Fertility and Educational Attainment in Slovenia

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Abstract

In the course of the 20th century, Slovenia completed its transition from high to low fertility as most European countries had. This trend was also accompanied by a rise in a level of education. In this essay, the author investigates the relationship between completed fertility and educational attainment in Slovenia over a longer period of time. At first, she provides the reader with demographic overview of the relationship between fertility and women's educational attainment for birth cohorts of women born in the first six decades of the 20th century. Afterwards, she identifies various subgroups of women with different levels of educational attainment in order to interpret some prospects of women with tertiary education and their fertility levels. The data used are from the population censuses, conducted in the second half of the 20th century and in 2002. Special attention is given to the most recent birth cohorts for whom information on fertility levels of women with different educational attainment is enriched by information on their marital status, economic status, occupation, religiosity, ethnic affiliation and housing. Cohort analysis was chosen to study differential fertility over a longer period of time. The analysis focuses on the intensity (quantum) and not the timing (tempo) of fertility of different groups and subgroups of women, defined by educational attainment and some additional characteristics.

KEYWORDS: Slovenia, completed fertility, parity progression ratio, educational attainment

Introduction

In Slovenia, fertility began to decline towards the end of the 19th century. Completed fertility of women born in the period from 1873 to 1877, the oldest birth cohort that can be observed in Slovenian censuses, was 4.7 children per women. In subsequent birth cohorts, completed fertility has been declining continuously, but in the 1873-1925 birth cohorts the decrease in fertility was faster than it was in the 1926-1966 birth cohorts. Women born in the first half of the1960s gave birth to 1.8 children on average, which was close to the European average; the birth cohorts of 1962 exceeded the threshold of two children in only three European countries, while in other countries the average number of children was between 1.6 and 1.9 children per woman (Pinelli 2001: 57).

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During the 20th century, changes in fertility were to reflect primarily the reductions of higher-order births in the majority of European countries. Gradually, the third, fourth, and higher-order births had been less frequent compared to the first and second births. Finally, the first and second births account for over 75% of fertility in most 'industrial societies', including Slovenia (the 1957-1961 birth cohorts). According to many demographers, this trend is unlikely to be reversed because the motives for having large families 'in modern settings' supposedly no longer exist, and the costs of large families are prohibitive (Keilman 2003:15). Only few couples want three, four or more children, and 'two kids' has become a norm. Therefore, the first births are decisive in determining the total fertility rates.

However, the increase in number of those women who are 'childless' cannot be overlooked. In several European countries, childlessness has increased from levels around 10% in women born around a year 1940, to 15-20% or higher in women born around 1960 (Piroux 2002). In Slovenia, the proportion of 'childless women' had been decreasing until birth cohorts born in the middle of the 1950s (7%); afterwards, the trend reversed. Among women born in 1966, 10% were still childless in 2002 (Šircelj 2006: 194, 242).

Low fertility in Europe was observed together with another trend: an increasing mean age of women at births of their first child. In Slovenia, statistics show that this mean age had been decreasing across birth cohorts until those born in the middle of the 1950s (22.5 years of age). A brief historical overview shows that women born in the 1950s became mothers at the earliest average age ever recorded since the civil registration of vital events has started in the second half of the 18th century. Since the 1950s birth cohorts, however, the mean age has risen faster than it fell in previous birth cohorts (Šircelj 2006: 194).

Several studies to date have clearly shown that women's increased enrolment in the educational system is conducive to delayed motherhood. Due to the 'fact' that women's educational attainment steadily rose across the birth cohorts during 150 years, education was identified as one of the major factors that determined the rise in delayed motherhood in the 'developed world' (Blossfeld 1992: 65). However, delayed motherhood does not

influence completed fertility; educated women only get their first child later (Blossfeld 1992; Pinelli 2001). Moreover, education was often discussed as a factor influencing the size of the family directly (i.e. without mediating factors). The proponents of this direct impact held that more educated couples, particularly higher educated women, might prefer smaller families compared to women with lower level of education. People with higher education were to be more engaged in roles outside the family, and exposed to more information on birth control. Consequently, educated couples were seen as more efficient family planners (Andorka 1978: 259).

Many scholars argued that women's increasing educational attainment enabled women to gain better career opportunities and growing economic independence. In this vein, education was interpreted as closely related to the socio-economic status of women, their income and other so-called economic characteristics. However, several studies also showed that either educational attainment or economic factors did not influence fertility directly, but only indirectly through the values and norms concerning the number of children in given society, social stratum or group. These values and norms sometimes seemed to be independent of economic and social conditions (Andorka 1978: 380-382).

The widely explored negative correlation between educational attainment and fertility, so well-known primarily to population experts of the nineteenth century, in some countries gradually changed to U-shaped relation (the highest fertility in the highest and the lowest educated) or even to positive relation (the higher education, the higher fertility). The evidence worldwide increasingly shows that there is no universal and ever lasting link. The relationship between women's education and fertility has been changing in both birth cohorts and countries. Therefore, it is important to study the relationship over a longer period of time, and not only after the Second World War, as is so widely accepted in most studies.

The aim of this article is therefore, to provide an overview of the changing relationship between women's education and fertility in Slovenia over a longer period of time, particularly in order to discover the intensity of these changes in selected birth cohorts.

Data sources and methods

In order to analyse the relation between the fertility and educational attainment of women over a longer period of time, I chose cohort analysis. In examining the sequences of family formation in individuals or specific groups of individuals over a longer period of time, the cohort analysis is a more appropriate method than period analysis, which is limited to the specified period (usually one year). The availability of data additionally supports my decision. I drew on data from population censuses conducted in Slovenia in 1953, 1961, 1971, 1981, 1991, and 2002. Since the last census was conducted in 2002, I could not measure very recent trends, such as the fertility of women born since the 1970s.

The data on the number of children ever born to women of different ages, educational attainment, economic status, occupations, places of residence, places of birth, ethnicity, and religion provide sufficient information on fertility and its relation to different social variables. As censuses use standardized methods, which usually do not change very much, the changes of fertility of different population groups can be studied. The time reference point of Slovenian censuses is the midnight between the 31st of March and the 1st of April. Therefore, data expressed in completed years of age do not correspond exactly to the birth cohorts. To simplify the mode of expression, the difference of three months is purposely overlooked. For example, the completed years of women aged 45-49 in the time reference point of the 2002 census are associated with the 1952-1956 birth cohorts.

Slovenian vital statistics also provide data on live births by different social characteristics of mothers (and fathers), but they are less detailed and less reliable than census data. As the central population register does not contain the data on different social characteristics of the population, only age specific general fertility rates can be calculated. In this view, the detailed fertility data from several censuses, which are occasionally complemented by the data from fertility surveys, are more suitable for investigating differential fertility. Between 1971 and 2007, four fertility surveys were conducted in Slovenia: in 1970, 1976, 1989 and 1995. For the purpose of this article I use some data only from the most recent fertility survey (*Family and Fertility Survey*), conducted in 1995.

By means of census data, two important indicators of cohort fertility can be calculated: completed fertility (CFR) and parity progression ratio (a_n) . Completed fertility is the cumulative fertility of women at the end of their reproductive ages. The term describes the average childbearing experience of all women or a special group of women over their lifetime. It represents the average number of children ever born to women aged 45-49 years or more at the time of observation (CFR). To obtain information about fertility behaviour of most recent birth cohorts, I calculated CFR for women who have not yet reached the upper limit of their reproductive ages; they were 40-44 years old (the 1957-1961 birth cohort) or even 35-39 (the 1962-1966 birth cohort) at the time of observation (census 2002). Their real completed fertility might be a bit higher than presented in this article, given the increasing average age of women at the births of their children.

$$\Sigma$$
 (number of women with n children * n) $n = birth order$
CFR = ______
Total number of women

The parity progression ratio is the proportion of women with at least *n* children who continue to have at least one more child. The ratio is conventionally represented by a_n . The parity progression ratio is a particularly sensitive indicator of family building patterns since it reflects the sequential nature of fertility decisions. Women (or couples) can have a second child only if they already have one, a third if they already have two, and so on. In this way, the ratio is a very useful indicator of the reproductive strategies of population.

$$\begin{array}{cc} T_{n+1} & T_{n+1} = number of women with at least n+1 child \\ a_n = \underbrace{T_n} & T_n = number of women with at least n child \end{array}$$

14

To avoid decimal fraction, the parity progression ratios are multiplied by 1000, and are calculated for the same birth cohorts as with completed fertility.

Completed fertility and parity progression ratios are calculated for women of different educational attainments. The classification of educational attainment basically corresponds to the classification used by the Statistical Office of the Republic of Slovenia (SORS) in order to demonstrate data on educational attainment from the 2002 census. An exception is made for those with less than basic education to assure a consistency with calculations of both indicators (CFR and a_n) already made for older birth cohorts. Classification used in this article sometimes consists of only three broad categories of education (basic or less, upper secondary, tertiary; Table 1). The choice depends on the availability of data and number of units. The most detailed classification is used to present relationships between educational attainment and other characteristics of women in the 1957-1961 birth cohorts.

Official classification of 2002 census data	Abridged classification		
No education			
Incomplete basic	No education		
- 1-3 grades of basic school			
- 4-7 grades of basic school			
- incomplete basic school and	Incomplete basic		
vocational training programs			
Basic	Basic		
Upper secondary	Upper secondary		
- lower vocational	- vocational		
- middle vocational			
- technical and professional	- upper secondary		
- general			
Tertiary	Tertiary		
- short-term tertiary	- short term		
- higher undergraduate and postgraduate	- higher		

Table 1: Classification of educational attainment

Increasing education in Slovenia

The first data related to the educational attainment in Slovenia refer to the literacy of the population. In 1880, on the territory of the present Slovenia, two-thirds of people, aged 10 years and more, were still illiterate, while in 1910, only 13.5 percent of the population was illiterate. The spreading of literacy was by no means of great importance for societal development, yet there is no reliable evidence for any conclusion that literacy at that time, significantly influenced fertility behaviour of people. The relationship between completed fertility of the 1873-1878 birth cohorts and the proportions of illiterates at the end of the

19th century by regions indicates a possible negative relationship (the higher the proportion of the literates, the lower the completed fertility). Yet this information is not sufficient to make any general conclusions. Moreover, there is no reliable information about the ways of spreading knowledge about birth control (Šircelj 2006: 102, 106).

The introduction of mandatory elementary schooling for men and women in 1869 created the possibilities for elementary educational attainment and employment, as well. The share of the female labour force, employed in elementary schools, began to increase. In only four decades (1871-1913), the number of female teachers rose from barely 3% in Styria or 10% in Carniola and Carinthia¹ to half and more of all employees in primary schools (Milharčič-Hladnik 1995: 19). Teaching profession enabled single women to be, to some extent, autonomous and independent. Teachers became economically secured; they enjoyed decent social position and earned their pensions. Yet vocational schools were opened for women only in 1910 (Hojan 1968-1970: 143).

At the end of the 19th century, teachers were mostly women from the middle social class. Teachers' training college was the only vocational training that was, according to educational legislation, accessible and allowed to women. The situation changed at the end of the 19th century, when the upper school system gradually enabled the entrance to women. However, at that time, it was impossible to imagine a woman at university (Milharčič-Hladnik 1995: 30). In 1953, only 0.3% of women aged 15 years or more had completed more than upper secondary education. In 2002, this proportion was already 13.3%

The spreading of the all-level school system, and its permitted access to women, determined rapid changes in gender educational composition (Table 2). The improvement of educational chances for each younger cohort is more than evident. Among women born in the transition from the 19th to the 20th century, 7 % completed upper secondary school, and only 0.3% attained more than upper secondary education. Since then, women's level of educational attainment has raised across successive birth cohorts. Higher secondary education has become nearly universal. In the 1962-1966 birth cohorts, 60% of women attained upper secondary education, and 21.8% tertiary education. In the youngest (1967-1971) birth cohorts, the trend has changed: the proportion of women with upper secondary education. More than one quarter of women of these birth cohorts have attained tertiary education.

In older birth cohorts, the educational attainment of women was lower than that of men. However, it seems that women took advantage of educational expansion after the Second World War more than men; as in many other countries, Slovenia experienced a substantial reduction in the differences between the educational attainment of men and women (cf. Blossfeld 1992: 30). In younger birth cohorts, the educational attainment of women even exceeded that of men. In the 1952-1971 birth cohorts, the proportion of persons with tertiary education is already higher among women than among men. This difference is likely to increase in recent birth cohorts (Table 2).

¹ The data refer to those parts of the so-called historical lands of the Austro-Hungarian Empire that covered present-day Slovenia.

		Educ	ational attain	ment	
		Basic			
Birth cohor	Total	or less	per second	Tertiary	Unknown
Women					
1896-1910	100	92,3	6,9	0,3	0,5
1911-1915	100	85,7	11,8	1,3	1,2
1921-1925	100	80,4	16,4	2,2	1,0
1931-1935	100	73,8	21,2	4,2	0,8
1942-1946	100	41,1	45,9	13,0	0,0
1952-1956	100	33,5	49,9	16,6	0,0
1962-1966	100	18,2	60,0	21,8	0,0
1967-1971	100	17,0	57,0	26,0	0,0
Men					
1896-1910	100	81,0	16,2	2,3	0,5
1911-1915	100	71,3	23,8	4,4	0,5
1921-1925	100	62,7	29,2	7,6	0,5
1931-1935	100	42,6	45,8	10, 1	1,5
1942-1946	100	23,2	60.4	16,4	0,0
1952-1956	100	23,2	62,6	14,2	0,0
1962-1966	100	15,7	69.5	14,8	0,0
1967-1971	100	17,1	67,1	15.8	0,0

Table 2: Educational attainment of women and men, Slovenia, selected birth cohorts

Source: SORS (1961, 1971, 1981, 2002 census), own calculations.

Fertility and education of women

The oldest birth cohorts of women for whom the data on educational attainment are available were born between 1896 and 1900. The difference between the completed fertility of the less educated women and the most educated women is huge; the completed fertility of the lowest educated was 4.5 times higher than completed fertility of the highest educated was. This difference has decreased in fifty birth cohorts to the point when the completed fertility of the lowest educated exceeded the completed fertility of the highest educated by only 27% (Graph 2). However, the prevalent formula still held: the higher educated the woman was, the fewer children she had. The diminishing difference was a consequence of two opposite processes: of decreasing fertility in women with at maximum basic education, and increasing fertility in women with upper secondary or tertiary education.

The most decreased fertility is observed in women without any education, most probably as an effect of spreading of education among women. In the oldest birth cohorts, the proportion of uneducated women was quite large. With the introduction of mandatory elementary schooling, the number of uneducated women decreased; in younger birth cohorts, they represent a very low percentage of all women. These women were simply unable to complete any kind of school available at that time. Their low fertility, therefore, mirrored poor chances for marriage or having children. Many of them did not give a birth to a single live-born child. In birth cohorts born between 1911 and 1915 every third uneducated woman did not deliver a single live-born child while in birth cohorts, born between 1941 and 1945, every second uneducated woman did not give a birth to a live-born baby (Table 3).

In the oldest birth cohorts (1896–1900), the fertility of women without education was still the same as the fertility of women with incomplete basic education (Graph 2). Since then, the fertility of the uneducated has been lower. However, the increasing lower number of uneducated women makes the calculation of their completed fertility less reliable by each birth cohort; in some further graphs or tables, these women are associated with women with incomplete basic education, or the calculations are not made for them.

Graph 2: Completed fertility by educational attainment of women, Slovenia, birth cohorts 1896–1966



Source: Šircelj 2006: 209

Completed fertility of women with more than basic education increased until the 1942-1946 birth cohorts, and stagnated or slightly decreased in the younger birth cohorts. But, because the birth cohorts born between 1962 and 1966 at the time of observation were aged between 35 and 39, it is likely that their completed fertility will be somewhat higher than values shown on Graph 1.

The increasing fertility of educated women across birth cohorts may be the result of the decreasing influence of differential nuptiality, which was a consequence of gender selected emigration in the second half of the 19th century and the first half of the 20th century (at that time, more men then women emigrated from present Slovenia), the gender imbalance caused by the First World War, and marriage restrictions. The latter referred mostly to the female teachers, the most numerous group of educated women in older birth cohorts. According to the *Law on legal relations of teaching stuff in public elementary schools* from 1871, a female teacher had to voluntarily renounce her job if married (Milharčič-Hladnik 1995: 21). The teachers began to oppose the Law only in 1911; the law was finally abolished in 1938 on the initiative of the *Association of women movements* (Rožman 2004: 53).

Due to the marriage restriction of female teachers, the proportion of the nevermarried among women with tertiary education was high; higher levels were only among the uneducated. In the 1911–1915 birth cohorts, the share of never-married women among women with tertiary education was 30%. Since then, it has decreased; in birth cohorts born between 1931 and 1935 it came to 14% only. At the same time, the proportion of women with tertiary education increased among married women, from 1 % to 19 %. It seems that increased nuptiality substantially added to increased completed fertility of women with tertiary education.

In birth cohorts born after the Second World War, the proportion of never-married women again increases. The reasons for this situation are new compared to those prevalent in the old birth cohorts, e.g. a deliberate renouncement or postponement of marriage and spreading partnership out of wedlock. Yet the proportions of never-married women among women of different educational attainments are U-shaped as in the older birth cohorts: higher proportions of never-married women can be identified among both, the less and the more educated women, and lower proportions among other women.

 Table 3: Proportion of never-married women among women of different educational attainments, Slovenia, the 1911-1966 birth cohorts

Education		Birth cohorts							
attainmen	1911-1915 1921-1925		1931-1935	1942-1946	1952-1956	1962-1966			
No educat	34,7	56,1	47,1	28,9	32,4	57,5			
Incomplet	14,2	13,1	8,8	7,3	11,6	26,9			
Basic	12,3	10,5	7,1	4,7	8,1	19			
Upper see	17,1	13,5	7,9	5,5	8,7	18,2			
Tertiary	30,3	23,2	14,2	10,7	13,7	24,2			

Source: Šircelj, 1991; SORS (1961, 1971, 1981, 2002 census); own calculations.

The differences among women with different educational attainment gradually diminish (Graph 2). In the 1896–1900 birth cohorts, the completed fertility of the most educated represented only 21% of fertility of those with incomplete basic education. In the 1921–1925 birth cohorts, this proportion was 48%, and in the 1952–1956 birth cohorts, it was already 78%. Gradual convergence of completed fertility among particular education groups can be interpreted as a result of two opposing processes: on the one hand, of the decreasing proportion of childless women, and on the other hand, the increasing proportion of women with only one child or two children. Or to put it another way: the probability of having a first child increased and decreased for the third and higher-order births (Graph 3).

The higher the level of education, the greater the probability of having first births. The slight increase of the probability for the second births was roughly the same in all educational groups. The probability for the third births, however, decreased more among the less educated and decreased less in the more educated women. In the 1952-1956 birth cohorts, the probability for the first births at all educational levels except the uneducated was more than 900, i.e. at the most, 10% of women were childless. In the youngest birth cohorts (1962-1966), the probability for the first births was somewhat lower, but their fertility is not completed yet.

Given the changes described above, the probability for the second births in the 1931-1935 and younger birth cohorts is lower in comparison to first births. This might be a clear indication of family planning at all educational levels, except the uneducated. The uneducated have minor probability of getting the first births; approximately 40% of them remain childless. Yet upon having their first child, the probability for a second and third is greater compared to other women.



Graph 3: Parity progression ratios by educational attainment of women, Slovenia, birth cohorts 1911–1966

In the youngest observed birth cohorts (1962-1966), the probability for the first and second births is lower in all educational groups than in the five-year older birth cohorts. However, the completed fertility of the 1962-1966 birth cohorts will probably be higher because the women were 35-39 years old at the 2002 census. Due to increasing average age at first births, it is expected that their completed fertility will come near to the values of ten years older birth cohorts. For the same reasons, the probability of having a third live-born child will increase, as well. In women aged 35-39 years, the probability of having a third child is higher in women who completed more than basic education than in ten to twenty years older birth cohorts. This indicates that younger educated birth cohorts more frequently decide to have a third child than older equally-educated birth cohorts. This might be the beginning of a new process that will lead to other differences than have been known so far. If the directions of a trend as observed in the 1952-1966 birth cohorts continued, the probability of having a third child in the 1972-1976 birth cohorts would be higher among women with upper secondary or tertiary educational attainment than among women with primary or lower secondary education.

For the birth cohorts born after the Second World War, some data from the Family and Fertility Survey are available concerning the timing of birth. The data refer to first births and three levels of educational attainment of women: basic education or less, upper secondary and tertiary education. The differences in the timing of first births in differently educated women have already been observed in the 1951–1955 birth cohorts when completed fertility of the first births was high and almost the same at all educational levels. In these birth cohorts, 83% of women with less than upper secondary education, and 50 % of women with higher than upper secondary education.

Greater changes in timing began in the 10-years younger birth cohorts: in the first place, women with tertiary education started to postpone their first births in higher ages (the 1961-1965 birth cohorts), followed by the others. Comparisons of the 1951-1955 and the 1971-1975 birth cohorts show those women who did not continue the schooling after they had completed their basic education changed the timing of their first births the most (Kožuh Novak 1998: 110–111). Therefore, the delayed births are not only a consequence of prolonged schooling, at least not in younger birth cohorts, but also of some other factors.

Education and marital status

Census data distinguishes four categories of marital status: single (never-married), married, widowed and divorced. All groups other than single women are often combined to form the category of so-called ever-married women. The completed fertility of ever-married women is as a rule higher than the completed fertility of never-married women. Therefore, the proportion of never-married women among all women of a particular birth cohort influences the level of completed fertility of this birth cohort. The influence is changing across birth cohorts. The high proportion of never-married women in young birth cohorts does not have the same impact on the completed fertility of women as in old birth cohorts. The completed fertility of never-married women was much lower in old birth cohorts than it is in the young ones. The differences are shown in Table 4; this table does not include data on the completed fertility of widowed and divorced women. The former are not included because their completed fertility is almost the same as that of married women, and the latter because of their small number in some subgroups (less than 100). However, the completed fertility of the divorced seems lower than that of married women by approximately 15-20%.

Compared with the completed fertility of all women, regardless their marital status, the marital completed fertility of the 1911-1966 birth cohorts is higher, the differences among women of different educational attainment are smaller and the shape of the curves presenting their completed fertility across birth cohorts is different. The completed marital fertility of women with incomplete and complete basic education has been decreasing, while the completed fertility of women with upper secondary and tertiary education is rather stable, except in the case of the 1921-1925 birth cohorts. Their completed fertility is lower than in the previous and following birth cohorts. It seems that the Second World War had a negative impact on their fertility.

Educational attainment		Birth cohorts						
Marital status	1911-1915	1921-1925	1931-1935	1942-1946	1952-1956	1962-1966		
No education								
Single	0,38	0,37	0,45	0,53	0,65	0,7		
Married	3,45	3,28	3,33	2,75	2,81	2,9		
Incomplete basie								
Single	0,43	0,47	0,6	0,93	1,15	1,35		
Married	3,21	2,73	2,46	2,44	2,31	2,34		
Basic								
Single	0,35	0,44	0,53	0,92	1,19	1,33		
Married	2,86	2,43	2,23	2,29	2,15	2,1		
Upper secondary								
Single	0,18	0.32	0,44	0,73	0.96	1,06		
Married	2,02	1,82	1,81	1,94	1,93	1,95		
Tertiary								
Single	0,21	0,15	0,21	0,49	0,76	0.73		
Married	1,84	1,52	1,68	1,85	1,86	1,87		

Table 4: Completed fertility of selected birth cohorts, by educational attainment and marital status, Slovenia

Source: SORS (1961, 1971, 1981, 2002 census); own calculations.

Completed fertility of never-married women is remarkably different, though it increases in all educational groups. Completed fertility of women with incomplete basic and basic education is the highest in all birth cohorts, while completed fertility of women with upper secondary education increases the most. The relatively high completed fertility of never-married women in old birth cohorts may be related to the traditionally high non-marital fertility in some regions in Slovenia.

The completed fertility of never-married women with tertiary education is the lowest and started to increase within the cohorts born in the period of the Second World War. However, the completed fertility of never-married women with tertiary education born in the 1962-1966 period, which is not completed yet, is slightly lower than it was in the previous group of birth cohorts. It might increase by the end of their reproductive period, but the final value of their completed fertility will certainly not be much higher than that presented in Table 4 (0.73). It seems that the fertility of never-married women with tertiary education does not tend to increase in young birth cohorts. As adequate data are missing, it is not clear whether this is the consequence of higher rates of dissolution among cohabiting partners, increasing rates of marriage for those who already have children born out of wedlock, or they just do not decide to have children.

As shown in Table 4, the differences between completed fertility of married and never-married women are getting smaller. The reduction is mostly the consequence of the



Graph 4: Completed fertility of married and single women by educational attainment of women, Slovenia, the 1911-1966 birth cohorts

increasing fertility of never-married women. However, the difference between the completed fertility of married and never-married women is still large. In young birth cohorts, the completed fertility of married women is twice as high as the completed fertility of single women. Among women with tertiary education, this difference is even bigger because the completed fertility of married women is rather the same as in women with upper secondary and basic education, while the completed fertility of never-married women is lower. It is important to note that in younger birth cohorts, marital completed fertility of women with less than upper secondary education is no longer decreasing; on the contrary, it is slightly increasing. Some details about the relationship between the educational attainment and marital status of women born in the 1957-1961 period are shown in Table 5.

Educational		Parity progression ratios							
attainment	a	a_n a_l			a_0 a_1 a		2		
	married	single	married	single	married	single			
Less than basic	968	502	882	642	417	448			
Basic	970	742	855	546	287	261			
Upper secondary	976	716	806	450	205	164			
vocational	977	779	824	498	225	201			
other	976	674	792	413	188	128			
Tertiary	970	558	775	375	205	112			
short term	978	593	792	368	198	2)			
higher	962	494	758	38 t	211	.,			

 Table 5: Parity progression ratios for married and never-married (single) women by
 educational attainment, Slovenia, the 1957-1961 birth cohorts

Source: SORS (2002 census); own calculations.

To highlight the differences among women of various marital statuses at the end of their reproductive period and different educational attainments, the parity progression ratios are shown in Table 5 for the 1957-1961 birth cohorts. Differences between married and never-married (single) women are the biggest as far as the probability of having the first child is concerned (a_0). They become smaller for each successive parity progression ratio. Such trends are evident in women at all educational levels. However, differences between the parity progression ratios of married and never-married women are the biggest for women with tertiary education.

Women of various educational attainments, who are (still) married at the end of their reproductive age, have almost the same probability of having the first child. The differences among married women with various level of education are only evident at second births. The parity progression ratios for the second child proportionally decrease with the increasing education level. The same also holds true for never-married women; with never-married women, however, the differences among educational groups are higher.

Women with tertiary education, particularly those with higher education, have lower fertility than other women. However, the reasons are different for married and single women. The completed fertility of married women with tertiary education differs from the completed fertility of less educated women because they less frequently decide to have second and third children. Furthermore, the completed fertility of never-married women with tertiary education differs from the completed fertility of less educated never-married women because they less frequently decide for a first child. Among single women with tertiary education almost half are childless.

It appears that completed fertility depends more on marital status than on the educational attainment of women. Unfortunately, this assumption cannot be proven by the data available. It is not clear enough whether a formal marital status at the end of women's reproductive period reflects adequately life courses of women or not (consensual unions, age at marriage, re-marriages).

Education and economic characteristics

Concerning economic characteristics of women, the distinction between economically active and inactive women seems to be the most important. In Slovenia, the completed fertility of economically active women is higher than the completed fertility of economi-

Birth cohorts	Completed fertility				
	active women	inactive women			
1911-1915	2,21	3,18			
1921-1925	1,99	2,67			
1931-1935	1,95	2,56			
1941-1945	1,94	2,54			
1952-1956	1,86	2,33			

Table 6: Completed fertility of active and non-active women, Slovenia, selected birth cohorts

Source: Šircelj, 2006:212.

cally inactive women. In the 1952-1956 birth cohorts, the completed fertility of active women represents about 80% of completed fertility of inactive women. In older birth cohorts, the differences are greater due to a high proportion of childlessness (up to 30%) among economically active women.

In the 1952-1956 birth cohorts, childlessness is the same for active and nonactive women (7%). The difference in completed fertility thus arises from the differences in higher birth orders only (Šircelj 2006: 212, 213).

In the 2002 census, a question on economic status was included in a questionnaire. Twelve answers were precoded, but only six are relevant for our analysis: paid employment, self-employed (without farmers), farmer, unemployed, housewife, and pensioner. The relationship between educational attainment and these characteristics of women is shown in Table 7. In this and following tables, data do not refer to five-year age groups, but to ten-year age groups. In order to avoid very small numbers of women in particular subgroups, five-year age groups are merged in ten-year age groups.

Activity status	Educational attainment				
	Less than	Less than Basic		Tertiary	
	basic		secondar		
Paid employment	2,07	1,96	1,82	1,7	
Self-employed (without farmers)	1)	1,97	1,83	1,59	
Farmers	2,35	2,43	2,55	2,56	
Unemployed	1,71	1,81	1,66	1,38	
Housewives	2,52	2,06	1,82	1,53	
Pensioners	2,66	2,46	2,31	2,3	

Table 7: Completed fertility by educational attainment and activity status, Slovenia, the 1952-1961 birth cohorts

1) The number of women is too small for the calculation of reliable indicator.

Source: SORS, own calculations.

Completed fertility of women of a particular activity status is decreasing with increasing educational attainment. The only exception is farmers: their completed fertility is the highest for women with tertiary education and the lowest for women with less than basic education. Therefore, differences among women of various activity statuses are more pronounced for more educated women than for less educated women. The same is observed when women are classified by main occupational groups (Table 8).

It is clear from Tables 7 and 8 that farmers (economic status) and agriculture and fishery workers (occupation group) have the highest completed fertility, still sufficient for the replacement of generations. If the agriculture and fishery workers are excluded from Table 8, then a U-shaped curve appears in the completed fertility of women with tertiary

education. Completed fertility is the lowest in the group of clerks and the highest in the more and less demanding occupations. This is not yet the case in women with less than tertiary educational attainment.

Occupation group	Educational attainment			
	Less than	Basic	Upper	Tertiary
	basic		secondary	
Legislators and managers	1)		1,77	1,67
Professionals			1,76	1,71
Technicians		1,79	1,79	1,7
Clerks		1,84	1,77	1,58
Service and sales workers	1,85	1,93	1,84	1,68
Agriculture and fishery workers	2,44	2,4	2,41	2,5
Craft and related trade workers	2,08	1,93	1,89	1,79
Plant and machine operators and ²⁾	2,03	1,95	1,91	1,77
Elementary occupations	2,14	2,01	1,9	

 Table 8: Completed fertility by educational attainment and occupation, Slovenia, the

 1952-1961 birth cohorts

1) The number of women is too small for the calculation of reliable indicator.

2) Plant and machine operators and assemblers.

Source: SORS, own calculations.

Some additional information can be extracted from the data on fertility by birth orders. Differences among various economic statuses are small for the first births and bigger for the second and third births. These differences are increasing with increasing educational attainment of women; they are the biggest for women with tertiary education. Therefore, the group of women with tertiary education is less homogenous than other groups defined by educational attainment (upper secondary, basic, less than basic). Among women with various economic statuses, farmers are distinct from other groups in two respects: a lower probability of having a first child and higher for the higher-order births.

Our findings that address the association between educational attainment and completed fertility are comparable with the main findings of a studies based on Swedish (1955-59 birth cohorts data) and Norwegian data (1954-1958 birth cohorts). Scholars have discovered that ultimate fertility decreases somewhat with increasing educational levels, but its dependence on the field of education is much more impressive. Women educated for administrative jobs (at any level) or for work in economics or social science systematically have lower fertility than women educated to be teachers or health personnel (Hoem, Neyer, Andersson 2006: 1-15). Slovenian data are not sufficiently detailed to include the field of education in our study, but the combination between educational attainment and occupational groups indicate possible similarity to the Swedish and Norwegian birth cohorts.

Type of building

The lack of suitable apartments for young families is often seen by the proponents of urgent demographic measures as one among the factors that crucially determine low fertility in Slovenia. In this regard, I reviewed the census on dwellings and buildings, conducted in Slovenia in 2002, to show whether there is any link between types of building and completed fertility. The first results show that fertility differentials related to the type of building are important but tend to diminish. Completed fertility of the 1927-1966 birth cohorts is the highest for women who lived in houses with agricultural premises, followed by those who lived in detached and semi-detached houses, row houses and multi-dwelling buildings. As semi-detached houses, row houses and multi-dwelling buildings are characteristic of bigger settlements and houses with agricultural premises and detached houses of smaller settlements, data on completed fertility for these two groups indirectly show differences between urban and non-urban areas.

Graph 5: Completed fertility by educational attainment and type of building in which women lived, Slovenia, the 1957-1961 birth cohorts



Graph 5 shows the completed fertility by educational attainment and type of building (detached houses and multi-dwelling buildings) for the 1957-1961 birth cohorts.² In every educational group, completed fertility of women living in detached houses is higher than completed fertility of women living in multi-dwelling buildings. Irrespective of the type of building, completed fertility decreases with the increase of education. Therefore, the lowest fertility is characteristic for women with tertiary education living in multi-dwelling buildings.

Completed fertility of women with tertiary education who live in multi-dwelling buildings is lower than completed fertility of women with the same educational attainment living in detached houses for at least two reasons. Firstly, because the proportion of

² The number of women living in houses with agricultural premises, semi-detached houses or row houses is small, therefore it is not taken into consideration.

childless women is higher among former than among latter, 16.0% and 9.7% respectively, and secondly, because women living in multi-dwelling buildings less frequently decide to have a second or the third child. However, it is important to note that within the 1926-1961 birth cohorts, the completed fertility of women with tertiary education who lived in multi-dwelling buildings in 2002 was increasing faster than the completed fertility of women with the same level of educational attainment who lived in detached houses. This phenomenon might be related to the increasing fertility of never-married women.

However, from the above described linkage between fertility and type of building, it is impossible to discern whether completed fertility is also dependent of type of building, or the other way round. It seems that in Slovenia having a detached house is more a reflection of the financial power of a couple than their desire to have more children. The data available cannot confirm this assumption. The described linkage does, however, indirectly corroborate well-known urban-rural differentials; urban populations have smaller numbers of children than rural populations.

Economic characteristics of women, including housing conditions, appear as important determinants of fertility in all observed birth cohorts. However, some studies of changing patterns of fertility behaviour in developed societies stress the importance of values and attitudes related to fertility behaviour. Differences in fertility behaviour among individuals and social groups are seen more as a consequence of differences in their social-psychological predisposition and less as a consequence of differences in their standard of living or access to services offered by the state (Obersnel Kveder 2001: 42). The data on values and attitudes are modest in the Slovenian censuses under consideration; however, religion and ethnic affiliation can be discussed.

Education and religious affiliation

According to the 2002 census, completed fertility of those women who declared themselves as believers is higher than completed fertility of those who declared themselves as atheists.³ Among women who declared themselves as believers, completed fertility was the highest in Muslims, followed by Catholics. As Catholics are the biggest religious group in Slovenia, I compared their completed fertility to that of atheists. The difference in completed fertility is in all observed generations (1927-1966) nearly the same: the completed fertility of atheists is almost 20% lower than the completed fertility of Catholics. Atheists rarely decide to have second child, let alone the third or fourth child (Šircelj 2006: 225). However, the parity progression ratio for the first child (a_0) is almost the same in both groups.

The difference in completed fertility between declared Catholics and atheists also comes to the light in smaller, more homogeneous groups, as for instance in Catholic women with tertiary education. The completed fertility of atheists is in each and every subgroup, defined by the level of educational attainment, lower than completed fertility of Roman Catholics with the same level of educational attainment as shown in Table 4 for the 1957-1961 birth cohorts. The difference is nearly the same as the difference in completed fertility between women with the highest and lowest educational attainment.

 $^{^3}$ Answering the question on religious affiliation is not compulsory. In the 2002 census, 15.7 % of population aged 15 or more did not want to reply to this question.



Graph 6: Completed fertility of women who declared themselves as Catholics and atheists by educational attainment, Slovenia, the 1957-1961 birth cohorts

Parity progression ratios by educational attainment are always higher for Catholics than for atheists. Differences are increasing by higher-birth orders. For the 1957-1961 birth cohorts, higher-birth orders are presented in Table 9. In all groups defined by women's educational attainment, the probability of having a first child is almost the same for Catholics and atheists. There is only a slight difference for the second child (a_i) and considerable difference for the third child (a_2) . Concerning the decision for the third child, the differences between Catholics and atheists are bigger for more educated women than for the less educated.

Educational attainment	Parity progression ratios						
	$a_{\dot{\theta}}$		a_1		<i>a</i> ₂		
	eatholics	atheists	catholics	atheists	catholies	atheists	
Incomplete basic	896		832	. 1)	449		
Basic	941	925	830	752	316	196	
Upper secondary	949	920	786	680	232	125	
- vocational	958	938	806	695	249	136	
- technical, professional, general	941	914	768	676	215	122	
Tertiary	905	891	769	654	262	115	
- short-term	924	914	780	665	242	105	
- higher	881	877	755	647	289	122	

Table 9: Parity progression ratios for Catholics and atheists by educational attainment, Slovenia, the 1957-1961 birth cohorts

1) The number of women is too small for the calculation of reliable indicator

Source: SORS, own calculations

Source: SORS (2002 census); own calculations.

Education and ethnicity

Slovenia is considered to be a rather ethnically homogenous nation-state. Although the proportion of declared Slovenians has decreased, in 2002 was still 83.1% of population. In the same year, only three ethnic groups surpassed one percentage in the Slovenian population: Croats, Muslims and Serbs. The proportions of other ethnicities were lower than 1%.⁴

The number of non-Slovenian women is small, but increases mostly due to immigration. However, the number of women aged 40-44 years or more is for several ethnicities too small for the calculation of any relevant indicators like completed fertility and parity progression ratios. Therefore, completed fertility for all ethnic groups is calculated for the 1947-1961 birth cohorts, and completed fertility by ethnicity and educational attainment for the 1957-1961 birth cohort only.

The highest completed fertility is calculated for Roma and Albanians. The fertility of Muslims and Bosniacs is lower than the fertility of Roma and Albanians but much higher in comparison to the average Slovenian fertility. Differences in completed fertility among women of different ethnicities are the consequence of differences that result from differences in parity progression ratios for the second, third, and higher birth orders. The probability of having the first child is almost the same for all groups.





Šircelj 2006: 227.

Table 10 shows the relationship between educational attainment of women and their ethnicity. Although the number of women in numerous subgroups is very small and thus accurate calculation of completed fertility is difficult, it is evident that the educational attainment of women influences the fertility of every ethnic group. The completed fertility of less educated women is higher than the completed fertility of more educated women. However, the data from the Table 10 are not sufficient to determine whether educational attainment is a more important determinant of completed fertility in the 1957-1961 birth cohorts than ethnicity or the other way round. Moreover, it is impossible to distinguish between ethnic and religious affiliations. Usually they intertwine, however not automatically. The ethnic groups with the highest average fertility in Slovenia, with the exception of Roma, are mostly of the Muslim faith (Šircelj 2003: 131).

⁴ There is no exact definition of ethnicity in the censuses. Answer to the question is not compulsory. In the 2002 census, 2.5% of population aged 15 or more did not want to reply (Šircelj 2003:62).

Ethnicity		Ec	lucational attai	l attainment ¹⁾				
	Incomplete	Basic	Upper	Ter	ation			
			secondary	total	short	higher		
	basic				term			
Slovenes	2,08	2,03	1.86	1,71	1,77	1.65		
Hungarians	2)	1,92	1,82					
Albanians		2,87						
Bosniaes		2.04	1.87			••		
Montenegrins		2,25	1,6					
Croats	2,38	1,95	1,79	1,68	1,79	1,62		
Macedonians		1,91	1,8					
Muslims ³⁰	2,3	2.15	1.83			••		
Serbs	2.11	1.85	1.77	1,45	1,64	1.34		
Undeclared								
Bosnians	2,46	2,05	1.82	1,57				
Others		1.91	1.72	1,51	1,52	1,5		
Did not want to reply	2,11	1.94	1.77	1,37	1,48	1,29		

 Table 10: Completed fertility by educational attainment of women and their ethnicity, Slovenia, the 1957–1961 birth cohorts

1) Due to a small numbers, data for women without education are not presented.

2) The number of women is too small for the calculation of a reliable indicator

3) Persons who declared as Muslims in the sense of ethnic and not religious affiliation

Source: SORS, author's own calculations.

Discussion and conclusion

The educational attainment of women born in the first six decades of the 20th century in Slovenia proved to be an important determinant of fertility behaviour. However, its influence is weakening. Differences in completed fertility among women with different educational attainments are declining, which is also confirmed by some results of the Family and Fertility Survey: 'The level of education did not have a significant impact on the average desired, realised or expected numbers of children' (Obersnel Kveder et al. 2001: 41).

The relationship between completed fertility and educational attainment of women born in the 1900-1966 period is negative. This negative correlation might change in coming birth cohorts: the completed fertility of less educated women still tends to decrease, while the completed fertility of more educated women tends to stagnate. However, stagnation does not mean that there are no registered changes. They occur within the birth orders.

Women with upper secondary and tertiary education, born in the 1962-1966 period, and who have not finished their fertility period yet in the time of observation (the 2002 census), have a higher probability of having a third child than women with the same level of education born five years earlier (the 1957-1961 birth cohorts). Conversely, the probability of having the first child is lower in the 1962-1966 than in the 1957-1961 birth cohorts. This difference is so large, especially in women with tertiary and incomplete basic education, that it is hard to believe that the women of the 1962-1966 birth cohorts will

catch up to the women of the 1957-1961 birth cohorts in the following years. If this assumption proves to be correct, then the proportion of childless women and the proportion of women with three and more children will increase in young birth cohorts.

Comparing educational attainment with other characteristics of women (marital status, economic status, occupation, type of residence, religion, and ethnicity) reveals that completed fertility of every subgroup depends on the educational attainment of women. As a rule, higher educational attainment results in lower completed fertility. The only exceptions are women who are farmers by the classification of economic status or occupation: their completed fertility is higher when their educational attainment is higher.

It is also important to note that the curve, which presents completed fertility of women with tertiary education (the 1957-1961 birth cohorts) by occupation, is U-shaped when farmers are excluded. Clerks have the lowest fertility, while the completed fertility of women executing 'more and less demanding' jobs is higher. This is not the case of women with less than tertiary educational attainment.

Women with tertiary education have lower fertility than other women. However, their completed fertility is increasing. Unfortunately, it is not clear whether this increase will continue. Differentiation that can be observed among highly educated women of various occupations indicates that women with tertiary education do not form a homogenous group. Additionally, the completed fertility of women with tertiary education varies across regions, as well (Šircelj 2006: 173). In the 1952-1956 birth cohorts, women with tertiary education already account for 20% of all women.

Differences among women observed by different characteristics mainly stem from their decisions to have a second and a third child. Childlessness is not widespread. If women are classified by educational attainment only, the proportion of childless women ranges from 5% to 10% in the 1952-1956 birth cohorts. If we add some other characteristic to educational attainment, we get more homogenous groups, and among them also the groups with much higher proportions of childlessness. For instance, nearly 50 % of nevermarried women with tertiary education are childless. By adding the additional variables, the groups become more and more homogenous but also small, and calculated indicators are not reliable any more.

In old birth cohorts, the completed fertility of women with tertiary education was low due to legal constraints concerning marriage, particularly when they decided to be a teacher. In the lifetime of young birth cohorts, there have been no such restrictions. Yet, it is likely that young women with tertiary education will remain unmarried if the 'traditional pattern' of the educational level of spouses (a homological educational attainment) does not change. Specifically, the number of women with tertiary education in young birth cohorts. Taken into account the 'fact' that marital fertility of women with tertiary education is the same as marital fertility of other women, except the never-married, the disproportion between the number of higher educated men and women might increases childlessness among women with tertiary education.

Finally, it is necessary to mention some limitations of the findings based primarily on census data. Census data are a good source of information on differential fertility across birth cohorts. However, they do not provide the answers about the reasons and causes of particular fertility behaviour. Accordingly, a more detailed longitudinal analysis is necessary to obtain data from various sources.

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Anthropological Notebooks, XIII/2, 2007

Povzetek

Tako kot v večini evropskih držav se je tudi v Sloveniji v teku 20. stoletja zaključil prehod z visoke na nizko rodnost. Ta prehod je potekal istočasno z zviševanjem izobrazbene ravni prebivalstva. Zato avtorica v tem prispevku raziskuje morebitno povezavo med ravnijo rodnosti in najvišjo dokončano ravnijo izobrazbe v Sloveniji in to za daljše časovno obdobje. Bralcu najprej predstavi demografski pogled na povezavo med ravnijo rodnosti in izobrazbeno ravnijo žensk, rojenih v prvih šestih desetletjih 20. stoletja. Nato oblikuje nekaj podskupin žensk z različno ravnijo izobrazbe, da bi lahko interpretirala nekatere značilnosti rodnega vedenja žensk z višjo ali visoko izobrazbo. Za analizo uporablja podatke popisov prebivalstva, izvedenih v drugi polovici 20. stoletja in leta 2002. Posebno pozornost posveča najmlajšim generacijam, za katere je informacija o ravneh rodnosti žensk z različno ravnijo izobrazbe obogatena še z informacijami o njihovem zakonskem stanu, ekonomskem statusu, poklicu, veroizpovedi, narodnosti in vrsti stavbe bivanja. Za analizo diferencialne rodnosti je avtorica izbrala vzdolžno (generacijsko) analizo. Analiza je osredotočena na intenzivnost in ne na časovni potek (koledar) rodnosti različnih skupin in podskupin žensk, opredeljenih z ravnijo izobrazbe in še nekaterimi drugimi značilnostmi.

KUJUČNE BESEDE: Slovenija, končno potomstvo, verjetnost povečanja družine, raven izobrazbe