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Analysis of the natural movement of the population under the spectrum of the health crisis

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Abstract. *The natural movement of the population refers in principle to births, deaths, divorces and marriages. The reduction in the number of births or the maintenance at a lower level was carried out under the rule of the pandemic crisis, when the couples were reserved in trying to have an increased number of offspring.*
In the same vein, the reduction in the number of births is due to the fact that the birth rate is influenced by human fertility, a context in which it has been declining and probably under the effect of the health and economic and financial crisis, which has been associated and continues at a fast pace, will impose such a situation.
Mortality was also maintained in reasonable terms despite the fact that there were a number of effects of the pandemic crisis, the total number decreased. A structure of deaths by age groups shows that the most affected were those in the groups over 60-70 and even 80 years.

Keywords: birth rate, mortality, divorce, marriages, crises.

JEL Classification: J12, J13, J17.

Introduction

The pandemic crisis has an effect on the increase of deaths in case of comorbidity, with an immediate effect on the increase of the natural increase of the population. The natural increase of the population is less and less, because the older age groups reach critical situations, while the samples, quotas, of young population is smaller compared to the period of 10-20 years ago. It is found that in rural areas there are some situations in which the number of deaths is much higher.

Regarding marriages, we will find that their number has decreased, of course due to some measures imposed in the case of this strategy to fight infection, but also due to the impossibility of future couples to legalize through marriage in the context of one of the measures to combat infections it refers to the avoidance in any form of meetings, assemblies or private manifestations over a particularly small number.

Divorce in turn consisted in some reduction also due to these conditions imposed by some changes that were imposed in close correlation with the desire to limit their number.

The study is accompanied by some graphs and series of data, tables, which are suggestive and ensure an easier understanding and interpretation of the data presented by the authors, data they took from the National Institute of Statistics/Eurostat.

Literature review

The problem of a country's population is important from several points of view. First of all, the population is the perspective of the evolution of a nation in terms of the source of evolution of the source of the employed, active population, number of employees and even unemployment. Many economists and researchers have paid attention to this aspect. A number of analyses have emerged worldwide, some leading to the hypothesis that the world's population is oversized, others that Europe's population is declining sharply or that female fertility needs to be reconsidered. In this sense, we mention works such as Anghelache et al. (2020) on the quarterly analysis of population evolution or Anghelache and Anghel (2017) and Anghelache et al. (2018) who published studies on the analysis of population evolution in Romania and more globally, with emphasis on the fact that population evolution is demographic factor of population growth, factor of evolution of the labour force or element of appreciation of the perspective of the evolution of humanity through the prism of the relation between the global resources and the evolution of the world population. In other words, a number of papers such as those of Anghelache (1996), Anghelache et al. (2006), Baron et al. (1996), Ber Py (1989) analyse in their works various aspects related to the methods of measuring and comparing macroeconomic indicators that give essence to economic development, and Capanu and Anghelache (2001a, 2001b) address in detail in their work macroeconomic indicators. Also, Pecican and Tănăsoiu (1989) and Tövissi, et al. (1979) are concerned with some methods and models of analysis of economic phenomena. Bijak et al. (2007) conducted a study on the population and employment outlook in the 27 Member States of the European Union, with a view to 2052. The expertise is somewhat bleak if we consider the resources, development programs and

the impact of international migration. Headey and Hodge (2009) analysed the effect of population growth on increasing performance indicators at the national level. Melo et al. (2008) dealt with the study of economic developments at the regional level, and Oster et al. (2O13) addressed the issue of capital in general and the prospect of increasing investment. Last but not least, Walker and Maltby (2012) dealt with the study of demographic solutions on the achievement of a settlement strategy at European level.

Methodology

In order to understand the content of the demographic indicators used, we will briefly see the main provisions of the methodology used by the National Institute of Statistics/Eurostat in the calculations of the disseminated statistical variables. Thus, the data on demographic phenomena were obtained by processing the information contained in the statistical bulletins of live births, deaths, marriages and divorces prepared by municipal, city and communal town halls, together with the registration of the phenomena in civil status documents. The main concepts used have the following content.

Born alive is the product of conception, expelled or completely extracted from the mother's body, regardless of the duration of pregnancy and which, after this separation, shows a sign of life (respiration, heart activity, umbilical cord pulsations or will-dependent muscle contractions). The deceased is the person whose vital functions have ceased definitively after some time has elapsed since birth.

Regarding the natural increase, this represents the difference between the number of live births and the number of deceased persons, in the analysed period. Also, marriage is the union between a man and a woman, concluded in accordance with the legislation of the country, in order to establish a family and which results in rights and obligations between the two spouses, as well as their children.

Divorce consists in the dissolution of a legally concluded marriage, by a final decision of the court, of the civil status officer or of a notary public. The data refer to divorce proceedings for which the dissolution of the marriage was allowed.

By the domicile of a person we mean the address at which he declares that he has the main residence, entered in the identity document, as it is taken into account by the administrative bodies of the state.

As for the habitual residence, it is the place where a person normally spends his daily rest period, without taking into account temporary absences for recreation, holidays, visits to friends and relatives, business, medical treatments or religious pilgrimage. The habitual residence may be the same as the domicile or it may differ in the case of persons who choose to establish their habitual residence in a locality other than that of domicile in the country or abroad.

The number of live births includes live births whose mothers had, at their date of birth, their habitual residence or residence for a period of at least 12 months in Romania, and

the number of deceased includes persons who had, at the date of death, their habitual residence or residence for a period of at least 12 months in Romania.

Marriages include the legal act of marriage of persons who had, at the date of marriage, domicile in Romania, as well as marriages of Romanian citizens who marry abroad and are registered at the civil registry offices in Romania, while divorces include the dissolution of marriages of persons whose divorces were concluded with judges, marital status or notaries public, in accordance with the legal framework, as well as the divorces of Romanian citizens who divorced abroad, transcribed in Romania.

The birth and mortality data for 2018 are final and are distributed after the date of the demographic event. Also, the data on birth and mortality for 2019 are semi-final and are distributed after the date of the demographic event. In the same vein, the data on marriage and divorce for 2019 are final and are distributed after the date of the demographic event. Also, the data regarding the demographic phenomena related to the months of 2020 are provisional and are distributed after the date of registration of the demographic event.

The provisional data on the demographic phenomena related to the months of a certain year present the demographic phenomena, registered at the civil status offices in the considered year, distributed after the date of registration of the phenomenon. Provisional data for the year in question do not include phenomena produced in the previous year and recorded late in the year in question (except January of each year).

By semi-definitive data regarding demographic phenomena such as births and deaths, registered at the civil status offices, related to the months of the considered year, they represent the absolute provisional data related to the demographic phenomena registered at the civil status offices in each month of the considered year. redistributes by months after the date of production, from which are excluded the phenomena registered late at the civil status offices, in the considered year, but which took place in the year before it and the demographic phenomena registered at the civil status offices, registered late in Romania are added during the first month of the following year, but which occurred during the year under review.

The final data on the demographic phenomena registered at the civil status offices, related to the months of the considered year represent the absolute semi-final data related to the demographic phenomena registered at the civil status offices of the considered year, redistributed by months after the production date in the first nine months of the following year, but which occurred in the year in question.

The revised data on demographic phenomena (births and deaths) related to the months of the year considered represent the absolute final data related to demographic phenomena (births and deaths) recorded in the year considered, to which were added the demographic phenomena (births and deaths) recorded late in subsequent years the first or second and the first 4 months of the third year, but which took place in the year in question.

The final data with reference to the demographic phenomena (marriages and divorces) produced in the considered year represent the total of the demographic phenomena (marriages and divorces) registered in the reference year and distributed on months after the date of the demographic events.

In the study, the authors used statistical methodologies, consisting of the system of statistical indices and indicators, structural analyses, graphical representations, statistical data series, etc.

Data, results and discussions

Based on the data presented by the National Institute of Statistics, we find that in September 2020 the number of registered births increased compared to September of the previous year and compared to the previous month of the same year. Also, in September 2020 the number of deaths and the number of deaths of children less than one year of age increased compared to the same period of the previous year. The data are summarized in Tables 1 and 2.

Table 1. *Natural population movement in Romania in 2019 (persons)*

Year/ Month	Live births[1)]	Deceased[1)]	Increase natural[1)]	Marriages[2)]	Divorces[2)]	Deceased under 1 year[1)]
2019						
January	17614	27388	-9774	5551	2196	99
February	14993	22357	-7364	5306	2672	90
March	15716	23665	-7949	6268	2884	105
April	15588	21338	-5750	5470	2686	103
May	16434	21264	-4830	13260	2788	89
June	16049	20529	-4480	14091	2657	106
July	18082	20305	-2223	16793	2153	114
August	16625	19899	-3274	23044	1579	101
September	16287	18982	-2695	15570	2466	91
October	14884	21079	-6195	11350	2909	82
November	13108	20482	-7374	6555	2827	79
December	12755	22433	-9678	5352	2380	86

[1)] Semi-final data distributed after the date of the demographic event.
[2)] Final data distributed after the date of the demographic event.
Source: INS communique number 291/10 November 2020.

Table 2. *Natural population movement in Romania in 2020 (persons)*

Year/ Month	Live births[1)]	Deceased[1)]	Increase natural[1)]	Marriages[1)]	Divorces[1)]	Deceased under 1 year[1)]
2020						
January	15971	23352	-7381	4356	836	91
February	12127	21699	-9572	5864	2184	102
March	11857	22591	-10734	4053	1889	83
April	12098	21812	-9714	1409	1381	94
May	12873	20249	-7376	2488	1137	77
June	14786	21073	-6287	5389	2355	83
July	17415	22417	-5002	11168	1863	101
August	16804	23169	-6365	14929	1953	88
September	18036	21973	-3937	12471	2371	104

[1)] Provisional data distributed after the date of the demographic event.
Source: INS communique number 291/10 November 2020.

In the same vein, in September 2020 the number of registered marriages decreased compared to September 2019 and compared to August 2020. Also, in September 2020, 18,036 children were born, with 1,232 more children than in August. 2020.

Regarding the number of deaths registered in September 2020, it was 21,973, with 1,196 fewer deaths than in August 2020, and the number of deaths of children less than one year, registered in September 2020, was 104 children, increasing by 16 deaths compared to August 2020.

The comparison with the previous month is affected by the fact that the statistical records of demographic phenomena register a gap from one month to another, due to the fact that there are demographic phenomena produced in the last 4-5 days of the current month. Also, the mortality phenomenon registers a seasonal evolution, being more accentuated in the winter months and registering the lowest values in July, August and September. The data are structured in Table 3.

Table 3. *Deaths recorded in the reference month, after the date of production (persons)*

Months of the year 2020	Recorded deaths [1]	Deaths caused [2]		
		in the reference month	in the month preceding the reference month	two months or more before the reference month
January	23352	22434	757	161
February	21699	20607	1092	-
March	22591	21335	1153	103
April	21812	20593	1049	170
May	20249	19317	796	136
June	21073	19542	1292	239
July	22417	20980	1133	304
August	23169	21765	1108	296
September	21973	20371	1196	406

[1] Provisional data distributed after the date of registration of the demographic phenomenon.
[2] Provisional data distributed according to the date of occurrence of the demographic phenomenon.
Source: INS communique number 291/10 November 2020.

Data on the evolution of the number of live births and deaths in July-September 2011-2020 are summarized in Table 4.

Table 4. *Evolution of the number of live births and deaths in July-September 2011-2020*

Year Month	2011	2012	2013[1]	2014[1]	2015[1]	2016[1]	2017[1]	2018	2019[2]	2020[3]
Live births										
July	18794	18860	19892	19323	19906	18905	20011	19416	18082	17415
August	17698	18147	19609	17477	17833	18916	19620	18028	16625	16804
September	18085	18067	20836	18824	19053	19963	19956	18766	16287	18036
Deceased										
July	19353	20996	19146	19582	20593	19567	19863	20298	20305	22417
August	18660	18960	18450	19369	19411	19391	20508	20463	19899	23169
September	17567	17688	18894	18756	18696	18955	18734	19347	18982	21973

[1] Data revised according to the INS Revision Calendar.
[2] Semi-final data distributed after the date of the demographic event.
[3] Provisional data distributed after the date of the demographic event.
Source: INS communique number 291/10 November 2020.

Figure 1 shows the evolution of the number of live births and deaths, between January 2018 and September 2020, noting a decrease in the number of deaths in September 2020 compared to the previous one.

Figure 1. *Evolution of the number of live-born and deceased, in the period January 2018 - September 2020*

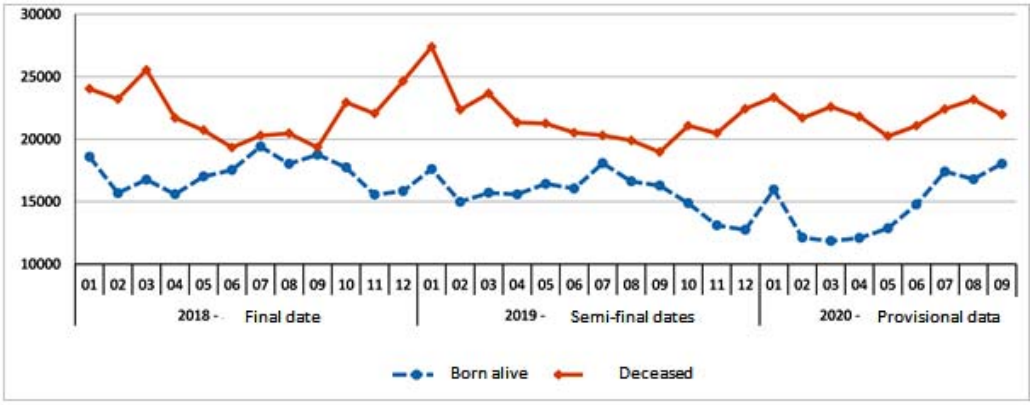
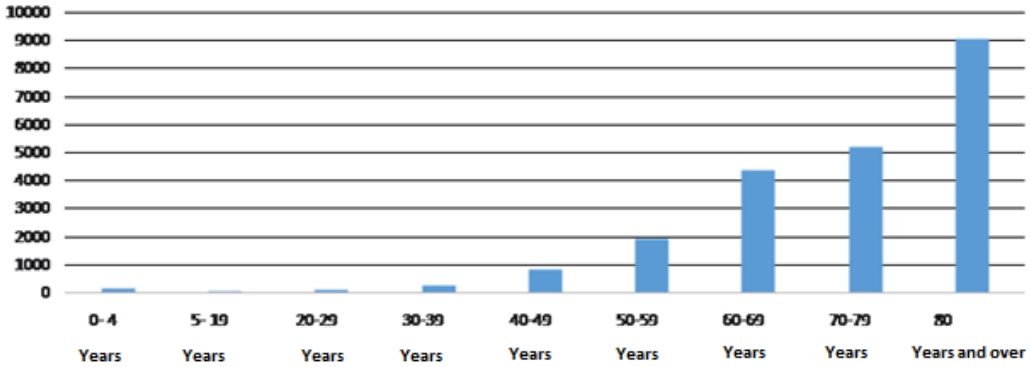


Figure 2 shows the deaths recorded in September 2020, by age groups.

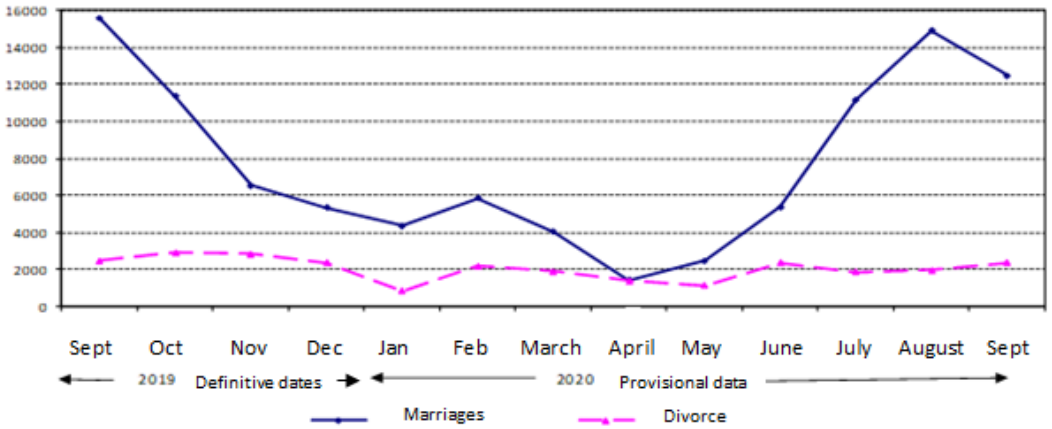
Figure 2. *Deaths recorded in September 2020, by age groups*



According to the data presented, we find that in September 2020, almost two thirds of the total number of deaths were registered for people aged at least 70 years, respectively 9,039 deaths, representing 41.1% of the total, were registered at age groups 80 years and over, 5,230 deaths, representing 23.8%, in people aged 70-79 years and 4,354 deaths, i.e. 19.8%, in people aged 60-69 years. The lowest deaths were recorded in the age groups 5-19 years (64 deaths), 20-29 years (104 deaths) and 0-4 years (131 deaths).

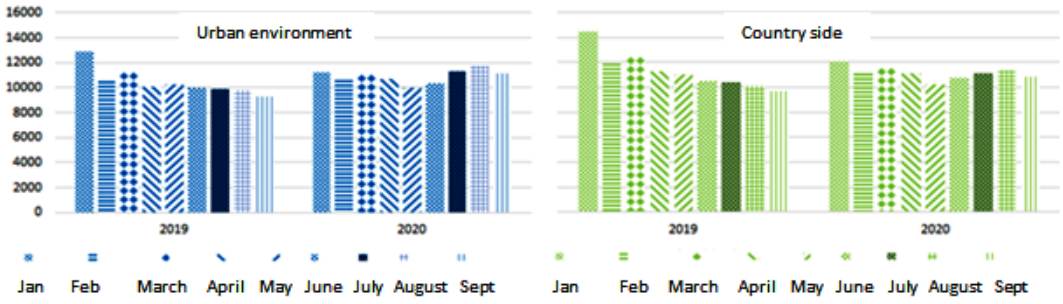
Regarding the natural increase, it remained negative in September 2020, with a surplus of live births of 3,937 people. In the same vein, in September 2020, 12,471 marriages were registered at the civil status offices, 2,458 less than in August 2020, and the number of divorces pronounced by final court decisions was 2,371 in September 2020, 418 more than in August 2020. The data regarding the evolution of the number of marriages and divorces, in the period September 2019 - September 2020 are presented graphically in Figure 3.

Figure 3. *Evolution of the number of marriages and divorces, between September 2019 and September 2020*



Regarding the number of live births registered in September 2020, it was higher by 1,749 compared to the same month in 2019. Also, the number of people who died in September 2020 was 2,991 higher than in September 2019, and as a consequence, the negative natural increase increased in September 2020 compared to September 2019 (-3937 people in September 2020, compared to -2695 people in September 2019). Also, the number of children under one year of age who died was 13 times higher in September 2020, than the one registered in September 2019. The evolution of the number of deaths by residence, during January-September of 2019 and 2020 is presented in Figure 4.

Figure 4. *Evolution of the number of deaths by area of residence, in the period January - September of 2019 and 2020*



According to the data presented and analysed, we find that in September 2020, 11,146 people died in urban areas, of which 5,974 men and 5,172 women, and in rural areas the death of 10,827 people, of which 5,885 men and 4,942 women. Compared to the similar period in 2019, the number of people who died increased by 1,872 people, of which 1,092 men and 780 women in urban and rural areas by 1,119 people, of which 610 men and 509 women.

In the same vein, the number of marriages was, in September 2020, 3,099 lower than that recorded in the same month of the previous year, and by final court decisions were pronounced with 95 divorces less than in September 2019.

The effects of the health crisis on demographic phenomena are visible in the case of deaths, especially in April, June, July, August and September 2020, when there were increases compared to April, June, July, August and September 2019, of marriages which, since March, have seen a decrease in the number of events compared to the corresponding month in 2019. Also, the number of births has decreased every month compared to the same period of the previous year, except for August and September when a number was recorded, higher live births than the previous year.

Conclusions

From this article a series of theoretical and practical conclusions can be drawn, which must be taken into account in the analysis of the trend that the natural movement of the population will have in the next period.

First of all, the health crisis will temper the phenomenon of marriage due to the concrete conditions. Of course, reducing marriage due to the health crisis or low fertility will reduce the quotas of the young population. Romania has long been experiencing declines in the natural increase of the population due to declining birth rates, along with higher mortality, taking into account the older contingents, which are in the critical phase of leaving the stage of life.

It also turns out that this health crisis will be able to increase the number of deaths, which offers a negative perspective, that of the increase in stillbirth.

The natural movement of the population will be lower as a result of the declining incomes, which do not encourage generations (young couples) to start a family, which is the most appropriate framework for raising the birth rate.

In contradictory terms to some opinions that are manifested nationally in relation to the world's population, the need to stabilize stillbirth in Romania becomes a problem, a context in which couples should be encouraged to give birth to offspring and find additional ways of health care for older generations, in order to extend the average life expectancy.

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