Female education and fertility under state socialism: Evidence from seven Central and South Eastern European countries

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Abstract

In this paper I analyse trends in completed fertility of women born between 1916 and 1960 in Central and South Eastern Europe. I employ decomposition and standardisation methods to study the effect of growing educational attainment on fertility outcomes. I use censuses and one large-scale fertility survey from seven countries: Croatia, the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia. The results suggest that the decline in cohort fertility was driven by rising educational enrolment on the one hand, and by reductions in high parity births on the other. These two negative effects were partially counterbalanced by the shrinking proportions of childless women. All in all, the trends in cohort fertility were rather universal, but their strength varied vastly.

1 Introduction

Trends in cohort completed fertility in Central and Eastern Europe (CEE)[1] are still under-studied. The existing contributions focus on contrasting the stability of state socialism with the dynamic developments during the economic and political transition (Kotowska et al. 2008 on Poland, Mureşan et al. 2008 on Romania, Perelli-Harris 2008 on Ukraine, Potančoková et al. 2008 on Slovakia, Sobotka et al. 2008 on the Czech Republic, Spéder and Kamarás 2008 on Hungary, Stropnik and Šircelj 2008 on Slovenia, Zakharov 2008 on Russia). They usually analyse trends in period fertility as data from 2010s, covering women whose entire reproductive careers took place after 1989, are scarce. Furthermore, most of them are one-country studies, not aiming at comparing several regions behind the Iron Curtain.

[1] In the text, whenever I use the term CEE I refer to its political meaning, i.e. former socialist countries in Europe. In geographical terms, countries studied in this paper belong to Central (the Czech Republic, Hungary, Poland, Slovakia) and South Eastern (Croatia, Romania and Slovenia) Europe.

Using the Rendall et al. classification (2009, 2010), under state socialism one should expect rather small differences in fertility, similar to those observed in Belgium, Norway or Sweden (Toulemon et al. 2008, Kravdal and Rindfuss 2008, Andersson et al. 2009, Neels and De Wachter 2010) as, officially, the political system strove for equality in every aspect of life. In practice, however, the daily life, marked by substantial social inequalities, would speak for considerable educational differences in fertility, on a par with Austria, Great Britain (Prskawetz et al. 2008, Sigle-Rushton 2008). The existing evidence suggests that the education-fertility relationship in CEE before 1989 was negative, but its strength varied greatly over time and across countries (Mureşan and Hoem 2010, Potančoková et al. 2008, Stropnik and Šircelj 2008).

In this paper I study the macro-level relationship between women's educational expansion and completed fertility under state socialism in Europe. I try to assess if the observed fertility trends were driven by changes in the educational structure or in fertility behaviour such as childlessness or high parity births. More specifically, I am interested in answering the following questions:

1. How strong was the educational gradient in completed fertility and how did it vary over time and by country?
2. What was the effect of female educational expansion on the trends in completed fertility?
3. How did fertility net of growing educational attainment change? In particular, what was the role of childlessness and high parity births?

To address these questions I study education-specific trends in completed fertility of women born between 1916 and 1960. I use censuses and one large-scale fertility survey from seven CEE countries: Croatia (HR), the Czech Republic (CZ), Hungary (HU), Poland (PL), Romania (RO), Slovakia (SK) and Slovenia (SI)[2]. First, I briefly describe how state socialism in general and in different countries defined the role of women, their rights and duties as mothers, wives and employees. Second, I analyse trends in female educational structure together with completed fertility rate (CFR). I decompose the changes in CFR into structural and direct effects. The latter ones I further decompose into parity-specific components. After

[2] For avoiding confusion I use the current names of the states. Thus, instead of *the Czech and Slovak part of Czechoslovakia* I write *the Czech Republic* and *Slovakia*, respectively.

developing several standardised hypothetical fertility scenarios, I explain factors lying behind them: education-specific trends in CFR, childlessness and high parity births. The concluding section discusses the results.

2 The diverse faces of state socialism

The ideological roots of communist parties that governed the states behind the Iron Curtain were very similar, but the geo-political and cultural conditions made the 'socialist reality' multifaceted. First, it was changing with time, and second, it varied locally. Below I shortly discuss changes in the attitudes towards women and population policy over time and space.

2.1 Changes over time

In the late 1940s and in the 1950s, Central and Eastern Europe underwent rapid industrialisation. The economy faced severe shortages of hands to work and desperately needed new workers (Berend 2005). To meet the growing demand, the governments vastly expanded vocational schooling at the basic, secondary and, to a lesser extent, tertiary level, and vigorously encouraged women to take jobs as agricultural or factory workers, allowing them to occupy positions previously reserved for men e.g. in the mining industry (Fidelis 2010 chap.4). Except for the Czechs, the societies behind the Iron Curtain were mostly rural, with an overwhelming majority of the population having primary education or no education at all. In course of the fast industrialisation and urbanisation, millions of young people, both men and women, became literate, got vocational training and moved to factory towns, where they usually lived in workers dormitories (Berend 1996 chap.5). Women had to enter the labour market not only for ideological reasons, but also out of necessity: the wages were much too low to allow a family to live just on one (i.e. the husband's) pay (Stloukal 1999). Even staying in the countryside and depending on agriculture forced women to take up paid work as in the system of collective farming, imposed under state socialism, farmers became agricultural workers who received wages as any other employee.

The image of a perfect socialist woman, created by the propaganda, was that of a hard worker, devoted to her duties as a mother, wife and employee (Fidelis 2010 chap.1). The maternal leaves were very short as it was assumed that the state, i.e. the state-owned and -run nurseries and kindergartens, will take care of the children. Turning the slogans and promises into reality, however, did not go smoothly. In fact, the supply and quality of the

day-care centres were far below the needs and expectations. Working women found it very hard to combine the role of mother and employee (Stloukal 1999) especially that many of them had left their parental homes in the countryside to work in factories in towns. Their new lifestyles included a much easier access to pre-marital sexual relationships (Fidelis 2010 chap.3). As contraceptives other than natural methods of birth control were hardly used (Sobotka 2004 chap.8) and the access to abortion was very limited, many factory towns saw a surge in young unwed single mothers (Fidelis 2006). Following the legislative changes in the Soviet Union in 1955, its satellite states liberalised the abortion law, making it possible to terminate pregnancy for rather broadly defined 'social reasons' (a more detailed picture of the access to abortion is given in the next section).

Since the 1950s, when the post-war marriage and fertility recuperation had passed, fertility kept going down. As the communist governments believed in the power of big nations, in the 1960s they started to introduce pronatalist policy measures based on more generous maternity leaves for mothers, some family allowances and privileges like advancing in the queue for a flat (Stloukal 1999). In the 1970s and 1980s these measures were usually reinforced, especially in those countries where they were aimed not only at increasing fertility rates, but also at pushing women out of the labour market (Kurzynowski 2000, Zembrzuska 2000 on Poland). The planned economies slowed down in the 1970s and, in some countries, reached the state of agony in the 1980s, and became unable to employ each and every man and woman available for work. As, by definition, unemployment did not exist under state socialism, the governments focused their efforts on encouraging people to leave the labour market. This was why mothers could stay up to two years on paid maternity leaves (Poland) and why older women could go into earlier retirement.

Under state socialism, family policy and the attitude to women's paid work was fully subordinated to political and economic needs (Zembrzuska 2000). In times of rapid economic growth and shortages of labour force, women were encouraged to take up jobs, including those typically reserved for men (and usually much better paid). When economy was slowing down or there was a sufficient number of trained male workers, women were banned from some "male jobs" (like mining) and encourage to take on the traditional role of mothers (Fidelis 2010 Introduction). At all times, however, the policy measures were *aimed at making a male-dominated society function better* (Stloukal 1999). Posts typically occupied

by women were much lower paid than those held by men; professionally active women were expected to do all the housework, thus being forced to bear double burden, which was much heavier than in the West as many of the facilities making every-day life easier (household appliances, well organised public transport, fully supplied and easily accessible shops) were lacking and part-time jobs were scarce (Stloukal 1999). All in all, although theoretically socialism brought women liberalisation and made them equal to men, in reality, women carried double burden, were discriminated on the labour market and expected to perform the traditional role at home (Heinen 1997).

2.2 Country variations

State socialism was introduced in Central-Eastern Europe under very much different economic and social circumstances. This paper covers seven countries, which politically, economically, socially and culturally formed at least four-five groups.

The best developed and, at the time of imposing the new system, virtually undistinguishable from the Western economies, were the Czech Lands. The most industrialised and urbanised, they remained the richest country in the Eastern Bloc[3] until its collapse. In the early 1950s, after the post-war fertility recuperation, total fertility rate (TFR) began to fall, starting from a rather low level at that time of 2.8 (Sobotka et al. 2008). Between the 1960s and mid-1980s it fluctuated between two and 2.4 due to changes in family policy (Wynnyczuk and Uzel 1999). Czechoslovakian married couples with children received the most generous social benefits behind the Iron Curtain: having children almost guaranteed getting an apartment, entitled parents for family and children allowances, and mothers for a one-year paid maternity leave (equal to 90% of woman's salary) and an earlier retirement. All in all, including all benefits and subsidies to nurseries and kindergartens, school meals, transportation children's clothing etc. the Czech Republic spent 10% of its budget in 1975 on population policy measures (Frejka 1980). As a result, Czechoslovakia had one of the lowest proportion of childless women and one of the highest percentage of ever married people: 95% in the Czech Republic in 1991 (Wynnyczuk and Uzel 1999). The cohort fertility did not change much, declining monotonously from around 2.2 in the 1920 cohort to two among

[3] Eastern Bloc refers to the following states: Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Romania, the Soviet Union. It does not include Yugoslavia, which belonged to the Non-Aligned Movement.

women born in 1960. Without the generous benefits and subsidies, however, it could have been lower (Frejka 1980).

In the sister-country, Slovakia, the responses to the pronatalist measures were similar, but the trend strength resembled much more the Polish one than the Czech: TFR declined from 3.6 in 1950 to 2.1 in 1989. After the Second World War, Slovakia, like Poland, was an agricultural country, with poorly educated[4], traditional and religious population (Wynnyczuk and Uzel 1999). In case of unwanted pregnancy, however, women in Slovakia resorted much more often to abortion than in Poland, though slightly less often than in the Czech Republic (Wynnyczuk and Uzel 1999). In both federation states and their northern neighbour abortion was legalised in 1956, but the difference has been especially pronounced only since the 1980s, when the Catholic Church in Poland was becoming more and more influential[5] (Titkow 1999); in 1988 in Czechoslovakia abortion before the 12th weeks of pregnancy became available on woman's written request, without having to get an approval from any committee or commission. Modern contraception was rarely used, but while it was rather easily obtainable in Czechoslovakia, Polish domestic production met only 2% of the demand (Okólski 1983).

Population policy measures in Poland were similar to those in Czechoslovakia, but they started to be introduced only in the late 1960s. Directly after the war the government followed pronatalist policy, but it was limited to propaganda slogans rather than real support as the country was economically too devastated to offer anything more. Between the mid-1950s and late 1960s the policy changed: in face of economic difficulties and high TFR (above 3.5), it encouraged couples to have smaller families. Afterwards, the government started to introduce pronatalist measures, but less generous than the Czechoslovakian ones. Backed up by the Catholic Church, they reached their peak in the early 1980s when the maternity leave was extended to 24 months (Titkow 1999). As a result, fertility went up from 2.3 in 1980 to 2.4 in 1983, but then it started to decline again, reaching around 2 in 1989 (Kotowska et al. 2008).

[4] In Poland, 23% of the 1931 population were illiterate. The educational, anti-illiteracy campaign organised by the government between 1949 and 1952 reduced this quota to 2.7% in 1960 (Łepkowski 1964, 1973)

[5] Since 1993 the access to abortion has been very restrictive. But even before the new law, in the late 1980s and early 1990s women found it increasingly difficult to obtain a legal termination of pregnancy (Titkow 1999).

Hungary, another rich in the Eastern Bloc, was unique in two ways. First, since 1980 fertility has remained below two despite an active family policy, which included various cash benefits, a two-year maternity leave and a childcare allowance enabling the mother to stay at home up to the child's third birthday. Second, it was the only country behind the Iron Curtain that declared effective contraceptive practice to be a matter of social policy (David 1999). Abortion became easily available in 1956, and then restricted in 1974, but still possible to obtain. Despite educational campaigns, an easy and cheap access to modern contraceptives, the abortion ratio remained high, going beyond 1,000 (per 1,000 births) in 1973 and then, until 1989, fluctuating between 500 and 700. On the other hand, according to surveys conducted in the 1970s nine in ten sexually active women under age 35 practiced some form of contraception. Almost half of them were taking pills and further almost 20% had an IUD or used condoms (David 1999). Such high numbers of practicing effective contraception were seen in no other country in CEE.

A policy opposite to the Hungarian was established in Romania. The maternity leaves were one of the shortest in CEE countries; the poorly educated population, urbanised and industrialised at high speed (Ronnås 1982), relied mostly on abortion as a contraceptive method (Muresan et al. 2008). In 1964, seven years after introducing the most liberal abortion law in Europe (1957), the number of legally terminated pregnancy was four times higher than the number of births. It corresponded to around 80% of conceptions having been terminated in abortion (Baban 1999). In view of these sky-rocketing numbers and falling fertility (TFR plummeted from 3.2 in 1950 to 1.9 in 1966), in 1966 the access to abortion became severely restricted[6], getting a divorce was made much more difficult and single persons and childless couples over age 25 were made pay a special tax. The abortion law was very strictly observed and interpreted, which together with a very restricted access to modern contraceptives led to an upsurge in fertility to 3.7 in 1967. Afterwards, it dropped, reaching around 2.7 in 1975 and continued to decline to about 2.3 in 1989. In 1990 the abortion law was liberalised (Baban 1999).

[6]It was restricted to women over 45 years old, those who already had at least four children, those whose life was endangered by pregnancy, those whose pregnancy was a result of crime (rape or incest) and those who were *physically, psychologically or emotionally incapacitated* (medical indications were enlisted in detail)

Finally, Croatia and Slovenia were the most developed and the richest federal states of the former Yugoslavia. Fertility was relatively low already in the 1950s (around 2.6) and since the late 1960s and early 1980s it has consistently remained below two in Croatia and Slovenia, respectively (David and Kapor-Stanulovic 1999). There were no pronatalist incentives similar to those in other parts of Central and Eastern Europe. Up to eight or twelve months after the child's birth (depending on the federal republic) mothers were entitled to a combination of maternity leave and part-time job. Since 1960 abortion has been easily available and until the mid-1980 it was also widely practiced (around 700 and 800 abortions per 1,000 birth in 1985 in Slovenia and Croatia, respectively). Since then the abortion ratio has continuously declined. Since 1969 modern contraceptives have been becoming more and more readily available, yet still, according to a 1970 survey, only half of married women practiced contraception, out of which almost 70% relied on withdrawal (David and Kapor-Stanulovic 1999).

3 Data

I use data on cohort completed fertility by level of education from population censuses and one large-scale survey in the following countries: the Czech Republic (1991, 2001), Croatia (2001), Hungary (1990, 2001), Poland (Fertility Survey that accompanied the 2002 census), Romania (1992, 2002), Slovakia (2001) and Slovenia (2002). Data for Hungary, Romania and Slovenia come from IPUMS International and are 5% (Hungary) and 10% (Romania and Slovenia) census samples (Minnesota Population Center 2013[7]). For data coming from more than one census I have computed an arithmetic mean. I include in the analysis women aged between 40 and 76 at the time of the census. Thus, I study the completed fertility of women, whose whole or main part of the reproductive careers took place in the times of state-socialism. I conduct all analyses on five-year cohorts, starting with the 1916-20 one and ending with the 1956-60 one[8]. I carry out the analyses using four educational categories, which correspond to the following ISCED-1997 levels: primary and lower (ISCED 0, 1 and 2), basic vocational (ISCED 3C), secondary (ISCED 3AB and 4) and tertiary (ISCED 5 and 6). In

[7] Data originally produced by: Hungarian Central Statistical Office, Romanian National Institute of Statistics, Statistical Office of the Republic of Slovenia.

[8] The Slovenian cohorts are in fact shifted by one year, starting from 1917-21 and finishing with 1957-61, as age is given in the data as five-year groups. Thus, one is limited in constructing cohorts by the year of the census (2002).

Hungary, the basic vocational category emerges only among women born after 1940, but for the sake of comparability with other countries I have kept the four category classification. The reason why I have conducted analyses using four educational categories, and not three as it usually done in comparative studies, is that in state socialism the difference between basic vocational and secondary education was quite important, corresponding to that between the blue- and white-collar workers. The graphs plotted below show clearly that these two groups differed significantly in terms of their demographic behaviour.

I excluded from the analyses cases of unknown education. For exact sample sizes and missing cases please consult Table 1 in Appendix.

4 Methods

First, I employ the decomposition analysis drawing on Kitagawa's (Kitagawa 1955) and Cho's and Retherford's (Canudas Romo 2003) work. I decompose fertility changes into structural (1a) and direct (1b) effects.

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

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

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

In order to assess the effect of parity changes (including childlessness), the direct effect (1b) can be further decomposed into two components measuring the effect of standardised mother's fertility by parity (3a) and standardised childlessness (3b):

$$\sum_i [\sum_j [\frac{\omega(t+h)_i + \omega(t)_i}{2} * \left(MCFR(t+h)_{ji} - MCFR(t)_{ji}\right) * \frac{p(t+h)_i + p(t)_i}{2}] \quad (3)$$

$$+ \sum_j \left[\frac{\omega(t+h)_i + \omega(t)_i}{2} * (p(t+h)_i - p(t)_i) * \frac{MCFR(t+h)_i + MCFR(t)_i}{2}\right]]$$

$$= \sum_j \sum_i \left[\left(MCFR(t+h)_{ji} - MCFR(t)_{ji}\right) * \frac{\omega(t+h)_i + \omega(t)_i}{2} * \frac{p(t+h)_i + p(t)_i}{2}\right] \quad (3a)$$

$$+ \sum_i \sum_j \left[(p(t+h)_i - p(t)_i) * \frac{\omega(t+h)_i + \omega(t)_i}{2} * \frac{MCFR(t+h)_i + MCFR(t)_i}{2}\right] \quad (3b)$$

where: $MCFR(t)_{ji}$ and $MCFR(t+h)_{ji}$ denote mother's completed fertility rate of parity j in educational group i at time t and $t+h$, respectively, and $p(t)_i$ and $p(t+h)_i$ denote the proportion of childless women in educational group i at time t and $t+h$, respectively.

In all decomposition analyses I use the first cohorts, for which data are available, as a reference. Thus, t is constant.

Complementary, I use direct and indirect standardisation to develop different fertility scenarios. The fixed-education scenario is a directly standardised CFR computed as follows:

$$CFR_{edu\ const}(t+h) = \sum_i [\omega(t)_i * CFR(t+h)_i] \quad (4)$$

Classic indirect standardisation (i.e. fixed-fertility rates scenario) is calculated as:

$$CFR_{fert\ const}(t+h) = \sum_i [\omega(t+h)_i * CFR(t)_i] \quad (5)$$

Noticing that

$$CFR(t+h) = (1-p) * MCFR \quad (6)$$

formula (5) can be easily transformed into a scenario of fixed childlessness (Equation 7) and of fixed mothers' fertility (Equation 8):

$$CFR_{childless\ const}(t+h) = \sum_i [\omega(t+h)_i * (1-p(t)_i) * MCFR(t+h)_i] \quad (7)$$

$$CFR_{mother\ fert.\ const}(t+h) = \sum_i [\omega(t+h)_i * (1-p(t+h)_i) * MCFR(t)_i] \quad (8)$$

Finally, in order to assess the importance of changes in high parity births one can imagine fertility scenario of fixed conditional CFR among women who have at least three children. This conditional CFR tells us how many children an average mother of at least three children had, and is defined as:

$$CondCFR3+ = \frac{C-(C_1+C_2)}{F-(F_0+F_1+F_2)} = \frac{C_{3+}}{F_{3+}} \quad (9)$$

where C denotes the number of all children, C_1 and C_2 stand for the number of children of birth order one and two, respectively; F is the number of women, F_0 , F_1 , F_2 denote the number of women with zero, one and two children, respectively. CFR can be then defined as:

$$CFR\ = (1-p) * (MCFR1 + MCFR2 + m_3 * CondCFR3+)\ , \quad (10)$$

where $MCFR1$and $MCFR2$ denote mothers' CFR of parity one and two, respectively, and m_3 is the proportion of women with exactly three children.

Thus, the respective standardised fertility scenario has been computed in the following way:

$$CFR_{conditional\ CFR3+\ const}(t+h)\ = \tag{11}$$

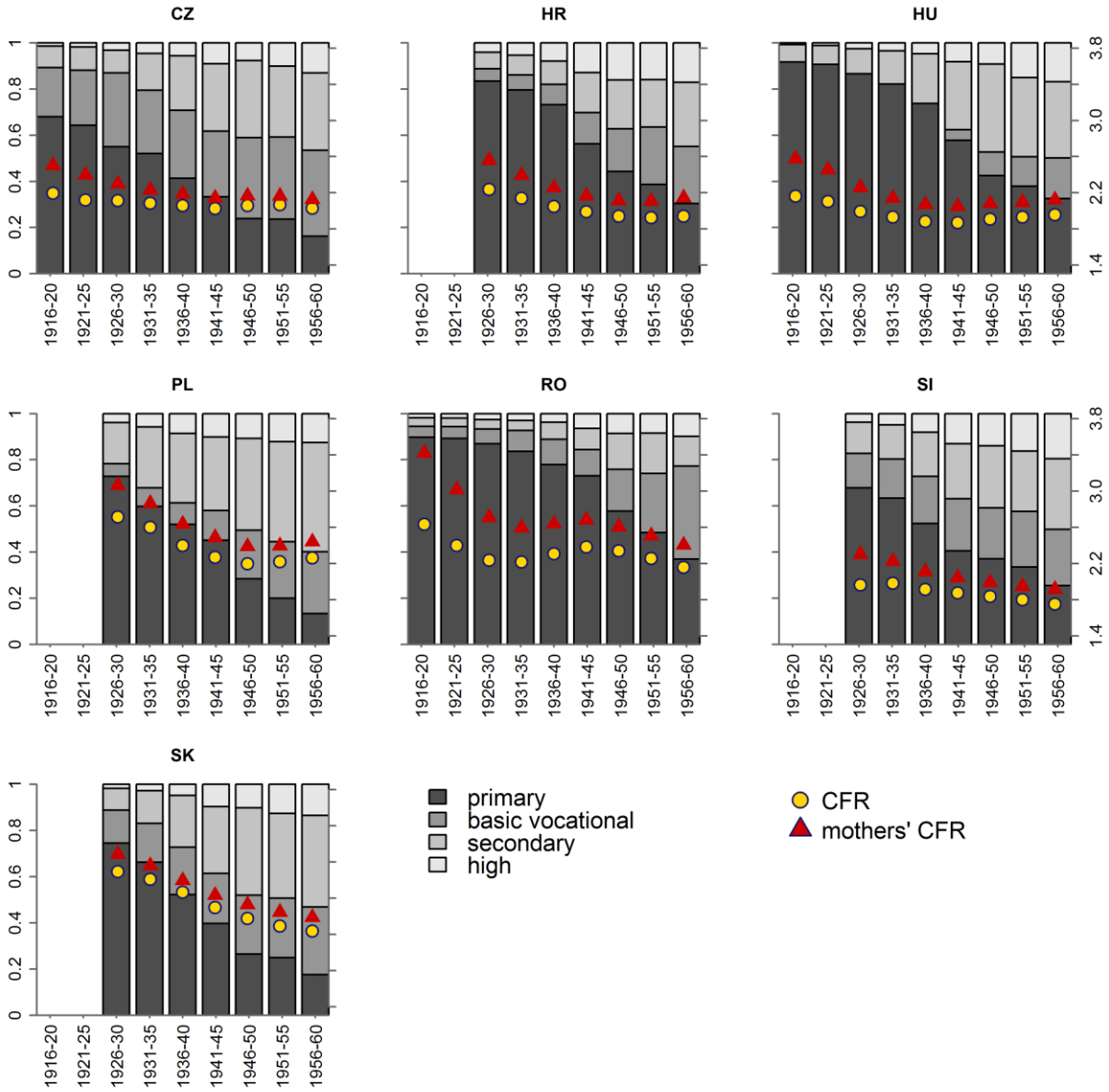
$$\left[\sum_i \begin{matrix}\omega(t+h)_i * (1-p(t+h)_i) * \\ (MCFR1(t+h)_i + MCFR1(t+h)_i + m(t+h)_{3i} * CondCFR3 + (t)_i)\end{matrix}\right]$$

5 Results

5.1 Educational expansion and completed fertility

Figure 1 shows that all countries experienced a continued expansion of female educational attainment. In the youngest cohorts, women with primary education constituted one-third to one-half of what they did in the oldest cohorts. While eight in ten women born between 1916 and 1930 in Croatia, Hungary and Romania had primary education, their share among those born in the 1950s plummeted to less than 40%; in the Czech Republic, Poland and Slovakia it fell below 20%. By the 1946-50 cohort more than half of the female population had at least basic vocational education (except for Romania where this proportion was achieved one five-year cohort later). In most countries it was secondary education that expanded most, becoming the modal education in the youngest cohorts, but in the Czech Republic and Romania the basic vocational education advanced more. With time, the exclusiveness of university education weakened, but it still covered less than one-fifth of the population.

Figure 1 Educational structure (left-hand axis), CFR and CFR of mothers (right-hand axis), by cohort and country



Generally, completed fertility tended to decline together with the share of the least educated: in the Czech Republic, Slovenia and Slovakia the average number of children a woman gave birth to decreased monotonously. However, in Hungary and Poland it started to rise in the last four and two cohorts, respectively, followed by the youngest cohort in Croatia, while the group of the least educated carried on to shrink. In the Czech Republic the minor fertility reduction did not reflect the extensive changes in the educational structure. Romania showed its own unique pattern: fertility went down among women born between 1916-20 and 1926-30, then went up to the 1941-45 cohort and started to decrease again in the younger cohorts.

In all countries except for Slovakia, the difference between CFR and mothers' CFR diminished with time, which reflects the falling proportion of childless women (most spectacularly in Romania). While in the oldest cohorts CFR constituted between 77% (Romania) and 93% (Slovakia) of mothers' CFR, in the youngest cohorts this ratio reached between 90% (Romania) and 95% (the Czech Republic). Thus, the proportion of childless women converged with time across the countries: the difference between the extremes shrank from 11 in the 1926-30 cohort to less than four percentage points in the youngest cohort (1956-60).

5.2 Changes in fertility: structural and direct effects

Figure 2 shows how growing educational attainment (structural effects) and changes in fertility within the educational groups (direct effects) affected cohort fertility. In all countries, increasing school enrolment pushed fertility substantially down. Usually, it far exceeded the role of the direct effects, which did not exhibit any clear pattern. In some countries fertility within educational groups seems to have been falling in the older cohorts and going up in the younger ones (Croatia, the Czech Republic, Hungary, Romania), in other countries the opposite took place (Slovenia). In Poland it first grew, then decreased and then rose again, while in Slovakia it shrank continuously.

In Hungary and Romania sharp declines in completed fertility of women born between 1916 and 1930-35 were driven mostly by fertility reductions within educational groups: these were the only two cases of the direct effect exceeding the structural one. However, when one decomposes the direct effects, it is obvious that their overall modest role is spurious (Figure 3). In fact, they played very important role, but counterbalanced each other. On the one hand, the declining fertility of high parities (MCFR_4+) consistently suppressed fertility, on the other hand the falling proportion of childless women (childlessness) and the growing share of mothers of two children (MCFR_2) pushed it in the opposite direction. Changes in the proportion of mothers with one child had a small, usually negative effect, and of those with exactly three children fluctuated: over cohorts, it shrank a bit in Hungary and Slovenia, and rose slightly in Croatia, the Czech Republic, Romania and, most visibly, in Slovakia. Thus, the proportion of mothers of one and three children changed only little: the former tended to decline, and the latter decreased in Hungary and Slovenia, and went up in other countries.

Figure 2 CFR (right-hand axis) and direct and structural effects of changes in CFR (left-hand axis), by cohort and country.

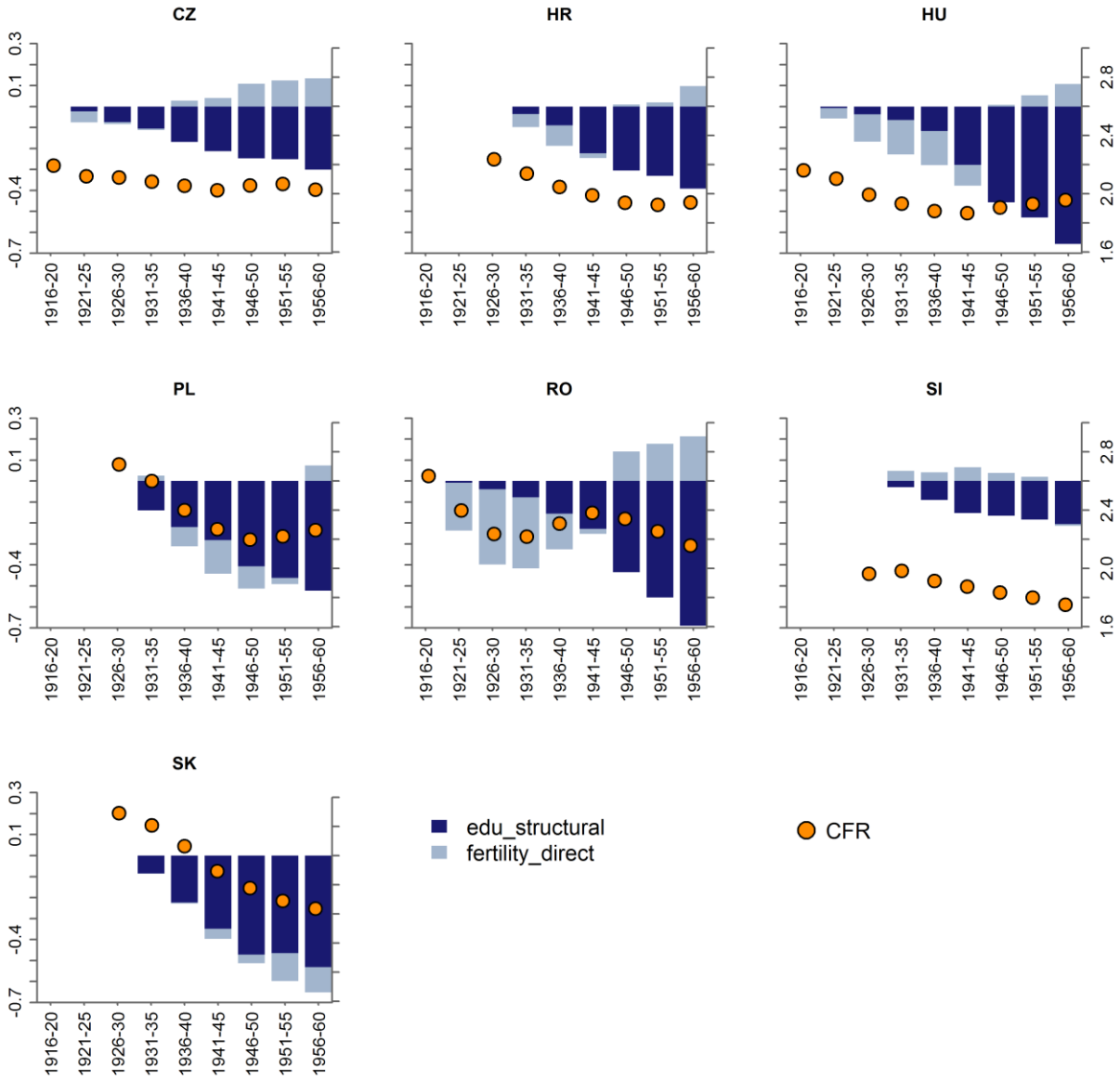
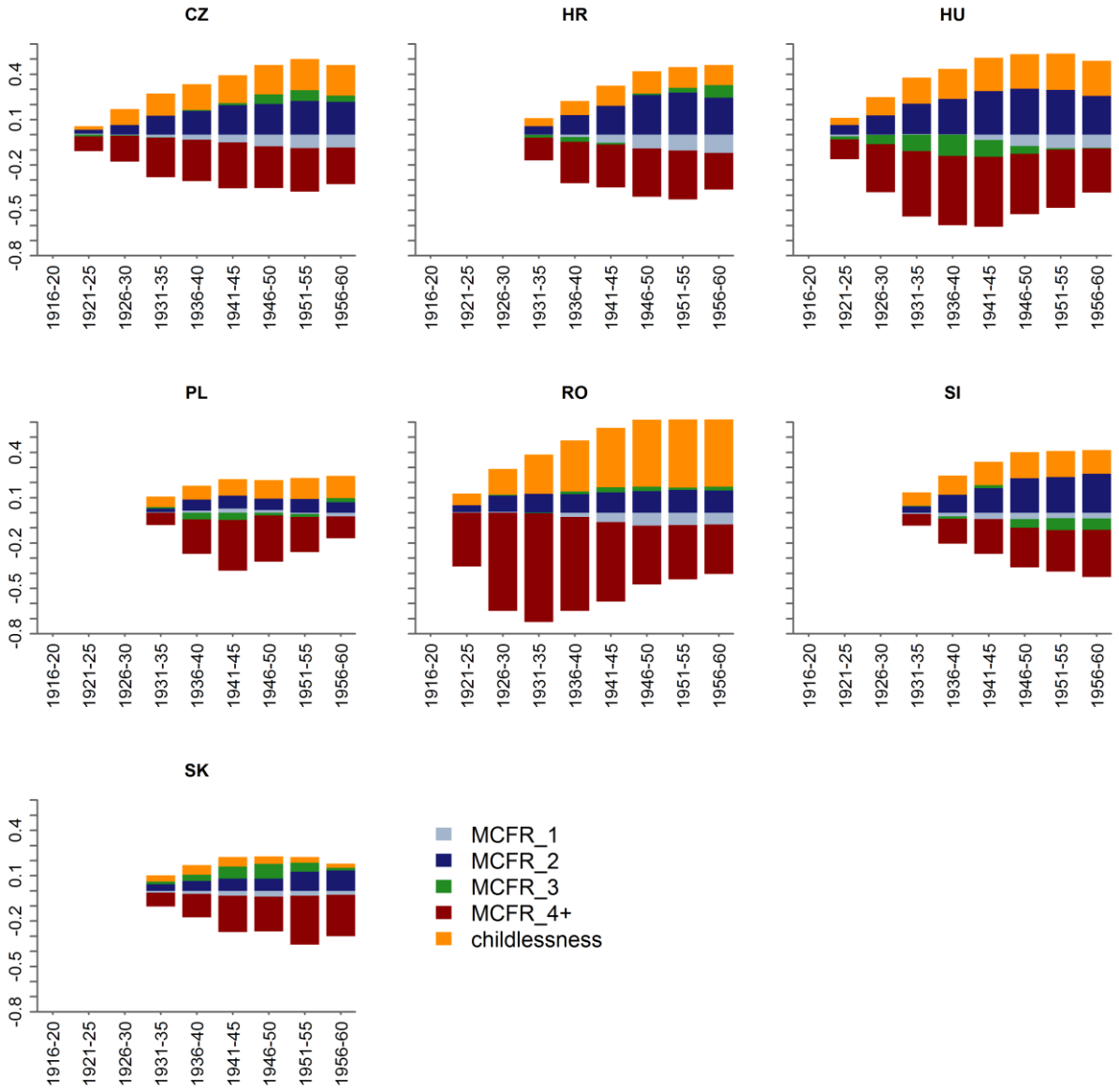


Figure 3 Direct effect decomposed into the effects of childlessness and mothers' parity-specific completed fertility, by cohort and country

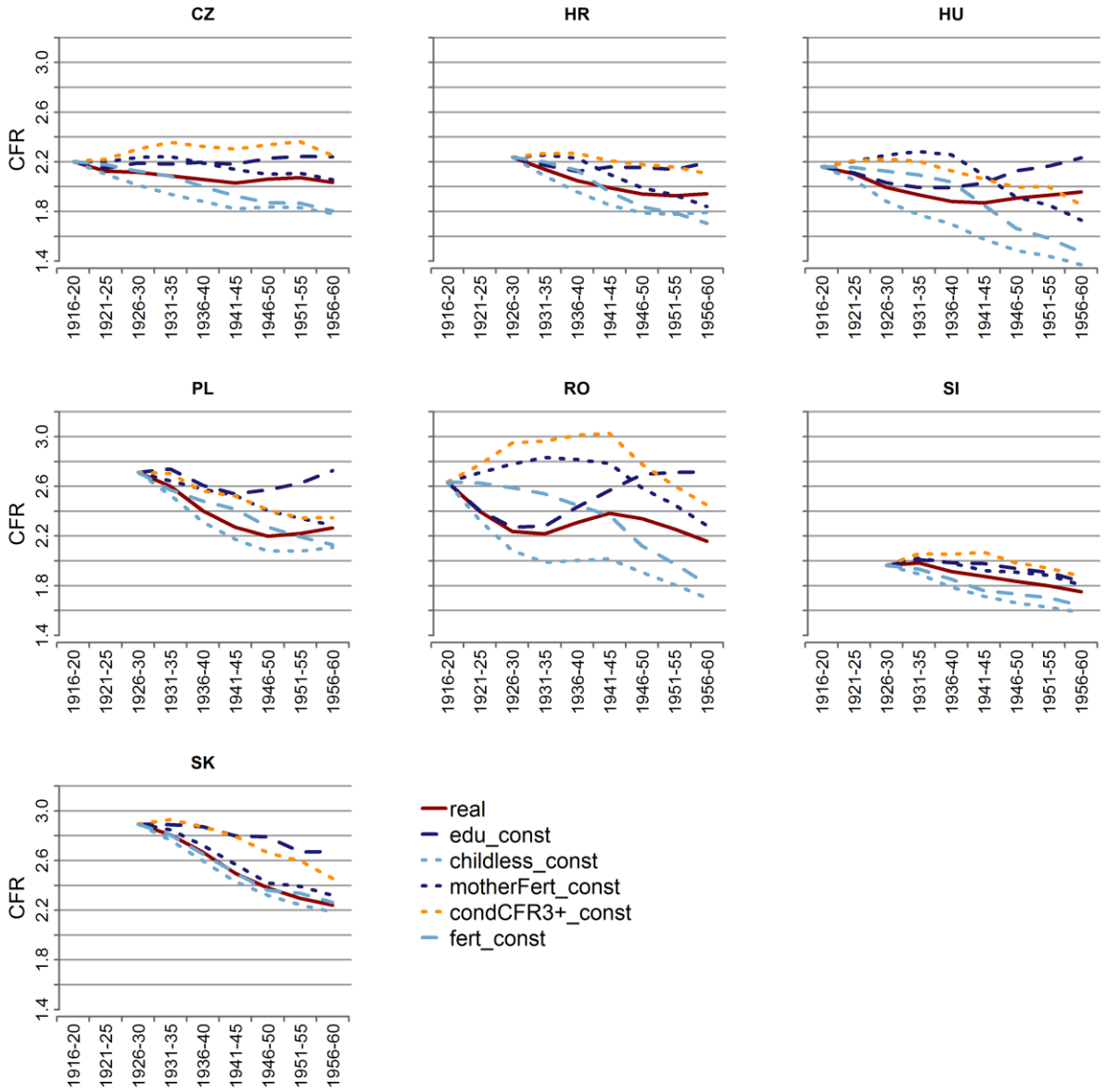


5.3 Scenarios of completed fertility

Translating the decomposition effects into direct and indirect standardisation gives various hypothetical completed fertility scenarios. As mentioned above, among women born between 1916 and 1960 fertility declined in all countries (though not everywhere the fall was monotonous). How would have fertility evolved when some of its components had not changed? In all countries, the growing educational attainment pushed fertility down, but its significance varied greatly (Figure 4). In Poland, Slovakia and Romania an average woman born in the late 1950s would have had over 0.4-0.5 children more if the educational structure had been the same as in the oldest cohorts. In contrast, it would have had only

moderate effect in the rest of the countries. In the fixed childlessness scenario (childless_const), fertility would have been lower in the youngest cohorts by approximately 0.15-0.2 in Croatia, the Czech Republic, Poland and Slovenia, by 0.5 in Romania and by 0.6 in Hungary. As expected, it would have had no effect in Slovakia, where the proportion of childless women changed very little over cohorts.

Figure 4 Fertility scenarios by cohort and country



Except for Hungary, reductions in high parity births (i.e. fertility rate of those having at least three children, condCFR3+_const) played a more important role in fertility decline than reductions in mothers' fertility rate (motherFert_const): had condCFR3+ remained at the levels of the oldest cohorts, an average woman in the last cohorts would have had almost

0.2 children more. In all countries the gap between the real and this hypothetical fertility was narrowing in the youngest cohorts, which indicates that high parity births started to rise again. Keeping mothers' fertility constant in Hungary, Poland and Romania would have resulted in similar trends to those observed in the condCFR3+_const scenario, but in other countries it brought about different developments. In Slovakia and Slovenia fertility in this scenario very much resembled the real CFR, as it did in the Czech Republic starting from the 1946-50 cohort. In Croatia, it rose for the first two cohorts, and then started to drop, going below the real CFR in the second youngest cohort. Thus, within the educational groups, mothers born in the 1950s had on average more children than those born before the Second World War (this conclusion refers also to Hungary).

Finally, the classic indirect standardisation, i.e. keeping the education-specific fertility rates fixed at the level of the oldest cohorts (fert_const), results in figures usually below the real CFR. In Slovenia the gap is very small, and in Slovakia it is non-existent, but in Croatia and the Czech Republic it amounts to 0.2 children per women in the youngest cohorts. In Hungary and Romania the real CFR among women born in the late 1950s was around 0.4 higher than the standardised one, but up to the 1941-45 cohort the difference was actually negative. Thus, up to that cohort the fertility rates kept declining and only then they started to increase. A similar development, but much slower, was observed in Poland.

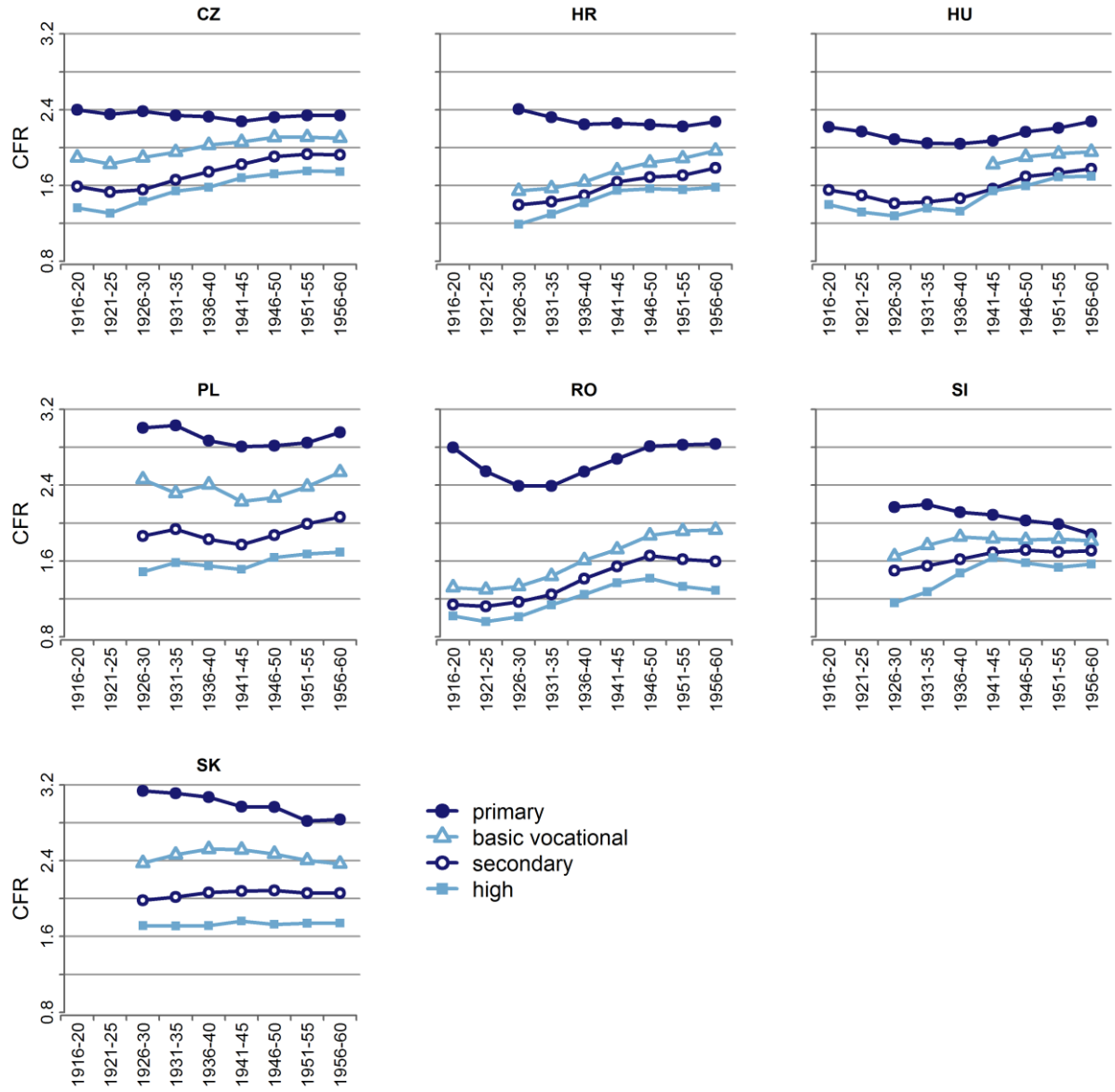
5.4 Trends in completed fertility by education

All countries exhibited a negative educational gradient in completed fertility and a positive one in childlessness. Figure 5 shows that we can distinguish three patterns of educational differences in fertility: convergence, stability and divergence. Convergence took place if fertility among the least educated fell (Slovenia and Slovakia) or remained stable (Croatia and the Czech Republic), while in the other educational groups it increased (Croatia, the Czech Republic and Slovenia) or did not change much (Slovakia). Convergence was mostly visible in Slovenia, where the CFR difference between the least and the highest educated dropped to 0.3 in the youngest cohort. In contrast, in Slovakia the curves narrowed only a little and were still very education specific, varying by 1.1 between those with primary and tertiary education.

Both in Poland and Hungary the educational differences in fertility remained stable over time, but they very much varied in sharpness: while they were moderate in Hungary (and similar in magnitude to those observed in the Czech Republic and Croatia in the last cohorts), they stayed huge in Poland, exceeding those seen in Slovakia and reaching almost 1.3 between the extremes. It is also fair to point out that the rise in fertility seen in Hungary among the least educated born after 1940 was probably driven by the emergence of an additional category: basic vocational education. The group with primary education became more selective.

Finally, since the 1946-50 cohort Romania had exhibited the divergence pattern. The educational differences in completed fertility increased not only between the least and the highest educated, but also between those with basic vocational, secondary and tertiary education. Among all women fertility increased between the 1926-30 and 1946-50 cohorts. Afterwards, it continued to rise among those with basic vocational education, levelled off among the least educated and dropped among the two best educated groups. In the youngest cohort the least educated had on average over 1.5 children more than those with university education.

Figure 5 CFR by education, country and cohort

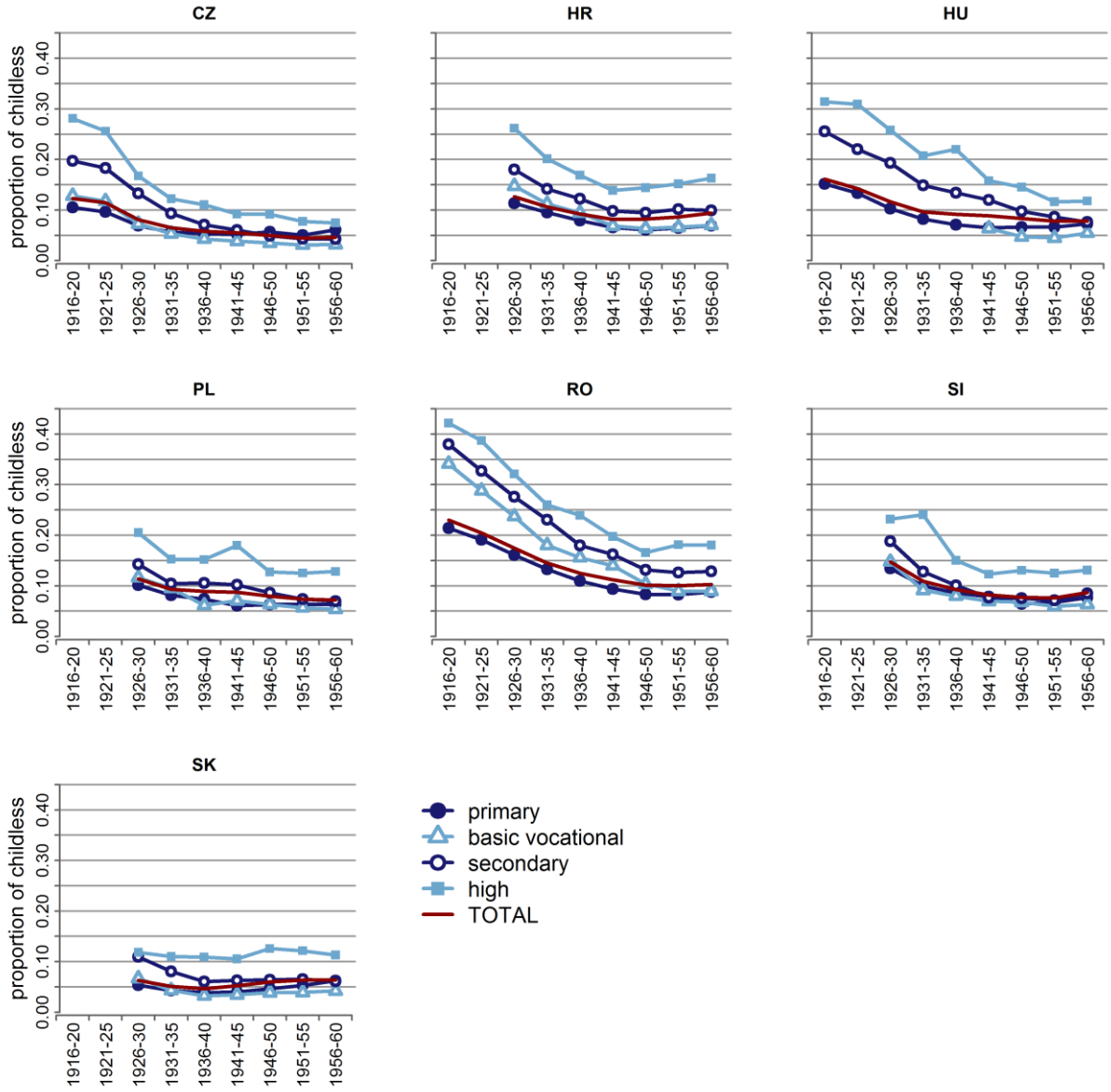


In contrast to completed fertility, the trends in childlessness were very similar in all countries and in all educational groups (see Figure 6). Overall, the proportion of ultimately childless women declined with time, converging both across countries and education. While among women born between 1916 and 1920 the spread of childlessness varied from 12% (the Czech Republic) to 23% (Romania), among those born 40 years later the variation dropped to 5.5 percentage points (between 4.5% in the Czech Republic and 10% in Romania). The educational differences did not vanish, but they very much faded with time. For the youngest cohorts in most countries a clear distinction was visible only between the highly

educated and the rest, with an average difference between these two groups of six percentage points (varying between three in the Czech Republic and eight in Croatia).

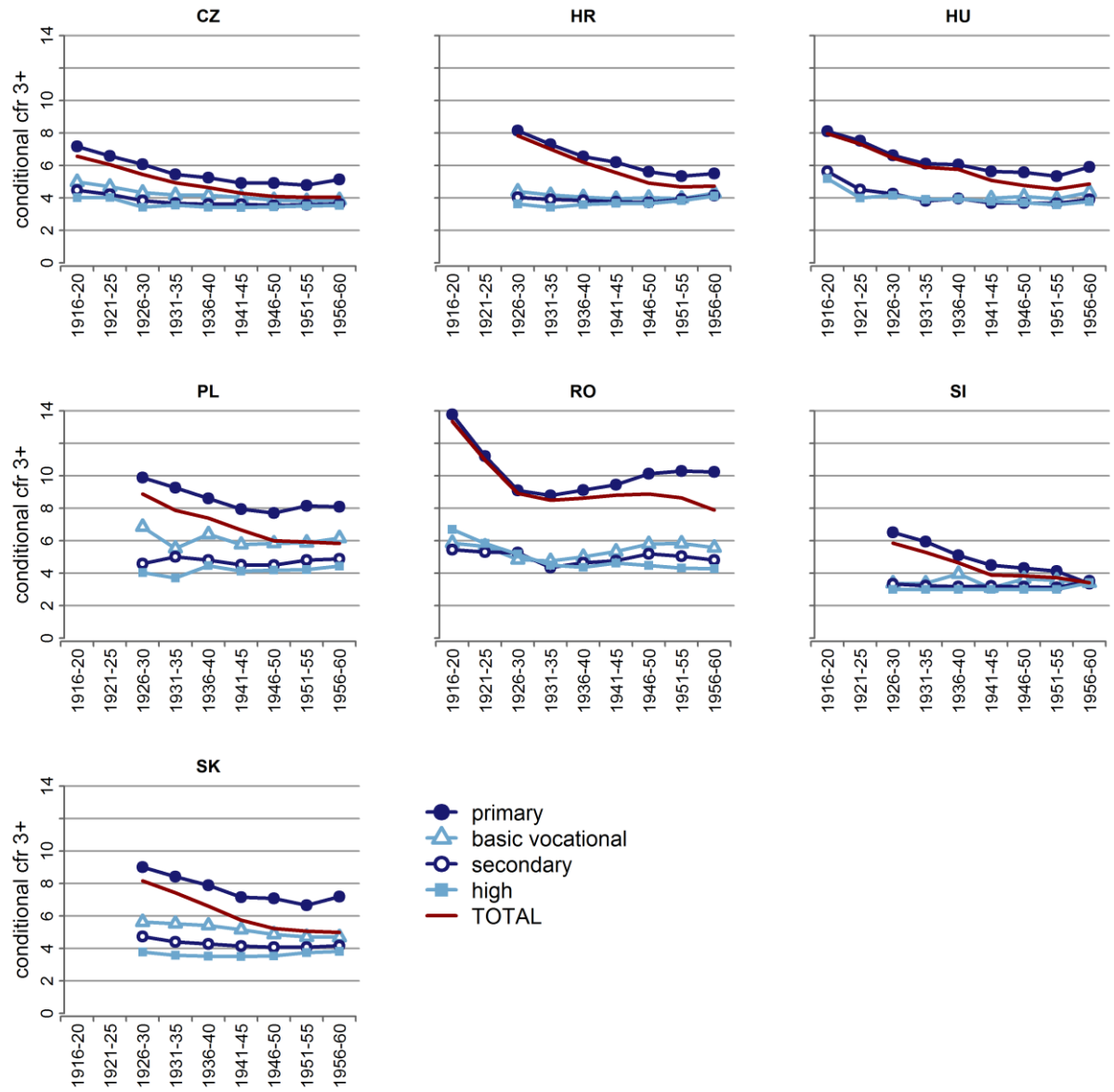
The decrease was fastest in the older cohorts; in the younger cohorts it slowed down (the Czech Republic, and Hungary), stabilised (Poland and Romania) or even turned into an increase (Croatia and Slovenia). In most countries, the turning point were the cohorts 1941-45 and 1946-50. Only in Slovakia, where the proportion of ultimately childless women had been already very low in the oldest cohorts, it remained rather stable, going slightly up only among highly educated women born after 1945.

Figure 6 Proportion of ultimately childless women by education, country and cohort



When looking at high parities, they were clearly on decrease in all countries (Figure 7). The average number of children among women with at least three children already, fell on average from around eight in the oldest cohorts to around 4.5 in the youngest ones. The highest figures were observed for Romania, starting with over 13 and sinking to almost eight. The forerunner of the dominance of low parity births was Slovenia, for which the conditional CFR 3+ not only diminished (from 5.85 among women born in 1926-30 to 3.4 among those born 30 years later), but also fully converged across the educational groups. In all countries the negative educational gradient became weaker with time, in Poland, Romania and Slovakia, however, the educational differences remained huge, varying between seven-ten and four children among the least and the highest educated, respectively. Throughout the cohorts in all countries the most distinctive group were the least educated. The gap between them and all the others narrowed with time, but among women born between 1956 and 1960 having at least three children they still had on average three children more than the better educated (1.5-2 in Croatia, the Czech Republic and Hungary, 3 in Poland and Slovakia and 5 in Romania). All in all, the decline of high parity births was driven by decreases among the least educated and by changing educational structure.

Figure 7 Average number of children per woman who had at least three children (conditional CFR 3+), by education, cohort and country



6 Conclusions

Despite the usual practice of treating the socialist countries *en bloc*, and despite their similar political and economic system, there does not seem to have existed one "socialist" fertility pattern. The general trends appear to have corresponded to those in the West: fertility declined, which, to a certain extent, was driven by growing educational attainment among women and falling high-parity births; two became the modal children number in the family (for CEE, see Figure 8 in Appendix). Thus, one should see the quantitative changes in fertility, which took place in the second half of the 20th century, as common to the whole

industrialised Europe rather than as specific to market democracy and state socialism (Monnier and Rychtarikova 1992). When inspecting the trends more closely, there does show up one 'socialist' peculiarity: the very low levels of childlessness.

While in Western Europe the proportion of childless women was usually on the increase, behind the Iron Curtain it kept shrinking over cohorts. This opposite trend was most probably strongly connected to social policy adopted under state socialism, which greatly encouraged married couples to procreate. Having children made it easier to get a flat (sometimes it was a precondition, in fact), parents were getting generous allowances (the Czech Republic, Slovenia); sometimes singles or childless couples had to pay extra taxes (Romania). Beside these pronatalist policy measures, modern contraceptives were very difficult to obtain (or even banned as in Romania), and when trying to avoid pregnancy, most people relied on highly inefficient *coitus interruptus*. In case of an unwanted pregnancy, women could resort to abortion since late 1950s (except for Romania where it was very restricted for most of the time). However, although it was a socially accepted means of contraception, for some women it did pose a moral problem. The official and sometimes humiliating procedure of getting a permission to have an abortion may have also acted as a deterrent. Thus, women who were undecided or not determined enough to terminate their pregnancy, most probably would have carried it term, even if it was unplanned or unwanted.

Except for economic and technical reasons for the shrinking share of childless women one can also point out motives related to social pressure and opportunity costs. Being parents constituted a standard biography of grown-up people in state socialism. It was socially expected that one finishes his or her education, finds a job, gets married and has children (Sobotka 2004 chap.8). Following such a trajectory was made easier by the lack of opportunity costs. There were hardly any career opportunities that would collide with family life, especially for women. They usually occupied lower position than men, working as factory or agricultural workers or low- and mid-ranked office clerks. Their posts rarely depended on their skills or devotion to work. Thus, one did not have to choose between promotion and having children.

Furthermore, one should not forget the importance of family under state socialism. In a non-democratic system full of secret service collaborators, family provided a sphere of freedom, as sort of *refuge* (Vaskovics and Andorka 1997, Sobotka 2004 chap.8).

Despite some reductions in mothers' fertility in the older cohorts (especially in high-parity births), in all analysed countries fertility rates within the educational groups tended to rise (mostly in the younger cohorts). Thus, the results do not seem to support some authors' claim that the pronatalist policy measures adopted under state socialism resulted only in tempo effects but not in quantum changes (Frejka 1980, Spéder and Kamarás 2008). The rises in completed fertility in the younger cohorts (net of educational changes) coincide with implementing pronatalist solutions, but their positive effect was cancelled out by growing educational attainment, which consistently pushed fertility down.

It might seem surprising that in countries led by communists fertility exhibited strong negative educational gradient. Communists took power calling not only for social equality, but also for empowerment of workers and farmers. Yet, the educational differences seen in most countries (except for Slovenia in the youngest cohorts) are not smaller than those in Western Europe (Neels and De Wachter 2010, Sigle-Rushton 2008, Andersson et al. 2009, Prskawetz et al. 2008). Why did they not vanish in the course of time? As explained above, opportunity costs could have not been the reason, because they were hardly existent. However, although among ordinary people financial differences were very moderate, they were profound and persistent in social terms: household studies found significant variation in household equipment and arrangement across social strata (Andorka 1995). Lifestyle differed considerably across social strata, especially the one led by highly educated people was distinctive (Domański 2004, Giza-Poleszczuk 2007, Szacka 2008). Against the official ideology and policy, they embodied Becker's theory of raising children of high quality (Becker 1991), which, considering the low earnings, made it very difficult to have many children and lead to a quantity–quality trade-off. Besides, better educated women tended to use modern contraceptives more often (David 1999, David and Kapor-Stanulovic 1999), and, as the Romanian case shows, they either knew better how to employ the natural methods of birth control more effectively or were able to get contraceptives on the black market or from abroad.

It is difficult to make direct comparisons, but it is possible that changes in the educational structure played a more important role in fertility decline behind the Iron Curtain than in the West. When looking at cohort fertility by education in the European market economies, the trends within the educational groups are usually similar to those observed at the general level (Andersson et al. 2009, Neels and De Wachter 2010), while in the CEE countries declines in fertility frequently took place when fertility within the educational groups remained stable or went up slightly.

While the fertility trends were similar, their strength differed enormously. When trying to detect some clusters, three groups seem to emerge. They seem to follow one rule: the higher fertility in the oldest cohorts and the steeper its decline across cohorts, the bigger the educational differences in fertility and the stronger the effect of changing educational structure on CFR. The first and biggest country group contains Croatia, the Czech Republic, Hungary and Slovenia. In these countries fertility was already relative low in the oldest cohorts (around or below 2.2) and it fell moderately to around 1.9 (2.1 in the Czech Republic and 1.8 in Slovenia) despite profound changes in the educational structure. The educational gradient in fertility was weaker than in the rest of the countries and it was diminishing with time. The second group consists of Poland and Slovakia, where both the decline and the educational gradient in fertility were very steep, while decreases in the proportion of childless women were small. The fact that the Czech Republic and Slovakia belong two so different groups might be surprising as until 1993 these two countries formed one federal state and carried out the same policy. This is an interesting example of how the initial population structure and culture affect responses to the same policy measures. Finally, the last group comprise of one country: Romania. Its fertility development reflects the drastic policy measures imposed by Nicolae Ceaușescu in the mid-1960s. In the older cohorts, among women born before the mid-1930s, completed fertility was going down. This was mostly driven by very strong reductions in high parity births (net of educational changes). Then, within the educational groups women born after 1935 tended to have more and more children (while fewer and fewer women remained childless), but on the population level completed fertility increased only in the 1936-45 cohorts; afterwards, the rapid rise in educational attainment made it fall. Throughout the cohorts the educational gradient in completed fertility (high parities) remained very strongly negative.

In sum, the developments in completed fertility of women born between 1916 and 1960 were similar at both sides of the Iron Curtain. A specific "socialist" fertility trend does not seem to have existed with one exception: the proportion childless women kept shrinking (while it expanded in the West). The extent of fertility changes varied considerably across the CEE countries under state socialism, as did the role of structural and direct components.

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9 Appendix

Table 1 Full sample sizes and cases excluded from the datasets

	CZ 1991		CZ 2001		HR 2001	
cohort	All	Excluded	All	Excluded	All	Excluded
1916-20	156199	2680				
1921-25	293274	4687				
1926-30	293027	4334	241144	2529	241144	2529
1931-35	273845	3613	244529	2151	244529	2151
1936-40	268442	2563	252043	1964	252043	1964
1941-45	341712	2785	328869	2584	328869	2584
1946-50	420044	3164	411458	3310	411458	3310
1951-55			396786	3445	396786	3445
1956-60			336903	3225	336903	3225

	HU 1990		HU 2001		PL 2002	
cohort	All	Excluded	All	Excluded	All	Excluded
1916-20	9467	0				
1921-25	15605	0				
1926-30	16394	0	13297	0	13625	28
1931-35	16299	0	14248	0	15841	26
1936-40	16232	0	15338	0	15622	20
1941-45	17280	0	16436	0	13894	12
1946-50	14765	0	18639	0	22209	28
1951-55			21201	0	26032	30
1956-60			18010	0	25805	36

	RO 1992		RO 2002		SI 2002		SK 2001	
cohort	All	Excluded	All	Excluded	All	Excluded	All	Excluded
1916-20	28277	0						
1921-25	54382	0						
1926-30	63209	0	48452	0	4414	0	105284	1839
1931-35	68586	0	57651	0	4776	0	115573	1862
1936-40	71558	0	64272	0	4918	0	121089	1859
1941-45	58080	0	54110	0	4913	0	136579	1986
1946-50	73290	0	68847	0	6299	0	172651	2286
1951-55			79597	0	6791	0	206714	2931
1956-60			76823	0	6726	0	200308	2953

Figure 8 Proportion of mothers with two children