Zeszyty Naukowe

Working Papers

Was falling fertility in the communist Poland driven by changes in women's education?

Zuzanna Brzozowska

Working Papers
Institute of Statistics and Demography
Warsaw School of Economics

No. 27/2013

Abstract

During the communist period, Poland experienced an educational revolution: millions of people moved up from primary to lower- und upper-secondary education. At the same time, completed fertility dropped substantially from 2.48 in the 1932 cohort to 2.22 for women born in 1962. This article studies the relationship between education and completed fertility among women born between 1932 and 1962 and tries to assess to what extent the fertility decline was connected to changes in women's educational structure.

For the analyses I use data from the Fertility Survey 2002 that accompanied the Polish population census. Applying the Cho and Retherford's decomposition I decompose the change in the cohort-completed fertility rate into three terms that account for changes in: female educational structure, standardised completed fertility and standardised age-specific fertility. The results suggest that the decline in completed fertility was entirely due to changes in the educational structure. The standardised fertility actually increased, especially among women aged between 20 and 29.

Key words: educational differences in fertility, fertility in Poland, decomposition

CONTENTS

1. INTRODUCTION

The relationship between education and fertility in Europe is well documented, but far from being universal. In most countries, women with higher education have usually fewer children than women with lower education. Using the categorisation of Rendall et al. (Rendall et al., 2009; Rendall et al., 2010) it is possible to identify countries with sharper and weaker educational differences in fertility. Countries with a means-tested family policy (like Austria, the Czech Republic, Great Britain, Russia or Slovakia) belong to the former group (Potančoková et al., 2008; Prskawetz et al., 2008; Sigle-Rushton, 2008; Sobotka et al., 2008; Zakharov, 2008), and countries with a universalistic policy model (like Belgium, Norway or Sweden) to the latter one (Toulemon et al., 2008; Kravdal and Rindfuss, 2008; Andersson et al., 2009; Neels and De Wachter, 2010). In countries from the second group the negative education-fertility correlation can change into a positive one, like it happened in Belgium (Neels and De Wachter, 2010).

An increasing educational attainment of women usually leads to a fertility decline, either because of ideational changes, which are the reason behind the increasing female educational attainment (Surkyn and Lesthaeghe, 2004), or rising opportunity costs (Becker, 1991), or a delayed entry into motherhood resulting from leaving education at a later age (Rindfuss et al., 1996; Ekert-Jaffé et al., 2002; Ní Bhrolcháin i Beaujouan, 2012), or a combination of two or three of them. In the Polish context, fertility decline that took place after the collapse of communism is usually associated with two factors, which have increased the opportunity costs of having children and caused an ideational change: first, new uncertain economic circumstances and second, higher education boom (Okólski, 2006, 2007; Kotowska et al., 2008). The unemployment rate rose from null to 13% in 1992 and the inflation rate in 1989 and 1990 was measured in hundreds of percent (World Bank, 2012); in the 1970s and 1980s the gross enrolment ratio in tertiary education amounted to 16% and 18%, respectively, whereas in the 1990s and 2000s it rose to 31% and 63%, respectively (World Bank 2012).

Studies on fertility in Poland contrast today's dynamic reality with the predictability and stability of the state-socialism. It seems to be forgotten that profound societal and demographic changes occurred during the 40-year-long communist era. An educational revolution took place shifting millions of people up to the lower- and upper-secondary educational level; family policy underwent substantial changes; the total fertility rate (TFR) fell from 3.7 in 1950 to 2.2 in 1970, became stable at a level of 2.3 throughout the decade, then increased slightly between 1981 and 1983, and dropped again reaching 2.0 in 1989; the completed fertility rate (CFR) for cohorts born in 1930 and later was steadily decreasing, with an exception of women born in the mid-1950s (Kotowska et al., 2008; Holzer-Żelażewska and Tymicki, 2009). From what is known about the education-fertility relationship we cannot easily deduce its character in the times of the state-socialism, as they were full of contradictions. On the ideological level, the political system strove for equality in every aspect of life. In practice, however, the daily life was marked by social inequalities. This together with a means-tested family policy would speak for considerable social differences in fertility, including the educational differences. On the other hand, the magnitude of social inequalities was still smaller than in most Western societies, which would suggest subtler educational differences in fertility.

In view of the above given facts, I assume that there was a link between the fertility decline and the changes in women's educational structure. But I cannot assess how strong this relationship was. This paper aims to fill the gap, addressing the following questions:

1. What was the relationship between education and completed fertility for women, whose reproduction took place during the state-socialism? How was it changing over cohorts?
2. To what extent did the fertility decline result from a change in educational structure?
3. How did the completed fertility net of the educational effect change over cohorts?

I first analyse the trends in completed fertility of women born between 1932 and 1962 by their completed education. Then I decompose the changes in the completed fertility into two components: changes in the educational structure and changes in fertility net of the

effect of the educational structure change (i.e. changes in the standardised fertility). In the next step, I further decompose the latter component into changes in standardised age-specific fertility rates in five age-groups (see section 2.2 for details). I conduct this two-step decomposition twice: once for comparing the oldest (1932) and the youngest (1962) analysed cohort, and once for comparing all cohorts as five-year groups. This enables me to quantify the three components of the change in cohort fertility (i.e. changes in: educational structure, standardised fertility and standardised age-specific fertility), and to compare their importance over cohorts. In this way, I get a clear picture of the education-fertility relationship and its changes over 30 cohorts.

2. DATA AND METHOD

2.1. DATA

The data come from the Fertility Survey that accompanied the 2002 Polish population census. From a representative sample of 264,845 women aged 18 years old and more I chose 126,461 women born between 1932 and 1962 (i.e. aged 40 to 70 at the time of the interview). After deleting cases with missing data on education and age at childbirth, I included 116,323 observations in the analysis. They were weighted with population weights calculated from the Population Census 2002 by the Central Statistical Office. The population weights include several population characteristics (like age structure, education structure, distribution of the size of the place of residence and distribution of the administrative regions of residence), out of which the distribution of the size of the place of residence was the most distorted one (Tymicki 2010).

All the analyses were carried out using four educational categories, which correspond to the Polish educational system at the time the respondents were enrolled in education: primary education and lower (up to 7-8 years of schooling), lower-secondary education (10-11 years of vocational schooling), upper-secondary education (11-14 years of schooling) and tertiary education (16-18 years of schooling). The upper-secondary category includes both (vocational) secondary school, which lasted for 4 to 5 years, and one- to two-year long post-secondary (non-tertiary) education. The distribution by cohort

and education of the cleaned and weighted sample is presented on the graphs below (Figure 1ab).

Figure 1a. Distribution by cohort and education at the time of the interview (in absolute numbers)

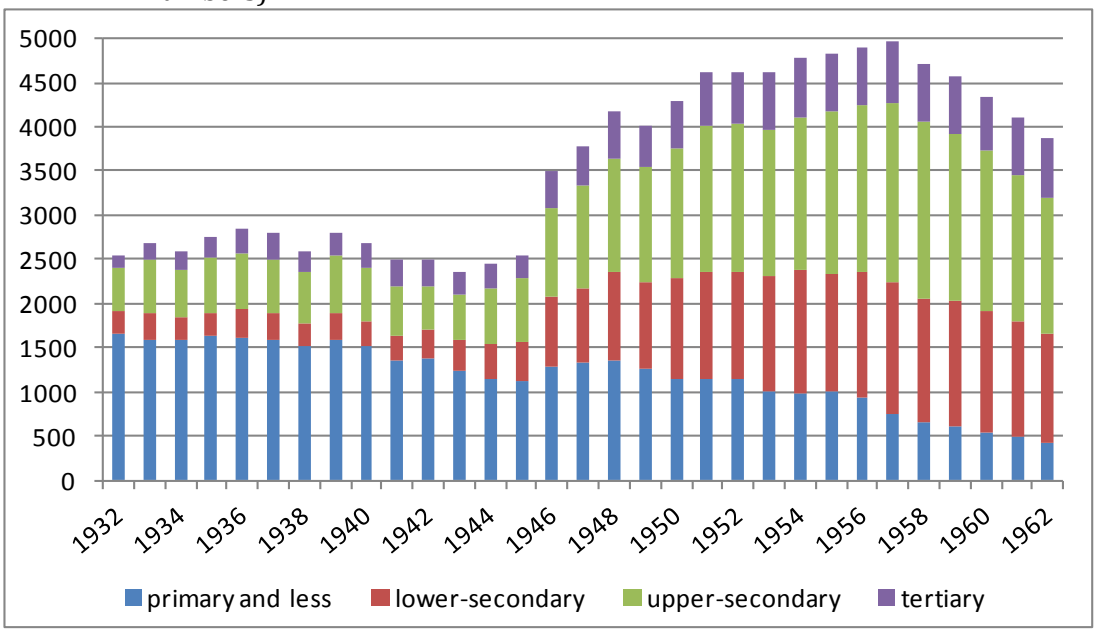
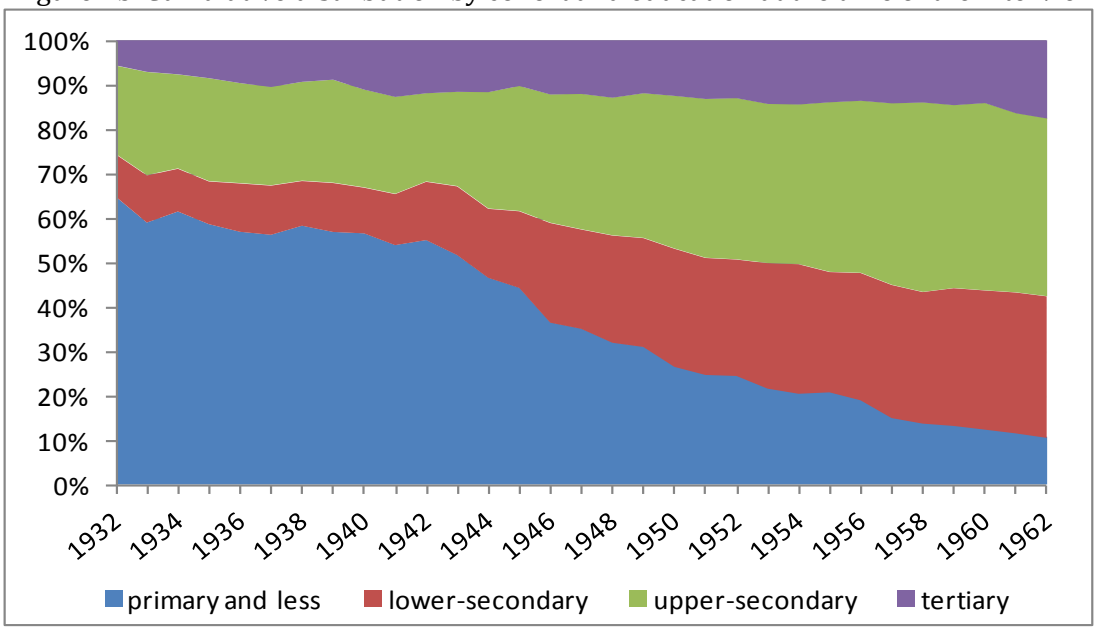


Figure 1b. Cumulative distribution by cohort and education at the time of the interview (in %)



Source: own calculations based on Fertility Survey, 2002

As it is seen in Figure 1a, there are much fewer women born in 1945 and before than afterwards, which raises doubts about the representativeness of the cohorts born before

1946. Including respondents at high ages in the analysis is a potential source of bias, but there are good reasons for doing it. First, the cumulative distribution of educational attainment does not show any abnormalities for cohorts born before 1946. Except for a primary education "hump" observed among women born between 1937 and 1945, the trend is very consistent: with time, the proportion of the least educated was declining drastically, the proportion of women with lower-secondary education was increasing sharply, and the proportion of those with upper-secondary and tertiary education was going up gradually. Second, retrospective analyses conducted on women aged up to 70 are not uncommon in contemporary demography. Neels and de Wachter, for example, analysed completed fertility of the 1930-1960 female cohorts using the 2001 Belgian census (Neels and De Wachter, 2010). Belgium, of course, is a country not as severely affected by the recent history as Poland, but the potential problem of the mortality-driven selection effect among the older cohorts is the similar. Third, the completed fertility of female cohorts born 1930 and after published by Council of Europe (Council of Europe, 2005) differs little from the completed fertility calculated here: the difference amounts to 4% for the 1935 and 1940 cohorts, and it is smaller than the difference observed for the youngest cohorts (for details see Table 3 in Appendix 1).

For the sake of comparability over cohorts, I measured the completed fertility rates at age 40 (as the youngest analysed cohort was 40 years old at the time of the interview)[1]. This common practice (Kravdal and Rindfuss, 2008; Cohen et al., 2011) enabled me to include 30 cohorts in the analysis instead of 21 with a loss of only 1-2% of the cohort fertility (see Table 3 in Appendix 1 for a comparison of the truncated and completed fertility, and the completed fertility given by Council of Europe).

2.2. METHOD

After analysing the completed fertility trends by education, I conduct a two-component decomposition drawing on the Cho and Retherford work (Cho and Retherford, 1973; Canudas Romo, 2003), which was a simple extension of the Kitagawa decomposition called

[1] Council of Europe measured CFR at age 49. For cohorts younger than 49 at the time of measurement, they imputed the fertility at the missing reproductive ages using the fertility rated of older cohorts (Council of Europe 2005)

"components of a difference between two rates" (Kitagawa, 1955). Applying her decomposition framework, the difference between the CFR of cohorts born in year t and year t+h can be split into a change (1) in the educational structure (compositional component) and (2) in the specific (standardized) completed fertility rates:

$$CFR(t+h) - CFR(t) = \sum_i [\frac{CFR(t+h)_i + CFR(t)_i}{2} * (\omega(t+h)_i - \omega(t)_i)] \quad (1a)$$

$$+ \sum_i [\frac{\omega(t+h)_i + \omega(t)_i}{2} * (CFR(t+h)_i - CFR(t)_i)] \quad (1b)$$

where: $\omega(t)_i = \frac{n(t)_i}{n(t)}$ and $\omega(t+h)_i = \frac{n(t+h)_i}{n(t+h)}$, which denotes the proportion of educational group i in the cohorts t and t+h, respectively.

The first part on the right side of the equation represents the difference in the educational structure weighted by the average completed fertility rate of cohorts born in t and t+h. The second component (equation (1b)) is the difference in the standardised completed fertility rates (with average educational composition as a weight). As the CFR of a cohort is calculated as the sum of the age-specific fertility rates (ASFRs), i.e.

$$CFR = \sum_j ASFR_j \,, \quad (2)$$

the second part on the right side of the equation (equation (1b)) can be further decomposed to include the age-specific fertility rates. For simplicity and clarity, let us call it the difference in the standardised fertility component (and denote it as ΔSFC). The decomposition can be written as:

$$\Delta SFC(t) = \sum_i [\frac{\omega(t+h)_i + \omega(t)_i}{2} * \sum_j ASFR(t+h)_{ij} - ASFR(t)_{ij}] =$$

$$\sum_i \sum_j \frac{\omega(t+h)_i + \omega(t)_i}{2} * (ASFR(t+h)_{ij} - ASFR(t)_{ij}) \quad (3)$$

It is possible to obtain *j* components of ΔSFC, each of them representing the change in fertility in one age-group. As I distinguish five age-groups (under 20, 20-24, 25-29, 30-34

and over 34, which means here 35-40 and is further denoted as "35 and more"), there are five such components. The final decomposition equation can be written as follows:

$$CFR(t+h) - CFR(t) = \sum_i [\frac{CFR(t+h)_i + CFR(t)_i}{2} * (\omega(t+h)_i - \omega(t)_i)]$$

$$+ \sum_i \sum_j \frac{\omega(t+h)_i + \omega(t)_i}{2} * \ (ASFR(t+h)_{ij} - ASFR(t)_{ij}) \qquad (4)$$

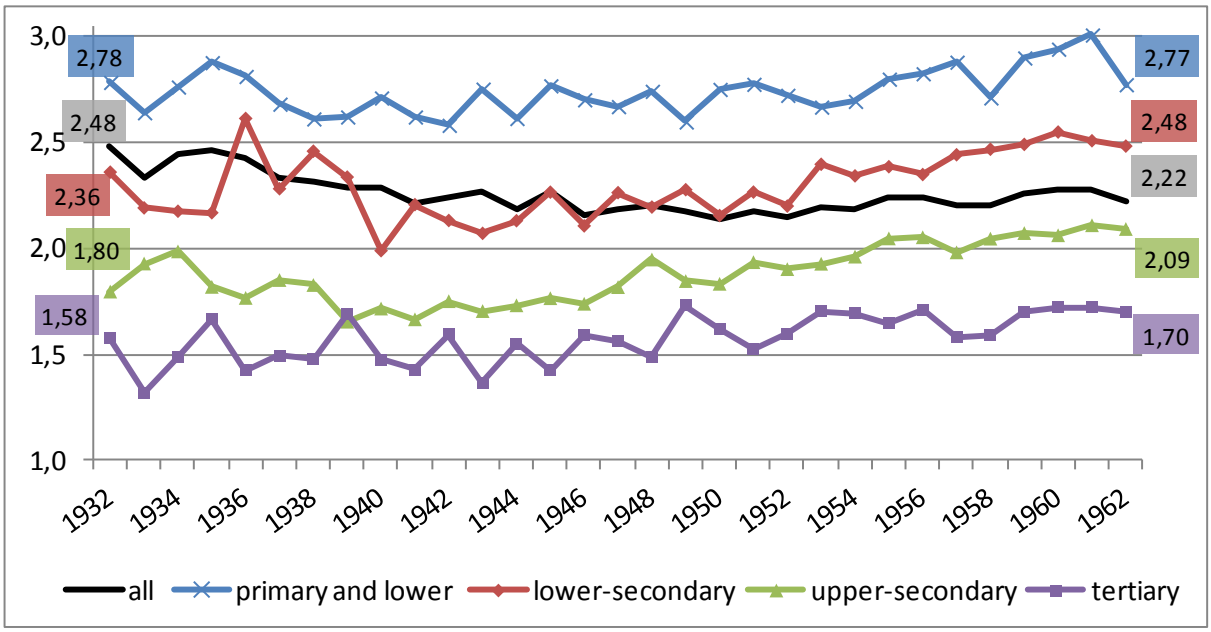
I carry out the analyses in two steps. First, I apply the two kinds of decomposition (formulas (1ab) and (3)) to the first and the last analysed cohort, i.e. to women born in 1932 and in 1962. In this way, I am able to assess the role of education and standardised fertility in the CFR decrease between the 1932 and 1962 cohort. Second, in order to analyse the trends I repeat the decomposition analyses for five-year-cohort groups (1932-1936, 1937-1941, 1942-1946, 1947-1951, 1952-1956, 1957-1961), decomposing the differences in the CFR between two subsequent cohorts (i.e. comparing the 1937-41 cohort to the 1932-36 one, 1942-46 to 1937-41 and so on).

3. RESULTS

3.1. EDUCATIONAL DIFFERENCES IN COMPLETED FERTILITY

The figure below shows the differences in completed fertility at age 40 between cohorts and educational groups (Figure 2).

Figure 2. Completed fertility rate (CFR) at age 40 by cohorts and education



Source: own calculations based on Fertility Survey, 2002

Generally, the younger the cohort the lower its completed fertility was. For women born between 1932 and 1962 the CFR went down almost linearly from 2.48 to 2.22, respectively, with an exception of cohorts born in the late 1940s and the early 1950s, which on average had slightly fewer children (2.14-2.18) than the succeeding cohorts (around 2.24). However, the CFR calculated for each educational group gives a different picture. The completed fertility of women with the lowest education (primary and lower) experienced some ups and downs, but, as a whole, it was stable, with the oldest and the youngest cohort reaching the same level. In all the other educational groups, the completed fertility increased with time. The large fluctuations observed in the older cohorts of women with lower-secondary and tertiary education are probably due to the small sizes of these education groups (for exact numbers see in Appendix 1 and Appendix 2).

Despite the extensive changes in female educational structure, the educational differences in completed fertility remained stable throughout the analysed cohorts. On the whole, the better educated a woman the fewer children she had. Thus, the general fertility decline among women born between 1932 and 1962 was most probably strongly connected to the changing educational structure.

3.2. DECOMPOSITION OF THE FERTILITY CHANGE: COHORT 1932 AND 1962

The figures below present the decomposition of the decrease in completed fertility between the 1932 and 1962 cohorts (Figure 3ab).

Figure 3a. CFR for cohorts 1932 and 1962, and the decomposition of its change

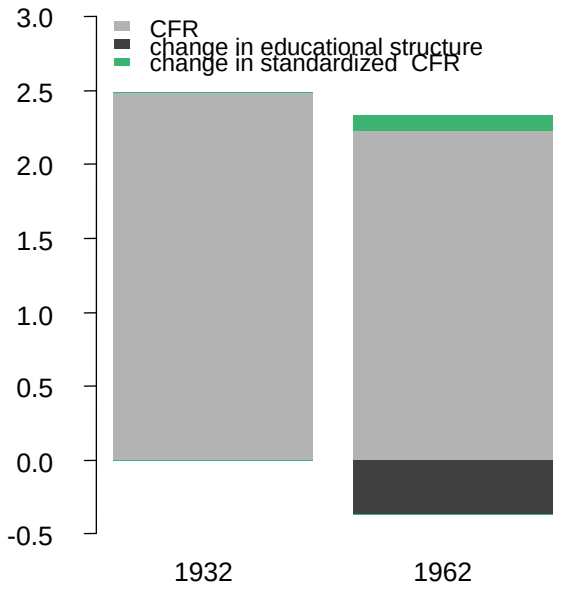
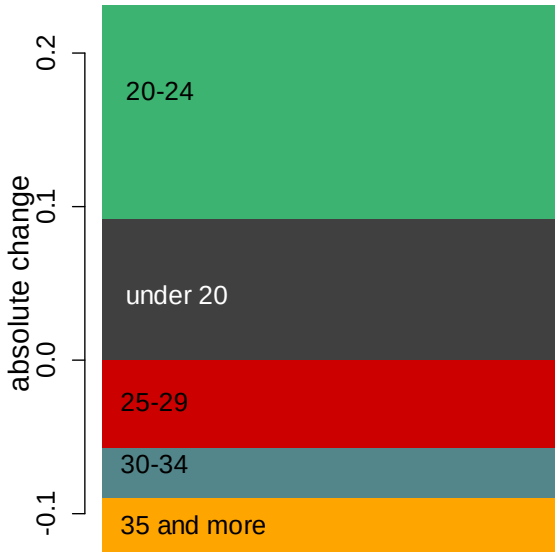


Figure 3b. The decomposition of the change in the standardised CFR into changes in the standardised ASFRs



Source: own calculations based on Fertility Survey, 2002

The total difference between the CFR of the youngest and the oldest cohort equals -0.26. The decline is entirely explained by the change in the educational structure. If the completed fertility net of education change had not increased by 0.12, the change in the educational structure would have pushed the CFR down by 0.38 (instead of going down from 2.48 to 2.22, the CFR would have dropped to 2.10). As the decomposition of the standardised fertility increase shows (Figure 3b), the 1962 cohort had significantly more children at their younger ages than the 1932 one: women aged under 20 and between 20 and 24 had 0.09 and 0.17 children per woman more, respectively. In contrast, the standardised fertility at age 25 and more declined by 0.14 children per woman.

3.3. DECOMPOSITION OF THE FERTILITY CHANGES: COHORTS 1932 TO 1962

For the 5-year cohorts, the completed fertility was declining in the three oldest groups and then, beginning with the 1952-56 cohort, it was going up slightly (Table 1).

Table 1 CFR and its change over 5-year cohorts

cohort	CFR	change in CFR
1932-36	2,43	-
1937-41	2,29	-0,14
1942-46	2,22	-0,07
1947-51	2,18	-0,04
1952-56	2,20	0,03
1957-61	2,24	0,04

Source: own calculations based on Fertility Survey, 2002

The most remarkable decline in completed fertility occurred among the 1937-41 cohort, when compared to the 1932-36 one. For the younger cohorts, the changes in CFR from one 5-year cohort to the next one were more moderate. The next two figures (Figure 4ab) present the decomposition of the CFR change (seen in Table 1) in a similar way as Figures 3ab do.

Figure 4a. The decomposed CFR change over 5-year cohorts

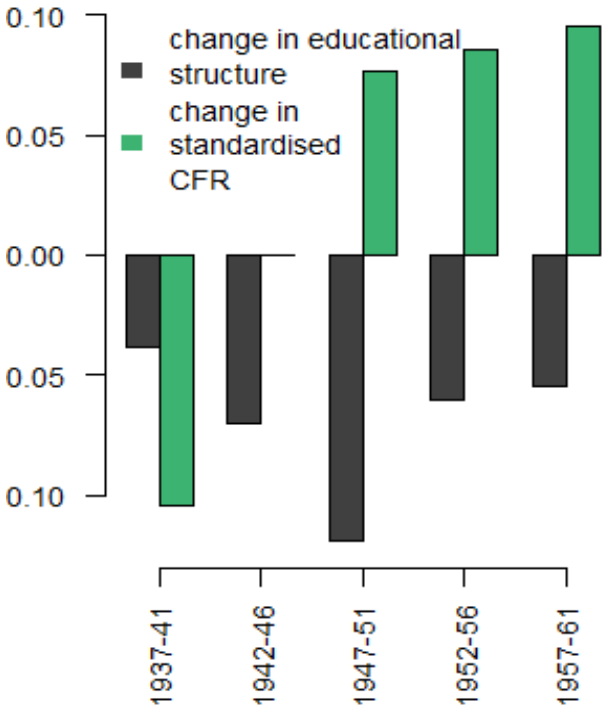
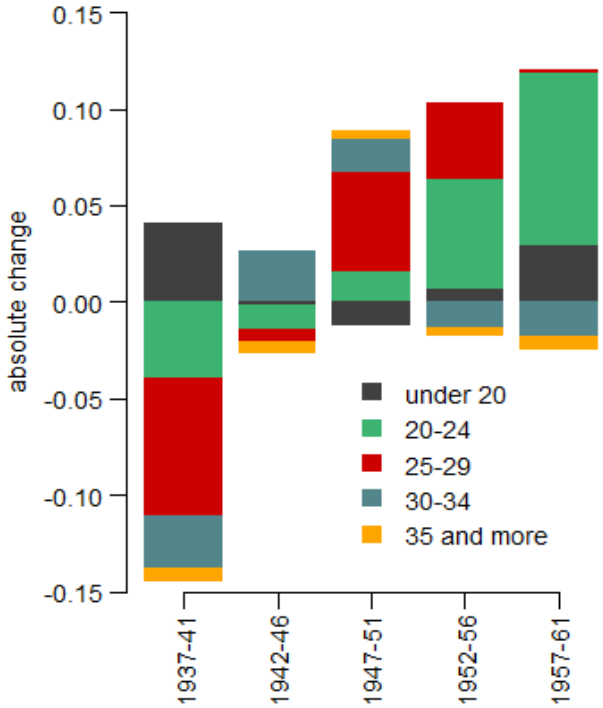


Figure 4b. The decomposed change in the standardised CFR into changes in the standardised ASFRs, over 5-year cohorts



Source: own calculations based on Fertility Survey, 2002

Figure 4a shows that in all cohorts changes in the educational structure pushed down completed fertility. Compared to the 1932-36 cohort, women born between 1937 and 1941 gave birth to fewer children. This resulted in a CFR decrease of 0.1, which was driven by a change in both educational structure and standardised CFR. The next five-year cohort, 1942-47, experienced a further fertility decline by 0.1 (compared to the 1937-1941 cohort), but this time it was due only to the change in the educational structure, with hardly any changes in the standardised CFR. Fertility of the next cohort, the 1947-51 one, was also lower than that of the previous cohort (1942-46), but the decrease was much smaller (0.04) and fertility net of the educational change actually went up by 0.07; the negative effect of the educational structure change was the strongest in this cohort, pushing down fertility by 0.11 compared to the previous cohort.

The two next cohorts had more children than the cohort preceding each of them: the 1952-56 and the 1957-61 cohorts had 0.02 and 0.04 more children per woman, respectively.

Both fertility increases took place despite the negative effect of changes in the educational structure: had it stayed constant in two neighbouring cohorts, fertility would have gone up by 0.08 in the 1952-56 cohort and by 0.1 in the 1957-1961 one.

The decomposition of changes in the standardised completed fertility (Figure 4b) gives an insight into changes in age-specific fertility rates. In the 1937-41 and 1942-46 cohorts almost all standardised ASFRs went down compared to the 1932-36 and 1937-41 cohorts, respectively. The exceptions were the standardised fertility rates among teenagers (the 1937-41 cohort) and women in their early 30s (the 1942-46 cohort). In contrast, in the 5-year cohorts of women born after 1946 the completed fertility increased (net of the change in the educational structure) compared to the preceding cohorts. In all three, women had more and more children in their 20s; with time, they more often gave births in their early 20s (20-24) than in their late 20s (25-29). Compared to the cohort 1942-46, women born between 1947 and 1951 had children more often in their early thirties and less often in their teens. In the two youngest cohorts, 1952-56 and 1957-61, the fertility rates increased among teenagers and decreased among women in their 30s and more. The time, at which the changes in the standardised ASFRs occurred in each 5-year cohort, is shown in the table below (Table 2).

Table 2 The years of increases and decreases in the standardised ASFRs of 5-year cohorts

age \ cohort	1937-1941	1942-1946	1947-1951	1952-1956	1957-1961
15-19	1952-1960	1957-1965	1962-1970	1967-1975	1972-1980
20-24	1957-1965	1962-1970	1967-1975	1972-1980	1977-1985
25-29	1962-1970	1967-1975	1972-1980	1977-1985	1982-1990
30-34	1967-1975	1972-1980	1977-1985	1982-1990	1987-1995
35-40	1972-1981	1977-1986	1982-1991	1987-1996	1992-2001

Note: Green and red stand for the increases and decreases, respectively. The colour intensity represents the amount of change; white colour means hardly any change.

It is clearly seen that the increases and decreases in the standardised ASFRs are clustered in time. Most of the increases appeared at similar time, namely between the 1970s and the mid-1980s. Interestingly, the standardised fertility went up at women's most fertile ages, 20 to 29 (cohorts 1947-51, 1952-56 and 1957-61), as well as at older ages, 30 to 34 (cohorts 1942-46 and 1947-51), and at the very young ones, under 20 (the 1957-61

cohort). In contrast, most of the decreases took place between the late 1950s and the early 1970s.

4. CONCLUSIONS

This study provides a macro-level insight into the education-fertility relationship for women, whose reproductive careers fell mostly on the communist period in Poland. It shows that the decline in completed fertility of cohorts born between 1932 and 1962 was driven by profound changes in female education structure. The educational differences in completed fertility in all analysed cohorts were large and persistent: the average difference in CFR of women with at most primary education and those with tertiary education amounted to 1.12.

In view of the communist ideology, the substantial and stable educational differences in completed fertility might seem surprising. Communism postulated social and gender equality, and strove for building a classless society with equal rights for everybody. Polish communist party did not manage to reach any of these goals: women's emancipation turned into a double burden (i.e. work in the market and at home) with very small chances for occupying managerial positions, the Gini-coefficient was one of the highest among the communist countries (but still lower than in most Western countries; World Bank, 2012) and achieving success in life was much more dependent on the connections to the Party members than on own merits. What state-socialism did achieve, however, was the full employment and a rather predictable life course, similar for the majority of Polish citizens. Thus, from the opportunity cost perspective there were no reasons for big educational differences in fertility: by law, everybody had a steady job of little risk of being fired (at least as long as he or she was not active in the opposition movement) and with a guarantee of being returned to the previous position after maternity leave; women's opportunities of making a career were very limited (women usually worked as teachers, nurses, low-ranked clerks and factory workers) and hardly dependent on their productivity or creativity.

Despite the leading role of the working class, officially declared by the state (and guaranteed by the 1952 Constitution; Sejm Ustawodawczy, 1952), the concept of

traditional social hierarchy remained deeply embedded in the Polish society throughout the communist period. In a non-meritocratic country, in which, by law, blue-collar workers earned more than white-collar ones, the financial status as one of the determinants of social position was of no use. That is why education enormously increased in importance as a factor determining social status. Highly educated people - the so called "intelligentsia" – were determined to pass on to their children the only thing they were able to pass on to them, namely the "intelligentsia" status, meaning higher education together with a certain lifestyle and certain manners (Giza-Poleszczuk, 2007). "Intelligentsia" drew a clear distinction between their social class and the others. They expressed the distinction by leading a "bourgeoisie"-like lifestyle – e.g. by buying and reading books, going abroad for holiday if it was possible, sending children to private piano lessons, or teaching them English or French privately. Against the official ideology and policy, they embodied Becker's theory of raising children of high quality (Becker, 1991), which, considering low earnings, made it very difficult to have many children.

The so called "new intelligentsia", i.e. highly educated people from less educated background, tried to adopt the "bourgeoisie"-like lifestyle of the "old intelligentsia". What is more, people from lower social strata who wanted their children to get higher education, to a certain extent exhibited the behaviour of the intellectual elite, too. This was a more general pattern: people who wanted to push their children up in the social ladder and people from a less educated background, tried to adopt the ideals and manners of the better educated strata (Domański, 2004). In times of great upward social mobility, this inevitably led to a decline in cohort fertility.

On the other hand, the adaptation was usually not complete. The expansion of lower- and upper-secondary and, to a lesser extent, tertiary education might have been the reason for the fertility increase in these educational groups. With time, they were becoming more and more heterogeneous, absorbing people from less educated social backgrounds and of originally different values and lifestyles. This might explain the slightly narrowing gap in completed fertility between women with at most primary education and those with lower-secondary education (difference of 0.43 in the 1932 cohort and of 0.29 in the 1962 cohort),

and between women with lower-secondary education and those with upper-secondary education (difference of 0.56 in the oldest cohort and of 0.39 in the youngest one). An opposite process took place in the least-educated group: there were fewer and fewer women with primary education, so it became more selective. This might explain the stability of completed fertility in this group.

The decomposition of the completed fertility difference between the 1932 and 1962 cohorts shows that the standardized completed fertility increased. Thus, the fertility decline was entirely due to changes in the educational structure. Had it not been for changes in the educational structure, completed fertility of the younger cohort would have exceeded completed fertility of the older one. This finding is opposite to the one found in other European countries (Sobotka et al., 2012).

The increase in the standardised completed fertility was entirely due to fertility at young ages (under 25). This might be the result of a selection effect, by which the 1932 cohort is certainly affected to some extent. On the other hand, it might also be an indicator of changing fertility patterns: Holzer-Żelażewska and Tymicki have shown that fertility among women under 25 was much lower in the first post-war cohort (1946) than in the 1960 one (Holzer-Żelażewska and Tymicki, 2009). This finding goes in line with the explanation of early parenthood in the socialist countries, given by van de Kaa (van de Kaa, 1994): setting up a family was a way of gaining independence. Centrally-planned economies suffered from persistent shortage of housing, and being single or living as a childless marriage reduced the chances of moving out from parental home almost to zero.

The decomposition of fertility differences between the five-year cohorts show a clear distinction between the two oldest cohorts (1937-1941 and 1942-1947) and the three younger ones, which might again indicate a selection effect. But there are arguments that speak for a period effect. As shown in Table 2, most of the increases in the standardised ASFRs took place between 1970 and mid-1980s. In these years, family policy changed substantially: in 1968 a one-year unpaid parental leave was introduced for mothers, who had children under 4 years old; in 1972 the maternity leave was increased to 4 months and a three-year unpaid parental leave was introduced, which between 1981 and mid-1980s

turned into a paid one (the benefit was income-dependent; Kurzynowski, 2000). The observed increases in the standardised ASFRs were most probably due to these changes in family policy. Ironically, the government did not have any pronatalistic intentions. The aim of the changes in family policy was to keep a substantial part of women away from the labour market. By law, there was no unemployment in a socialist country. Guarantying jobs for everyone was not difficult in times of massive industrialisation and fast economic growth, i.e. in the 1950s and 1960s. Since the late 1970s on, however, the economic situation in Poland was getting worse and worse, ending up in a spectacular crisis in the 1980s. Under such circumstances, keeping full employment was impossible. But admitting it would have meant admitting the failure of the state-socialism. For this reason, the authorities tried to keep parts of the labour force out of the labour market by means of, for example, family policy. In Hungary, for the same reasons similar changes were introduced at the same time and had a similar effect on fertility (Spéder and Kamarás, 2008).

In summary, the results show persistent educational differences in fertility in the communist period: better educated women had substantially fewer children than the less educated ones. Comparing the older female cohorts with the younger ones, the completed fertility slightly increased in the better educated groups and stayed relatively stable in the least educated one. The overall completed fertility was going down, which was due to profound changes in the educational structure: millions of women were shifted up from primary education category to lower-secondary education; the better educated groups (with upper-secondary and tertiary education) were expanding, too. Starting from the post-war cohorts, the completed fertility net of education effect was increasing.

ACKNOWLEDGMENTS

This study was conducted within the EURREP project, which is funded by the European Research Council under the European Union's Seventh Framework Programme (FP7/2007-2013) / ERC Grant agreement n° 284238. I am very grateful to Janina Jóźwiak, Tomáš Sobotka and Eva Beaujouan for their valuable comments on an earlier draft of this paper.

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APPENDIX 1

Table 3 The completed fertility calculated from (1) the Fertility Survery 2002 (1a) measured at age 40, (1b) with no age limits, and given by (2) Council of Europe

cohort	(1a) CFR at 40	(1b) CFR completed (no age restrictions)	(2) CFR Council of Europe
1932	2,48	2,53	
1933	2,34	2,37	
1934	2,45	2,49	
1935	2,46	2,49	2,6
1936	2,42	2,46	
1937	2,33	2,36	
1938	2,32	2,35	
1939	2,29	2,31	
1940	2,28	2,31	2,41
1941	2,22	2,24	
1942	2,24	2,26	
1943	2,27	2,30	
1944	2,19	2,21	
1945	2,26	2,29	2,27
1946	2,16	2,18	
1947	2,19	2,21	
1948	2,21	2,23	
1949	2,17	2,20	
1950	2,14	2,16	2,19
1951	2,18	2,20	
1952	2,14	2,17	
1953	2,19	2,21	
1954	2,19	2,21	
1955	2,24	2,26	2,17
1956	2,24	2,26	
1957	2,20	2,22	
1958	2,20	2,22	2,21
1959	2,26	2,27	2,2
1960	2,28	2,29	2,18
1961	2,28	2,28	2,14
1962	2,22	2,22	2,11

Table 4 The selected cohorts by education (absolute numbers)

cohort	primary and lower	lower-secondary	upper-secondary	tertiary
1932	1660	243	506	142
1933	1596	286	623	188
1934	1597	248	546	194
1935	1624	265	637	231
1936	1621	309	637	268
1937	1579	309	618	288
1938	1520	261	576	238
1939	1593	307	645	243
1940	1528	277	591	293
1941	1356	287	546	313
1942	1376	327	494	292
1943	1227	366	501	269
1944	1148	381	642	281
1945	1131	438	713	257
1946	1285	785	1009	419
1947	1335	845	1150	448
1948	1346	1009	1294	531
1949	1256	986	1308	471
1950	1148	1141	1472	527
1951	1152	1216	1649	599
1952	1142	1211	1674	592
1953	1009	1302	1651	649
1954	992	1396	1719	680
1955	1016	1309	1844	663
1956	943	1404	1896	655
1957	755	1485	2024	691
1958	658	1393	2005	647
1959	615	1416	1879	655
1960	548	1359	1827	602
1961	484	1303	1657	663
1962	417	1231	1547	668