Vienna Yearbook of Population Research 2010 (Vol.8), pp. 77-106

Postponement and recuperation of Belgian fertility: how are they related to rising female educational attainment?

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Abstract

Fertility trends in Europe after 1970 are routinely referred to in terms of the postponement of fertility. The shortening of the effective reproductive lifespan and its association with post-materialist values have raised questions as to whether fertility can or will be recuperated. Decomposition of cohort fertility in Belgium by level of education shows that the postponement of fertility after 1970 is closely related to the expansion of education: compared with cohorts born in 1946-1950, 40 to 50 per cent of the difference in cumulated fertility at age 25 in the 1951-1975 birth cohorts is attributable to rising educational levels. Educational differentials also prove relevant with regard to the recuperation of fertility at older ages as the tempo and quantum of order-specific fertility have responded differently to variations in the economic and policy context, depending on the educational level considered. Differential fertility trends by level of education have thus attenuated the relationship between female educational attainment and completed fertility in recent cohorts.

1 Introduction

Over the last decades, fertility trends in Europe have been characterised by the postponement of parenthood and the decline in period fertility levels below replacement (Frejka and Sobotka 2008). In Belgium, the period total fertility rate (period TFR) declined from 2.72 in 1964 to 1.74 in 1975. By 1975 subreplacement fertility had also emerged in other western and northern European countries such as Austria, Denmark, Finland, France, Germany, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom (Council of Europe 2005). The subsequent spread of period fertility below replacement to southern Europe in

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DOI: 10.1553/populationyearbook2010s77

the 1980s, and particularly the emergence of lowest-low fertility in central and eastern Europe in the 1990s, with period total fertility rates (TFRs) declining below 1.3, increasingly caused concern about the fertility trend prospects in Europe and the implications of these trends for accelerated population ageing.

Despite the early onset of fertility postponement in western and northern European countries and the persistence of low period fertility levels throughout most of the 1980s and 1990s, fertility trends in many of these countries now seem to have reversed. Although period TFRs were still well below replacement, tempo-adjusted fertility rates around 2005 were near the replacement level in the Nordic countries, France, Ireland and Britain, closely followed by the Netherlands and Belgium, thus suggesting scope for the recovery of period fertility (Sobotka 2004). Similarly, cohort completed fertility (cohort TFR) of women born in 1960 was found to be around 2 children in the countries considered (Council of Europe 2005). By 2009, the anticipated recovery of period TFRs seems to have materialised, with period TFRs around 1.7 to 1.8 in Belgium and the Netherlands, 1.9 to 2.0 in the Nordic countries, Britain and France, and around replacement in Ireland (Population Reference Bureau 2009).

In Belgium, the onset of fertility postponement coincided with the expansion of enrolment in secondary and tertiary education. As a result, the proportion of women graduating from tertiary education increased from 7.8 per cent in cohorts born in the early 1930s to 47.6 per cent in cohorts born in the early 1970s. The increase in education witnessed in Belgium is also similar to developments witnessed in other European countries (World Bank 2010). For Belgium, the impact of increasing education on aggregate-level trends of postponement and recuperation between 1970 and 2000 can be documented in detail, owing to the availability of complete maternity histories in the census. In this study, we reconstruct educational differentials in tempo and quantum of cohort fertility by birth order for women born between 1930 and 1980 in order to assess the impact of increasing education on the postponement or tempo of fertility. Subsequently, we focus on temporal variation in educational differentials, and point out the relevance of such variation for recent trends in the recuperation or quantum of fertility.

The study is structured as follows. The next section provides a review of mechanisms that link education to fertility outcomes and discusses the hypothesised effects of education on tempo and quantum of order-specific fertility. The third section discusses the quality of the Belgian census data and the methodology used in the study. Results are presented in the fourth section. The final section presents the conclusions and discusses the relevance of the Belgian results for trends in the postponement and recuperation of fertility in Europe.

2 Education and fertility

To assess the impact of rising education on recent trends in postponement and recuperation the mechanisms that link education to tempo and quantum of order-specific fertility need to be explored. In considering the multifaceted impact of education on fertility, a distinction can be made between the effect of current educational activity and the long-term effects related to the level and field of education (Lappegård and Rønsen 2005). The effect of educational activity means that being in education significantly reduces the rates of entering a consensual union, getting married or entering parenthood compared with non-students (Hoem 1986). Apart from the effect related to educational activity, the level and the field of education are assumed to be correlated with a variety of factors likely to have longer-term effects on fertility outcomes, such as value orientations and choice of household type (Lesthaeghe and van de Kaa 1986), fertility preferences (van de Kaa 2001; Van Peer 2008), career tracks and labour market opportunities (Becker 1981), and also contraceptive use (Cliquet and Lodewijckx 1986).

Research on the effects of educational attainment and labour force participation on fertility over the last few decades has been dominated by Becker's new home economics. At the core of the argument is the household production model where household members purchase goods from the market subject to a budget constraint and combine these with the time it takes these household members to produce commodities such as children from which they derive utility. An increase in the price of goods provides an incentive to produce less of those commodities for which these goods constitute an important input. According to Becker, the rising educational attainment of women has increased their earning potential, leading in turn to higher participation in the labour force. As the cost of time spent on nonmarket activities increases, the relative cost of children increases as well, thus reducing the demand for children (Neels 2006). Because opportunity costs are considered to be more important among the highly educated, education is assumed to have a negative effect on fertility. On the other hand, the income effect associated with higher wages may well outweigh substitution effects and increase fertility, leading to education having a positive effect on fertility. The effect of education thus depends on the compatibility of labour force participation and family formation that affects the balance of income effects and opportunity costs.

The explanation of macro-level fertility trends in western countries offered by Becker's economic reading has not remained uncontested and a number of restrictive assumptions have been challenged as a result. Liefbroer and Corijn (1999) consider the static view on the incompatibility of family life and labour force participation to be the main factor limiting the validity of the argument as a general explanation of the relationship between educational attainment and family formation. Based on their review of the literature, they suggest that the effects of education and labour force participation on family formation are contingent on

gender, the event considered, the societal context in which family formation takes place and the age of young adults.

The contingency in terms of *gender* is related to gender roles and particularly the gendered division of labour in the family. As family formation is more likely to reduce the time spent by women on paid labour than by men, an income effect is assumed to prevail in the case of men, whereas opportunity costs are assumed to outweigh income effects in the case of women. Hence, the effect of education on fertility is assumed to be negative for women, whereas the effect is likely to emerge as positive for men. Because entry into consensual unions or marriage is less likely than entry into parenthood to raise issues of compatibility with labour force participation, the negative effect of education is also assumed to be more pronounced in relation to fertility decisions compared with other events.

The contingency of the education effect in terms of *societal context* refers to the possibility that participating in the labour force may be more compatible with family formation in some societies than in others. Liefbroer and Corijn (1999) assume that the impact of education and labour force participation is weaker in societies where gender equality has become a dominant cultural value and in societies that provide better structural opportunities to combine work and family (Liefbroer and Corijn 1999). In this respect, Esping-Andersen points out that the Nordic countries, but also France and Belgium, where social policies since the early 1970s have actively pursued the de-familialisation of care burdens (e.g. through the availability of child care) have been characterised by higher fertility levels, at least from a comparative European perspective (Esping-Andersen 1999). A comparison of patterns of fertility and labour force participation in Denmark and Germany similarly suggests that the degree to which social policy supports dual-earners in their combination of work and family is likely to mediate the relationship between educational attainment and childbearing (Andersson et al. 2009). In evaluating the impact of policies on fertility outcomes, Neyer and Andersson (2008) stress the need to consider the (differential) uptake of policy measures under consideration. Although social class differences in policy response have received less attention in the study of policy effects on fertility (Gauthier 2007), results for Belgium suggest that taking advantage of arrangements such as child care and parental leave is not neutral in terms of socioeconomic background. The use of formal child care arrangements is reported to be much lower in families at the lower end of the income distribution scale, and highly educated women are also overrepresented in the population taking advantage of (parental) leave (Desmet et al. 2007; Ghysels and Van Lancker 2009). In Belgium, policies aimed at reducing the incompatibility of labour force participation and family formation may thus have reduced the negative effect of education on fertility over time.

Becker's view of changing fertility patterns focuses predominantly on the level of fertility and has remained somewhat agnostic of timing issues (Lappegård and Rønsen 2005). In addressing the problem of causal ambiguity between female

employment and delayed childbearing, Blake and Ní Brolcháin state that, given the known compatibility issues in this area, decisions concerning each of these activities are almost certainly taken in the context of a decision about the other (Blake 1965; Ní Brolcháin 1993). As a result, women may well adopt specific strategies aimed at combining participation in the labour force and forming a family throughout the life cycle. Rather than taking decisions sequentially, women may attempt to reconcile work participation and family formation with each other by choosing different modes of combining them: by accelerating childbearing, leaving the labour force in the interim but returning soon after completion, or maintaining a greater attachment to the labour force by working between births, rather than having a longer spell out of the labour force for childbearing (Neels 2006). Liefbroer and Corijn (1999) suggest that highly educated people are more likely to enter long-term career tracks where the increase in earnings is gradual, because age and experience are important determinants of wages. This combination of factors makes it in turn unlikely that highly educated women will have children early in their careers, as this would presumably hamper their prospects of entering career tracks typical for people with higher education (Liefbroer and Corijn 1999). Hence, highly educated women are assumed to postpone childbearing up to a point where they consider themselves to be sufficiently established in a career track and where taking a temporary break from the labour market is also considered less damaging for future career development (Kreyenfeld 2000). Similarly, Lappegård and Rønsen (2005) state that for women in Norway, who usually return to work when their youngest child is quite small, it has become increasingly important to get established in the labour market before becoming a mother. Given these considerations, we expect highly educated women to further delay parenthood after graduation until some foothold on the labour market has been gained. As job opportunities are determined by economic conditions, particularly for younger people entering the labour market, we further expect the delay of fertility to increase in periods of adverse economic conditions (Neels 2010; Sobotka et al. 2010).

The arguments presented thus far have predominantly considered the effects of opportunity costs and income, assuming stable and endogenous fertility preferences. Ryder (1965), however, associates demographic change with changes in the normative horizon. Similarly, the notion of a second demographic transition coined by Lesthaeghe and van de Kaa links recent demographic trends to the emergence of higher-order needs and post-materialist values (e.g. individual autonomy, self-actualisation, expressive work and socialisation values), disengagement from civic and community-oriented networks and general weakening of social cohesion (Lesthaeghe and van de Kaa 1986; Lesthaeghe and Neels 2002). In their 'cohort education' model of demographic change, Lesthaeghe and Surkyn (1988) link changing value orientations to the increasing educational levels of more recent birth cohorts, and refer to the pivotal role of

education in transmitting cultural codes and maintaining social stratification through building ideational systems and the patterning of preferences. Increasing education has, in their view, fostered the accentuation of post-materialist values and the general retreat of long-term commitments such as family formation. Van De Kaa doubts, however, that post-materialist values have directly affected childbearing preferences. Referring to results of the FFS for Canada and a large number of European countries, he concludes that neither the number of children ultimately wanted nor the number of children considered ideal shows substantial differences in terms of post-materialist values, whereas the average number of children actually born is lower among post-materialist women (van de Kaa in Bachrach 2001). For Belgium, Van Peer (2008) reports that the number of children desired among the highly educated has been consistently higher since the 1970s than the number desired by less educated groups. The effect of post-materialist values thus seems to indirectly affect fertility outcomes, i.e. in the way different groups (are able to) fit childbearing into their lives, rather than directly lower fertility preferences (Bachrach 2001). In this view, differential adoption of 'new' household forms (e.g. unmarried cohabitation rather than marriage) or opportunities to combine work and family may be instrumental in creating educational differentials in fertility.

Finally, the effect of education on fertility may be associated with differences in contraceptive use. In northern and western Europe the transition to dominant use of modern contraceptives by the majority of the population mainly took place during the 1960s and 1970s (Frejka 2009). Modern contraceptives have affected values concerning sexuality and childbearing, have changed partnership relationships and have been instrumental in postponing childbearing, but are not considered a primary cause of contemporary low fertility levels (Frejka 2009). In Belgium, educational level has played an important part in determining differentials in the adoption of modern contraceptive methods, and is thus likely to have given rise to educational differentials in the frequency of both timing and parity failures (Cliquet and Lodewijckx 1986).

To summarise, the increasing education of cohorts born after 1940 is hypothesised to have contributed substantially to the aggregate trends in fertility postponement and the recuperation of Belgian fertility between 1970 and 2000. More specifically, we expect highly educated women to delay childbearing due to their lengthier educational careers and also, as a result, the desire to firmly establish their position in the labour market prior to family formation. As this may be more difficult to achieve during recession, a further increase in postponement is likely to emerge during periods of adverse economic conditions. Because of this, we expect the transition into parenthood to be less frequent ultimately among highly educated women as labour force participation and family life are more likely to raise compatibility issues for this group. Because structural opportunities to combine family life and work have gradually improved since the early 1970s, this negative effect of education on entry into parenthood may have diminished

over time. The combined effects of increasing education on tempo and quantum would thus be to generate a substantial delay in entry into parenthood, combined with a reduction in the proportion of women ultimately entering parenthood. Among women managing the transition to parenthood, we assume the progression to higher-order births to be more frequent among women with higher education, due to the larger family sizes desired and the effect of income. Overall fertility will thus be determined for the highly educated by the extent to which more frequent progressions to higher-order births offset the lower proportion of women becoming mothers.

3 Data and methods

The analysis into the effects of education on trends in tempo and quantum of order-specific fertility is based on the Belgian censuses of 1991 and 2001. Both retrospective and prospective research designs are used. In both designs, data on order-specific fertility are drawn from the census of October 1st 2001. For women aged 14 and older, the 2001 census provides data on i) the years of subsequent live births up to the 12th birth, ii) the year of the first marriage and iii) the year when women first cohabited inside or outside marriage (Deboosere and Willaert 2004). Validation of fertility indicators against vital registration indicates that retrospective estimation yields reliable results for the period TFR between 1960 and 2000 and for the completed fertility of women born after 1930 (Gadeyne et al. forthcoming). In this study, the analysis of order-specific fertility trends is limited to third births as trends in fourth and higher-order births are similar to those of third births (Neels and Gadeyne 2008).

Analysis of data quality in the 2001 census indicates that non-response varies considerably by nationality of origin. Restricting the scope to the resident female population born between 1930 and 1975, non-response is limited to 1.4 per cent for Belgian-born women (who make up 86.0 per cent of the population considered), compared with 8.2 per cent for women of migrant origin. Apart from non-response, information on key covariates like education is also more frequently missing for immigrant groups. Due to these data limitations, the analysis is restricted to women holding Belgian nationality at birth, thus excluding foreign born immigrants (first generation) and also their children who were often born in Belgium and have Belgian nationality (second generation) (Deboosere, Lesthaeghe et al. 2009). To assess the impact of migrant populations on Belgian fertility rates, we compared the period TFR estimated retrospectively from the 2001 census with results obtained from vital registration. Contrary to common expectations, but consistent with results obtained in the Netherlands and France (Fokkema et al. 2008; Toulemon et al. 2008), the migrant population turns out to have a limited impact on the Belgian period TFR between 1960 and 2000. Migrants on average yield a positive contribution to the period TFR of 0.04

throughout the 1960s and 1970s, increasing to 0.05 in the 1980s and 0.06 in the 1990s. The limited impact of immigration on fertility levels throughout the period considered is due to the heterogeneous composition of the immigrant population. The somewhat higher fertility among non-western immigrant groups such as Turkish and Moroccan populations is offset by the lower fertility of immigrants of European descent. As approximately 50 per cent of second-generation Turkish and Moroccan immigrants currently marry a partner recruited from the country of origin (Corijn and Lodewijckx 2009), the migration background clearly continues to be an indispensable factor in family formation and fertility among these populations that warrants separate study. In conclusion, however, restricting the analysis to Belgian women of non-migrant descent does not seem to invalidate the results of the analyses.

3.1 Retrospective design

The effects of rising education on trends in tempo and quantum of order-specific fertility are assessed by reconstructing fertility schedules by order of birth and level of education from the 2001 census for cohorts born between 1930 and 1980.[1] Because the census only provides fertility histories for women aged 14 and older, the analysis is necessarily restricted to the impact of female educational attainment. Decomposition by level of education uses information on the highest level of education obtained in 2001. Further analysis indicates that 98.5 per cent of the women in the 1930-1980 cohorts finished their educational career before having their first child. Five levels of education are considered in the analysis; i) no education or primary education (PE), ii) lower secondary education (LSE), iii) higher secondary education (HSE), iv) short tertiary education (HEST) and v) long tertiary education (HELT).[2] For cohorts born between 1930 and 1961, changes in the tempo and quantum of order-specific fertility are illustrated by evaluating cohort TFR and cohort mean age at childbearing (cohort MAC) at the age of 39. For cohorts born after 1951—whose fertility schedules are right censored at increasingly younger ages in the 2001 census—trends in

[1] Although the decomposition of period indicators by educational level is equally feasible (e.g. Neels 2009), the separation of tempo and quantum components is more straightforward using a cohort approach (Ní Brolcháin 1992).

[2] The proportion of women without education or with primary education declines progressively over subsequent 5-year birth cohorts from 41.0% in the 1931-35 cohorts to 36.2% in the 1936-40 cohorts, 28.8% in the 1941-45 cohorts, 20.7% in the 1946-1950 cohorts, 13.9% in the 1951-55 cohorts, 10.7% in the 1956-60 cohorts, 6.9% in the 1961-65 cohorts, 4.0% in the 1966-70 cohorts, 2.3% in the 1971-75 cohorts, and 1.5% in the 1976-80 cohorts. Conversely, the proportion of women graduating from tertiary education increased from 7.8% in the 1931-35 cohorts to 11.9% in the 1936-40 cohorts, 16.6% in the 1941-45 cohorts, 21.0% in the 1946-50 cohorts, 24.8% in the 1951-55 cohorts, 29.2% in the 1956-60 cohorts, 35.0% in the 1961-65 cohorts 40.9% in the 1966-70 cohorts, 47.6% in the 1971-75 cohorts, 34.2% in the 1976-80 cohorts. Given the young age of the latter cohorts at the time of the census, the share of higher educated is likely to have increased after October 1st 2001.

postponement are illustrated by comparing cumulated fertility by birth order for women born between 1951 and 1980 with the order-specific fertility schedules of the 1946-1950 birth cohorts. The 1946-1950 cohorts have finished the first demographic transition, but show limited postponement of fertility, making them a suitable benchmark to analyse postponement in subsequent birth cohorts. Finally, to assess the impact of increasing education on postponement and recuperation, order-specific fertility schedules of the 1951-1980 birth cohorts are standardised for education using as the reference standard the distribution by educational level of the 1946-1950 birth cohorts (Neels 2006; Neels and Gadeyne 2008). For the cohorts born after 1951, the difference in cumulated fertility at age 25 between observed and standardised fertility schedules provides a measure of the amount of postponement that can be attributed to increasing educational attainment.

3.2 Prospective design

The 2001 census does not provide retrospective time-varying information on household positions and activity status. To explore the mechanisms linking education to fertility outcomes, a prospective research design was used. For 95.6 per cent of the women born between 1958 and 1969 present in the 2001 census, additional information on household positions and activity status could be drawn from the census of March 1st 1991. Using hazard models, the effects of these covariates on the first birth hazard of childless women were estimated during a 3-year observation period following the 1991 census. As the focus is on postponement of fertility, the analysis was restricted to first births. The research design is similar to the prospective research design used in the Generation and Gender Surveys (Simard and Franklin 2005). To avoid problems of state and rate dependence—e.g. women changing their activity status in anticipation or as a result of entry into parenthood—the analysis was restricted to the 1992-1994 period, thus allowing an appropriate time lag of 10 months between the measurement of covariates in the 1991 census and the entry into the risk set as of January 1992. We assumed that women are less likely to make anticipatory changes in their employment status before a pregnancy occurs (Liefbroer and Corijn 1999). The analysis uses discrete-time event history models (Allison 1982), because occurrence of the first birth in the 2001 census is measured in years.

4 Results

The discussion of results is subdivided into four parts. Section 4.1 provides a summary of the aggregate trends in tempo and quantum of order-specific fertility between 1960 and 2000. Section 4.2 links these trends to educational differentials in order-specific cohort TFR and cohort MAC of women born in 1930-1961. Section 4.3 discusses postponement and recuperation by comparing the cumulated fertility of women born in 1951-1980 with the order-specific fertility schedules of women born in 1946-1950. Finally, Section 4.4 discusses the relationship between education, household position, activity status and fertility outcomes by turning to the results of the prospective analyses.

4.1 Trends in order-specific fertility, 1960-2000

Between 1960 and 2000, the period TFR in Belgium declined from 2.70 in 1964 to 1.74 in 1975 and further to 1.5 children per woman in 1985 (Figure 1a). The period TFR remained virtually constant at this low level until 1995, but witnessed some recovery in the second part of the 1990s. After 2000, the period TFR recovered to 1.62 in 2002 and even 1.8 in 2006 (Council of Europe 2005). Between 1965 and 1975, the decline in the period TFR does not seem to have been driven by postponement of fertility, but after 1975 the decline in the period TFR coincides with a rapid increase in the period MAC from 26.6 years in 1974 to 28.9 years in 2000. Over the period considered, the cohort TFR declined from 2.04 for the 1934 cohort to 1.77 for women born in 1961. The cohort TFR equally declined below replacement, but remained nevertheless substantially higher than the levels suggested by the period TFR during most of the 1980s.

The decline in the period TFR after 1965 is an aggregate outcome of the interplay between i) the changing composition of total fertility in terms of birth order components, and ii) shifts in tempo and quantum of fertility that have differentially affected period indicators of order-specific fertility (Neels 2006; Neels and Gadeyne 2008). For first to third births, the plots in Figure 1 compare the period TFRi and MACi between 1960 and 2000 with the TFRi of cohorts born between 1929 and 1961. The cohort fertility indicators are lagged by the cohort mean age at childbearing. The correspondence between period and cohort indicators is largest for third births. Where the proportion of women having a third birth was approximately 35 per cent in the mid 1960s, this proportion declined below 25 per cent by the mid-1970s.

Figure 1:
Period TFRi and MACi (1960-2000) versus cohort CTFRi (cohorts 1931-1961 lagged by cohort MACi), Belgium

Figure 1a. PTFR, CTFR and PMAC

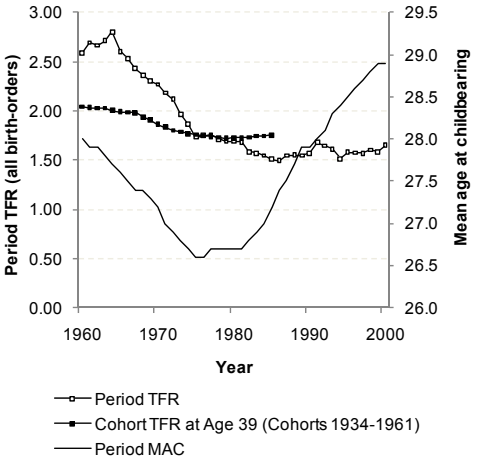


Figure 1b. PTFR1, CTFR1 and PMAC1

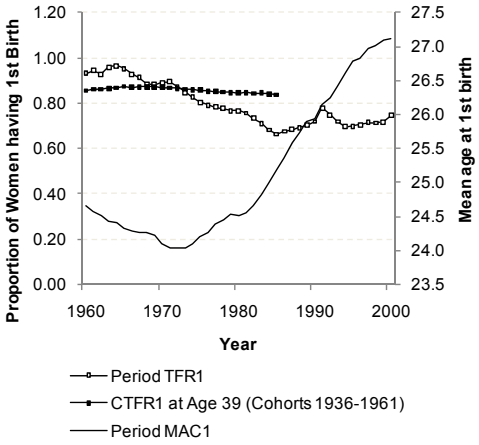


Figure 1c. PTFR2, CTFR2 and PMAC2

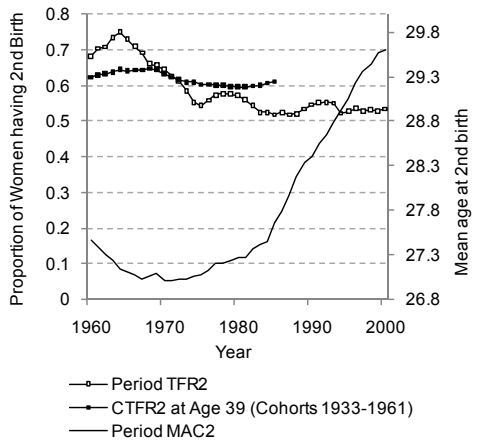
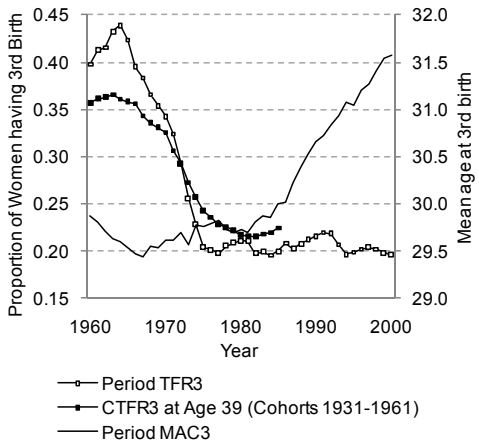


Figure 1d. PTFR3, CTFR3 and PMAC3



Source: Statistics Belgium, SEE2001, calculation by authors

Given this decline in third and higher-order births—which is largely responsible for the decline in total fertility below 2 children per woman—the period TFR after the early 1970s increasingly reflects trends in tempo and quantum of first and second births. For these birth orders, however, the decline in the period TFRi is not mirrored by the trend in the cohort TFRi. The decline in period TFR1 from 0.95 in 1964 to 0.66 in 1985 partially overlaps a rapid increase in MAC1 from 24 years in 1971 to 27 years in 2000. The cohort TFR1 for cohorts born between 1936 and 1961 has been relatively stable around 0.85, however, indicating that the period TFR1 is too low or deflated as a result of rapid postponement of childbearing in the period considered (Bongaarts and Feeney 1998). Similarly, the decline in the period TFR2 from 0.75 in 1964 to 0.54 in 1975 partially overlaps a rapid increase in period MAC2 and is not mirrored by the cohort TFR2 that was relatively stable between 0.60 and 0.65.

To summarise, the breakdown of total fertility by birth order suggests that the decline in the period TFR between 1965 and 1975 was primarily driven by reductions in the quantum of third and higher-order births, whereas the decline in the period TFR after 1975 is primarily driven by the deflation of the period TFRi for first and second births, reflecting changes in the timing of births, rather than reductions in the quantum of cohort fertility (Neels and Gadeyne 2008). The subsequent section investigates how both the changing tempo of first and second births and the reduction in quantum of third births are related to increasing educational attainment over the period considered.

4.2 Educational differentials in order-specific fertility

The long-term trend in the cohort MAC1 exhibits the typical pattern of decline from the cohorts born in the 1930s to the cohorts born in the early 1940s followed by an increase indicating first birth postponement (Frejka and Sardon 2006). The decomposition of cohort fertility by education for the cohorts 1930-1961 indicates that the differentiation in tempo and quantum of order-specific fertility by education was already well marked for women born in the early 1930s, and that these differentials have persisted over time (Figures 2 and 3). For highly educated women (i.e. short and long tertiary education) born in 1931-1935, the mean age at first birth was already around 28 years (Figure 2b). Only 70 per cent of these highly educated women eventually had children (Figure 3b). For those who did enter parenthood, however, progression to a second child (Figure 3b) and then to a third child was very frequent (Figure 3d). This more frequent progression among the highly educated women born in 1931-1935 to second and higher-order births is not sufficient to compensate for the high proportion of women remaining childless. As a result, cohort completed fertility of highly educated women born in the early 1930s is substantially lower than the completed fertility of women with secondary education, and particularly women with no education or primary education only.

The fertility pattern of highly educated women born after 1930 is characterised by an increasing mean age at first birth and particularly—in contrast to the trends suggested by the period TFR1 and period MAC1—a significant increase in the proportion of these women entering parenthood: compared with women born in 1931-1935 the proportion of women making the transition to motherhood by age 39 has increased by 9 percentage points for women with short tertiary education and 7 percentage points for women with long tertiary education. The frequent progression to a second child—already characteristic of tertiary educated women born in the early 1930s—persists for the more recent generations born after 1930, with the cohort parity progression ratio being stable at around 80 to 85 per cent (Figure 3c). Progression to third births, however, has declined substantially for all levels of education after cohorts born in the 1930s, but has remained more frequent in cohorts born after 1945 among women with primary education and women with long tertiary education.

The trends in educational differentials in order-specific fertility over subsequent birth cohorts have reversed the relationship between educational attainment and cohort completed fertility since the cohort of women born in 1947. The more frequent entry into parenthood of women with long, and particularly short, tertiary education, combined with frequent progression to second and third births, has resulted in a reversal of the negative gradient. Among cohorts born in 1947-1961, completed fertility of highly educated women (i.e. short and long tertiary education) consistently exceeds that of women with secondary education and, for most cohorts born in the 1950s, it also exceeds the completed fertility of women with no or primary education only.

Figure 2:
Cohort mean age at childbearing by level of education, birth orders 1-4, Belgian women, birth cohorts 1930-1961

Figure 2a. Cohort MAC (all orders)

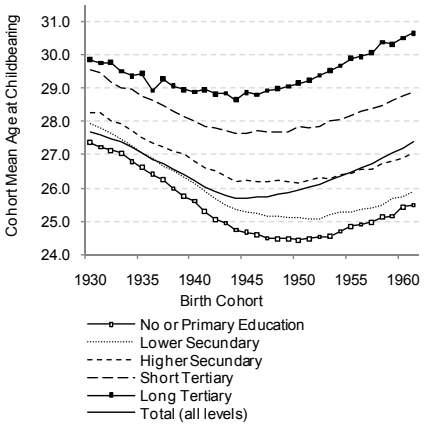


Figure 2b. Cohort MAC1

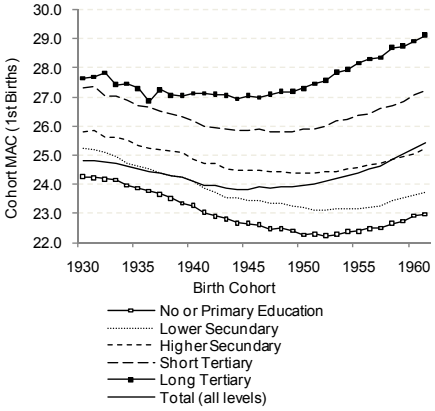


Figure 2c. Cohort MAC2

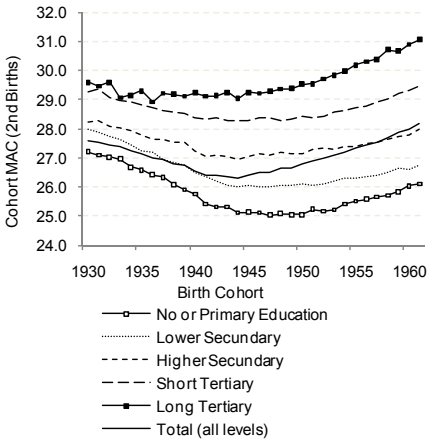
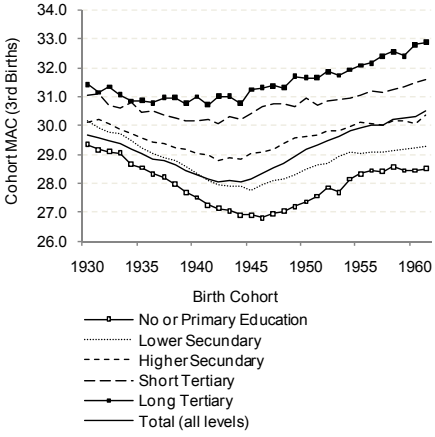


Figure 2d. Cohort MAC3



Source: Statistics Belgium, SEE2001, calculation by authors

Figure 3:
Completed cohort fertility and Cohort parity progression ratios, first to third births, Belgian women, cohorts 1930-1961

Figure 3a.

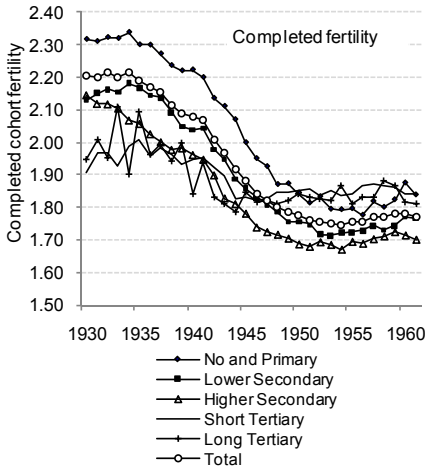


Figure 3b.

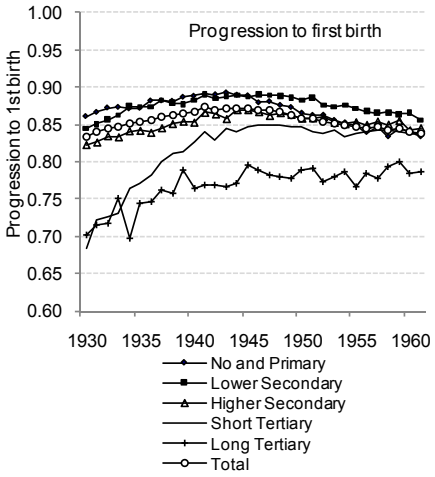


Figure 3c.

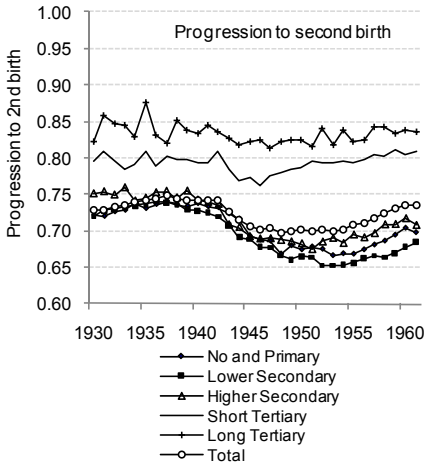
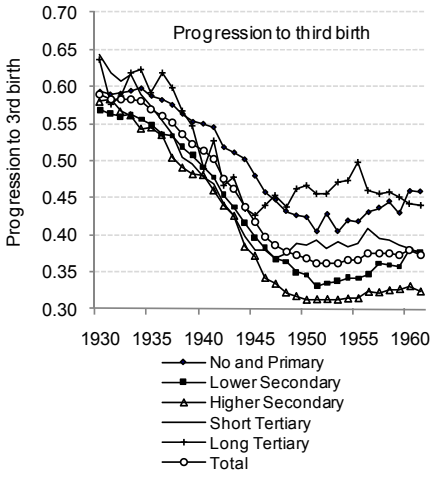


Figure 3d.



Source: Statistics Belgium, SEE2001, calculation by authors

The cohort MACi indicate that trends in fertility postponement occurred for all levels of education suggesting that period effects such as the oil crisis in the early 1970s played an important role in starting postponement, over and above

compositional effects associated with increasing education (Neels 2010; Sobotka et al. 2010). Among women with long tertiary education, fertility postponement was initiated by the cohort of women born in 1946, who had their first birth in 1973 on average. Less educated women (i.e. no education or primary education only, and lower secondary education) further advanced first births up to the cohort born in 1952, who had their first child on average between 1974 and 1975. This has implications for the analysis of differences in cumulated fertility over subsequent birth cohorts. For the analysis of postponement and recuperation it is customary to compare cumulated fertility by age with the schedule of a benchmark cohort. As suggested by Lesthaeghe (2001) a good benchmark cohort would be one that has not yet experienced much postponement nor catching up (i.e. at the end of the first fertility transition). In the Belgian case, both the 1946-1950 and the 1951-1955 cohorts are thus viable candidates. As the start of postponement has to be located in the earlier cohorts for higher birth orders, the 1946-1950 cohorts were used as a benchmark to analyse differences in cumulated fertility. The decomposition of cohort MAC by level of education and birth order illustrates that the overall MAC is ill-suited to locating the start of postponement, as it continued its decline well into the 1970s, predominantly reflecting the decline of third and higher-order births when postponement of first and second births had in fact already started. The Belgian data thus illustrate that the MAC for all birth orders combined is influenced by both the order-specific MACi and the relative weight of different birth orders.

The comparison of educational differentials in cohort MACi further indicates that differentials by education have widened over the generations considered. In the 1931-1935 birth cohorts, the cohort MAC1 was 24.3 years for women with primary education and 25.2 years for women with lower secondary education. For women born in 1961 with the same levels of education, the cohort MAC1 declined to 23.0 years and 23.7 years respectively (Figure 2a). Despite the fact that women have become younger on average at first birth, however, the transition to parenthood has become less frequent for less educated women born in 1961 than it was for less educated women born in 1931 (Figure 3a). Compared with highly educated women, progression to second births is also more subject to temporal variation among women with primary or secondary education (Figure 3b).

4.3 The importance of education for secular trends in tempo and quantum

The persistence of educational differentials in cohort TFRi and cohort MACi, together with the increase in educational attainment of women born after 1945, suggests that the expansion of education may have contributed substantially to trends in postponement and recuperation of fertility. More specifically, cohort tempo and quantum are assumed to increasingly reflect the pattern of delayed

fertility characteristic of women with higher educational levels (Neels 2009). The analysis of postponement was extended to the cohort born in 1975 by comparing cumulated fertility over subsequent birth cohorts (Table 1 and Figure 4).

Postponement of childbearing in Belgium was initiated by cohorts born in 1951-1955, with the proportion of women having at least one child at age 25 being 4 percentage points lower than for women born in 1946-1950. This difference in cumulated fertility at age 25 rapidly increased from 10 percentage points in the 1956-1960 cohorts to 34.2 percentage points for the cohort born in 1971-1975 (Table 1).

Table 1:
Observed and standardised differences in cumulated fertility at age 25 by birth order, Belgium, cohorts 1951-80 versus cohort 1946-50 (base)

	1951-55	1956-60	1961-65	1966-70	1971-75
First births					
Observed difference	-0.040	-0.098	-0.199	-0.271	-0.342
Standardised difference	-0.018	-0.056	-0.125	-0.163	-0.196
*% reduction in difference**	54.0	42.9	37.3	39.8	42.7
Second births					
Observed difference	-0.036	-0.063	-0.109	-0.144	-0.167
Standardised difference	-0.020	-0.035	-0.063	-0.079	-0.080
*% reduction in difference**	45.0	45.3	42.3	45.4	52.4
Third births					
Observed difference	-0.022	-0.028	-0.034	-0.039	-0.041
Standardised difference	-0.016	-0.18	-0.019	-0.017	-0.010
*% reduction in difference**	28.1	34.2	44.8	56.0	76.5
Total fertility (all births)					
Observed difference	-0.108	-0.200	-0.354	-0.467	-0.562
Standardised difference	-0.061	-0.117	-0.214	-0.264	-0.286
*% reduction in difference**	43.0	41.6	39.5	43.4	49.1

Source: Statistics Belgium, 2001 Census, calculation by authors;
*percentage reduction in fertility difference = ((observed diff.- standardized diff.) / observed diff.)

For cohorts born in 1951-1965 recuperation of delayed fertility sets in after age 25, suggesting that the shift in the timing of first births may have had limited impact on the proportion of women eventually entering parenthood. Sizeable differences in cumulated fertility also emerge for second births at age 25. In the 1951-1955 birth cohorts, the proportion of women having at least 2 children is 3.6 percentage points less at age 25 than the proportion of women born in 1946-1950. The difference rapidly increases over subsequent cohorts, ranging from 6.3 percentage points in the 1956-1960 cohorts to 16.7 percentage points for women born in 1971-1975. Again, differences relative to the 1946-1950 birth cohorts grow increasingly smaller after age 25, suggesting that at least for cohorts born between 1951-1965, the shift in the timing of fertility had little impact on the

proportion of women eventually having 2 or more children. For third births, differences in cumulated fertility at age 25 are smaller: the proportion of women having at least 3 children at age 25 is 2.2 percentage points less than for women born in 1951-1955 than for women born in 1946-1950 and this difference increases to 4.1 percentage points cohorts born in 1971-1975. Recuperation of third births after age 25 was only partial for the 1951-1955 birth cohorts, but the 1956-1965 birth cohorts again seem to be converging on the level of the benchmark cohort. Finally, comparison of cumulated fertility for all birth orders combined illustrates the compound effect of postponement on cohort fertility levels. Compared with the 1946-1950 birth cohorts, cumulated fertility is 0.11 children lower for women born in 1951-1955, with the difference increasing to 0.56 children in the 1971-1975 birth cohorts.

Standardisation of the order-specific fertility schedules of the 1946-1975 birth cohorts for education makes it possible to measure the impact of increasing education on the postponement of fertility. For all birth orders taken separately as well as for total fertility, standardisation substantially reduces differences in cumulated fertility at age 25 for cohorts born in 1951-1975 compared with cohorts born in 1946-1950. The percentage reduction in the difference observed through standardisation provides a more accurate assessment of the impact of education on fertility postponement. For first births, 37.3 to 54.0 per cent of the difference observed in cumulated fertility at age 25 is accounted for by the increasing education of women born between 1951 and 1975 relative to the 1946-1950 birth cohorts. For second births, the percentage reduction in the difference observed at age 25 ranges from 42.3 per cent for the 1961-1965 birth cohorts to 52.4 per cent for the 1971-1975 birth cohorts. For third births, the percentage reduction of the difference observed is limited to 28.1 per cent for the 1951-1955 birth cohorts, increasing to 76.5 per cent for the 1971-1975 birth cohorts. It should be noted, however, that differences in cumulated fertility over subsequent birth cohorts are much smaller in the case of third births than for lower birth orders. The compound impact of increasing education on postponement of cohort fertility can be gauged from the standardisation of fertility schedules for all birth orders combined. Compared with the 1946-1950 birth cohorts, a sizeable proportion of the difference in cumulated fertility observed at age 25 can be explained by rising educational attainment, ranging from 39.5 per cent for the 1961-1965 birth cohorts to 49.1 per cent for the 1971-1975 birth cohorts.

4.4 Educational differentials in the transition to parenthood: how are they related to household positions and activity status?

In this last section, the relationship between educational level, household position and activity status is addressed. A prospective research design was used to assess the effects of these covariates on entry into parenthood.

Figure 4:
Observed deficits in cumulated order-specific fertility by age, comparison of cohorts 1935-1980 relative to 1931-1935 birth cohorts[3]

Figure 4a. Total births.

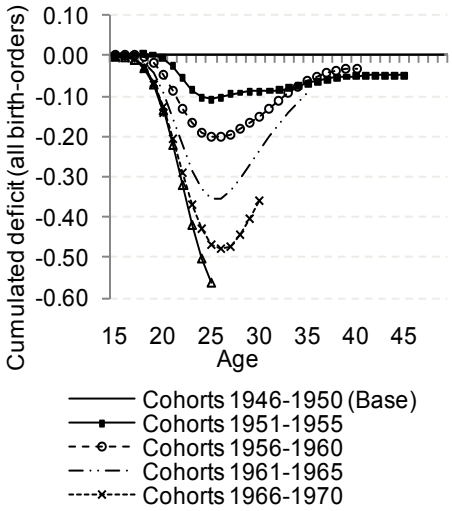


Figure 4b. First births.

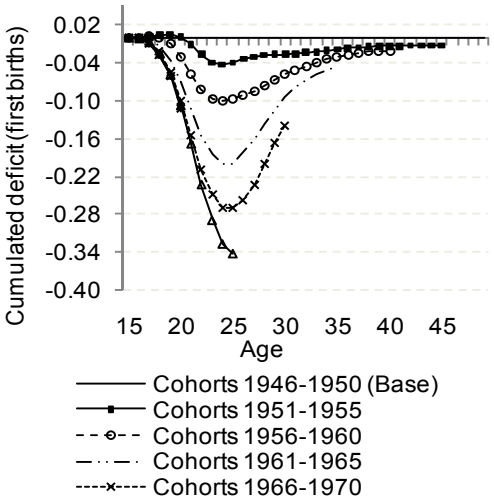


Figure 4c. Second births.

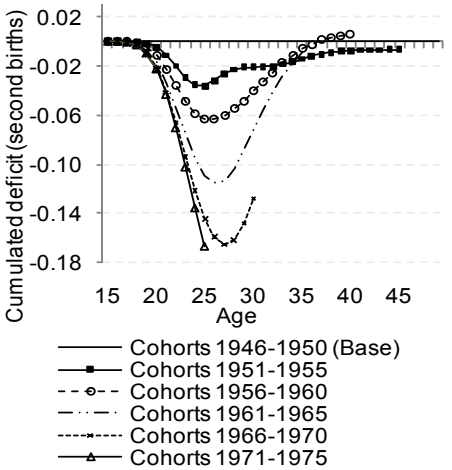
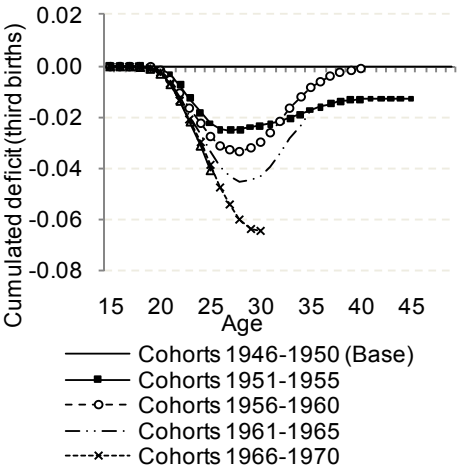


Figure 4d. Third births



Source: Statistics Belgium, SEE2001, calculation by authors

[3] The 1946-1950 birth cohorts have the following cumulated fertility (all birth orders) at ages 20, 25, 30, 35, 40 and 45: 0.19, 0.93, 1.52, 1.75, 1.81 and 1.82 respectively. Order-specific fertility schedules of the 1946-1950 birth cohorts are as follows: 15.6%, 60.8%, 81.5%, 85.7%, 86.6% and 86.8% of the women had a first birth by ages 20, 25, 30, 35, 40 and 45 respectively; 1.2%, 25.1%, 50.5%, 59.2%, 60.7% and 60.9% of the women had a second birth by ages 20, 25, 30, 35, 40 and 45 respectively and less than 1%, 5.7%; 15.1%; 21.5%; 23.2% and 23.5% of the women had a third birth by ages 20, 25, 30, 35, 40 and 45 respectively.

4.4.1 Education and household positions

The relationship between education and household position is analysed by combining information on the current situation in the 1991 census with information on whether women have ever cohabited or have previously been married.[4] This results in the 9 household positions considered in Table 2. In the case of less educated women (i.e. no education or primary education only, and lower secondary education) aged 22-27 years, 60.7 to 62.7 per cent of the women have already moved out of the parental home, with approximately 13 per cent residing in a single-person household, 11.0 to 12.1 per cent living in unmarried cohabitation and 29.1 to 33.2 per cent being married. In contrast, most of the highly educated women (i.e. short and long tertiary education) were still enrolled in education at this age with the vast majority still residing in the parental household. As a result, the proportion of women living in single-person households, unmarried cohabitation or marriage was substantially lower. Among highly educated women, particularly those enrolled in long higher education, educational activity thus delays union formation. In the case of women aged 28-33 years, more than 70 per cent of the less educated women have left the parental home, with 35.8 to 40.5 per cent being married, 19.1 to 22.0 per cent living in single-person households and 9.7 to 10.6 living in consensual unions. In contrast, highly educated women still showed somewhat higher proportions living with their parents, although most of them would now have finished their educational career. Turning to childless women living in unions, 33.4 to 38.7 per cent were married and 7.1 to 6.7 per cent were living in consensual unions. This is again considerably lower than the proportions encountered for less educated women. The proportion living in single-person households on the other hand, ranging from 25.3 to 28.5 per cent, was much higher than for less educated women. To summarise, highly educated women are slower to move out of the parental home and more frequently move into single-person households, resulting in lower proportions of women living in marriage or cohabitation, even at ages 28-33.

The effects of household position in 1991 on the odds of entering parenthood during the subsequent 3-year period were estimated using discrete-time hazard models (Tables 3 and 4). The analysis is stratified by age-group (22-27 years and 28-33 years) and educational level, because the effect of education was found to differ significantly by age-group[5] and the effects of household position and

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[4] Retrospective information on cohabitation and marriage is drawn from the question on the year of the first marriage and the year of first cohabitation (inside of outside marriage) in the 2001 census. Women are considered to have lived in unmarried cohabitation when the date of first cohabitation precedes the date of first marriage.

[5] The model including an interaction between age (age-groups 22-27 years and 28-33 years) and education (5 levels) resulted in a significant improvement in model fit over an additive model specification. (ΔDeviance = 1030 for Δdf = 4).

activity status were in turn found to differ significantly by education.[6] In each of the stratified models, the effects of household position and activity status on first birth hazards were estimated controlling for age at entry in 1991 (quadratic effect) and duration since graduation in 1991 (quadratic effect). Duration since January 1992 (in years) is used as the exposure dimension in the analysis.[7] All covariates are time-constant, that is, referring to the situation in the 1991 census.

The results of the discrete-time event history analyses for the age-group 22-27 indicate that married women who never cohabited before marriage generally have the highest odds of entering parenthood in the subsequent 3-year observation period (Table 3). With the exception of women with long tertiary education, the odds are not significantly lower, however, for women who did previously cohabit. The odds of having a first child in the next 3 years are lower for women living with their parents, women living in a single-person household and women living in a consensual union, with the negative effects becoming more evident as educational attainment increases. For women aged 28-33 years (Table 4), the odds of having a first child in the next 3 years are again highest for married women, regardless of previous cohabitation. For women still living in the parental household, the effects differ depending on previous cohabitation or marriage and educational level: generally the odds are significantly lower, except for less educated women who were previously married or had lived in a consensual union. For women in single-person households and unmarried cohabitation, the odds of having a first child are lower, particularly among women with educational levels exceeding higher secondary education. In summary, first birth probabilities are lower for women living with their parents, in single-person households or in consensual unions compared with married women, with the effects becoming more striking as the level of education increases. For less educated women, household positions other than marriage thus provide a somewhat more ready context for entry into parenthood.

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6 The model including an interaction between household position in 1991 (9 categories) and level of education in 1991 resulted in a significant improvement of model fit over an additive model specification (ΔDeviance = 1415, Δdf = 32) Similarly, the model allowing an interaction between educational attainment in 1991 (5 levels) and activity status in 1991 (4 categories) resulted in a significant improvement of model fit compared to the additive model specification (ΔDeviance = 258, Δdf = 12).

7 Alternatively, all models were re-estimated using age as a time-varying covariate (i.e. a late entry design). Because of the stratification by age-group, the estimates of the covariate effects were found to be nearly identical to those reported in tables 3 and 4. Results are available on request from the first author.

Table 2:
Distribution of childless women aged 22-33 by age, educational level, household position and activity status, Belgium, 1991 census

	Age-group 22-27 in 1991 by education					Age-group 28-33 in 1991 by education				
Covariates	PE	LSE	HSE	HEST	HELT	PE	LSE	HSE	HEST	HELT
Household position (in 1991)										
Residing in the parental home, by never versus ever cohabited/married										
Never	30.7	26.5	29.0	42.8	58.0	24.1	18.5	17.2	19.3	20.3
Ever	8.6	10.8	12.8	15.6	16.5	4.2	4.9	6.1	6.8	8.5
Single person household, by never versus ever cohabited/married										
Never	7.5	7.2	5.5	4.2	4.1	10.0	11.0	11.9	14.4	16.2
Ever	6.1	6.6	5.5	4.1	3.5	9.1	11.0	11.1	10.9	12.3
Married, by never versus ever cohabited										
Never	24.0	28.0	30.5	23.5	11.0	31.4	34.9	35.6	31.9	24.6
Ever	5.1	5.2	4.7	3.3	2.5	4.4	5.6	5.8	6.8	8.8
Cohabiting, by never versus ever married										
Never	9.3	8.2	6.3	3.2	2.0	6.9	6.3	6.1	5.2	5.0
Ever	2.8	2.8	2.2	1.1	0.6	3.7	3.4	2.9	1.9	1.7
Other household position										
Otherhh	6.0	4.7	3.5	2.3	1.7	6.2	4.4	3.3	2.8	2.6
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
N	18568	28294	97064	80587	35388	14880	15813	36104	30507	13924
Activity Status (in 1991)										
Education	2.1	0.9	2.7	18.3	51.0	0.1	0.1	0.1	0.4	2.2
Full-time	38.3	45.3	54.1	48.9	31.3	37.2	48.3	59.1	59.3	67.8
Part-time	24.8	29.3	28.3	27.2	12.5	24.4	27.9	27.8	35.2	24.7
Unempl.	28.9	21.7	14.2	5.4	5.2	29.1	19.3	11.7	4.7	5.0
Other	5.9	2.7	0.7	0.2	0.1	9.2	4.5	1.3	0.3	0.3
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
N	18568	28294	97064	80587	35388	14880	15813	36104	30507	13924

Source: Statistics Belgium, 1991 Census, Calculations by authors

Table 3:
Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 22-27 years on first birth hazards between in 1992-1994, Belgium

	Models stratified by level of education and observation period:									
	None or primary only		Lower Secondary		Higher Secondary		Short Tertiary		Long Tertiary	
Observation period (time-varying)										
1992	0.32	***	0.34	***	0.3	***	0.25	***	0.19	***
1993	0.31	***	0.35	***	0.34	***	0.35	***	0.29	***
1994	0.28	***	0.36	***	0.36	***	0.43	***	0.41	***
Years since graduation (in 1991, time-constant)										
Linear	1.07	***	1.00		0.99	*	0.93	***	0.94	
Quadratic	0.99	***	0.99	**	1.00	**	0.99	***	0.99	
Age (in 1991, time-constant)										
Linear	0.89	**	1.00		1.04	**	1.12	***	1.20	**
Quadratic	1.00		0.99		0.99	**	0.99		0.99	
Household position (in 1991, time-constant)										
RESPAR_NMNC	0.17	***	0.15	***	0.13	***	0.09	***	0.08	***
RESPAR_EMEC	0.84	**	0.67	***	0.63	***	0.52	***	0.42	***
SINGLE_NMNC	0.35	***	0.26	***	0.19	***	0.1	***	0.08	***
SINGLE_EMEC	1.75	***	0.57	***	0.56	***	0.44	***	0.37	***
MARRIED_NPC	-		-		-		-		-	
MARRIED_EPC	0.97		0.95		0.95		0.95		0.82	**
COHAB_NM	0.57	***	0.46	***	0.43	***	0.32	***	0.27	***
COHAB_EM	1.13		1.14	*	1.21	***	1.05		0.98	
OTHERHH	0.45	***	0.36	***	0.44	***	0.34	***	0.31	***
Activity Status (in 1991, time-constant)										
Full-time	-		-		-		-		-	
Part-time	1.05		1.04		1.03	*	1.06		1.01	
Unemployed	0.86	**	0.9	**	0.92	***	0.79	**	0.72	***
Other	0.49	***	0.61	***	0.87		1.01	***	0.76	
N Events	4565		8034		28655		21195		42996	
N Person-periods	42195		63732		217189		155728		5501	
Deviance (-2LL)	26738		44731		154806		107359		28182	

Significance levels: *p <.05, ** p <.01, *** p <.001
Legend: *RESPAR_NMNC*: lives with parents, never married nor cohabited; *RESPAR_EMEC*: lives with parents, ever married or ever cohabited; *SINGLE_NMNC*: single-person household, never married nor cohabited; *SINGLE_EMEC*: single-person household, ever married or cohabited; *MARRIED_NPC*: married with no pre-marital cohabitation; *MARRIED_EPC*: married with pre-marital cohabitation; *COHAB_NM*: cohabiting with partner, never married; *COHAB_EM*: cohabiting with partner, ever married; *OTHERHH*: other household position

Table 4:
Effects (Exp(b)) of socio-economic characteristics measured in the 1991 census among childless women aged 28-33 years on first birth hazards between in 1992-1994, Belgium

	Models stratified by level of education and observation period:				
	None or Primary only	Lower Secondary	Higher Secondary	Short Tertiary	Long Tertiary
Observation period (time-varying)					
1992	0.14 ***	0.20 ***	0.21 ***	0.28 ***	0.36 ***
1993	0.12 ***	0.16 ***	0.18 ***	0.26 ***	0.35 ***
1994	0.10 ***	0.13 ***	0.15 ***	0.24 ***	0.35 ***
Years since graduation (in 1991, time-constant)					
Linear	1.02	0.95 ***	0.90 ***	0.89 ***	0.90 **
Quadratic	0.99	1.00	0.99 ***	0.99 ***	0.99 **
Age (in 1991, time-constant)					
Linear	0.80 ***	0.82 ***	0.94 *	0.89 ***	0.86 ***
Quadratic	1.00	1.01	0.99	1.00	1.01
Household position (in 1991, time-constant)					
RESPAR_NMNC	0.19 ***	0.20 ***	0.18 ***	0.12 ***	0.09 ***
RESPAR_EMEC	1.31 **	1.28 **	1.05	0.89 **	0.66 ***
SINGLE_NMNC	0.51 ***	0.42 ***	0.30 ***	0.17 ***	0.11 ***
SINGLE_EMEC	1.15	0.99	0.81 ***	0.62 ***	0.50 ***
MARRIED_NPC	-	-	-	-	-
MARRIED_EPC	1.18	0.99	1.00	1.05	1.08
COHAB_NM	0.90	0.68 ***	0.60 ***	0.52 ***	0.42 ***
COHAB_EM	1.38 **	1.54 ***	1.01	1.51 ***	1.46 **
OTHERHH	0.58 ***	0.55 ***	0.47 ***	0.36 ***	0.30 ***
Activity Status (in 1991, time-constant)					
Full-time	-	-	-	-	-
Part-time	1.07	0.95	0.95	1.01	0.97
Unemployed	0.82 **	0.70 ***	0.73 ***	0.65 ***	0.60 ***
Other	0.48 ***	0.58 ***	0.60 ***	0.69	0.86
N Events	1845	2571	7248	7723	3849
N Person-	38896	39689	86547	68410	30515
Deviance (-2LL)	13829	17852	46465	43004	20211

Significance levels: *p < .05 ,**p < .01 ,*** p < .001
Legend: *RESPAR_NMNC*: lives with parents, never married nor cohabited; *RESPAR_EMEC*: lives with parents, ever married or ever cohabited; *SINGLE_NMNC*: single-person household, never married nor cohabited; *SINGLE_EMEC*: single-person household, ever married or cohabited; *MARRIED_NPC*: married with no pre-marital cohabitation; *MARRIED_EPC*: married with pre-marital cohabitation; *COHAB_NM*: cohabiting with partner, never married; *COHAB_EM*: cohabiting with partner, ever married; *OTHERHH*: other household position

4.4.2 The effect of activity status

Educational level also has a pronounced effect on activity status, with highly educated women typically moving into more stable labour market positions. Of women aged 22-27 years with lower educational levels, 38.3 to 45.3 per cent were working full-time, 24.8 to 29.3 per cent were working part-time and 21.7 to 28.9 per cent were unemployed. Of women with higher levels of education, a substantial proportion in this age category were still enrolled in education (18.3 and 51.0 per cent for short and long tertiary education respectively). The educational differences in labour market outcomes are even more pronounced for women aged 28-33 years. Labour force participation is now clearly the dominant trajectory for highly educated women, with 24.7 to 35.2 per cent working part-time and 59.3 to 67.8 per cent working full-time. Lower educated women found themselves in a more insecure or uncertain labour market position, with the proportion of women working being much lower and unemployment levels ranging from 21.7 to 28.9 per cent.

The event history analyses indicate how educational differences in activity status in turn affect entry into parenthood. Among women aged 22-27 years (Table 3), those with full-time employment have the highest odds of entering parenthood in the subsequent 3 years, regardless of educational level. The results suggest that the odds are somewhat higher for women working part-time, but the differential is only significant for women with higher secondary education. Being unemployed significantly reduces the odds of entering parenthood compared with women with full-time employment, the differential being more marked among highly educated women. The negative effect of unemployment on first birth hazards is somewhat more pronounced among highly educated women aged 28-33.

To summarise, the results indicate that, as education increases, women are more likely to take up employment, but also that the penalty of unemployment is more strongly felt among women with higher levels of education. The latter suggests that highly educated women in particular prefer to have a secure labour market position before entering parenthood.

5 Discussion

Fertility trends emerging in Europe after 1970 are routinely referred to in terms of fertility postponement. The shortening of the effective reproductive lifespan and particularly the alleged association with post-materialist values, plus a general retreat from long-term commitments, have raised questions as to whether the lack of fertility at younger ages can or will be recuperated. In Belgium, the postponement of fertility after 1970 coincides with the rapid expansion of educational attainment among cohorts born after 1945. Various mechanisms

suggest that the increase particularly in female educational attainment may have contributed strongly to parenthood being delayed as a result of prolonged educational activity, safeguarding career opportunities and improving possibilities for combining work and family formation later in the course of life. The amount of recuperation taking place is considered to depend on the effects of value orientations concerning—entry into unions and family formation, the societal context providing structural opportunities to combine work and family formation, temporal variation in access to labour markets, but also the amount to which income effects outweigh opportunity costs.

The decomposition of cohort fertility by level of education and birth order indicates that educational differentials in the tempo of order-specific fertility were already very noticeable for women born in the early 1930s, and have widened over subsequent birth cohorts. Taking the 1946-1950 birth cohorts as a reference, standardisation of cohort fertility schedules for education indicates that 40 to 50 per cent of the difference in cumulated fertility of first births at age 25 is accounted for by increasing educational attainment of the cohorts born between 1951-1975. Compared with the total fertility (i.e. all birth orders combined) of the 1946-1950 cohorts, the difference in cumulated fertility at age 25 of the 1961-1965 cohorts is explained for 39 per cent by increasing educational levels of the women considered. This percentage increases to 49 per cent for women born between 1971-1975. Consistent with expectations, the increasing education of recent birth cohorts has contributed substantially to the aggregate-level trend in fertility postponement. Analysis of the cohort MAC by level of education indicates, however, that the onset of postponement for all birth orders and all educational groups can be situated in the early 1970s, suggesting that period circumstances have also contributed substantially to this onset. Analysis of the effect of aggregate unemployment levels on first birth hazards suggests that the rapid increase in unemployment levels throughout the 1970s adversely affected first birth hazards, particularly among younger women aged 20-29 years old (Neels 2010). Consistent with the use of period fertility measures advocated by Ní Brolcháin, the results thus suggest that a period perspective may prove useful in bringing out the impact of period circumstances on fertility postponement (Ní Brolcháin 1992). Results from this study suggest, however, that such measures should also be standardised for cohort effects such as increasing education.

The decomposition of cohort fertility by level of education indicates that educational differentials are equally relevant for trends in the level or quantum of order-specific fertility. This touches upon the issue of recuperation of delayed fertility. The proportion of highly educated women entering parenthood has increased markedly over more recent birth cohorts, despite the further postponement of family formation. Moreover, cohort parity progression to second births has remained stable at around 80 per cent among the groups considered, and parity progression to third births is also found to be higher than among most less educated groups. The results thus suggest that contextual factors (e.g. social

policies supporting dual-earner families, etc.) rather than postponement have affected the quantum of fertility. As a result, the hypothesis voiced by Frejka and Sardon (2006) that continuous postponement of first births can lead to a decline in fertility because there is less time remaining for second- and higher-order births is not substantiated by this study. In contrast to the pattern for highly educated women, there has been a decline in motherhood among less educated women, despite their young fertility schedule. In addition, progression to a second birth is subject to strong temporal variations. As a result of these fertility trends diverging by level of education, the strong negative gradient between female educational attainment and fertility levels found among women born in the 1930s is attenuated, and at times even reversed, among women born after 1945, with highly educated women frequently showing the highest fertility levels. All in all, educational differentials in fertility quantum, and particularly the seemingly differential response of these groups to the varying economic and policy context over the last few decades, have shaped recent trends in fertility recuperation. It should be remembered at this point, however, that the study has not addressed in detail the impact of migrant groups on fertility levels, nor the impact of migration on the educational gradient in fertility outcomes.

Finally, the analyses linking education to household position and activity status indicate that highly educated women are slower to leave the parental home than less educated women and also move into single-person households more frequently than they do. The thesis that the delay of union formation is associated with the articulation of post-materialist values (e.g. autonomy, gender equality, etc.) cannot be tested with the data at hand. The results do indicate, however, that these household positions are associated with significantly reduced odds of entering parenthood in the subsequent 3-years, compared with women in marriage or cohabitation, and that the negative effect is more evident among highly educated women. For less educated women, household positions other than marriage provide a somewhat more ready context for entry into parenthood. Apart from household position, the distribution of activity status and its effect on fertility outcomes are equally differentiated in terms of educational attainment. Consistent with the expectations, labour force participation is found to be the dominant pattern among highly educated women. Less educated women are characterised by much higher unemployment levels. The results indicate that the odds of entering parenthood in the subsequent three years are significantly lower for women in unemployment than for women in full-time or part-time employment, with the effect again being more pronounced among highly educated women. The latter suggests that these women prefer a stable labour market position before entering parenthood, consistent with theoretical expectations. The effect of variation in economic conditions on labour market positions and fertility outcomes cannot be addressed with the current data as the prospective study covers only a 3-year period in the early 1990s.

The decomposition of cohort fertility in Belgium by level of education indicates that the increasing educational attainment of women has contributed substantially to the postponement of fertility over subsequent birth cohorts. Similarities between Belgium and other countries in northern and western Europe—both in terms of fertility trends and the expansion of education—suggest that the mechanisms documented in this study may have wider validity. Educational differentials have proved equally relevant, however, for understanding recent trends in fertility quantum, and therefore warrant further consideration in studies focusing on the impact of economic conditions and social policies on fertility recuperation.

Acknowledgements

An early version of this paper was presented at the international conference 'Education and Demography' organised by the Vienna Institute of Demography and the Austrian Academy of Sciences, 30 November to 1 December 2009, Vienna, Austria. The paper benefitted substantially from suggestions made by two anonymous referees.

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