EDUCATION AS A TOOL FOR TRANSITION TO MOTHERHOOD: A DEMOGRAPHIC PERSPECTIVE

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Abstract

Modern societies are facing major demographic challenges. Improving the quality of life, women's empowerment, the access to education, medical services and contraceptives methods, the postponement of marriage, migration, are just a few of the issues that influence reproductive behavior. As official statistics show, fertility rates have declined considerably over the past decades, generating – especially in more developed countries – numbers below replacement rates. This reality is also specific for Romania, especially since the 1990s, when fertility rates have declined significantly. However, the recovery of these figures is not a short-term process: besides socio-economic interventions, it is necessary to change attitudes regarding the family size. The purpose of this article is to analyze the relationship between the level of education of women and fertility rates in Romania, based on a descriptive analysis of the data obtained in the last censuses of the population (2002 and 2011). At the same time, the article proposes to bring to attention a series of theoretical approaches on the relation between education and the family dimension, as well as a series of general data on the evolution of fertility at international, European and national level.

Keywords: fertility rate, level of education, reproductive behaviour, replacement rate

Résumé

Les sociétés modernes sont confrontées à des majeurs défis démographiques. L'augmentation de la qualité de vie, l'émancipation des femmes, l'accès à l'éducation, aux services médicaux et aux contraceptifs, le report de l'âge au premier mariage, la migration, ne sont que quelques-uns des problèmes qui influencent le comportement de reproduction. Comme le montrent les statistiques officielles, les taux de fécondité ont considérablement diminué au cours des dernières décennies, en particulier dans les pays plus développés – inférieurs aux taux de remplacement des générations. Cela est également évident en Roumanie, en particulier depuis les années 90, lorsque le taux de fécondité ont considérablement diminué. Cependant, le redressement de ces chiffres n'est pas un processus à court terme. Outre les interventions socio-économiques, il est nécessaire de changer les mentalités face à la taille de la famille. L'objectif de cet article est d'analyser la relation entre le niveau d'instruction des femmes et les taux de fécondité dans l'espace roumain, à partir d'une analyse descriptive des données obtenues lors des derniers recensements de la population (2002 et 2011). En même temps, l'article propose également d'attirer l'attention sur une série d'approches théoriques sur le lien entre l'éducation et la dimension familiale, ainsi qu'une série de données générales sur l'évolution de la fécondité aux niveaux international, européen et national.

Mots-clés: taux de fécondité, niveau d'instruction, comportement de reproduction, taux de remplacement des générations

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Rezumat

Societățile moderne se confruntă cu importante provocări de ordin demografic. Creșterea calității vieții, emanciparea femeii, accesul la educație, la servicii medicale și mijloace contraceptive, amânarea vârstei la prima căsătorie, migrația, constituie doar câteva din aspectele care influențează comportamentul reproductiv. După cum arată statisticile oficiale, ratele de fertilitate au scăzut considerabil în ultimele decenii, generând în mai multe spații – în special în țările cu un grad mai ridicat de dezvoltare, cifre sub nivelul de înlocuire a generațiilor. Acest lucru este vizibil și în România, mai ales începând cu anii '90, când ratele de fertilitate s-au diminuat semnificativ. Redresarea acestor cifre nu reprezintă însă un proces de scurtă durată, dincolo de intervențiile de ordin socio-economic fiind necesare schimbări de atitudine privind dimensiunea familiei. Scopul acestui articol este de a analiza relația dintre nivelul de educație al femeilor și ratele de fertilitate din spațiul românesc, având la bază o analiză descriptivă a datelor obținute la ultimele recensăminte ale populației (2002 și 2011). Totodată, articolul își mai propune să aducă în atenție o serie de abordări teoretice privind legătura dintre educație și dimensiunea familiei, precum și o serie de date generale despre evoluția fertilității la nivel internațional, european și național.

Cuvinte cheie: rata fertilității, nivel de educație, comportament reproductiv, rata de înlocuire a generațiilor

1. Introduction

According to official statistics, fertility levels have fallen in most industrialized countries. Even though we are facing a slight increase of fertility rate at the European Union' level over the last three years, we are still below the replacement fertility rate and facing demographic challenges, as population ageing, migration, urbanization, dependency ratio et al. Postponing the marriage and late first pregnancies are aspects that influence total fertility rate, as the results of different research. This influence is even more specific for developed countries, where we can identify a demographic-economic paradox (a first reference to this model was made my Thomas Malthus in 1798): an inverse relationship between income and fertility. Considering the latest demographic changes and the forecast of birth rate evolution, we can find different frameworks for these phenomena in specialty literature, including the long-term effects of this descendent trends.

The purpose of this article is to bring into attention some particularities regarding demographic behaviour in European countries, especially Romania, starting with the relationship between the level of education and fertility rate. Thus, the first section of the article is dedicated to theoretical framework, where I present some of the approaches regarding the influence of education on family size decisions. The second section contains a general overview on fertility rate over the world, in Europe and Romania, in order to understand

the important changes that have been made during the last decades. Going from a macro-approach to a micro-approach, the last chapter of this article is a case study on the reproductive behaviour of Romanian women based on educational level. Through a descriptive analysis, using data from the last two censuses, especially *The 2011 Population and Housing Census*, hopefully this ending section will give a clear image on the connection between education and fertility.

2. Theoretical framework

The way that families decide the number of children they want is related to different approaches, but one of the most common aspects noticed on theoretical and empirical studies is the attention offered to education as a factor of fertility decline.

An important theoretical perspective has been developed by the economist Gary Becker (1960), who used an economic framework to analyze family size decisions, having the principle of population by Thomas Malthus as a starting point. Becker brings into attention that the demand for children is connected to the *price* of a child: "A family must determine not only how many children it has but also the amount spent on them – whether it should provide separate bedrooms, send them to nursery school and private colleges, give them dance or music lessons, and so forth" (Becker 1960, 211). Becker doesn't resume the "price" only at monetary costs, childcare, education/ schooling etc., he also refers to costs as opportunity cost in time that is needed for pregnancy and upbringing of the child. Some explanation of Becker's view is that more educated women want fewer children because the opportunity costs are higher: "women who are better educated have to turn down more opportunities than women who are less well educated and so the *prize* they have to pay for having children is higher" (Roser 2017).

The changes made in modern societies: the establishment of compulsory education, followed by the massification of secondary and higher education, lead to a significant increase of the costs per children, by comparison with traditional societies, where children started to produce what they use from 10-11 years old. On the other hand, a long-term education reduces the fertile period of women and influences the reproductive strategy, having a smaller number of children (Rotariu and Voineagu 2012, 145-146).

Another point of view about the impact of education on reproductive behavior is that a greater education leads to a better knowledge of birth control methods and generates more informed fertility decisions. Chicoine – on a study regarding the schooling reform from 1985 in Kenya that lengthened

primary school by one year, showed that "an increase in schooling can lead to women having greater control over the household fertility decision, and ultimately, lower levels of fertility" (Chicoine 2012, 29-30). Also, the reform came with effects on postponing marriage and sexual activity, all these findings bringing into attention the importance of education on the choices and decisions of young women (Chicoine 2012, 29).

According to L. Breiorova and E. Duflo's article ("The impact of education on fertility and child mortality: do fathers really matter less than mothers?"), that brings into attention a case study on the massive school construction program that took place in Indonesia (from 1973 to 1978), there is a significant effect of education on child mortality, but there are no important gender differences regarding this matter. However, when the relation between education and fertility is taken in consideration, besides the fact that it has a strong effect, "the wife's education is a stronger determinant of fertility decisions than husband's education" (Breiorova and Duflo 2004, 3). Thereby, female' level of education has a more significant impact in reproductive behavior than male'.

Another perspective on how education influence fertility is that "women with advanced degrees have lower completed fertility on the average principally because women who have one or more children early are more likely to leave or not enter long educational tracks and never attain a high educational level" (Cohen, Kravdal and Keilman 2011, 11830). That conclusion is based on a study about the effects of childbearing on educational attainment and the effects of education on fertility in the 1964 birth cohort of Norwegian women, but it can be tested in different types of societies.

Miller – on a study regarding childbearing motivation, shows that higher education has a great influence on women's autonomy "because it expands the individual's point of view so far beyond family and community of origin" (Miller 1992, 269), promoting and facilitating activities competitive with childbearing, leading to wishes for fewer children. Another interesting conclusion of Miller's is that the level of education has a negative effect on the childbearing motivation of women, but not of men (Miller 1992, 282).

Considering the relation between intentions and real behaviour, Toulemon and Testa demonstrated – through a research conducted in 1998, that women with a higher level of education anticipated their own reproductive behaviour most accurately by comparison with other's. The results of their investigations showed that 63 percent of the highly educated persons who stated that they want a child in the next five years fulfill their desired, while the overall average was 48 percent. Also, only three percent of the most highly educated women who didn't want a child had one later, compared

with seven percent overall (Toulemon and Testa 2005, 4). These findings point out that women with a higher level of education have a better control over their reproductive behaviour and a clearer view on the number of desired children.

When we refer to women's reasons for postponing first birth, there are a lot of aspects that can be invoked. For instance, "more predominance of discussions regarding fertility; the conflict between established careers and a new maternal identity; anxieties about birth without complications and the baby's health, given the increased risks associated with higher maternal age" (Brunton, Wiggins and Oakley 2011, 5). As Iacovou and Taveres showed, educational and occupational careers have a lesser but still significant importance in family size intentions, a central role being occupied by living arrangements. According to the authors, one thing is certain: "more individuals make downward than upward revisions" and the "family size intensions of young people are strongly affected by events in the fertility career" (Iacovou and Taveres 2010, 3-4).

Regardless the theoretical perspective from which we decide to examine the demographic changes, it is impetuously to be acquainted with the fertility trends and to understand the way that they evolved during the last years. The next chapter is dedicated to a brief description of the fertility statistics.

3. Fertility rate statistics over the world, in Europe and Romania

Firstly, it is necessary to define the main concept of this section: total fertility (TFR). According to United Nations, TFR represents "the average number of live births a hypothetical cohort of women would have at the end of their reproductive period if they were subject during their whole lives to the fertility rates of a given period and if they were not subject to mortality. It is expressed as live births per woman" (United Nations 2017).

An overview at global level regarding fertility rates indicates the fact that the decline of fertility is specific to all the regions, even though the process hasn't been simultaneously: it began as far back as the late nineteenth-century in Europe, Northern America and the developed countries of Oceania, and since the mid twentieth century, fertility decline has followed in Asia, Latin America and the Caribbean, and Africa (United Nations 2015, 46). From 1950 to 2015, global fertility rate has halved: from 4.96 live births per woman in 1950-1955, to 2.52 during 2010-2015 period (United Nations, 2017). The modernization of societies came with important changes in demographic behavior, as the Demographic Transition Theory shows: the

societies "progress from a pre-modern regime of high fertility and high mortality to a post-modern one in which both are low" (Kirk 1996, 361)[1].

An important decrease on total fertility is also specific to European space, where we can identify a transition from 2.66 children per woman in 1950-1955 to 1.6 in 2010-2015. Since 1975-1980, the fertility rate has been below replacement level (1.98), the lowest level being registered between 1995 to 2005 (1.43). By comparison with Europe, Romania had an even more severe decline: total fertility halved from 1950-1955 (3.06 live births per woman) to 2010-2015 (1.48). If in the 50's Romania was above the European average of fertility rate, after a decline during 1960-1965, our country managed to increase the fertility rate due to pronatalist policy (Decree 770, from 1966, within which abortion was declared illegal and the access to contraception was restrained). The effect of the pronatalist policy had been on short term and the descendent trend of fertility rate had been maintained until the fall of the communist regime. But the important dropout, below replacement fertility rate, had been registered since 1990, the year from which Romania have been placed below European average (1990-1995: 1.51 – Romania, 1.57 – Europe). As it was mentioned by Netedu, unfortunately, a justification for the negative natural growth in the first years after the Romanian Revolution (1989) is that abortion remained the main contraceptive method, since we were facing with more than 1 million abortion per year. Another reason was the effect of migration (Netedu 2016, 104).

Table 1. Total fertility (live births per woman) over the world, in Europe and Romania from 1950 to 2015

	1950-1955	**1955-1960**	**1960-1965**	**1965-1970**	**1970-1975**	**1975-1980**	**1980-1985**
WORLD	4.96	4.89	5.03	4.92	4.46	3.87	3.60
EUROPE	2.66	2.66	2.57	2.37	2.17	1.98	1.88
Romania	3.06	2.74	2.10	2.87	2.65	2.55	2.26
	1985-1990	**1990-1995**	**1995-2000**	**2000-2005**	**2005-2010**	**2010-2015**	
WORLD	3.44	3.02	2.75	2.63	2.57	2.52	
EUROPE	1.81	1.57	1.43	1.43	1.55	1.60	
Romania	2.22	1.51	1.34	1.32	1.45	1.48	

Source: data selected from United Nations, *World Population Prospects 2017*

[1] For more information about Demographic Transition Theory see Landry (1934) and Notestein (1945).

When it comes to European Union (EU-28), according to EUROSTAT, the average total fertility rate in 2016 was calculated at 1.6 children per woman, while in 2005 had a value of 1.51. During the last ten years, we can identity an ascending route (from 1.51 in 2005 to 1.62 in 2016), even though there was a slow decrease from 2011 to 2014 (from 1.59 to 1.55). Romania is facing the same problems: small rates of births, below replacement level, and population ageing.

Table 2. Total fertility rate in European Union and Romania from 2005 to 2016

	2005	**2006**	**2007**	**2008**	**2009**	**2010**
EU (27/28 countries)	1.51	1.54	1.56	1.61	1.61	1.62
Romania	1.4	1.42	1.45	1.6	1.66	1.59
	2011	**2012**	**2013**	**2014**	**2015**	**2016**
EU (27/28 countries)	1.59	1.59	1.55	1.58	1.57	1.6
Romania	1.47	1.52	1.46	1.56	1.58	1.64

Source: EUROSTAT, 2018

In 2016, Romania was occupying the tenth place in the ranking of fertility rates (1.64), while the highest TFR was registered in France (1.92, with a slight decrease from 1.95 in 2015), followed by Sweden (1.85), Ireland (1.85), Denmark (1.79) and the United Kingdom (1.79). Very low total fertility rates are especially in Southern European countries: Italy (1.34), Spain (1.34), Portugal (1.36), Malta (1.37), Cyprus (1.37) etc. (EUROSTAT 2018). A particularity of Romania is that – by comparison with some of the European countries in which it can be identified a small tendency of recovery, it is facing a long stability of fertility at the very low level, apart from the replacement rate of population (considered at 2.1 children/ woman) (Rotariu and Voineagu 2012, 133).

Besides these gross numbers, the study of population attempts to explain and understand the factors that determine changes in the number of children that women have: women's empowerment (access to education and labor force), family planning and access to contraceptive methods, economic changes, technological development, norms and values of modern society are just a few examples of potential reasons why the transition to motherhood is postponed. As I mentioned before, the purpose of the article is to focus on the relationship between education and fertility, since an increasing level of education generates a declining number of children per woman. In this context, the next part of the paper is dedicated to understanding if women's education is linked to the choice of given birth.

4. Education and fertility in Romania

According to *The 2011 Population and Housing Census*, the total number of women from the stable population of 15 years and above was 8.781.829 in 2011, from which 71.8 percent were mothers (28.2 percent haven't gave birth). An analysis based on educational level reflects that 76.1 percent of the women that haven't graduated an educational institution gave birth, while the same situation was specific to 70.7 percent of women that graduated a level of education (from primary to postgraduate). Thus, from 219.398 women (15+ years old) with no education, 166.941 were mothers, above the total average regardless educational level. However, in order to express a series of conclusions in conjunction with the patterns identified in Romania, it is necessary to observe if there are any differences between categories according to the level of education graduated. As the **Table 3** shows, the percentage of women that gave birth increases with the decrease of educational level. Thus, if 82.1 percent of the women that graduated primary education gave birth, when it comes to secondary education, the percentage is smaller: 73.3 for high school and 72.3 for middle school. The figures are even lower as the level of education increases: 59 percent for higher education and 48.9 percent for postgraduate degree (master or PhD). Therefore, less than half of the postgraduate women gave birth, while more than three from four women with no education have gone through the same experience. The only deviation from this pattern is specific for post-secondary education, where it can be observed the highest level of births (76.7 percent).

Besides the fact that it is important to know how many women from the total female population gave birth, another interesting aspect is related to the birth rank. An analysis on this criterion is useful for implementing family policies in a differential manner, especially if we consider the statistics lately: more than half of the children that are born during a year represent women's first child (Voineagu, Rotariu (coord), 2012, p. 137). As it can be seen from the **Table 4**, there are significant differences between women with a school diploma and those with no education when it comes to the child rank. Thus, 88.9 percent of the educated women are having one (37.1 percent), two (39.4 percent) or three (12.4 percent) children, and 11.1 percent between four and ten (16.149 of 6.138.403 women have ten children). By comparison, the reproductive behaviour of non-educated women is more various. Thereby, even if the highest figures are specific to those who have one child (23 percent) or two children (26.6 percent), there is a large percentage of females that gave birth to three children (17.7 percent), while the number of four rank' children is double compared to educated women

(13.5 percent). Important differences can be seen between five to ten rank: 8.1 percent of women that haven't graduated an educational institution gave birth to five children, the same aspect being specific to 2.6 percent of the educated women.

Table 3. Total number of women (15 years and above) and the percentage of women that (haven't) gave birth based on educational level

	Women of 15 years and above (Total number)	**Percentage of female that haven't gave birth**	**Percentage of female that gave birth**
ROMANIA – Stable population	**8781729**	**28.2%**	**71.8%**
Women that graduated an educational institution	**8562331**	**29.3%**	**70.7%**
Postgraduate degree	190387	51.1%	48.9%
Higher education	1202944	41%	59%
Post-secondary education	295315	23.3%	76.7%
Secondary education	5765688	27.1%	72.9%
High school	3100167	26.7%	73.3%
Middle school	2665521	27.7%	72.3%
Primary education	1107997	17.9%	82.1%
Women that haven't graduated an educational institution	**219398**	**23.9%**	**76.1%**

Data source: The 2011 Population and Housing Census (personal data processing according to the total number of graduates in each category)

Table 4. Birth rank according to mothers' educational attainment

	1 child	**2 children**	**3 children**	**4 children**	**5 children**
Women that graduated an educational institution	37.1%	39.4%	12.4%	6.2%	2.6%
Women that haven't graduated an educational institution	23%	26.6%	17.7%	13.5%	8.1%
	6 children	**7 children**	**8 children**	**9 children**	**10 children**
Women that graduated an educational institution	1%	0.5%	0.3%	0.2%	0.3%
Women that haven't graduated an educational institution	4.5%	2.6%	1.6%	1%	1.4%

Data source: The 2011 Population and Housing Census (personal data processing according to the total number for each category)

It is important to understand how these figures evolved between censuses. The first main conclusion is that since 2002 to 2011, the percentage of women that gave birth to more than three children decreased: with two percent for Rank 3 and 3.8 percent for Rank 4 and more. Also, we are facing an increase with five percent of women that have only one child. As we can see from the detailed presentation of the percentages based on the educational level (**Table 5**), another conclusion is that during a nine years' period, educated women changed their reproductive behaviour. Thus, even though the percentage for Rank 2 is still the same, the proportion of females that have a single child grew (with 4.5 percent), while the proportion of women with three, four or more children fell (1.8 for 3 children and 3 percent for Rank 4 until 10). Among the levels of education, the most significant changes are visible for higher education and primary education. Unfortunately, the 2002 census doesn't bring into attention information about postgraduate degrees, so it is possible to be included in *higher education* section. Even though we can identify an increase of women with university degree that have a single child (3.4 percent), the difference is more obvious when we refer to primary education: between the censuses, the number of women with more than three children had fallen (with 1.3 percent for Rank 3 and 3 percent for Rank 4-10).

All these data confirm the general tendency of embracing a reduced reproductive behaviour, but there are still important differences generated by the level of education: the higher it is, the lower it's the fertility rate. This aspect is certified by the fact that from postgraduate degree level to post-secondary education, more than half women are having one child, while from secondary education level and below the majority are women with two children. On the other hand, starting with middle school we discover higher figures for Rank 3 and more.

Table 5. Proportion for birth rank based on mothers' educational level

	Year	Rank 1	Rank 2	Rank 3	Rank 4 +
ROMANIA – Stable population (women)	**2002**	31.7%	38.4%	14.5%	15.5%
	2011	36.7%	39.1%	12.5%	11.7%
Women that graduated an educational institution	**2002**	**32.6%**	**39.2%**	**14.2%**	**14%**
	2011	**37.1%**	**39.4%**	**12.4%**	**11.1%**
Postgraduate degree	2011	66.9%	30.5%	2.2%	0.4%
Higher education	2002	55.9%	38.7%	4.2%	1.2%
	2011	59.3%	36.1%	3.6%	1%

	Year	Rank 1	Rank 2	Rank 3	Rank 4 +
Post-secondary education	2002	50.3%	41.5%	6.2%	2%
	2011	50.3%	42%	5.7%	2%
Secondary education	2002	34.1%	41.2%	13.7%	11%
	2011	34.9%	41.8%	13.1%	10.2%
High school	2002	42.8%	43.4%	9.3%	4.5%
	2011	41.6%	44.3%	9.5%	4.6%
Middle school	2002	24.7%	38.8%	18.3%	18.2%
	2011	27.1%	38.8%	17.4%	16.7%
Primary education	2002	18.5%	32.2%	20%	29.3%
	2011	23.3%	31.7%	18.7%	26.3%
Women that haven't graduated an educational institution	**2002**	**18.4%**	**26.8%**	**18.7%**	**36.1%**
	2011	**23 %**	**26.6%**	**17.7%**	**32.7%**

Source: Censuses from 2002 and 2011 (personal data processing according to the total number for each category)

5. Conclusions

Considering these aspects, there are some main results that we need to reflect on, starting with the fact that in European Union and Romania, the fertility rate is below the replacement level and the forecast for birth rate evolution is not optimistic. There are some demographic challenges – as population ageing, migration, dependency ratio et al, that we need to respond with integrated, complex and viable measures, on medium and long term. An overview at global level regarding fertility rates indicates the fact that the decline of fertility is specific to all the regions, even though the process hasn't been simultaneously and an important decrease on total fertility is also specific to European space, where we can identify a transition from 2.66 children per woman in 1950-1955 to 1.6 in 2010-2015. Furthermore, our country rates are smaller than European averages and we are facing a long stability of fertility at the very low level, apart from the replacement rate of population (2.1 children per woman). Statistics show that more than half of the children that are born during a year in Romania represent women's first child and since 2002 to 2011, the percentage of women that gave birth to more than three children decreased with two percent for Rank 3 and 3.8 percent for Rank 4 to 10.

As we could see from theoretical and empirical studies, education represents one of the factors associated with fertility decline and the changes

on reproductive behaviour. A long-term education reduces the fertile period of women and influences the reproductive strategy. Thus, a greater education leads to a better knowledge of birth control methods and generates more informed fertility decisions and a clearer view on the number of desired children. The relation between fertility and education was tested on national statistics and it was confirmed that the higher it is the level of education, the lower it's the fertility rate. In Romania, according to *The 2011 Population and Housing Census*, 76.1 percent of the women that haven't graduated an educational institution gave birth, while the same situation was specific to 70.7 percent of women that graduated a level of education (from primary to postgraduate).

When it comes to birth rank, more than half women that graduated tertiary education (including PhD and master) or post-secondary education, had one child, while from secondary education level and below the majority were women with two children. Starting with middle school level, we discover higher figures for Rank 3 and more. These results confirm the fact that an increasing level of education generates a declining number of children per woman.

Not least, for a future study, I believe that it is important to extend this analysis to a more complex approach, including other socio-demographic variables (as age, place of residence, ethnicity et. al.) but also perspectives on the modern mentalities, norms and values regarding family and reproductive behaviour, along with demographic forecasts and the specialists' recommendations for improving natality and fertility.

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