TRENDS OF POPULATION NATALITY IN MACEDONIA AND NEIGHBORING COUNTRIES

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Abstract

The developments of population natality in Republic of Macedonia and neighboring countries Serbia, Bulgaria and Greece, in the last thirty years shows trends of decreasing.

In 1980 Macedonia had 1.889.000 inhabitants and 39.784 live births (effective natality rate 21 ‰), Serbia had 9.227.037 inhabitants with 162.744 live births (18 ‰), Bulgaria with 8.861.535 inhabitants had 128.190 live births (14 ‰), and Greece with 9.642.505 residents had 148.147 live births (15%).

In 2011 Macedonia had 2.059.000 inhabitants and 39.784 live births (effective natality rate 11 ‰), Serbia had 7.258.745 inhabitants (without Kosovo) with 65.598 live births (9 ‰), Bulgaria with 7.348.328 inhabitants had 70.846 live births (10 ‰), and Greece with 11.299.976 residents had 106.428 live births (9‰).

The main feature in all these countries is that there is a trend of decreasing natality rate, i.e. gradual self-genocide of its population. This paper with table and graphic display will indicated processed statistical data backed up with comments and analysis.

Keywords: *data processing, forecasting, life expectancy, statistical analysis.*

Introduction

Statistical studies shows that the natality rate in the Republic Macedonia and its neighboring countries in the last thirty years has a decreasing trends.

The number of live births in Macedonia in 2011 was 22 770, and is decreased by 43% compared to 1980 when we have 39 784 live births.

In the same period there was a 60% reduction in live births in Serbia, 45% in Bulgaria and lowest 28% in Greece.

A common feature of all this states is that the natality rate in 2011 ranges from 9 to 11 ‰, or live births per 1,000 inhabitants.

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This paper in more details shows the general situation of the development trends of natality.

Basic aspects of natality

Natality rate indicates the total childbirths in a particular area at a particular time. It's calculated as the ratio of the number of live births and the number of total population.

Usually for different purposes and questions for examining natality we used natality rate.

Natality rate represents a ratio between the number of live births and the average number of people in the middle of the year which is calculated, estimated at 1,000 inhabitants. To calculate the rate we used the following mathematical formula[3]:

$$S_n = \frac{P_{ch}}{P} \cdot 1.000$$

where,

Sn = natality rate,

P_{ch} = the number of live births in the calendar year,

P = number of residents in a particular area in the period for which we calculated the rate, usually one year.

If the natality is higher than mortality, than the rate of population growth is positive, and if the natality rate is lower than mortality, then the rate of population growth is negative. Unfortunately, in the Republic of Macedonia he have a negative developments of the population growth, i.e. the rate of population growth decreases and approaches to zero and to negative values.

Trends of natality rate in Macedonia

According to statistics the developments of population natality in the country in the last thirty years has a decreasing trends, which is shown in Table 1 and Figure 1.

[3] Miceski T., (2009) Health Statistics, University Goce Delchev, Stip p. 288

Table 1[4] presents that the number of live births in Macedonia is declining, and thus reduces the natality rate, i.e. the number of live births per 1,000 inhabitants.

Table 1. Developments of population natality in Macedonia 1980-2011

Year	Average population	Live births	Base 1980	Natality rate
1980	1.889.000	**39.784**	**100%**	**21,06**
1981	1.916.000	**39.488**	**99%**	**20,61**
1982	1.928.000	**39.789**	**100%**	**20,64**
1983	1.942.000	**39.210**	**99%**	**20,19**
1984	1.956.000	**38.861**	**98%**	**19,87**
1985	1.969.000	**38.722**	**97%**	**19,67**
1986	1.982.000	**38.234**	**96%**	**19,29**
1987	1.995.000	**38.572**	**97%**	**19,33**
1988	2.007.000	**37.879**	**95%**	**18,87**
1989	2.018.000	**35.927**	**90%**	**17,80**
1990	2.028.000	**35.401**	**89%**	**17,46**
1991	2.039.000	**34.830**	**88%**	**17,08**
1992	2.056.000	**33.238**	**84%**	**16,17**
1993	2.066.000	**32.374**	**81%**	**15,67**
1994	1.946.000	**33.487**	**84%**	**17,21**
1995	1.966.000	**32.154**	**81%**	**16,36**
1996	1.983.000	**31.403**	**79%**	**15,84**
1997	1.997.000	**29.478**	**74%**	**14,76**
1998	2.008.000	**29.244**	**74%**	**14,56**

[4] Source: Statistical Yearbooks of the Republic of Macedonia 1990-2011, State Statistical Office of the Republic Macedonia, and http://makstat.stat.gov.mk/pxweb2007bazi/Dialog/Saveshow.asp

1999	2.017.000	**27.309**	**69%**	**13,54**
2000	2.026.000	**29.308**	**74%**	**14,47**
2001	2.035.000	**27.010**	**68%**	**13,27**
2002	2.020.000	**27.761**	**70%**	**13,74**
2003	2.027.000	**27.011**	**68%**	**13,33**
2004	2.032.000	**23.361**	**59%**	**11,50**
2005	2.037.000	**22.482**	**57%**	**11,04**
2006	2.040.000	**22.585**	**57%**	**11,07**
2007	2.044.000	**22.688**	**57%**	**11,10**
2008	2.047.000	**22.945**	**58%**	**11,21**
2009	2.051.000	**23.684**	**60%**	**11,55**
2010	2.055.000	**24.296**	**61%**	**11,82**
2011	2.059.000	**22.770**	**57%**	**11,06**

The table shows that in 1980 the average number of population was 1.889.000 inhabitants and the number of live births 39.784, so the effective natality rate was 21 ‰, i.e. the number of live births per 1,000 inhabitants was 21 child.

In 1991 the average number of population was 2.039.000 inhabitants and the number of live births 34.830, so per 1,000 inhabitants ware born 17 children. Thus, the declining of live births in 1991 compared to 1980 was 12%.

In 2001 the average number of population was 2.035.000 inhabitants and the number of live births 27.010, so per 1,000 inhabitants ware born 13 children. Thus, the declining of live births in 2001 compared to 1980 was 32%.

In 2011 the average number of population was 2.059.000 inhabitants and the number of live births 22.770, so per 1,000 inhabitants ware born 11 children. Thus, the declining of live births in 2011 compared to 1980 was 43%.

The trends of live births is also shown with Figure 1.

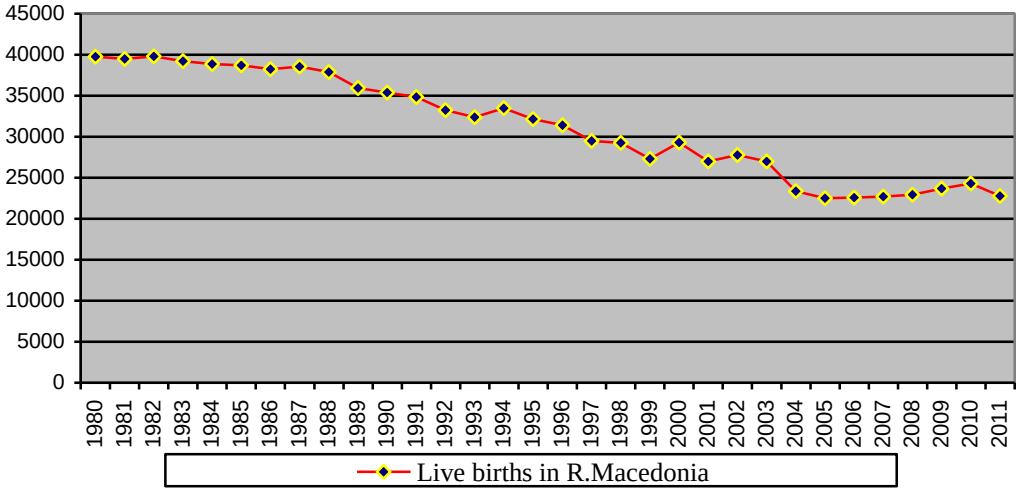

Figure 1. Developments of population natality in Macedonia 1980-2011

The pitfalls of births in the Republic of Macedonia are obvious. Upon this condition affects numerous factors, because natality is a complex phenomenon. Its development is influenced by many factors which can be divided into three groups: biological, economic - social and psychological. The action of these factors can be directly and indirectly, i.e. long and short term. The intensity of the influence of these factors is not always the same, but changing through time.

For detailed analysis of births within the observed population, we should use other indicators, which will be increasingly aware for the female population. One of these indicators is the fertility rate which considers the population in the reproductive years. Fertility of the population can be observed in relation to both, men and women population, separately or jointly. But, in any case the fertility rate refers more to the female population, which is able to give birth and usually take women in the fertile age between 15- 49. This is subject to other more extensive analyses in other studies.

Population growth of Serbia, Bulgaria and Greece

Given the similarities of cultural and sociological traditional values and the closeness of the number of childbirths, its information about natality rate will be shown separately in Tables 2, 3 and 4 and with Figure 2.

Table 2. Trends of population natality in Serbia 1980-2011

Year	Average population	Live births	Indices Base 1980	Natality rate
1980	9.227.037	162.744	**100%**	**17,64**
1981	9.313.686	151.518	**93%**	**16,27**
1982	9.360.219	159.440	**98%**	**17,03**
1983	9.406.748	157.648	**97%**	**16,76**
1984	9.453.281	162.279	**100%**	**17,17**
1985	9.499.808	155.863	**96%**	**16,41**
1986	9.546.347	153.938	**95%**	**16,13**
1987	9.592.873	154.500	**95%**	**16,11**
1988	9.639.402	153.754	**94%**	**15,95**
1989	9.685.933	144.926	**89%**	**14,96**
1990	9.732.464	145.642	**89%**	**14,96**
1991	9.789.795	142.641	**88%**	**14,57**
1992	9.835.190	131.295	**81%**	**13,35**
1993	9.878.582	132.063	**81%**	**13,37**
1994	9.918.975	128.742	**79%**	**12,98**
1995	9.961.370	131.012	**81%**	**13,15**
1996	10.005.763	128.589	**79%**	**12,85**
1997	10.047.159	122.636	**75%**	**12,21**
1998	7.867.551	76.330	**47%**	**9,70**
1999	7.873.944	72.222	**44%**	**9,17**
2000	7.880.338	73.764	**45%**	**9,36**
2001	7.886.732	78.435	**48%**	**9,95**
2002	7.500.031	78.101	**48%**	**10,41**
2003	7.480.591	79.025	**49%**	**10,56**
2004	7.463.157	78.186	**48%**	**10,48**

2005	7.440.769	72.180	**44%**	**9,70**
2006	7.411.569	70.997	**44%**	**9,58**
2007	7.381.579	68.102	**42%**	**9,23**
2008	7.350.222	69.083	**42%**	**9,40**
2009	7.320.807	70.299	**43%**	**9,60**
2010	7.291.436	68.304	**42%**	**9,37**
2011	7.258.745	65.598	**40%**	**9,04**

Table 3. Trends of population natality in Bulgaria 1980-2011

Year	Average population	Live births	Indices Base 1980	Natality rate
1980	8.861.535	128.190	**100%**	**14,5**
1981	8.891.117	124.372	**97%**	**14,0**
1982	8.917.457	124.166	**97%**	**13,9**
1983	8.939.738	122.993	**96%**	**13,8**
1984	8.960.679	122.303	**95%**	**13,6**
1985	8.960.547	118.955	**93%**	**13,3**
1986	8.958.171	120.078	**94%**	**13,4**
1987	8.971.359	116.672	**91%**	**13,0**
1988	8.981.446	117.440	**92%**	**13,1**
1989	8.876.972	112.289	**88%**	**12,6**
1990	8.718.289	105.180	**82%**	**12,1**
1991	8.632.367	95.910	**75%**	**11,1**
1992	8.540.164	89.134	**70%**	**10,4**
1993	8.472.313	84.400	**66%**	**10,0**
1994	8.443.591	79.442	**62%**	**9,4**
1995	8.406.067	71.967	**56%**	**8,6**
1996	8.362.826	72.188	**56%**	**8,6**

1997	8.312.068	64.125	**50%**	**7,7**
1998	8.256.786	65.361	**51%**	**7,9**
1999	8.210.624	72.290	**56%**	**8,8**
2000	8.170.172	73.679	**57%**	**9,0**
2001	8.020.282	68.180	**53%**	**8,5**
2002	7.868.468	66.499	**52%**	**8,5**
2003	7.823.557	67.359	**53%**	**8,6**
2004	7.781.161	69.886	**55%**	**9,0**
2005	7.739.900	71.075	**55%**	**9,2**
2006	7.699.020	73.978	**58%**	**9,6**
2007	7.659.764	75.349	**59%**	**9,8**
2008	7.623.395	77.712	**61%**	**10,2**
2009	7.585.131	80.956	**63%**	**10,7**
2010	7.534.289	75.513	**59%**	**10,0**
2011	7.348.328	70.846	**55%**	**9,6**

Table 4. Trends of population natality in Greece 1980-2011

Year	Average population	Live births	Indices Base 1980	Natality rate
1980	9.642.505	148.147	**100%**	**15,36**
1981	9.729.350	140.953	**95%**	**14,49**
1982	9.789.513	137.296	**93%**	**14,02**
1983	9.846.627	132.621	**90%**	**13,47**
1984	9.895.801	125.742	**85%**	**12,71**
1985	9.934.300	116.495	**79%**	**11,73**
1986	9.967.213	112.823	**76%**	**11,32**
1987	10.000.595	106.401	**72%**	**10,64**
1988	10.036.983	107.561	**73%**	**10,72**

1989	10.089.498	101.657	**69%**	**10,08**
1990	10.156.902	102.251	**69%**	**10,07**
1991	10.256.292	102.620	**69%**	**10,01**
1992	10.369.866	104.081	**70%**	**10,04**
1993	10.465.528	101.799	**69%**	**9,73**
1994	10.553.035	103.763	**70%**	**9,83**
1995	10.634.385	101.495	**69%**	**9,54**
1996	10.709.173	100.718	**68%**	**9,40**
1997	10.776.504	102.038	**69%**	**9,47**
1998	10.834.880	100.894	**68%**	**9,31**
1999	10.882.580	100.643	**68%**	**9,25**
2000	10.917.482	103.267	**70%**	**9,46**
2001	10.949.957	102.282	**69%**	**9,34**
2002	10.987.543	103.569	**70%**	**9,43**
2003	11.023.514	104.420	**70%**	**9,47**
2004	11.061.701	105.655	**71%**	**9,55**
2005	11.103.965	107.545	**73%**	**9,69**
2006	11.148.460	112.042	**76%**	**10,05**
2007	11.192.763	111.926	**76%**	**10,00**
2008	11.237.094	118.302	**80%**	**10,53**
2009	11.282.760	117.933	**80%**	**10,45**
2010	11.307.502	114.766	**77%**	**10,15**
2011	11.299.976	106.428	**72%**	**9,42**

Table 2, 3 and 4[5] shows that in the last thirty years Serbia, Bulgaria and Greece, share the same fate as Macedonia, in terms of the movement of population growth. Given the comparability of the numbers of live births, visibility of the numbers we will show in the same Figure 2.

[5] Извор: Statistical Office of the Serbia,
World Bank Health Nutrition and Population Statistics
http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database

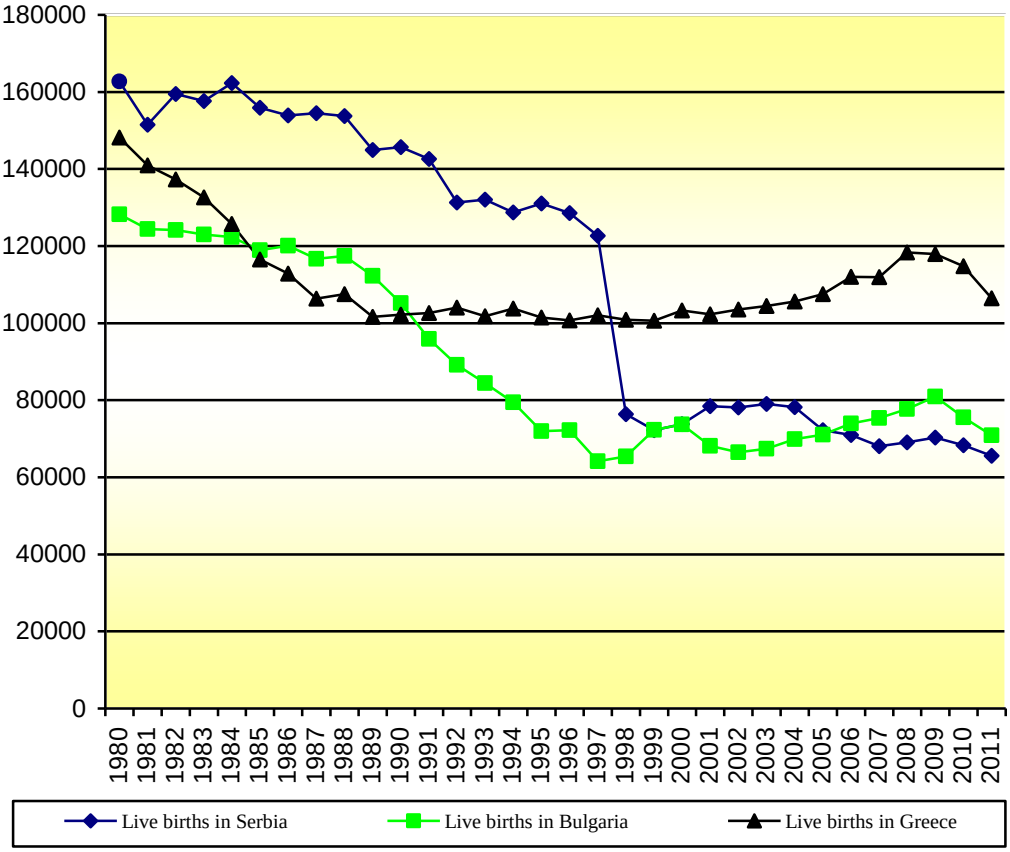

Figure 2. Trends of population natality in Serbia, Bulgaria and Greece 1980-2011

Based on the data we can conclude that the common feature is that these countries cannot provide a simple reproduction of its population.

A number of reasons contribute to this situation, such as:

• Rapture of living “contemporary life”,

• Avoiding responsibility of establishing families,

• Abandoning the traditional values,

• Reduce the number of marriages,

• Increase the number of divorces,

• Changes in the age structure of the population,

• Displaced level of fertility,

• Physical-mechanical movement of the population;

• Changes in the social structure of the population;

• Fear of change (fear of deterioration) of the general conditions of life and other influences.

Conclusion

Population with its existence, knowledge, skills and creativity are indispensable contributor for the success of every activity, company and country.

Because of that today has been given special attention and even develop specific scientific disciplines for their analysis, research and forecasting, such as demographics, population statistics, etc., and in recent decades the management of human resources.

But, unnecessary would be all scientific disciplines if the trend of decreasing the birth rate continue.

Data shows that the number of childbirths in Macedonia, Serbia, Bulgaria and Greece with decades has continuous decreasing trends.

These are alarming signals that point to the need to study the biological, economic, social and psychological factors that are associated with natality rate of population and to take comprehensive measures that will prevent self-genocide of the peoples of these countries, and the countries themselves.

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КРЕТАЊА НАТАЛИТЕТА СТАНОВНИШТВА У МАКЕДОНИЈИ И ЗЕМЉАМА У ОКУЖЕЊУ

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Апстракт

Кретања наталитета становништва у Републици Македонији и суседне земље Србије, Бугарске и Грчке, у последњих тридесетак година показује тренд опадања.

У 1980 Македонија је имала 1.889.000 становника, а 39.784 живорођених деце (ефективна стопа наталитета је била 21 ‰), Србија је имала 9.227.037 становника, са 162,744 живорођене деце (18 ‰), Бугарска са 8.861.535 становника имала је 128,190 живорођених (14 ‰), и Грчка са 9.642.505 становника имала је 148,147 живорођених (15%).

У 2011 Македонија је имала 2.059.000 становника, а 39,784 живорођених (ефективна стопа наталитета 11 ‰), Србија је имала 7.258.745 становника (без Косова) са 65,598 живорођених (9 ‰), Бугарска са 7.348.328 становника имала 70,846 живорођених (10 ‰), а Грчка са 11.299.976 становника имала 106,428 живорођених (9 ‰).

Основна карактеристика у свим овим земљама је да постоји тренд смањења стопе наталитета, односно постепени само-геноцид становништва. Овај труд уз помочи табеларне и графички приказе ће опфатити обрађени статистички подаци сачувани са коментарима и анализама.

Кључне речи: обрада података, предвиђање, очекивано трајање живота, статистичка анализа.