Women's Education and Cohort Fertility during the Baby Boom

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Abstract

While today, women exceed men in terms of participation in advanced education, female enrollment rates beyond primary education were still very low in the first half of the 20th century. In many Western countries, this started to change around mid-century, with the proportion of women obtaining a degree in secondary education and beyond increasing steadily. The expected implication of rising female education was fertility decline and the postponement of motherhood. Yet, many countries experienced declining ages at first birth and increasing total fertility instead. How can we reconcile these fertility trends with women's increasing participation in education? Using census and large survey data for the USA and fourteen European countries, this paper analyzes trends in cohort fertility underlying the Baby Boom and how they relate to women's educational attainment. The focus is on quantum components of cohort fertility and parity progression, and their association with the age at first childbearing. We find that progression to higher parities continued to decline in all countries, in line with fertility transition trends that started back in the nineteenth century. However, in countries experiencing a Baby Boom, this was more than compensated by decreasing childlessness and parity progression after the first child, particularly among women with education beyond the primary level. As a result, the proportions having exactly two children went up steadily in all countries and all educational groups.

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1. Introduction

The expansion of education plays a crucial role in the multifaceted connection between population and development (Lutz et al. 2008). Educational expansion in general, and women's growing participation in education in particular, is a critical factor in worldwide demographic transition. Education speeds up the decline of infant and child mortality and it motivates and facilitates effective fertility control (Caldwell 1980; Hobcraft 1993; Axinn and Barber 2001). There are multiplier effects, since both processes are mutually reinforcing, with fertility limitation advancing child survival, and improved child survival stimulating fertility limitation (Drèze and Murthi 2001; Basu 2002; James et al. 2012; Smith-Greenaway 2013; Van Bavel 2013). Particularly education beyond the primary level has these effects on population and development (Cohen 2008).

In Europe and North America, the process of educational expansion beyond the primary level accelerated in the period following the Second World War, with growing proportions of not just men but also women completing secondary and higher levels of education (Boli et al. 1985; Aldcroft 1998; Schofer and Meyer 2005). While this process was taking off, the demographic transition had already proceeded a long way in many of these countries. In fact, after the First World War, a number of them had entered an era of below-replacement fertility, inciting concerns about population ageing and decline (Teitelbaum and Winter 1985). In the 1920s and 1930s, population experts were expecting that below-replacement fertility was there to stay, and some even envisaged its further decline. There was a range of reasons for that expectation, but one of them was “female emancipation”, encompassing the expansion of female participation in education (Van Bavel 2010). Indeed, the expected result of rising female participation in advanced education would have been further fertility decline and the postponement of maternity. What happened in many

countries, in fact, was a revival of fertility and a shift towards younger childbearing ages that produced what is now generally known as the Baby Boom (BB).[1]

The shift towards more universal marriage and family formation at younger age, as observed during the BB period, was in line with a longer trend that was emerging in a growing number of countries since the nineteenth century, namely the weakening of the old Malthusian, European marriage pattern (i.e., large proportions of women never marrying and a high age at marriage, see Hajnal 1965; Alter 1991; Watkins 1986). Even if the Great Depression implied reduced marriage rates for a number of years in many countries, the subsequent marriage boom (Hajnal 1953) was not running against a larger, secular tide. Rather, it was an acceleration of an ongoing trend: if anything, nuptiality had been on the rise in many European countries west of the Hajnal line already since the second half of the nineteenth century (exceptions are Spain, Italy, Ireland, and Finland; Coale & Treadway 1986). Nuptiality tended to increase only gradually until 1930, before speeding up during the marriage and Baby Boom (Hajnal 1953, Watkins 1986).

Even if there is no conclusive, generally accepted explanation for the marriage boom and the shift towards earlier childbearing, explanations in terms of increasing opportunities for the cohorts coming of age after the Great Depression (e.g., Easterlin 1987) are plausible, so the timing shift is not considered the most puzzling part of the Baby Boom. The reversal of the quantum trend, in contrast, is the most puzzling part.

The focus of this paper is on the quantum of cohort fertility even if timing shifts may have played a bigger role in the story of the Baby Boom. For the US, Ryder (1980) established that more than half (58%) of the increase in period fertility can be attributed to shifts in the timing of childbearing, and the rest to shifts in the quantum of cohort fertility. Even in case similar conclusion would hold for all countries experiencing a Baby Boom, we argue that the latter part (i.e., the increase of the quantum of cohort fertility) is the most interesting part to investigate today from a theoretical-scientific point of view because it was running against

1 We use capital letters to indicate that we are addressing specifically the mid-twentieth century Baby Boom in Western countries, not baby booms in general. BB is used throughout the paper as an abbreviation for the Baby Boom.

the tide of the larger fertility transition. For example, it is clear that the decline of childlessness was a major ingredient of the Baby Boom (Reher & Requena 2014; Sandström 2014; Van Bavel 2014), while childlessness had been on the increase during earlier stages of the fertility transition: as far as the evidence goes, childlessness rates were peaking in the 1880 to 1910 birth cohorts before starting to go down again among the cohorts producing the Baby Boom (Rowland 2007).

This paper investigates trends in cohort fertility underlying the Baby Boom in 14 European countries plus in the USA. Specifically, we analyze how components contributing to completed fertility (entry into motherhood, progression to lower and higher order parities) differ by women's educational attainment across countries and cohorts. For all the countries, our data, originating primarily from national censuses, allow observation of education-specific parity progression and fertility quantum. We compare parity progression ratios and parity distributions by level of education, as well as completed fertility size. Additionally, for seven European countries, we can use education-specific cohort trends in age at first childbirth to investigate the connection between the timing and quantum of childbearing (considering, for example, that if women have their first child at an earlier age, they remain at risk to attain higher parities for a longer part of their lives). The results indicate the importance of fertility revival in all educational groups, largely offsetting the shift in educational distribution, in the countries that experienced the Baby Boom. We discuss the possible mechanisms that could have led to such an outcome and how our observations relate to the stages of fertility transition in general.

2. Education and fertility during the Baby Boom

Since long, the spread of mass education has featured prominently in explanations of the transition from high to low fertility. For (former) high fertility countries, it has been shown empirically that mass education and rising levels of educational attainment lead to lower fertility levels (Caldwell 1980; Axinn and Barber 2001; James, Skirbekk & Van Bavel 2012). When it comes to the mechanisms that might explain this, some theories focused on the

schooling of parents, and mothers in particular, as a determinant of fertility preferences and behavior. Other theories have focused on the role of children's rather than parents' schooling (for an overview, see Axinn and Barber 2001).

In a context of increasing importance of education in the social structure of modernizing societies, particularly but not only in the paid labor market, one of the major strategies parents ensued to invest in the quality and prospects of their offspring was by sending them to school (Caldwell 1980; 1982; Axinn 1993; Axinn and Barber 2001). Many parents did this even before governments started to enforce this by law, and many parents stimulated their kids to continue schooling beyond the compulsory age (Soysal and Strang 1986). Schooling of children clearly entails economic costs for parents, both direct (e.g., school supplies, transport) and opportunity costs (prolonged economic inactivity of children) (Caldwell 1980; 1982). Children's schooling is therefore associated with increased parental investments in a lower number of children, with a preference for "child quality" rather than "child quantity" (Michael 1975; Hanushek 1992).

So, as married couples were limiting their fertility, a higher proportion of kids were sent to school and continued their education beyond the primary level. Following the decline of marital fertility, the expansion of mass education speeded up sharply after 1940 (Meyer, Ramirez & Soysal 1992). Since the expansion of education is associated with declining fertility, and since educational expansion speeded up after 1940, the question is: how can this be reconciled with rising total fertility during the Baby Boom? We argue that an important piece of the puzzle is that the connection between female education and family formation was profoundly restructured during the fertility transition.

2.1 Family formation among educated women

Before the transition, getting married for women typically implied that many years would have to be devoted to repeated pregnancies, childbearing, and childrearing. In such circumstances, the returns to education were very low for married women. Highly educated women were a very small and selective group who were probably more inclined towards a

professional career instead of eager to start a family. Role incompatibility between professional career and family life was high for women, and the negative association between female education and family formation was indicative of strong gender specialization (cf. Requena & Salazar 2014; Van Bavel 2014). Educated women who wanted to capitalize their degree in the labor market or elsewhere, could do two things: either refrain from starting a family altogether, or postpone it. In the latter case, as argued by Morgan (1991), postponement could entail experiences and circumstances that made it less likely that women would ever marry and/or have any children at all.

As explained, fertility limitation entailed the expansion of children's education, girls as well as boys. While women's level of educational attainment indeed increased after the Second World War, this did not immediately imply a weakening of gender role specialization in the postwar era. Rather on the contrary: the postwar era witnessed the hey-day of the male breadwinner – female homemaker family model, as a manifestation of strong gender role specialization (Cherlin 1983; Creighton 1999; Murphy 2002), even if it was often more an ideal than a reality, particularly in the working classes, and even there were large differences between countries (Pott-Buter 1993; Janssens 1997). The breadwinner family model, with its glorification of the mother and housewife, was a strong ally of the Baby Boom. But this alliance has dominated the picture of the 1950s to such an extent that it has overshadowed other developments that eventually brought about import major changes in family patterns (Cherlin 1983), including the expansion of female participation in advanced education and their participation in the labor force.

We argue that the advancement of fertility limitation, as part of the demographic transition, was the essential glue holding together these two seemingly contradictory forces, namely the glorification of motherhood on the one hand and the expansion of female education on the other. Once the fertility transition had advanced well for over at least one generation, the family system changed in such a way that the trade-off between either starting a family or having a professional career became less clear-cut for women. Family size limitation became an expected, conventional part of married life and this was freeing up time

to do things outside the household, creating opportunities to increase the potential returns to education for new generations of women. In other words, fertility limitation became a major demographic force pushing up the returns to education for women. At least in the USA, the initial increase of labor market participation in the 1950s came from married women with school-aged children; only later labor market participation increased more among women with pre-school children (Cherlin 1983; Davis 1984). After the BB, the breadwinner system was "on the way out there as well as in the rest of the industrial world" (Davis 1984: 404).

Apart from the demographic factor, there was also an economic factor which increased the returns to education for women, namely the expansion of the tertiary (service) sector in national economies and the ensuing demand for educated workers in jobs that were considered suitable for women (Cherlin 1983; Pott-Buter 1993; Goldin 2006). As a consequence, educated women started to form a family more often than in the past, and the group of educated women became less selective in terms of family ambitions than before. Or, put the other way around, a larger proportion of women with a predisposition to start a family would now go on and pursue a degree in education beyond the basic level.

This interpretation would imply the following mechanisms linking the first part of the fertility transition with the BB. First, the diffusion of family size limitation in the earlier generations was linked up with the increased educational attainment in the next generation (i.e., from child quantity to child quality). Next, family size limitation becoming an expected part of family life, this implied increasing potential returns to education for women, with investments in advanced education and family formation becoming increasingly compatible for younger generations of women. Finally, since the share of those who start a family increased within the group of educated women, the expansion of education did not lead to decreasing fertility. To the extent that the inclination to start a family grew at a greater pace than the increase of educational enrollment and attainment, fertility could even go up.

Recent evidence is consistent with this interpretation. Using decomposition techniques, Reher and Requena (2014) show that increasing educational attainment as such indeed had a negative effect on total fertility, but that fertility was nevertheless increasing

because all educational levels participated in rising fertility. The positive effect of the increasing rates outweighed the negative effect of the changing population composition in terms of educational attainment in all 11 countries analyzed, including European and non-European ones. Van Bavel (2014) reports a strongly declining educational gradient in total fertility in the cohorts producing the Baby Boom in Belgium, with declining childlessness and increasing marriage rates explaining the larger part of the convergence between women of different education. Sandström (2014) finds that fertility differentials by education were almost eliminated among Swedish women that produced the Baby Boom peak of the 1960s (while an earlier peak just after the Second World War was explained by postponement-recuperation). Sandström argues that the convergence of childbearing behavior between high and low educated women was a prerequisite for the 1960s Baby Boom in Sweden, as the proportion of secondary and post-secondary educated women had increased substantially in the cohorts born since the mid 1930s.

A recent study about Spanish women born during the first half of the twentieth century shows that the negative association between education and total fertility is mainly produced by differential rates of family formation. After selecting married women with at least one child, the correlation between education and total fertility disappears (Requena and Salazar 2014). At the time, Spain was still in an early stage of the fertility transition, but the mechanism in which education affects total fertility largely through marriage and childlessness, may as well apply to countries that were more advanced in the fertility transition.

Consistently with the above mentioned, we expect that the association between female education and family formation changed in important ways during the BB, namely that an increasing proportion of women with advanced education got married and had children rather than remaining childless. In this paper, we are limited to childbearing and can not consider the role of marriage. However, to the extent that the proportion of births outside marriage and the proportion of marriages without births remain low, women with at least one child can be considered proxies for married women.

2.2 The consolidation of the two-child norm

Although a large part of the BB happened to take place in times of economic prosperity and optimism, these factors can at most only partially explain it (Van Bavel and Reher 2013). It seems plausible that the Boom also involved a pro-natalist cultural tide, related to "the fear of population decline" (Teitelbaum & Winter 1985; Van Bavel 2010), that played a role of its own, independent from the booming economy. For the USA, there is survey evidence reported by Blake and Das Gupta (1975) that the revival of fertility during the Baby Boom was fueled by increases in the normative pressure to have children. In his review of the explanations of the Baby Boom, Bean (1983) concluded as well that, all in all, the acknowledged cultural emphasis on the family, home and motherhood must be assigned some independent role. Still, it remains hard to quantify and prove this empirically.

What has been documented, however, is the increasing homogeneity in family sizes observed during the period: the Baby Boom involved more people having at least two children and fewer people having more than four children (Bean 1983; Requena and Salazar 2014; Sandström 2014; Van Bavel 2014; Reher and Requena 2014). Bean (1983: 356) interprets this increasing homogeneity as signaling strong family norms:

> In short, part of the baby boom resulted from larger and larger fractions of the population being able to 'comply' with the norm that it is a good thing to have at least two children. [...] When juxtaposed with the decrease in the proportion of women having five or more children [...], we can see that achieving normative fertility during the baby boom also involved more and more couples choosing to reduce the maximum size of family that they considered acceptable. [...], the sizes of their families (two to four children) became more similar in the process. In short, the period involved increasing homogeneity, both in respect to the number of women having families and in respect to the sizes of the families they had.

This normative interpretation is in line with the categorization of the parity distribution into three categories proposed by Ryder (1980): first, the proportions remaining childless (as

opposed to those starting a family with at least one child); second, the proportions having the "normative" number of children, namely two children; third, the proportions having "optional" children, i.e., more than the expected number, meaning three and more. The justification for this categorization is that social norms "pressed people into a preference for marriage over non-marriage, parenthood over non-parenthood, and at least two children rather than an only child – with the proviso that one should be able to fulfil one's parental obligations. Beyond the second child, the progression is primarily a matter of individual preference" (Ryder 1980: 33). Implicit in Ryder's position is the notion that causal factors implicated in parity progression will vary by parity. For explaining variation in low-parity progression, "one should look within the realm of normative pressure in relation to the socio-economic context" (p.34). In contrast, for explaining variation in parity progression past the second child, one may look "within the realm of discretionary reproduction", although the latter will also be the repository of unwanted or unplanned pregnancies (ibid.). Testa, Cavalli and Rosina (2014) recently showed that the distinction between "normative" and "discretionary" (or "optional") parity progression remains relevant for childbearing decisions even today.

For the US, it has been established that only a limited part of the quantum increase involved in the BB resulted from an increase in progression past second child (Ryder 1980; Ryder 1982). In other words, only a limited part of the quantum increase was due to growing proportions having "many" children (say four and more). Nevertheless, the increase of the proportion of high parity births is highly significant to study since it represents an unexpected departure from the secular, downward trend. Survey evidence for the US indicates that part of the increase of the proportion of third, forth and higher order births did not result from an increase in intended high parity births but rather from an increase of unintended births (Ryder 1978; see also discussions in Bean and Swicegood 1979; Bean 1983).

The question remains whether the hypothesis of increasing homogeneity holds across countries and, within countries, when comparing women by level of educational attainment.

A recent study by Reher and Requena (2014), using the coefficient of variation to measure heterogeneity, indeed reported increasing homogeneity in the number of children ever born in the cohorts producing the BB in a range of European as well as non-European countries, including the USA, looking at all women irrespective of education. The hypothesis of increasing homogeneity should be investigated between educational groups within countries (i.e., did differences between educational groups become smaller?), and within educational groups within countries (i.e., did the variance in fertility measures go down within each level of education?).

With respect to the thesis that only a small part of the BB can be explained by an increase of the proportion of high parity births, and that part of this increase resulted from unintended births: it remains to be seen to what extent this holds for other countries besides the USA. The first part of the thesis, that only a small part of the Boom is attributable to increasing numbers having more than two children, can be investigated directly. For the second part, about unintended versus unintended births, we do not have direct evidence. We can, however, shed some light on the issue indirectly by investigating two things.

First, we can compare the final parity distributions with the corresponding parity progression ratios. Suppose that the proportions having three children and more were on the rise during the BB, then that result could be reached through two different pathways. One pathway is that a larger proportion of women who already have two children move on to have an additional child. This pathway would imply that parity progression after the second child would be on the rise. Another pathway is that parity progression after the second child stays stable (or might even go down), but that more women have at least two children (rather than remaining childless or having just one child) and, as a result, more women are at risk of having three children or more (even if the proportion of women intending to have three or more children remains the same or even goes down). In the latter case, the rising number of women having at least three children, if applicable, can be considered unintended, since women who had reached parity two are not more inclined than before to have additional

children. In contrast, rising parity progression ratio after the second child are indicative of rising intentions to have more than two kids.

If one were to interpret rising parity progression ratios as "unintended", too, then one would have to argue that the effectivity of fertility control in the younger cohorts was worse than in the older cohorts. As such, this seems unlikely, but taking into account the shift towards earlier family formation during the Baby Boom, it could indeed be the case that the effectiveness with which unintended births were prevented went down during the Baby Boom. Indeed, as argued by Ryder (1978, 1979), the shift towards earlier childbearing implied that women were exposed to the risk of unintended pregnancies during a longer part of their fertile lives, and with the additional exposure being concentrated in high-risk ("prime-time") ages, when couples were younger, sexually more active, and in their peak years of fecundity. If this mechanism plays a role indeed, we should see a negative correlation between the age at first childbirth and progression to higher parities.

A second way of to gain insight about the intended or unintended increase of high parity births, if any, is based on the following argument. If one can accept the assumption that higher educated women have been more successful in practicing contraception, then we would expect the increase of higher parity births among mothers to be greater for low than for highly educated women. Or that the average number of children among those who have at least two children would increase more among the low than among the highly educated. An additional reason for expecting such an association between education and high parity births might follow from timing-quantum interactions. As explained in the previous paragraph, a lower age at marriage and first birth is associated with a prolonged at risk period to attain higher order births. A recent study among Spanish Women born in the first half of the 20th century indicates that contraceptive use was indeed not just more widespread but also more sophisticated among women with more advanced education (Reher, Requena & Sanz 2014).

To continue the reasoning about the reproductive behavior of more educated women: the previous section made the argument that, as family size limitation and the two-child family are getting stronger foothold, educated women will become more inclined to start a

family rather than stay unmarried and/or childless. This implies a negative correlation between childlessness and family size limitation or, in terms of parity progression ratios (PPR), a negative correlation between the progression to the first child (PPR0) and progression from the second to higher order parities (PPR2): the more educated women were able to stop having children once they got two, the less they would feel the need to remain childless in order to realize their non-family ambitions, too.

The latter hypothesis runs against the evidence from the USA, presented by Morgan (1991), who showed a strong positive correlation over time between PPR0 and PPR2 for women born between 1836 and 1900. It remains to be seen, however, whether the correlation reported by Morgan (1991) remained the same for post-1900 cohorts that advanced a lot in terms of fertility control compared to the earlier cohorts. In addition, the parity progression ratios reported by Morgan are not broken down by level of educational attainment, while our argument highlights the role of women's education. The positive correlation between PPR0 and PPR2 found over time for the nineteenth century American cohorts may well be spurious in the sense that it may be an artifact of two things. First, low educated women having both higher PPR0 and PPR2 than highly educated women and, second, the proportion of low educated women going down over time. The combination of these two things would imply that both PPR0 and PPR2 go down over time, creating the observed positive correlation.

3. Data and measurements

3.1 Census data

The following analysis relies on data from official national population censuses. They either cover the complete population (like in the case of the Belgian 1981 census) or are based on such large samples that sampling error can to a large extent be neglected and tests of statistical significance are more or less obsolete. A disadvantage is that information collected in censuses is usually quite basic compared to demographic surveys. In the current analysis

we are limited to countries where census has recorded at least educational attainment of a woman and her final number of children.

The data come from the USA as well as fourteen European countries: Austria, Belgium, Croatia, Czech Republic, Estonia, France, Germany (but only the former GDR), Greece, Hungary, Poland, Slovakia, Spain, Sweden and Switzerland. They represent a broad range of countries from the Western world, both in terms of historical and cultural background. Compared to the range of countries analyzed in Van Bavel and Reher (2013), we were able to included only those for which data on completed fertility by education were available for the cohorts that potentially produced the BB. The data available for Estonia, Croatia, and Slovakia allowed to extend the coverage of Central and Eastern Europe. However, not all countries included in our analysis experienced a (major) Boom. Van Bavel and Reher (2013) use the volume of excess births as a criterion to distinguish between countries with a (very) small or a (very) large Baby Boom. Since the current paper is concerned with completed fertility rather than the (yearly) birth rate, we use cohort fertility as a criterion instead to distinguish between countries with and those without the BB, based on whether or not there was an increase of cohort total fertility. Countries which obviously did not experience the BB are still included in the analysis since what happened in this (pseudo) "control group" may help us to understand the mechanisms and circumstances producing a revival of cohort fertility in the other group.

Country-specific information and descriptive statistics about the census data and sources used is given in Table 1. As to the censuses and their timing, two potential limitations need to be considered. First, the census year should be not too close to the BB period, so that fertility of the cohorts under study can be treated as (almost) completed. If age 40 is taken as the upper limit for childbearing, censuses starting from 1980 allow examination of birth cohorts until 1940. Second, if a census is from a relatively recent period, selective old-age mortality becomes a potential source of bias for older birth cohorts. The latest censuses in our data are from 2000 (Switzerland), 2001 (Croatia) and 2002 (Poland). In such cases the pre-1920 birth cohorts are represented by individuals who at the time of information

collection were over 80 years old. In addition to selective mortality, individuals' memory about all the given births, especially for occurrences of infant or child death, may be less than perfect (for potential bias problem see also Van Bavel 2014). In some cases, we have used more than one census to avoid the first problem. For the Czech Republic and Austria, the youngest birth cohorts used in analysis have been taken from a later census (the birth cohorts of 1900-1940 are from census 1980/1981 and birth cohorts after 1940 come from census 1991). As of the second problem, interpretation of results for the oldest cohorts must be done with caution for the mentioned countries.

Although the data come mostly from national censuses, only few datasets cover the entire population. In many cases we use data from IPUMS database, which are very large samples of censuses submitted for public use. In the case of Estonian 1979 census, number of children were recorded only for a 25% sample of women. Polish data come from a fertility survey that was done on a sample of 2002 census, covering over a quarter of million women above age 16. For Sweden, the data originates partly from registers and are combined with census data. For Spain we have also used the Socio-Demographic Survey from 1991 to obtain age at first birth. Table 1 also indicates other countries for which the latter information is available.

TABLE 1 Data used

Country	ISO code	Source	Year(s)	Cohorts covered	Age at 1st birth	Study sample (thousands)
Austria	AT	census	1981, 1991	1901-1945	Yes*	1942
Belgium	BE	Hisstat.be	1981	1901-1945	Yes	2049
Croatia	HR	census	2001	1917-1945		644
Czech Republic	CZ	census	1980, 1991	1901-1945		2410
East Germany	DD	IPUMS	1981	1901-1945		1178
Estonia	EE	census, 25% sample	1979	1901-1945	Yes*	67
France	FR	*Enquête famille* within census	1982	1917-1942	Yes	135
Greece	GR	IPUMS	1991	1901-1945		196
Hungary	HU	IPUMS	1990	1901-1945		108
Poland	PL	fertility survey within census	2002	1921-1945	Yes	68
Slovakia	SK	census	1991	1901-1945		838
Spain	ES	IPUMS	1991	1906-1945	Yes*	367
Sweden	SE	Linnaeus Database, census and register data	1970+	1916-1945	Yes	1301
Switzerland	CH	IPUMS	2000	1901-1945		896
USA	US	IPUMS	1990	1901-1945		2138

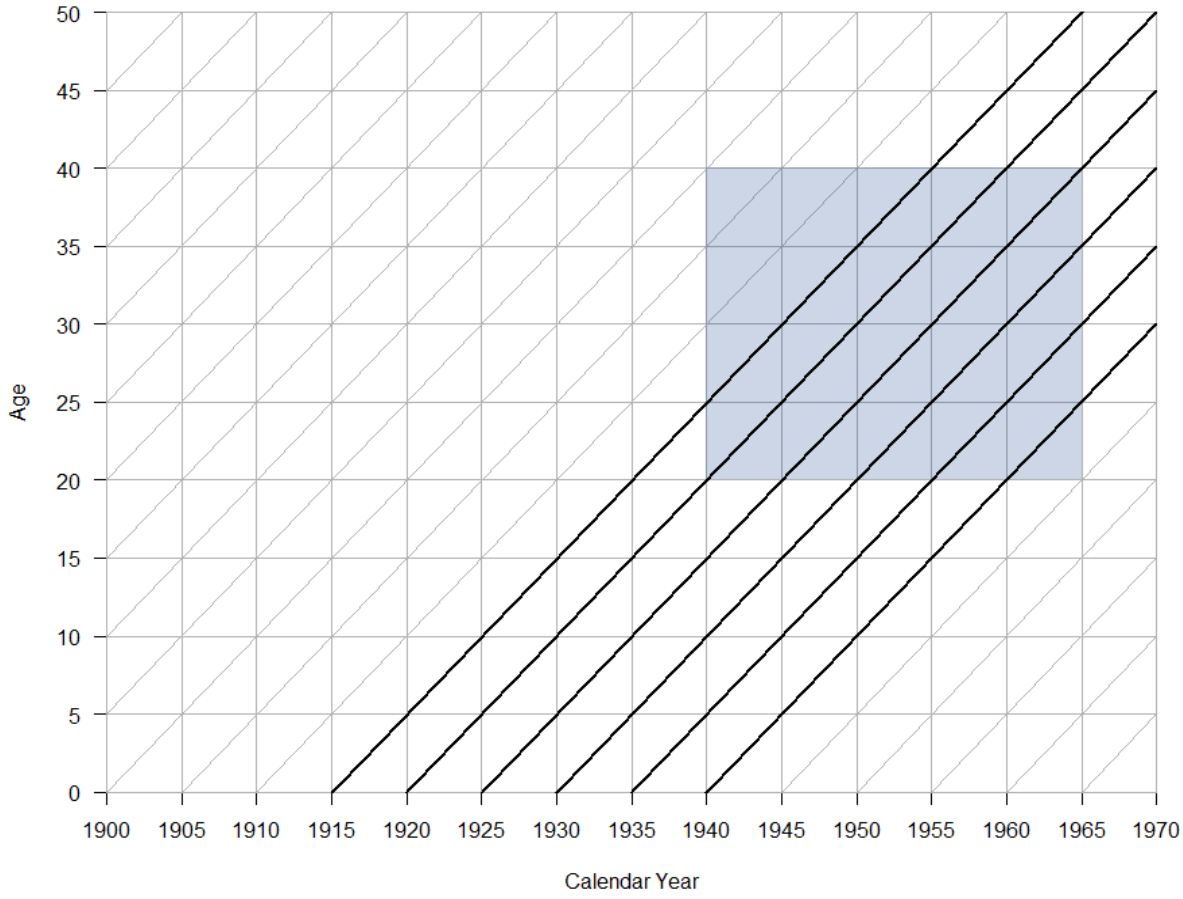
* Note: Age at first birth for Austria from census 1981, for Estonia from census 2000, for Spain from Encuesta Sociodemográfica 1991 (sample ~45K women).

3.2 Cohort fertility

Our main objective is to describe the change in the quantum of fertility by educational attainment. Although the BB is generally understood as a period phenomenon, the aim is to observe fertility outcomes of the birth cohorts who were producing the BB, namely the people born during the first four decades of the twentieth century. Figure 1 illustrates the birth cohort dimension that the study concentrates on. Considering, for example, that in the period view the BB peaked between 1955 and 1965, then the cohorts who contributed to this were

born between 1920 and 1940. Women born before 1915 belong to generations that largely completed their childbearing before the BB.

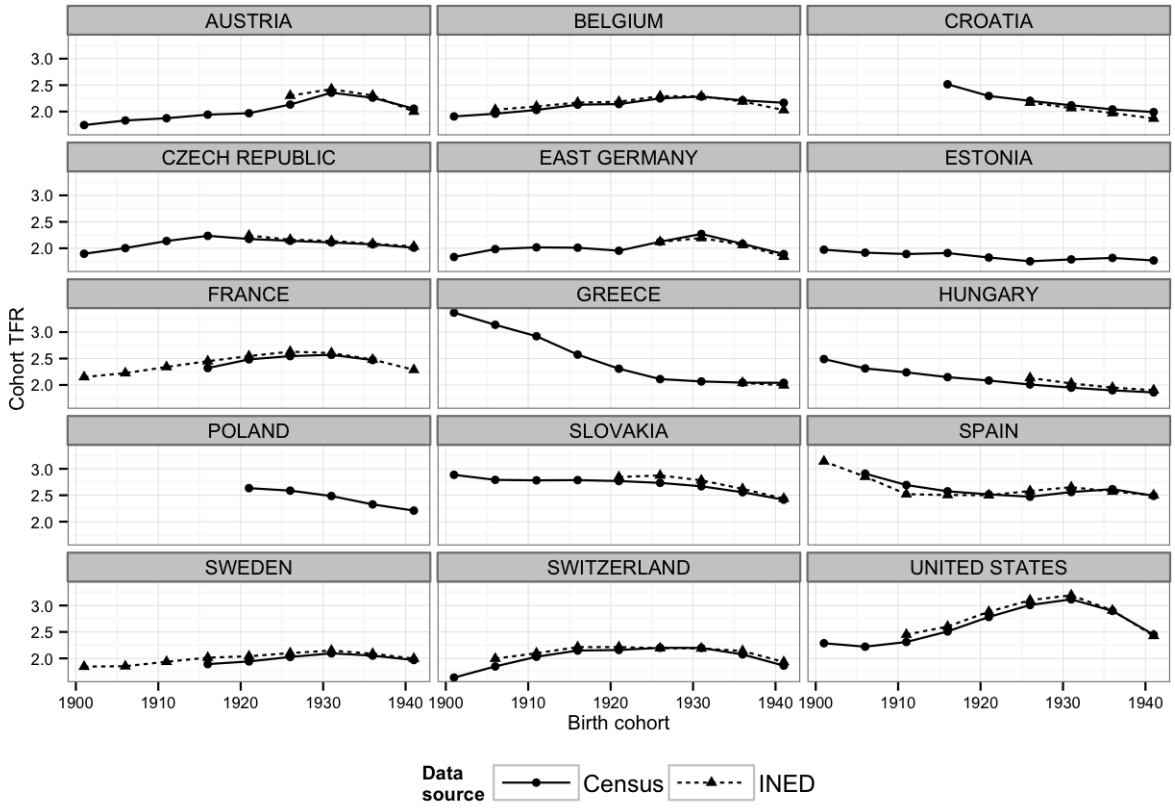
FIGURE 1 Lexis diagram of the cohorts we focus on in this study, with the Baby Boom period indicated by the shaded area



Based on available data we calculate completed fertility by 5-year birth cohorts. Potential sources of bias in retrospective estimates of fertility based on census data are discussed in Van Bavel (2014). However, in order to be confident that the CTFR in our data is not seriously biased we compared the calculated figure in each 5-year birth cohort to corresponding data from the INED database of developed countries.[2] The results of the comparison are given in Figure 2. As can be seen there, both time series are matching really close.

2 ☐ INED database available at: http://www.ined.fr/ Last accessed 1.06.2014.

FIGURE 2 Total cohort fertility as estimated from our retrospective (census) data compared to vital registration data from the INED database



Note: Estonia and Poland lack coverage of the selected birth cohorts in the INED database.

The general pattern that emerges confirms earlier observations: there was a revival of cohort fertility only in countries where the fertility transition was already well underway and that had reached already considerably low cohort fertility levels in generations born after the turn of 20th century (typically around two children per woman). Estonia is one country where there was no upward but rather a downward trend even if fertility had declined towards about two children per women.[3] In Greece, Croatia, Hungary, Poland, and Slovakia, fertility was still pretty high in the oldest cohorts and it declined subsequently. In Spain, it was very high at first, declined substantially next, but then rose slightly towards the end. So, Spain is a country with a late demographic transition that actually did experience something which could be called a muted BB.

3 See also Frejka, T., Sardon, J.-P., Katus, K. and Kingkade (2004:253-70). The authors attribute the absence of upward trend in cohort fertility to violent reorganization of society and large-scale repressions that took place in the 1940s and 1950s. Recent micro-data analysis lends support to this explanation (Puur and Klesment 2014).

3.3 Educational attainment

Comparative measure of educational attainment across countries is known to be problematic, especially considering differences in social meaning of an educational degree (e.g. Schneider 2010). In this analysis, standardization of educational levels in countries to be compared presents further challenges due to the time period under study. The attainment of post-secondary education was still rare for these cohorts in some countries. It is also known that some intermediate levels, e.g. specialized secondary education or non-tertiary post-secondary degrees, appear very country-specific. Therefore, we did not aim at establishing a strict equivalence of detailed levels of education between countries, but focused on comparing aggregated levels.

In the first step, educational levels recorded in national censuses were converted into ISCED-97 classification. Country-specific guidelines, which also take into account the length of schooling, are available for this purpose. In the next step, we aggregated the detailed educational levels into three major categories – low (ISCED 0-2), medium (ISCED 3-4) and high educated (ISCED 5-6). While this is a standard practice in contemporary research, it comes with a price if applied to older birth cohorts. For example, the lowest category includes all women from illiterate to those that received 9 years of schooling. This becomes a problem for countries where most of women fall into the lowest category and the levels ISCED 0-2 are highly heterogeneous. As shown in Figure 3, results for Belgium, Greece and Spain may suffer from this problem. However, it seems less of a problem for other countries, thus we proceed with the chosen categorization. Women above low education have at least upper secondary degree or an equivalent vocational qualification. The group of highly educated is, however, reserved for university graduates. For example, the Estonian census recorded incomplete higher education as a separate level, but we code it here into the group of medium education. Also, the difference between post-secondary non-tertiary (ISCED 4) and a degree from higher education can be subtle in some countries, but we have categorized everything

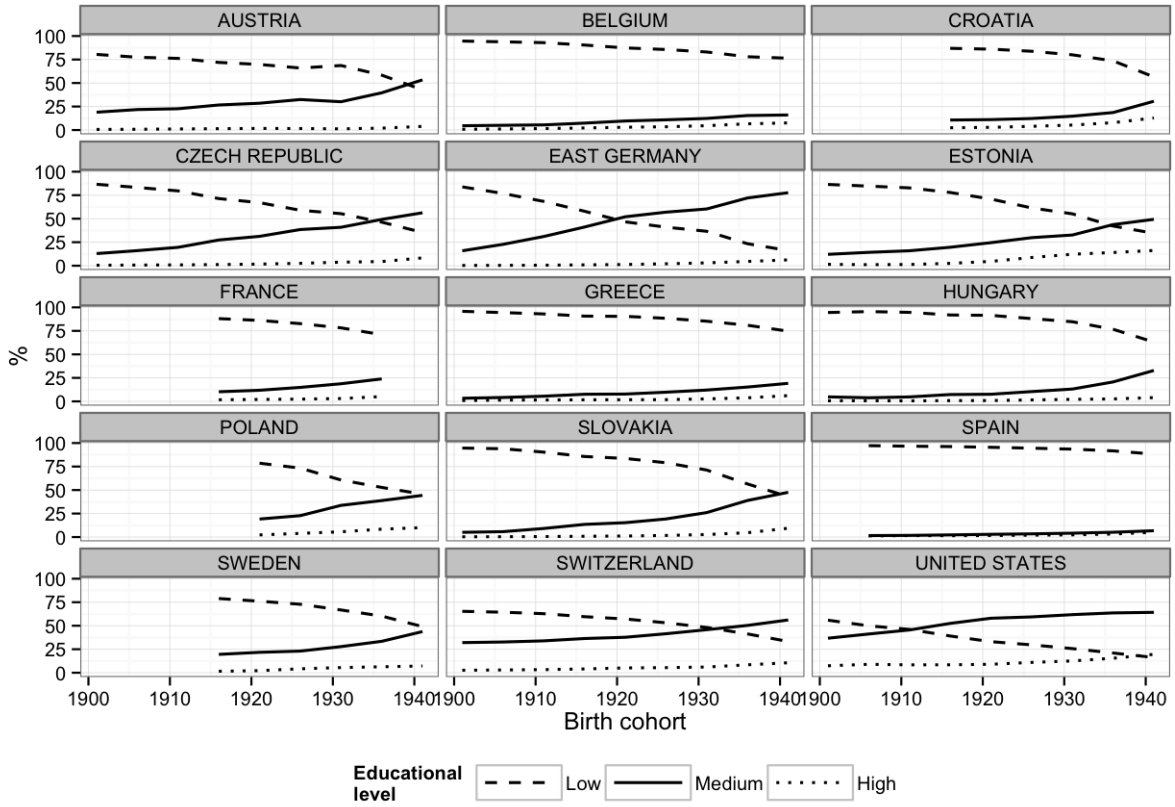
below ISCED level 5 it into the medium group. For convenience of reference, low, medium, and high education will be used interchangeably with primary, secondary, and tertiary education.

4. Results

The proportions of low, medium and highly educated women, by 5-year birth cohorts, are graphed for each of the fifteen countries in Figure 3. In all countries, there is some decline of the proportion of women who have completed at most a their primary education, so the proportion of women with education beyond the primary level goes up. However, the extent to which this happens varies strongly by country. In Greece, Belgium and particularly in Spain, the changes are minor. By contrast, in the USA, the proportion of medium educated women exceeds the proportion of low educated women after the 1910-1914 birth cohort. Several other countries also make the cross-over, but in later cohorts. Typically, the proportion of women with a degree beyond the primary level went down most notably from the cohorts who reached the childbearing ages during the Baby Boom period (1920s and especially the 1930s cohorts).

Although there was a rise of the proportion of highly educated women in all countries, it still remained very limited in most countries, with the corresponding line looking almost flat in many of them. The largest increase of the proportion of highly educated women is visible in the USA and in Estonia. The decline of the proportion of low educated women is driven in the first place by the proportion of women who finish secondary education but not tertiary. So, when we talk about the expansion of female education, it happens for the most part in secondary education. Accordingly, the compositional shift in the childbearing population was mainly towards more medium educated women in the 1900-1940 birth cohorts.

FIGURE 3 Percentage distributions of women by cohort and level of educational attainment

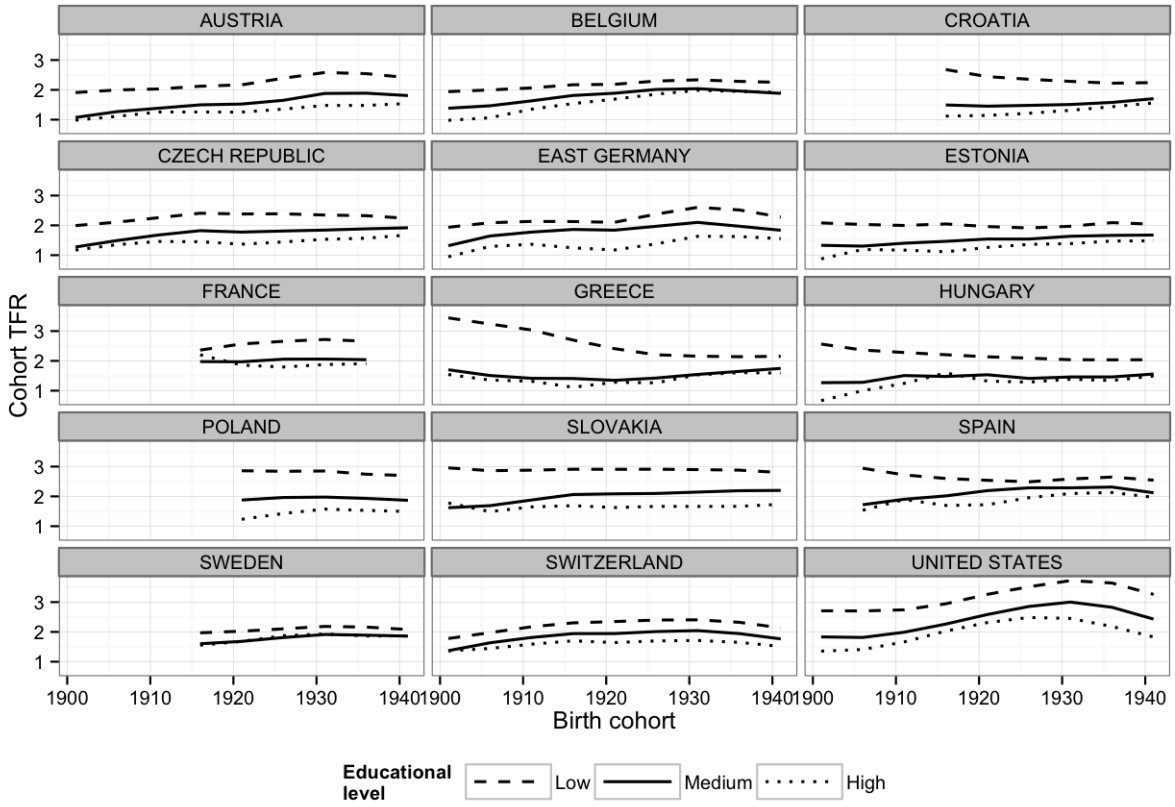


4.1 Family formation and total fertility

Figure 4 gives total cohort fertility by country and level of education. In most BB countries there is an increase in cohort fertility in all educational groups. An exception is France, where CTFR of the highly educated shows a decline at least for the early 1920s – the fertility of the highly educated in the 1915-19 cohort seems suspiciously high, however, so we are skeptical about whether these figure depict a realistic picture of what actually happened. In countries where general cohort fertility generally did not rise, this was because the fertility of low educated women did not go up. In such countries (without an overall revival of cohort fertility), fertility still increased among medium or highly educated women. In other words, in almost all countries, including countries without a Baby Boom, cohort fertility of the secondary and tertiary educated is increasing, but whether or not there was a revival of overall cohort fertility largely depended on the behavior of the largest part of the female

population, i.e. the low educated women. In a number of countries, there seems to be a clear convergence in total fertility between educational levels: e.g. Belgium, Croatia, Greece, Hungary and Spain. In other countries, the trends for different level of education are running more in parallel.

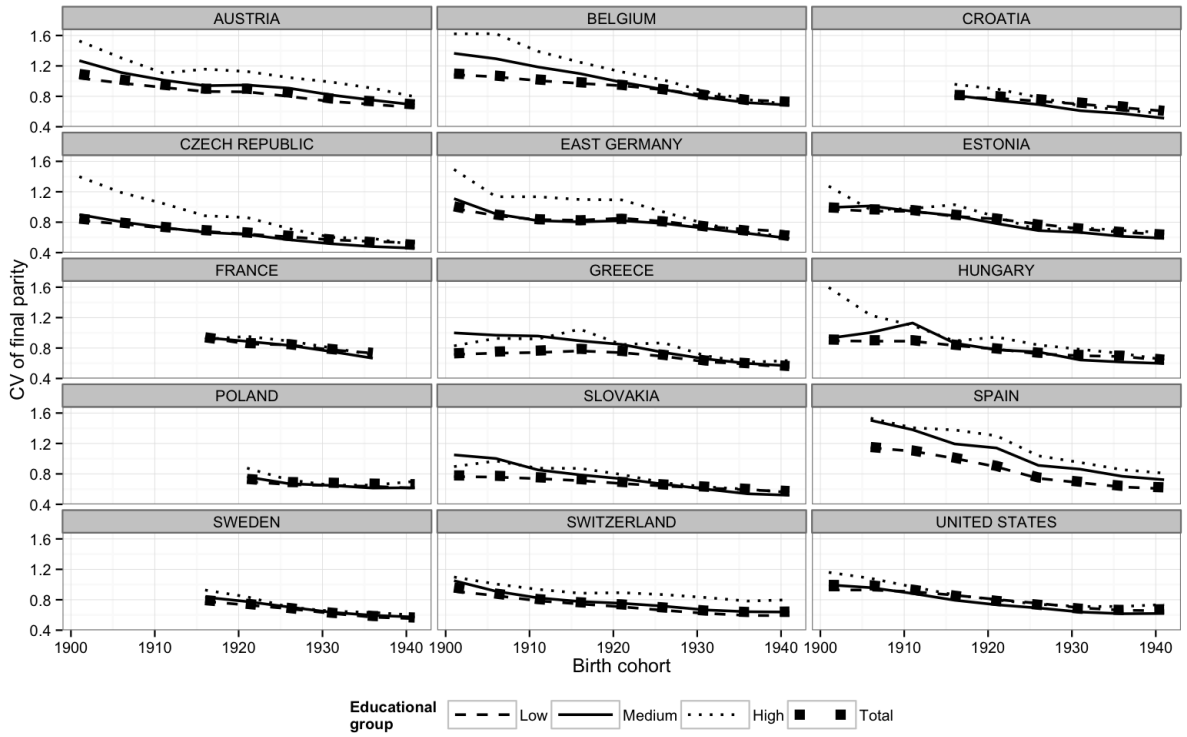
FIGURE 4 Cohort total fertility by country and level of education



To shed more light on the issue of increasing homogeneity, Figure 5 plots coefficients of variation (CV) for completed fertility for the total population (bold squares) as well as separately by level of education. Overall, all countries seem to move in the direction of more homogeneous distribution of final number of offspring, irrespective of level of education, confirming a conclusion drawn from a similar analysis for another selection of countries by Reher and Requena (2014: 14). Our analysis adds to that that increasing homogeneity holds not only within countries but also within educational groups. We can also say that in many cases the highly educated have been a more heterogeneous group than the other two, but this

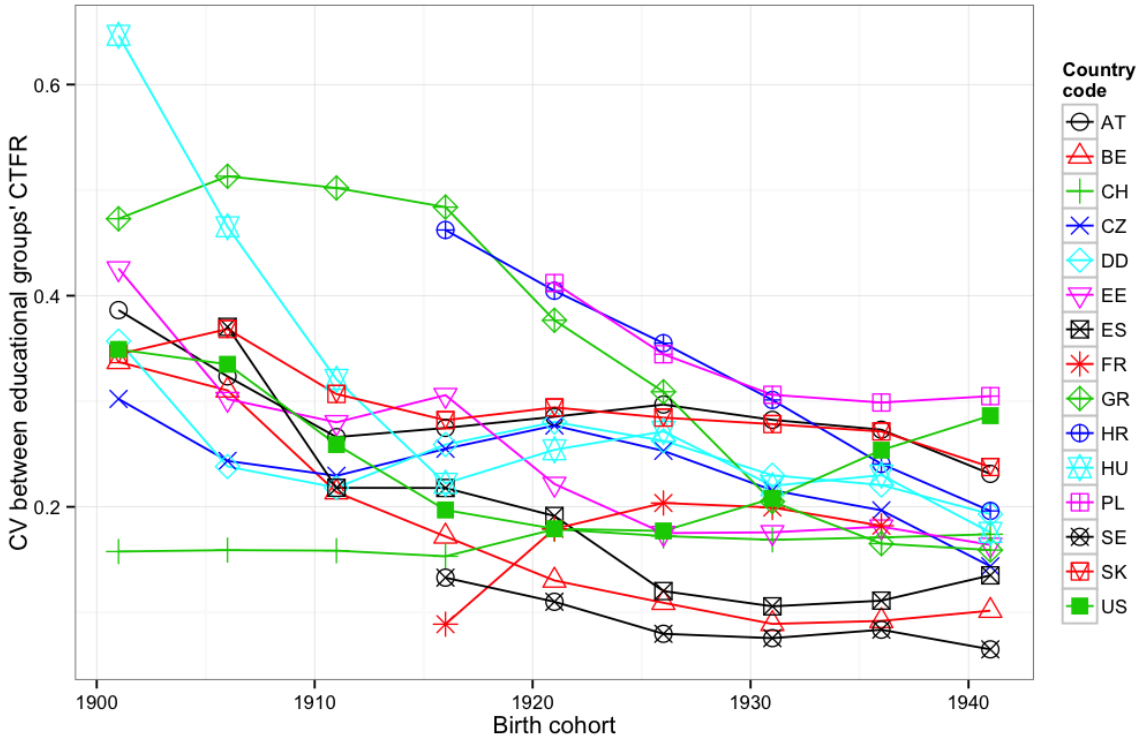
dissimilarity has decreased over time. Only in Switzerland there seems to be a different trend, namely that the CV of the highly educated is decreasing less than CV of the other two groups.

FIGURE 5 Coefficient of variation of final parity attained: total population (bold squares) and separately by level of education



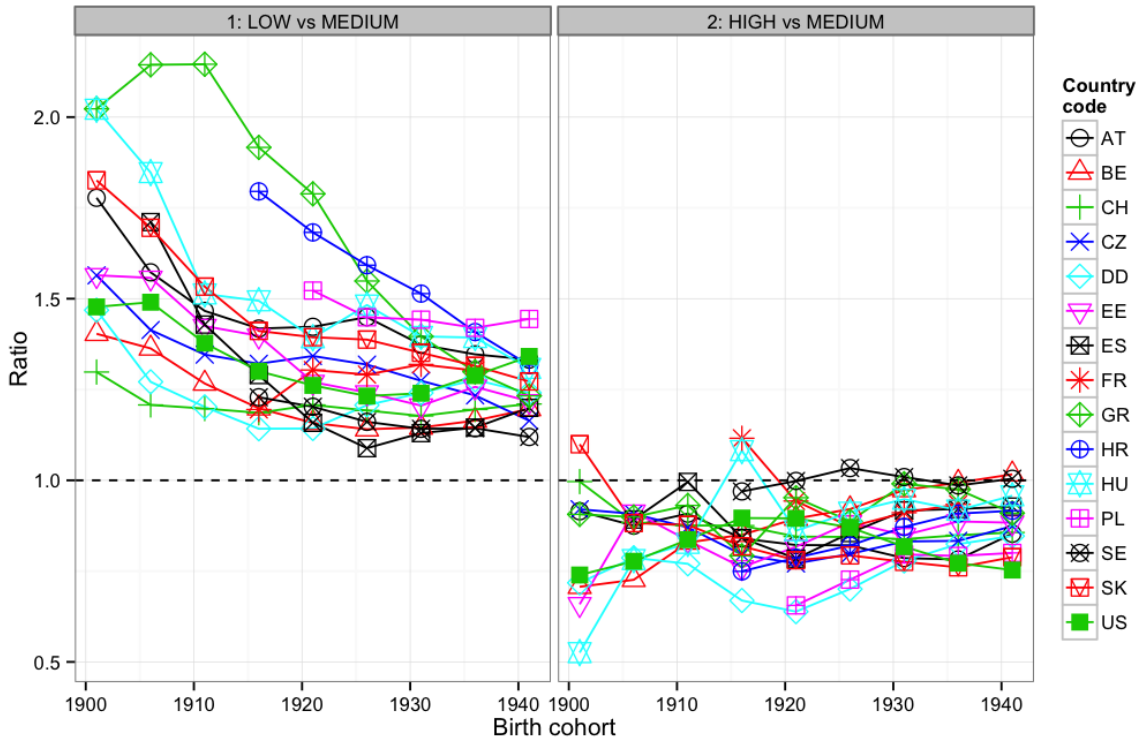
In order to quantify to what extent educational groups became more similar to each other over time, the coefficient of variation is calculated for the education-specific cohort fertility rate (that is, a coefficient based on 3 values). The results, plotted in Figure 6, suggest that in addition to overall homogenization of final parity, the average outcomes in completed fertility for educational groups converged over time in most countries. In the US the similarity of educational levels reaches its highest point around the cohorts that produced the peak of the BB in cohort perspective. Variation is lowest in Sweden and only Belgium and Spain seem to reach the same high level of similarity between educational groups. The graph also suggest which countries have gone through a rapid convergence of education-specific fertility rates during the period -- e.g. in Croatia, Greece and Hungary, where it was also a relatively late process.

FIGURE 6 Coefficient of variation between levels of education



Another way to display the change in differences between educational groups is using the gradient of education-specific fertility rate (see also Van Bavel 2014). In this case we present the low and high educated women's completed fertility relative to the medium educated women's completed fertility. The results are given in Figure 7 and, assessing visually, there is more change over time in the ratio of low to medium educated than in the ratio of high to medium educated. As explained in an earlier section, the category of low education is highly heterogeneous – the duration of formal schooling in this group ranges from zero to nine years. Across birth cohorts, the composition of the low education group shifts towards more schooling, gradually reducing the educational gradient relative to medium educated women. There is no such extensive compositional shifts in the medium and high educated group. There are also examples of stability over time in the low-to-medium gradient (Switzerland). When comparing highly educated women to medium educated, the differences are smaller and more stable. For instance, in Sweden the two groups almost overlap, which was also seen in Figure 4 albeit with less detail.

FIGURE 7 Educational gradient of fertility

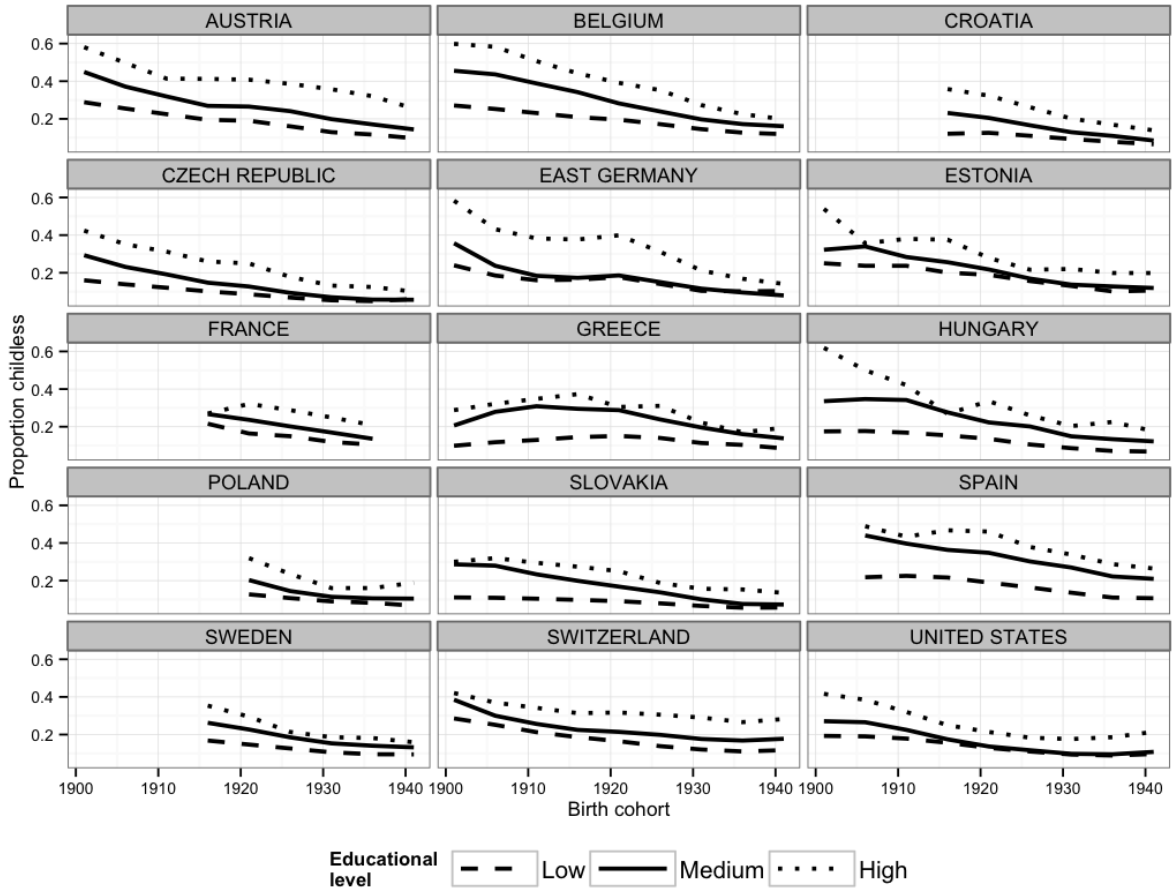


Turning to components of cohort fertility, we see that childlessness is declining for all three educational levels in the majority of countries, except in Greece, as shown in Figure 8. So, while childlessness was on the decline in all countries with a BB, also countries without a Baby Boom experienced declining childlessness (including Spain, Hungary, and Estonia). In countries where there was a convergence in total fertility, there was a convergence in the proportions childless as well. While childlessness of women with medium or high education was on the decline in all countries, there remained a considerable gap in most countries, with low educated women having at least one child more often.

The decline of childlessness in these cohorts was not limited to Europe and North America. Reher and Requena (2014) show that it also happened in countries as diverse as Argentina, Mexico, Morocco, Turkey, and China. The findings that childlessness declined in this era even in countries with almost universal and early marriage suggests that it was not

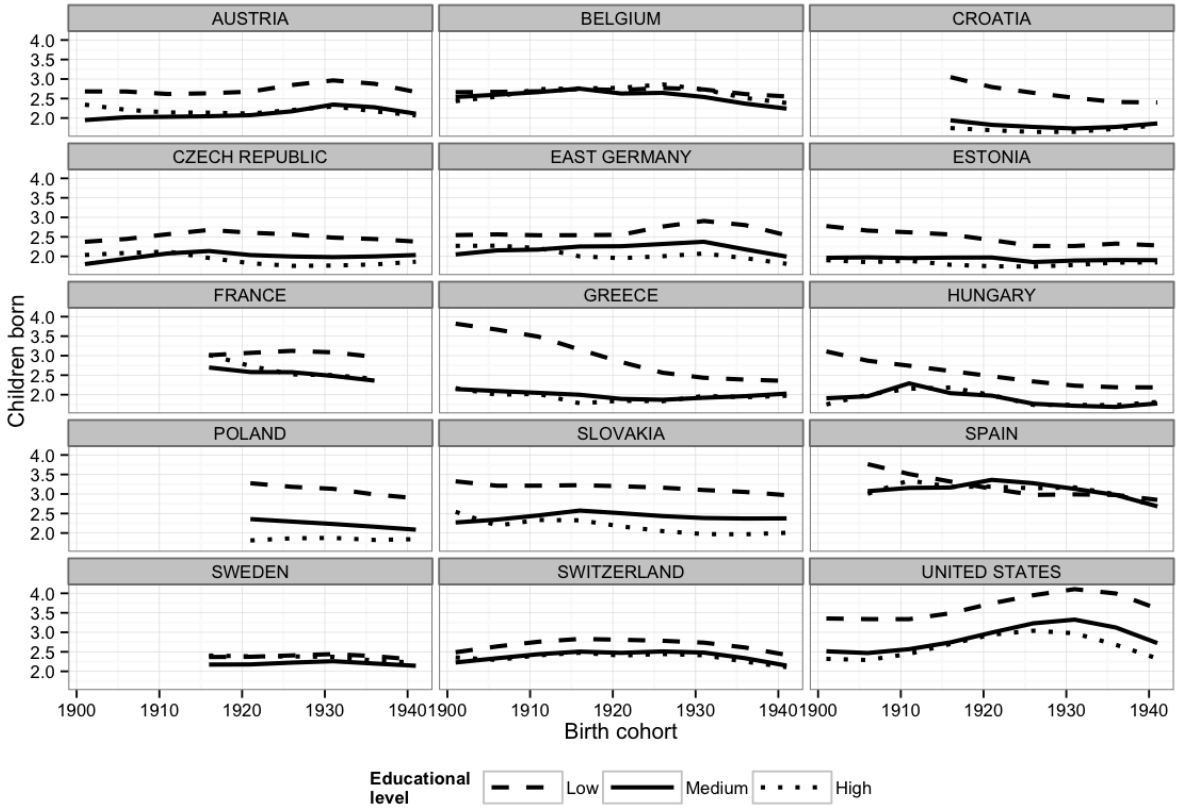
only the result of changing marriage behavior but that improving health conditions also may have played a role.

FIGURE 8 Proportions childless by country and cohort



To what extent can the revival of total cohort fertility be explained by rising proportions having at least one child? To answer this question, Figure 9 displays total cohort fertility just for those women who experienced at least one childbirth.

FIGURE 9 Total cohort fertility for women with at least one child, by country and level of education



Among women with at least one child, the educational gradient in total fertility almost disappears in some countries, like in Belgium and Sweden. Also, in some countries, the lines in Figure 9 look almost flat. This is the case in Belgium and Sweden, for example. In order to get a better picture, we have quantified the amount of percentage change between the 1916-20 and the 1931-35 cohorts by country and level of education. Results are given in Table 2.

Countries that experienced increasing CTFR for both low and medium educated groups between the two cohorts are highlighted yellow in the table. Interestingly, there is only one country where the fertility of the medium educated declined (Hungary). The suspicious trend of the highly educated in France also comes up here, otherwise the country would also be among those for which all educational groups increased fertility.

TABLE 2 Percentage growth in CTFR between 1916-20 and 1931-35 cohort, all women

	Low educated	Medium educated	Highly educated	Total
AT	21.7	25.6	17.5	21.3
BE	7.6	12.6	28.9	7.2
CH	4.4	5.2	0.7	2.3
CZ	-2.5	1.1	5.7	-5.6
DD	22.4	12.7	31.0	12.9
EE	-3.7	11.6	24.6	-6.3
ES	-0.6	13.4	23.6	-0.5
FR	15.1	4.3	-14.9	10.8
GR	-20.1	9.7	37.2	-19.7
HR	-14.8	1.1	17.5	-15.8
HU	-7.6	-1.1	-13.3	-9.3
PL	-0.3	5.2	27.8	-5.7
SE	10.9	19.3	24.2	10.7
SK	-0.4	4.0	-1.5	-4.2
US	26.4	32.6	20.9	24.2

Note: for Poland, the base cohort is 1921-25

The same calculations can be repeated, selecting women with at least one child exclusively. The results are shown in Table 3. Interestingly, they show that there was a general decline in the average number of childbirths between the two selected cohorts among those who gave birth at least once. There are some exceptions among the BB countries, as well as among the highly educated in Greece and Poland.

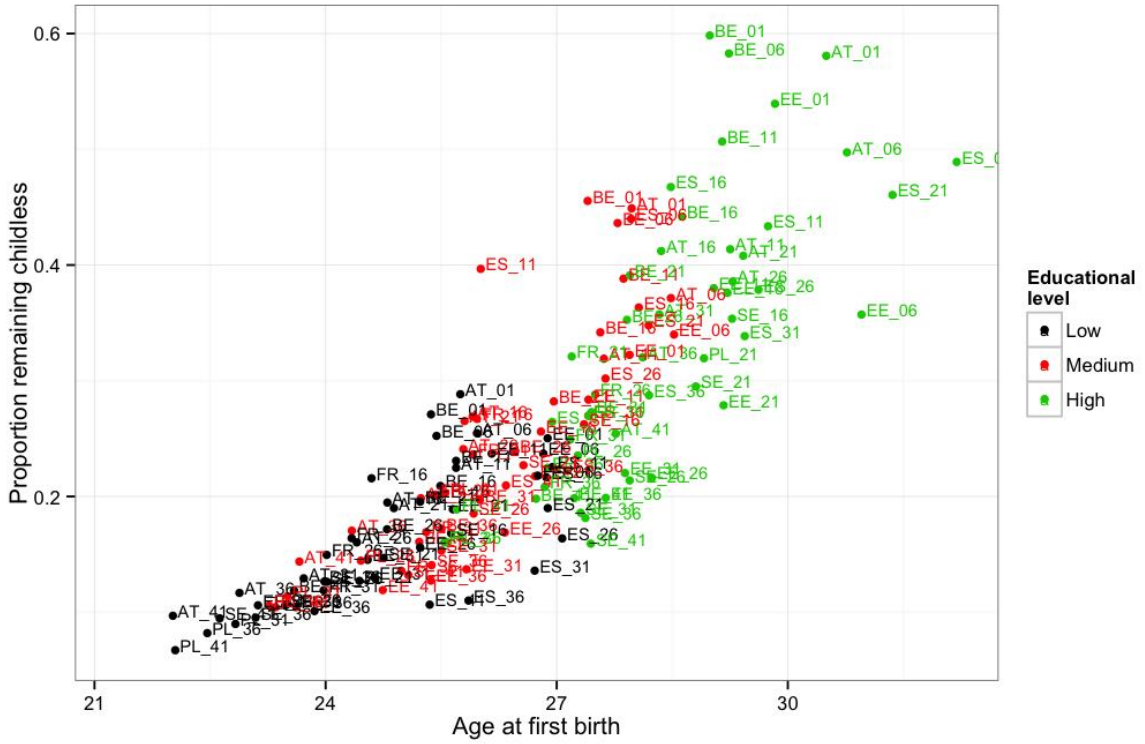
TABLE 3 Percentage growth in CTFR between 1916-20 and 1931-35 cohort, women with at least one child

	Low educated	Medium educated	Highly educated	Total
AT	12.5	14.6	7.5	12.1
BE	-0.4	-7.7	-1.0	-1.3
CH	-3.4	-1.0	-2.6	-3.6
CZ	-7.4	-7.3	-9.9	-10.9
DD	14.3	5.4	3.7	5.9
EE	-11.5	-3.8	-0.3	-14.2
ES	-9.9	-1.1	-0.5	-9.6
FR	2.5	-8.0	-17.2	-0.6
GR	-22.9	-3.8	10.5	-22.8
HR	-17.4	-10.8	-5.5	-19.0
HU	-14.4	-15.9	-20.4	-16.0
PL	-4.4	-5.3	3.5	-10.3
SE	3.1	4.0	-1.4	2.4
SK	-3.9	-7.4	-15.2	-7.9
US	17.7	21.3	10.1	14.8

Note: for Poland the base cohort is 1921-25

How was the shift towards earlier childbearing related to declining childlessness? Figure 10 is a scatterplot with data points referring to cohorts of women with a given level of educational attainment (as indicated by the colors) within each of the seven countries for which we have information about the timing of the first birth.

FIGURE 10 Age at first childbirth and proportions remaining childless by country, cohort, and level of education



Note: First birth data available for Austria (AT), Belgium (BE), Estonia (EE), Spain (ES, not based on census but on large survey), France (FR), Poland (PL), and Sweden (SE). Point labels include country code and two last digits of the birth cohort.

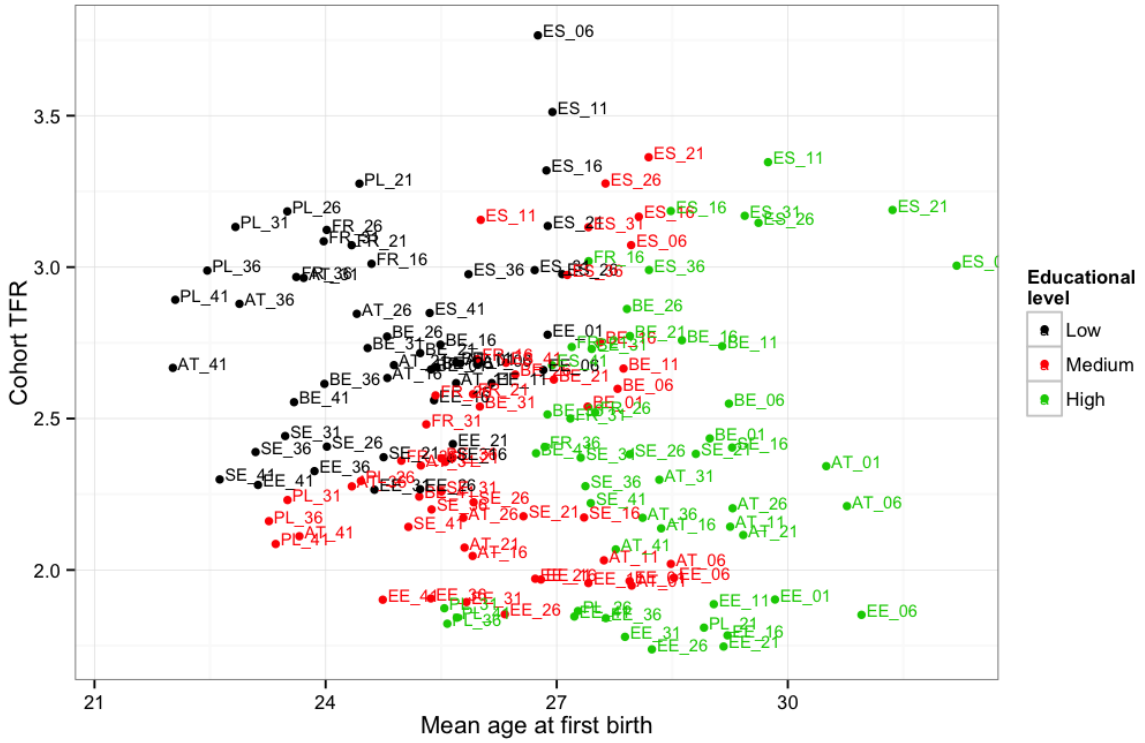
The connection is remarkably strong. Figure 10 shows that in countries, cohorts and educational groups where the mean age at motherhood was high, the proportion of women who never became a mother at all was also much higher. In groups and cohorts where many were postponing family formation, a significant proportion failed to start a family at all. In the three educational groups, the proportion remaining childless was decreasing as the cohort average age at first birth was decreasing. It was decreasing even more among medium or highly educated women. The Pearson correlation coefficient is 0.75 for the low educated, 0.84 for the medium educated, and 0.76 for the highly educated.

One could ask the question whether it is because some women in groups where childbearing usually started later were "too old" to have any children at all for physiological reasons (could not have the children they wanted because already too old when trying to start), or is it for some other reason maybe related to cultural norms about age at having children or related to their educational group? The latter interpretation is suggested by the

fact that the correlation is visible even in groups exhibiting a young age at first childbearing (say around age 24). Even age 30 is far from being an age where physical abilities to have children would be affected to such an extent as suggested by the graph. However, averages on the horizontal axis of Figure 10 are just simple averages for ages at actual first childbirth. It is hard to draw any conclusions about the "voluntary" or "involuntary" nature of the high childlessness in groups with a high age at first childbirth from this figure.

Figure 11 plots the relationship between age at first childbirth and the completed fertility for women who experienced at least one childbirth. There is hardly any correlation between the two dimensions (Pearson correlation coefficient is -0.09) if educational grouping is ignored. Within educational groups, however, there is still some positive association but it is relatively weak (correlation coefficient is 0.23 for the low, 0.32 for the medium, and 0.24 for the highly educated). Among those who started a family, the average family size depended on country and cohort rather than on the age at first childbirth or level of educational attainment. Looking at it the other way around: among those having at least one child, the ages at first childbirth provide much better cues for their educational attainment than their average family sizes.

FIGURE 11 Age at first childbirth and cohort total fertility for women with at least one childbirth (CTFR of women with at least 1 child) by country, cohort, and level of education



Note: First birth data available for Austria (AT), Belgium (BE), Estonia (EE), Spain (ES, not based on census but on large survey), France (FR), Poland (PL), and Sweden (SE). Point labels include country code and two last digits of the birth cohort.

These observations from Figures 10 and 11 suggest that lower childlessness does not have to be mechanically related to lower age at first birth, but rather being more related to preferences, norms and expectations specific for the country, cohort, and educational group. To shed more light on the matter, we should analyze marriage behavior, which is clearly driven by social-cultural circumstances rather than physiological factors. Or, perhaps the appetite or opportunities for having sexual relationship at younger ages increased during the period. Scattered evidence indicates that, while extra-marital childbearing was on the decline, the proportion of pre-marital pregnancies was increasing in many Western countries (Croog 1952; Rele 1965; Goldstein 1967; Smith and Hindus 1975; Sobotka and Toulemon 2008: Figure 7). This suggests that the declining ages at marriage and childbirth observed during the Baby Boom were at least partly driven by growing sexual activity at younger ages.

To sum up, these graphs together suggest that during the baby boom, age at first birth and childlessness declined together in all educational groups, but that both phenomena were most likely pushed together by a third "factor" rather than earlier age at first birth producing lower childlessness rates. Change in group habits, norms and expectations might have led this, like the appetite for marriage. To reiterate -- analysis of age at first marriage (not directly affected by physiological factors) may shed more light on this.

4.2 Parity distribution and parity progression

Figure 12 gives, per country and level of education, the proportions having no children, just one childbirth, two children, or three or more. Figure 13 gives the corresponding parity progression ratios (PPRs). The first line of panels of both figures reiterates the lesson just learned about decreasing childlessness and increasing inclination to start a family in all levels of education, but in particular among those who completed at least a degree in secondary education.

Next, the rising proportion of people having at least one child did not result in rising proportions having one child only. Rather on the contrary, there was a tendency for the proportions having just one child to go down, if they did not stay more or less stable. This resulted from rising parity progression after the first child: among those who had already one child, the inclination to have a next child went up in most countries and educational groups, but particularly among those with at least secondary education.

After the second child, parity progression was in most countries stable in the oldest cohorts, and typically declining in the cohorts born after 1930 (i.e., the cohorts that perhaps could turn to modern hormonal contraception after having born two kids by the mid 1960s). PRRs after the third child were already on the decline even in the older cohorts. However, since parity progression from childless and single-child women had been on the rise, a larger share of the population was becoming at risk to have third or even more children. As a result, the proportion of women with three or more children could go up for Baby Boom cohorts

even if the inclination to have more than two kids (as indexed by the PPR) did not go up. This happened in a number of countries, including Austria, Belgium, Switzerland, and Sweden. It happened notably for the cohorts that could plausibly have reached parity two or three before modern contraceptives became available.

The basic pattern that stand out is the increasing dominance of the two-child family, not just in terms of parity distribution (Figure 12, third row of panels) but also in terms of parity progression (see Figure 13): PRRs for those with less than two children were going up, PPRs for those with two children were going down. This happened in all educational groups but particularly so for the women who completed at least secondary education.

Figure 14 shows that the rising inclination to start a family and the diffusion of parity-dependent stopping behavior after having two children went hand in hand, indeed, particularly among educated women. The USA (in line with the evidence in Morgan 1991) and highly educated women in Poland appear to be exceptions. While PPR0-1 and PPR1-2 are correlating positively (data not shown), they both correlate negatively (in most countries and educational groups) with PPR after the second child.

FIGURE 12 Parity distributions: proportions ending up with 0, 1, 2 or 3+ children, by country and level of education

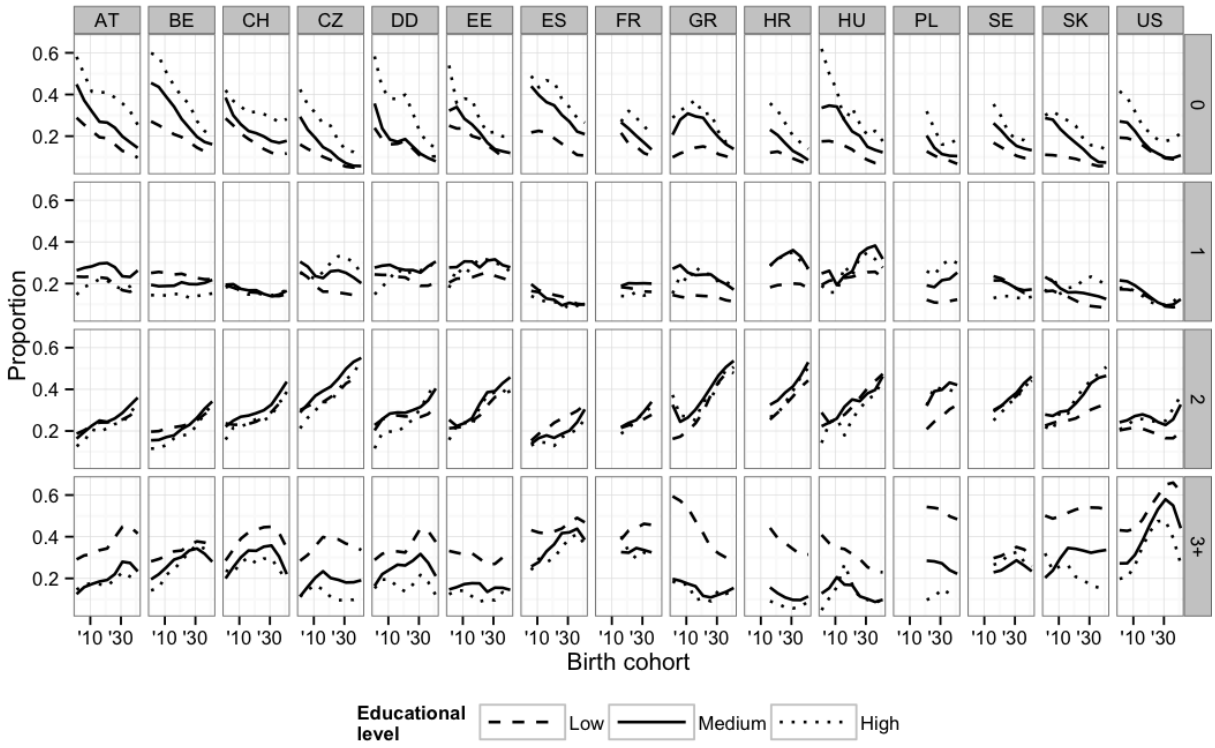


Figure 13 Parity progression ratios: proportion among those with 0, 1, 2 or 3 children proceeding to have additional children

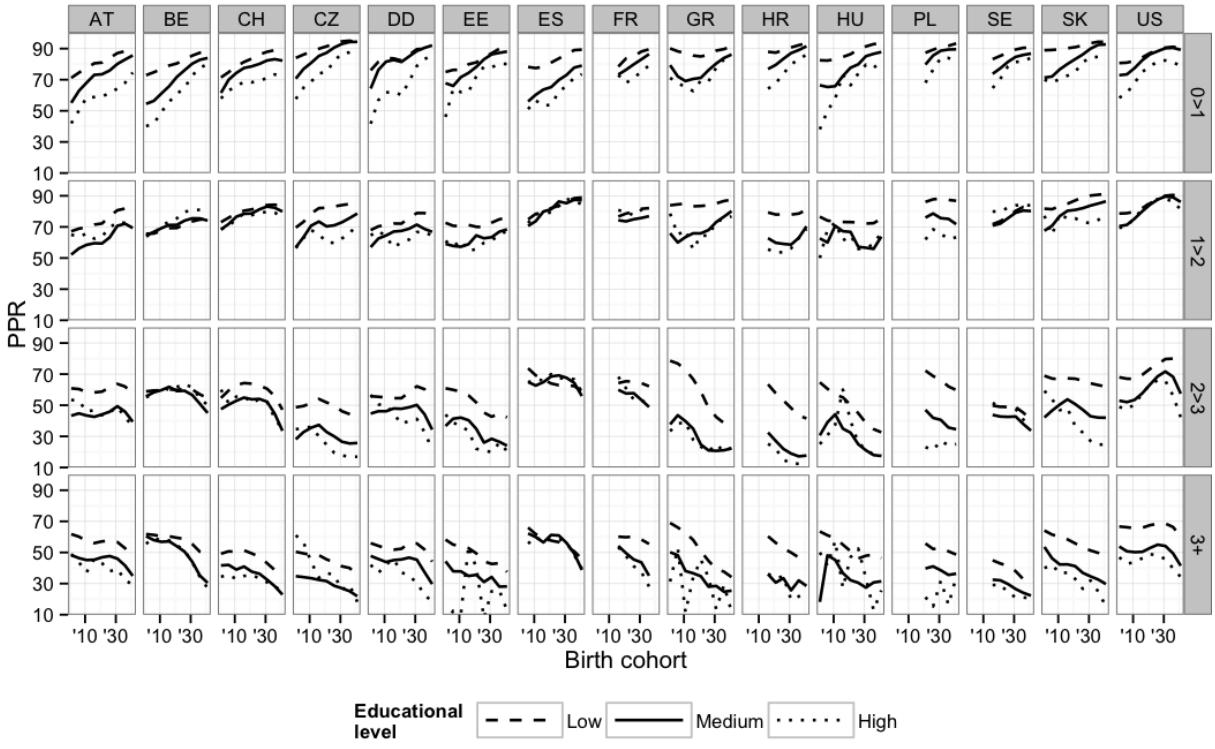
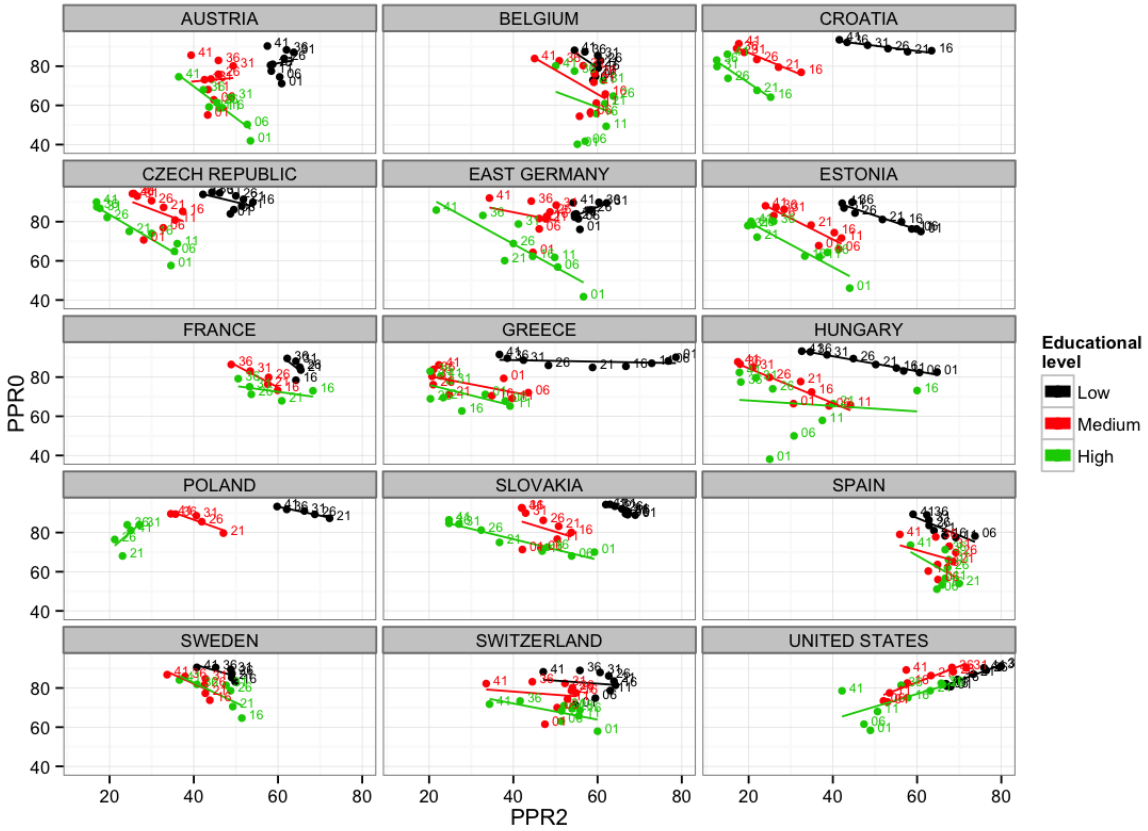


Figure 14 PPR0-1 versus PPR2-3 by country and level of education



Note: Point labels are last two digits of birth cohort. Lines are an OLS estimates by educational level.

5. Conclusion and discussion

This paper analyzed trends in cohort fertility by level of educational attainment for generations of European and American women born in the first half of the twentieth century. While the participation in education beyond the primary level expanded over the cohorts analyzed, the average age at first childbearing was on the decline in most countries and the total fertility rate was going up in many of them, resulting in a Baby Boom. Both the earlier timing and the higher quantum of fertility were running against expectations based on increasing female participation in education.

The reason why the fertility and education trends were compatible, is that the negative effect of educational expansion was more than compensated by a very general increase in fertility rates. This confirms earlier findings by Reher and Requena (2014). While

women with education beyond the basic level indeed continued to have a higher age at childbearing and lower total fertility than lower educated women, their weight in the total female population was still rather limited so that revival of fertility rates outweighed the negative effect of the compositional shift. And fertility rates increased across all educational groups, at least in countries exhibiting a Baby Boom.

The fact that the recovery of fertility rates, if any, was not restricted to a specific educational group suggests that it was not much related to socio-economic status. Given the high weight of the low educated in the size of the total female population, the revival of fertility in this group was crucial for the occurrence, or not, of a Baby Boom in their country: if the fertility rates of the low educated did not increase, then there was no Baby Boom. Yet, the participation of women with advanced education in the Baby Boom is remarkable and cannot be neglected. Since they still represented a relatively small part of the total female population, their influence on the big picture might have been limited from a purely statistical point of view, but their participation is very significant from a sociological point of view and says much about the Baby Boom as a societal process.

A crucial trend among the cohorts analyzed is the decline of childlessness. The decline is very general across countries and educational groups. Almost all countries (Greece is an exception) witnessed decreasing childlessness, irrespective of whether or not the total picture implied a recovery of total fertility and a Baby Boom. As to educational level, a major development was the increasing inclination of women with education beyond the primary level to start a family. In many countries, the decline of childlessness was stronger among women with more advanced education than among women with only primary education. As a result, the cohort trends implied decreasing heterogeneity in the incidence of family formation across educational levels, irrespective of whether or not there was an overall recovery of total fertility in the country in question.

The decrease of childlessness explains a large part of the revival of cohort fertility: for many countries, cohort total fertility trends showed quite flat lines if the calculations are restricted to women with at least one childbirth. To varying degrees, the educational gradient

in total fertility is also explained by differential childlessness: it explains almost all of it in Sweden and Belgium, but at most a limited part of it in the USA.

Childlessness was strongly correlated with age at first birth, both across cohorts and educational groups: when and where the age at first birth was high, the extend of childlessness was also relatively high. Part of this correlation may be explained by physiological issues: cohorts and groups exhibiting more postponement will also exhibit a higher proportion of women who wait "too long" to be able to have any children at all. But the correlation is also evident at quite young ages at first birth (between ages 20 and 30), when the incidence of physiological sterility is still very low. We speculate, therefore, that a major part of the correlation between age at first birth and the proportion childless should be explained by cultural factors, by such things as "the appetite" for marriage and family life: in groups and cohorts where such appetite was low, many waited long before marrying and having children and many did not make the transition at all. To the extent that starting a family moved more center stage, also among educated women, more people started a family at all and more did so at younger ages. This interpretation is to some extent backed up by our finding that, if we look only at those who did have at least one child, there is hardly any correlation between the age at first childbirth and total fertility.

The big picture that emerges from our analysis is one of growing homogeneity and increasing dominance of the two-child norm. This holds within countries both across, between, and within educational groups. In all countries and educational groups, the proportion of women ending up with exactly two children went up. At the same time, in many countries, the proportion of women having more than two children increased as well (although often the latter trend reversed in the youngest cohorts). Most likely, however, the increase of the proportion of women with more than two children was unintended, since the inclination to have more than two children (as indicated by the parity progression ratio for those with at least two children) tended to remain stable or go down (typically in the younger cohorts analyzed). The interpretation of the growing proportion of women with more than two kids as "unintended" is also supported by the fact that the trend reversed in the cohorts

that could start to benefit from the advent of efficient hormonal contraception after having reached their desired family sized.

So, if more women ended up with more than two kids, it was because a larger share of them were at risk to have more than two anyway, which was the result of decreasing childlessness and increasing parity progression after the first child. All this combined – increasing parity progression until the second child, decreasing parity progression thereafter – is indicative of a strong consolidation across countries, generations, and educational levels, of the two-child norm.

These observations point to one of the reasons why some countries experienced a revival of cohort fertility (underlying a Baby Boom) and others did not. In both groups of countries, we find that PPRs for those with less than two children were increasing, while PPRs for those with two or more children were decreasing. Hence, whether cohort fertility was rising or not, hinges on the balance between these two opposing trends: the Boom occurs only if the increase of the PPRs of those with less than two children appears stronger than the concurrent decrease of the PPRs for those with two children or more. This also explains that the Baby Boom is typically only observed in countries where the fertility transition had advanced well: in Baby Boom countries, most of the decline of parity progression after the second child had already occurred before the middle of the twentieth century, so that the increase of parity progression before the second child more easily outweighed any further decline of parity progression at higher parities. In the other countries, the increase of the progression to the first and the second child was often overwhelmed by strong declines at higher parities. Likewise, the Malthusian marriage pattern can be regarded a salient part of the mechanism that led to the Baby Boom among the forerunners of fertility transition. In particular, the high proportions of women remaining single and childless allowed the parity progression for those with less than two children to increase markedly during the Baby Boom. As regards the relationship between the two historical precursors of the Baby Boom, Coale (1992) has drawn attention to the

plausible link that runs from the Malthusian marriage pattern to the onset of parity-specific family limitation.

The previous arguments point us to the link between a first and a second stage in the transition from high to low fertility, with the first stage typically ending around the 1930s (depending on the country) and the second stage starting in the 1960s. The first stage was driven by increasing investments in children's education, where the drive for higher child quality was motivating parents to limit offspring quantity. The second stage was driven by the coming of age of the next generation of children, born towards the end of the first stage. Women of the new generation were more highly educated than the generations of their mothers and grandmothers. This stimulated the inclination to participate in the paid labor market, which started to boom later on. The new generations could, from the mid 1960s onwards, also benefit from more efficient, modern hormonal contraceptives. These things combined, i.e. women's higher educational attainment, labor market participation, and the availability of modern contraceptives, were boosting the changes in family life of the Second Demographic Transition (Lesthaeghe and Van de Kaa 1986; van de Kaa 1987; Lesthaeghe 2010), including the postponement of parenthood, the rise of unmarried cohabitation, and increasing divorce rates.

The Baby Boom, happening before the spread of modern contraceptives, is the piece of the puzzle linking both stages. The Baby Boom was a period in which men and women, and society at large, were coming to grips with the implications of the first stage of the fertility transition (see, e.g. Teitelbaum and Winter 1985; Van Bavel 2010). The massive spread of fertility control created a new *condition humaine*, with many implications for family life and gender roles. Thanks to the massive spread of fertility limitation, fertility control was becoming the expected rather than the unusual behavior. As a result, getting married, and getting married early, no longer automatically implied having many children. Given the option of family size limitation, more educated women now choose to start a family rather than not having any children at all. And, looked at it the other way around, having an

education first became a more attractive option also for women who were dreaming about starting a family later in life.

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