

**Part III**  
**Women's Education and Childlessness**

# Chapter 9

## Education and Childlessness: The Influence of Educational Field and Educational Level on Childlessness among Swedish and Austrian Women

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### 9.1 Introduction

Demographic research has long paid considerable attention to the connections between education and childlessness. For western countries it has regularly been shown that ultimate childlessness increases with a woman's educational level (see, e.g., Berrington et al., or Kreyenfeld and Konietzka in this volume). Researchers normally focus on individual-level explanations for this pattern, and there are competing interpretations of it. Economic theory holds that for women with more education, motherhood entails increased opportunity costs: i.e., compared to less educated women, highly educated women lose more income and human capital by concentrating on motherhood and on caregiving tasks. As a consequence, economists expect childlessness to increase with a woman's educational level (Becker 1960; Cigno 1991). Some feminist demographers have argued that having more education provides women with more economic independence and personal autonomy, and that highly educated women are therefore less likely to marry than less educated women (Oppenheimer 1994). Since unmarried women are more likely to remain childless than their married counterparts, the share of women who are childless should be higher among those who are highly educated (Kiernan 1989; Blossfeld and Huinink 1991; Hobcraft and Kiernan 1995). Theories that focus on changes in

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culture, values, and norms provide a third type of explanation. Researchers who take this perspective regard increasing childlessness as a consequence of a broadening range of life choices (van de Kaa 1996; Surkyn and Lesthaeghe 2004). They maintain that having more education offers women a wider spectrum of opportunities for organising their life, and that having children may thus become less important than other options (Rindfuss et al. 1996). The life course perspective offers yet another type of reasoning to explain the same general pattern: i.e., that because they spend longer periods of time in education and start employment later, women postpone motherhood, possibly up to an age at which physical fecundity may be reduced. Thus, childlessness may be expected to be higher among women who spend longer periods of time in education (Rindfuss and Bumpass 1976; Gustafsson 2001; Kravdal 2001).

However, empirical findings on childlessness for the former communist countries of Eastern Europe call into question the assumption of a monotonic relationship between educational level and childlessness. In these countries, women with more education do not necessarily have higher rates of childlessness than women with less education (Kantorova 2004; Kreyenfeld 2004). A similar conundrum is found in the Nordic countries (Andersson et al. 2009). Studies of the relationship between educational field and childlessness further complicate the picture. Findings for Sweden (Hoem et al. 2006), Norway (Lappegård and Rønsen 2005), Spain (Martín-García and Baizán 2006), Greece (Bagavos 2010), the Netherlands (Begall and Mills 2012), Germany (Maul 2012; Rösler 2012), the U.S. (Michelmores and Musick 2014), and European countries in general (Van Bavel 2010) indicate that women who have been educated to work in the education or health sector are significantly less likely to be childless than women who have been educated to work in other fields. In some cases the connection between educational field and childlessness is even stronger than the association between educational level and childlessness (Hoem et al. 2006; Van Bavel 2010).

We argue in this paper that a purely individual-level approach is not sufficient to resolve these apparent discrepancies. To find a valid explanation for the similarities and the differences in patterns of childlessness across educational groups and across countries, we need to take an institutional approach. We furthermore show that the demographic focus on family policies as the core institutional factor shaping child-bearing patterns in highly developed countries is also not sufficient for explaining patterns of childlessness. We call for a comprehensive view of institutions that considers the educational system, the labour market, and family and gender policies, as well as the interactions between these institutions.

Based on this reasoning, we compare the ultimate levels of childlessness of women born in 1955–1959 in Sweden and in Austria, according to their educational level and their educational field.<sup>1</sup> While the institutions of Sweden and Austria are similar in a number of ways, there are also essential differences in the educational

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<sup>1</sup> In this contribution we use the terms educational field, educational orientation, and type of education interchangeably. The same applies to level of childlessness, rates of childlessness, and per cent childless.

systems and in the labour market, in gender and family policies of the two countries. We contend that these differences have contributed to the marked differences we observe in the rates of childlessness among Austrian and Swedish women. To provide background information in support of this position, we briefly sketch in the following section the relevant country-specific aspects of the Swedish and the Austrian educational systems, and of the two countries' labour market, gender, and family policies (Sect. 9.2). We limit the information presented to the period 1970–1990s, when the women who were born in 1955–1959 were 15–40 years old, and were thus in their main childbearing years. In Sect. 9.3 we briefly describe the data and the methods we use in our analysis, and we present our main findings. We conclude the paper with our reflections on the possible institutional and individual-level explanations for our empirical results, and the implications of our findings for further research (Sect. 9.4).

## 9.2 Sweden and Austria – Institutional Commonalities and Differences

Because of their similarities and differences, Sweden and Austria are particularly suitable for a comparison of women's childlessness according to educational attainment. Both countries have small populations, a factor that influences their politics and policy formation process (Katzenstein 1985). Both have a long welfare tradition and can be regarded as strong welfare states in which social policies have had considerable influence on social structures. Both countries have coordinated market economies with strong employment protections for workers and employees (Estévez-Abe et al. 2001; Hall and Soskice 2001). In the 1970s and early 1980s, the Austrian federal social democratic government looked to Sweden's welfare state as a model in its efforts to modernise Austrian society (Hoem et al. 2001). The two countries have also undertaken similar family policy reforms. For example, both countries have introduced individual (rather than family-level) taxation, established legal equality between marital and non-marital children, legalised abortion in the first months of pregnancy, amended their parental leave regulations to increase women's employment, and actively promoted gender equality in many areas of public life. Moreover, in the late 1960s and early 1970s both countries reformed their educational systems to make higher education available to all social groups.

Despite these commonalities, the educational, gender, family, and social policies in Sweden and in Austria differ fundamentally in terms of their content and their aims. In political science, Sweden is classified as a proto-typical universalistic welfare state whose public policies are designed to achieve greater social and gender equality (Esping-Andersen 1990; Korpi 2000). By contrast, Austria is seen as a proto-typical conservative welfare state whose policies are designed to preserve social status differentials and perpetuate gender inequality (op cit., Marten et al. 2012). These basic orientations permeate all of the policy areas relevant to childbearing.

### 9.2.1 Sweden

Since the 1960s, Swedish labour market and social policies have actively promoted the integration of all adults into the employment system, and particularly of mothers with (small) children. Institutional day-care facilities for children of all age groups were gradually expanded to guarantee each child a place in public child care. As a consequence, for the past 50 years Sweden has been among the European countries with the highest public childcare coverage rates for children of all age groups (Bergqvist and Nyberg 2002; Neyer 2003). Maternity protection was replaced by a gender-neutral system of parental leave which grants both parents an individual right to paid parental leave. The (paid) leave was extended successively from 6 months (1974) to 12 months (1989), and an extra non-transferable “daddy month” was added in 1995 to promote a gender-equal division of care (for details, see Duvander and Ferrarini 2010). Until the child’s eighth year of life, each parent has the flexibility to take this leave on a part-time or a full-time basis, continuously or in segments, or even as individual days. Parental leave may also be combined with periods during which the parent is attending (further) education. While on parental leave, each mother or father receives an income-dependent benefit which replaces a large percentage of his or her previous income. The income replacement rate was about 90 % in the 1970s and 1980s and was 80 % thereafter, up to a fixed income ceiling. In addition to making it easier for parents to combine employment and family, Sweden has implemented comprehensive regulations to enhance gender and economic equality across all social groups. This includes the active promotion of equality in employment, wages and salaries, career advancement, professional and political representation, and education (Bergqvist et al. 1999).

The Swedish educational system is designed to be open, flexible, and supportive of social equality. It is oriented towards life-long learning (for details see Henz 2001; Halldén 2008). To ensure that as many people as possible have access to higher education, the system does not channel pupils into segregated educational streams early in their educational career. It is also relatively easy for pupils to later revise their early educational choices. Swedish primary schools provide 9 years of compulsory comprehensive education for children between the ages of seven and 16. The curriculum is largely the same for all pupils at this level. After primary school the majority of pupils enter (voluntary) upper-secondary education. If there is competition for places in certain upper-secondary programmes, the pupils’ grades determine which programmes they can choose from (Erikson and Jonsson 1996). For the cohorts born in 1955–1959, upper-secondary education still encompassed both 2-year and 3-year lines of education; the 2-year lines were converted into a 3-year line in the 1990s. The focus of the 3-year line is on theoretical knowledge. After successfully completing upper-secondary school pupils are entitled to enrol in tertiary education. The focus of most of the 2-year (and now converted 3-year) lines is on occupational and semi-occupational training. However, to ensure that students have the opportunity to change to other lines of education, a large share of the coursework is in general subjects, while practical vocational training in firms makes

up only a small part of the course of study. By taking additional courses pupils in 2-year lines could earn the 3-year qualification needed to enrol in the tertiary educational system (Halldén 2008). Since the 1970s, admission to tertiary education has been regulated by a numerus clausus. Standardised eligibility and admission regulations are applied to all tertiary programmes and to all levels (Erikson and Jonsson 1996). Tertiary education has three levels: (1) 2- to 3-year lines of study that mainly offer advanced vocational education, (2) lines of study of at least 3–4 years that lead to a bachelor’s or a master’s degree, and (3) further studies that lead to a licentiate or a doctoral degree. The third level is intended to prepare the student for a scientific career.

Despite the selection process applied to upper-secondary-level and tertiary-level programmes, the Swedish educational system aims to equalise educational attainment and reduce class differentials (Erikson and Jonsson 1996). It is flexibly organised, highly permeable, and has special procedures to allow for late entry into (higher) education. Interruptions in education, moves out of and back into education, and changes in the educational line are always possible, and are often used. Individuals have a right to interrupt their employment to further their education. An extensive system of adult education and of active labour market policies facilitates and promotes (re-)education, training, and skill enhancement. Education is tuition free. A generous system of financial support, consisting of grants and loans, for individuals in higher education encourages and facilitates educational participation throughout the life course. This has resulted in high levels of educational participation and the widespread use of opportunities to earn new or improved qualifications on a flexible basis (Tesching 2012).

### 9.2.2 *Austria*

Austria has remained a conservative corporatist welfare state in spite of the reforms of the 1970s and early 1980s (Neyer 2003; Obinger and Tálos 2010). The education, employment, and welfare systems are not aligned as closely with the equality principles as the Swedish systems are. Austrian labour and social politics have focused more on securing the branch- and occupation-specific rights of workers and employees and on supporting the male breadwinner model than on ensuring the gender-equal integration of women into the labour market or on reducing gender, social, and economic inequality (Biffl 1997). Fertility-related family policies were designed to make it easier for mothers to leave the labour market and focus full-time on caring for their children. Until 1990, parental leave lasted until the child’s first birthday, and was for mothers only. In 1990, parental leave was extended to the child’s second birthday, and restricted options for part-time leave and father’s leave were introduced. Under a 1996 amendment 6 months of the parental leave were reserved for fathers. During the leave, previously employed mothers and fathers received a low, flat rate benefit which was independent of their previous income, but dependent on their partnership status. Because of the low benefit level and the complicated

regulations on part-time work and on how the leave could be split between the mother and the father, parental leave was almost exclusively taken by women as full-time leave (Hoem et al. 2001; Neyer 2010).<sup>2</sup> Until recently, there were very few childcare places for children under age three or for children of school age (Statistik Austria 2014: Table 19). Thus, many women leave their job after taking parental leave or interrupt their employment for several years.

The Austrian school system has three distinct features: the early streaming of pupils into a complex set of educational paths, the “dual system” of apprenticeship and its separation from the main educational system, and the limited options for revising previous educational choices. As in Sweden, compulsory education in Austria lasts 9 years. However, in Austria the common primary school lasts only 4 years, up to the age of ten. Thereafter, the educational lines separate, with pupils being channelled into an upper level of primary school or a lower secondary school (Hauptschule), both lasting 4 years; or into an 8-year high school (Gymnasium) with a lower-secondary and an upper-secondary level. Pupils’ grades determine which type of school they can attend. To attend a Gymnasium, the pupils of our cohorts also had to pass an entrance exam. The Gymnasium and the Hauptschule are further subdivided. In the Hauptschule the pupils are grouped according to educational attainment (usually grades). In the Gymnasium pupils have to choose a specific subject line for their upper-secondary level education, such as a concentration on humanities, natural science/mathematics education, or home economics.

Pupils who have completed the Volksschule or Hauptschule or who have left the Gymnasium after completing its lower-secondary level have several options for continuing their education: (1) They can go on to a vocational middle school (berufsbildende mittlere Schule), which generally lasts 3–4 years and offers both vocational and general courses. (2) They can choose an apprenticeship (Lehre), which usually takes 3 years. The programme consists primarily of vocational training in firms, complemented by occupation-specific theoretical education in special vocational schools (“dual system”). Apprenticeships are not integrated into the “regular” educational system.<sup>3</sup> (3) Pupils with good grades can transfer to an upper-secondary high school (Oberstufenrealgymnasium), which is a Gymnasium that only offers the upper-secondary level.<sup>4</sup> (4) Pupils can transfer to a vocational upper-secondary high school (Berufsbildende höhere Schule) that takes 5 years to complete, and that offers vocational training together with a programme of general

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<sup>2</sup> In 2002 a 3-year childrearing benefit for all mothers (or fathers) replaced the 2-year parental leave benefit for working mothers (or fathers). The regulations were subsequently amended several times, so that parents can now choose between five different variants of payment length with four flat rate benefits and one income-dependent benefit. The longest variant is the most popular one, and fathers on leave are still a minority (for details, see Marten et al. 2012).

<sup>3</sup> Unlike the general school system, which is under the auspices of the ministry of education, education for apprentices is governed by the ministry of economic affairs and the social partners, particularly the regional economic chambers (Graf et al. 2012).

<sup>4</sup> In principle, a pupil can also transfer to the upper-secondary level of a Gymnasium, but due to the different curricula in the Hauptschule and the lower-secondary level of a Gymnasium, this is rarely done.

education equivalent to that of the upper-secondary level of a Gymnasium. (5) Pupils who do not make use of any of the options above can attend a 1-year poly-technical school that offers a preparatory vocational education programme. Upon completion of the Gymnasium, the Oberstufenrealgymnasium, or the berufsbildende höhere Schule students take a special maturation exam (Matura). After earning their Matura qualification, students can enrol in a tertiary education institution (a university or a post-secondary vocational college).

Austria has an open university system. Most tertiary education programmes have no numerus clausus, entrance exams, or other selection processes; and students are free to choose any line of study (irrespective of their Matura grades). There are also no formal restrictions on doctoral studies. Universities do not charge tuition, and students may qualify for financial support in the form of a non-repayable scholarship, depending on their own and their parents' income. While there have been efforts to provide special scholarships to former students to resume their studies, these programmes have been less systematically developed in Austria than in Sweden.

Having the Matura diploma is an important pre-requisite for many subsequent educational options. Not only does it open the way to tertiary education; it is also a precondition for many kinds of qualified work, particularly in the public sector. The Matura thus serves as a marker that keeps educational groups and classes apart. Individuals who have completed a course of study that did not finish with the Matura have the option of attending special schools or programmes which prepare them for taking the Matura examination. Individuals may also be admitted to specific lines of tertiary education without having earned the Matura, provided they can prove (e.g., based on their employment history) that they have the qualifications for the chosen line, and pass a special admission examination. However, the availability of preparatory courses for the Matura (outside of high schools) or for the special admission examination varies from region to region, and taking them often involves considerable effort and cost.

### ***9.2.3 Sweden and Austria – A Comparison of Their Institutions***

There are certain aspects of the Swedish and the Austrian institutions that should be highlighted here because they appear to have especially strong effects on the relationship between education and childlessness:

First, the Austrian educational system segregates pupils at an early age, and is not organised with the purpose of giving as many people as possible access to higher education. This is mirrored in the distribution of Swedish and Austrian women born in 1955–1959 across educational levels (Table 9.1). In Austria, 31 % of all women in these birth cohorts have completed no more than compulsory education. In Sweden the corresponding figure is as low as 17 %. Conversely, 80 % of the Austrian



**Table 9.1** Distribution of Swedish and Austrian women born in 1955–1959, by educational level

Sweden	Percentage	Austria	Percentage
Compulsory school <sup>a</sup>	16.6	Primary School <sup>b</sup>	31.3
Upper-secondary school, 2 years	36.0	Apprenticeship	27.1
		Vocational middle school	20.7
Upper-secondary school, 3 years	14.7	<i>Gymnasium</i> <sup>c</sup>	7.9
Post-secondary vocational college; shorter university	20.6	Post-secondary vocational college	6.2
University level <sup>d</sup>	12.1	University <sup>e</sup>	6.7

Sources: Neyer and Hoem (2008) and Neyer (2009)

Note:

<sup>a</sup> Comprehensive school up to age 16

<sup>b</sup> Primary school, lower-secondary school (*Hauptschule*), poly-technical school (up to age 15)

<sup>c</sup> *Gymnasium* proper, upper-secondary high school (*Oberstufenrealgymnasium*), vocational high school (*berufsbildende höhere Schule*)

<sup>d</sup> University, upper tertiary and research degree

<sup>e</sup> University, all levels of completion

women have no upper-secondary (Matura), post-secondary, or tertiary education, while in Sweden the corresponding figure is 53 %. Only 13 % of the Austrian women of these cohorts have completed post-secondary or tertiary education, while among Swedish women the corresponding figure is 33 %.

Second, in Sweden vocational education is integrated into the educational system. It prioritises the transmission of general, “transportable” skills over occupation-specific vocational training. A considerable share (30 %) of vocational education is at the tertiary level (Culpepper 2007). Having transportable and higher-level skills makes it easier to move between the various lines of study, and facilitates occupational mobility in the labour market (Estévez-Abe et al. 2001). By contrast, the Austrian apprenticeship system is largely segregated from the general school system (Graf et al. 2012). It offers a high level of occupation-specific vocational training, but little general, non-occupation-specific or transportable coursework. Thus, pupils in Austria have difficulties moving from an apprenticeship to a general course of study or switching between apprenticeships. Only 4 % of vocational education is offered at the tertiary level (Culpepper 2007). On the other hand, having firm-based training, which tends to be high-quality and standardised, can greatly ease a pupil’s transition from school to work. As a consequence, unemployment rates among young people, and particularly among those who complete apprenticeships, have been much lower in Austria than in Sweden (Lindahl 2011; Lassnig 2013).

Third, the Swedish educational system is oriented towards life-long learning, and therefore provides a broader spectrum of flexible options for participating in educational programmes, for leaving and re-entering education, and for earning new qualifications or enhancing existing qualifications over the life course. Austria has a more closed system, and limits participation in education to children and young adults to a much greater extent than Sweden.

Fourth, the Swedish school system is oriented towards promoting class and gender equality, and towards minimising corresponding differentials. Despite this aim,

levels of sex segregation by field of education have remained high (Jonsson 1999). Sex segregation is even more pronounced in Austria, where special educational lines directed at women were maintained for much longer than in Sweden. Almost one-third of all of the women who attended the Gymnasium in the 1970s and early 1980s, and more than half of all of the women who attended a vocational middle school or enrolled in an apprenticeship, were in an educational stream in which almost all of the pupils (95 %) were female. These streams had curricula with gender-stereotypical content oriented towards family work (Lassnig and Paseka 1997).

Finally, Austrian family, social, and labour market policies have been designed to encourage women to leave the labour force when they have children. Yet employment protection, social security rights and benefits, and opportunities for promotion in the labour market have largely been tied to having an uninterrupted (and mostly full-time) career. By contrast, Sweden has more consistently pursued policies aimed at helping both parents balance family and work, and at ensuring that men and women have equal career opportunities throughout the life course.

We might expect to find that such national differences influence the connection between educational attainment and childlessness. In particular, we would expect to observe that rates of childlessness are higher in Austria than in Sweden, simply because it is harder to have children and pursue employment in Austria. On the other hand, we might also expect to find that childlessness rates are lower in Austria than in Sweden because of the large share of highly educated women in Sweden and the prevalence of feminised educational fields in Austria. Moreover, it is not clear whether women with similar educational paths in the two countries have similar levels of childlessness. Rates of childlessness among women with all types of education may differ between the two countries because of institutional differences. But if we assume that preferences are more important than institutional conditions, we would expect to observe the same levels of childlessness by educational field in both countries. In the following chapters, we investigate these assumptions by analysing childlessness by educational field and educational level in greater detail.

### **9.3 Childlessness According to Educational Field and Educational Level in Sweden and in Austria**

For our empirical investigation we make use of Swedish register data and of Austrian census data.<sup>5</sup> Both provide individual-level information. We concentrate on the cohorts born in 1955–1959, because at the point in time when we carried out our analyses this was the “youngest” cohort for whom we could get data that allow us to determine whether women were childless at the end of their reproductive years (age 40 or above). The Swedish data are extracts from the country’s national educa-

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<sup>5</sup>For details of data content and data handling, see Hoem et al. 2006; and Neyer and Hoem 2008.

tional and population registers. The educational register contains data on all of the levels of education by field that each woman completed up to 1998. The population register lists all births through 2002. For Austria, we used the national census of 2001. It contains (self-reported) information on each woman's field and highest level of education, and on her births. For both countries, our datasets contained the entire resident female population; the datasets were large enough to allow us to also study the ultimate levels of childlessness among women who had chosen educational lines with comparatively few graduates. We combined the roughly 2600 Swedish and 650 Austrian educational fields into 60 educational groups for each country.<sup>6</sup> The groups largely correspond to the International Standard Classification of Education (ISCED) of 1997. This process made our Swedish and Austrian educational groups generally comparable.<sup>7</sup> Because of the differences in the educational systems, the levels of education were not harmonised. In particular, Sweden does not have the Austrian differentiation between vocational middle school (*berufsbildende mittlere Schule*) and apprenticeship (*Lehrberuf*). Conversely, the Austrian data contained no differentiation of degrees at the tertiary level, while the Swedish data allow us to make this distinction.

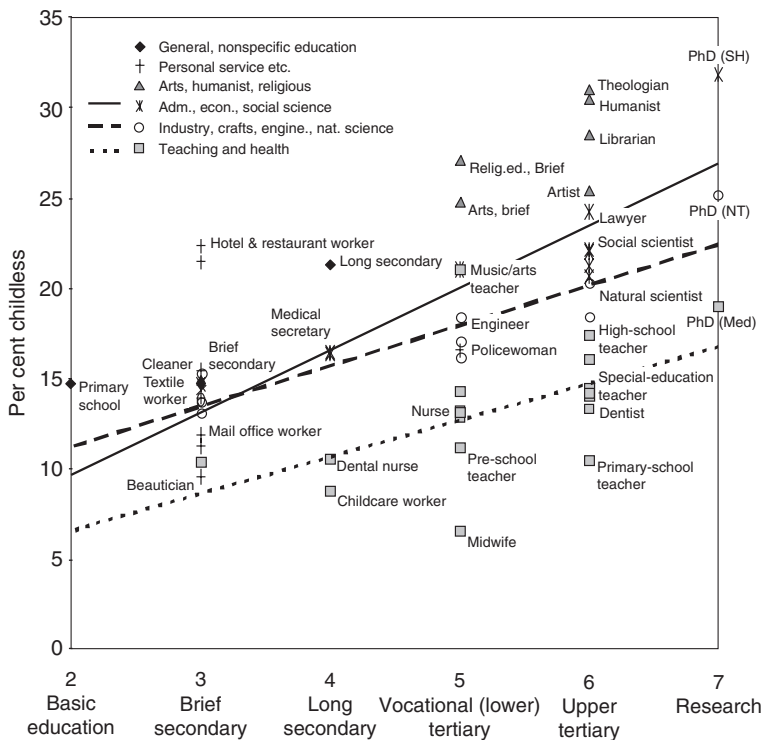
### 9.3.1 *Educational Field and Childlessness*

In Figs. 9.1 and 9.2 we present the percentages of women who were childless (at ages 40+ and of the cohorts 1955–1959) in Sweden and in Austria according to their educational orientation and educational level. In both countries, women who were educated to work in the education or health care sector are less likely to be childless than women with other types of education. In Austria, only women with an education in agriculture have lower rates of childlessness than women who were educated to work in the education or health care sector at all educational levels. On the whole, women who were educated to work in the education or health care sector are not only less likely to be childless than other women with the same level of education but in a different field; they are also less likely to be childless than women who were educated in a different field but at a lower level. For instance, Austrian women with a post-secondary degree that qualifies them to teach in primary and lower-secondary

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<sup>6</sup> Austria has many more educational fields than these 650, but in many of these fields not a single woman from the cohorts born in 1955–1959 had completed a course of study. The smaller number of educational fields in our Austrian data reflects the strong concentration of women in a select group of educational fields.

<sup>7</sup> There were a few types of education in Sweden (e.g., library science and law enforcement) that did not exist (in a similar and recorded form) in Austria, and vice versa (for example, tourism studies are common in Austria, but there was no corresponding category in our Swedish data). We chose to retain educational fields in our analysis if they had been chosen by a sufficiently large number of women; or if their inclusion contributes to our understanding of the connection between education and childlessness, even if they were present in the data of only one of the two countries.

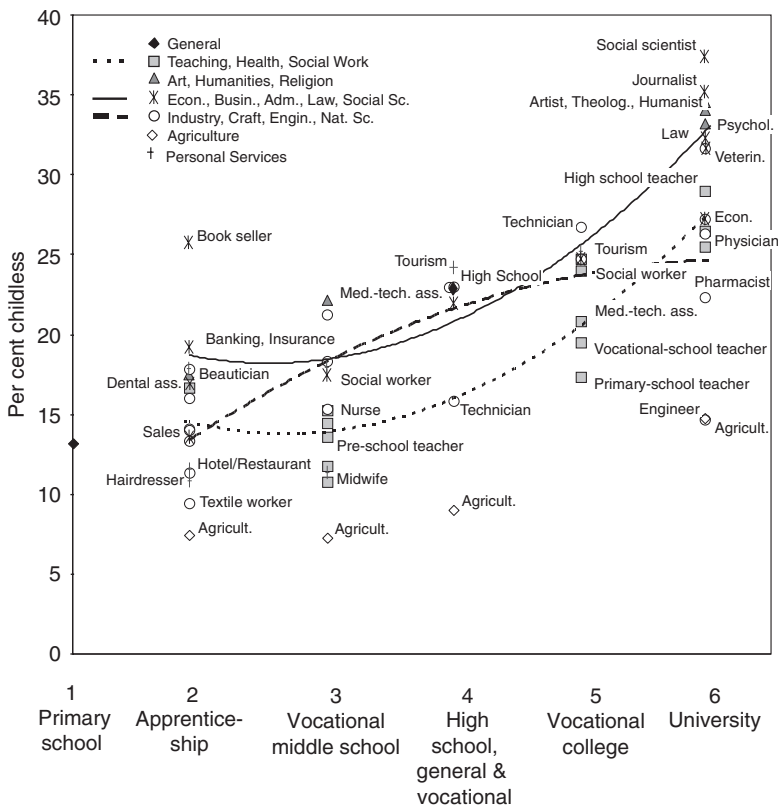


**Fig. 9.1** Per cent childless in the birth cohorts 1955–1959, by educational level and educational field (Sweden) (Source: Hoem et al. 2006)

schools (Volks- und Hauptschule) are less likely to be childless (16 %) than women who had completed an apprenticeship in the beauty business, in the insurance or bank sector, or in book selling; or women who completed high school (Gymnasium) or who earned an upper-secondary vocational diploma that qualifies them to work in the textile or chemical industry, in communication technology, or in tourism. We get similar results when we compare the childlessness rates of women who were educated to work in the health care sector with the childlessness rates of women who were educated in a different field.

In Sweden, we see much larger differentials in childlessness than in Austria between women who were educated to work in the education or health care sector and women who were educated in other fields, even if they spent less time in education. Thus, Swedish women with a tertiary education that qualifies them to teach home economics or pupils with special needs (14 %) or to practice medicine as a medical doctor (14 %) have the same level of childlessness as women who left school after the compulsory minimum, or who left after earning a 2-year upper-secondary qualification without any particular vocational education.

By contrast, women who were educated in journalism, the social sciences, the humanities, theology, or the fine arts have high rates of childlessness in both

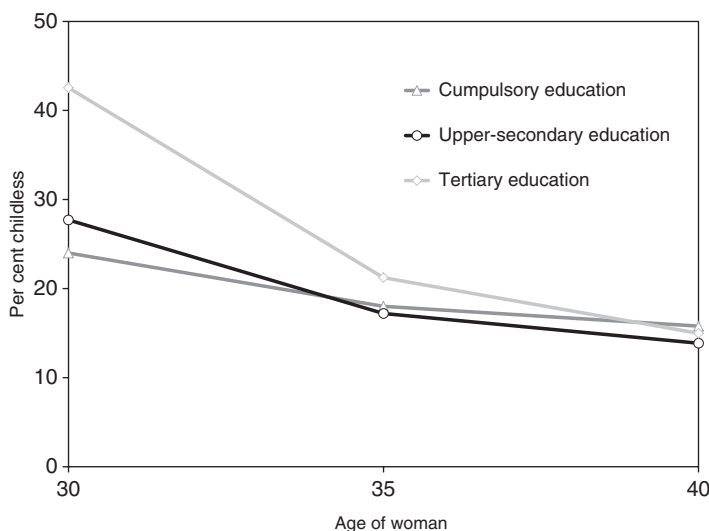


**Fig. 9.2** Per cent childless in the birth cohorts 1955–1959, by educational level and educational field (Austria) (Source: Neyer and Hoem 2008)  
 Note: To facilitate interpretation of the figure, the trend lines refer to the larger groups of education)

countries. A woman who was educated in one of these fields (e.g., as artist or historian) is more likely to be childless than a woman with an education degree in the same field of study (e.g., as arts teacher or history teacher). Similarly, women who studied in fields closely aligned with the humanities, such as book selling (in Austria) or library science (in Sweden), are much more likely to be childless than women who were educated in other fields at the same level.

### 9.3.2 Educational Level and Childlessness

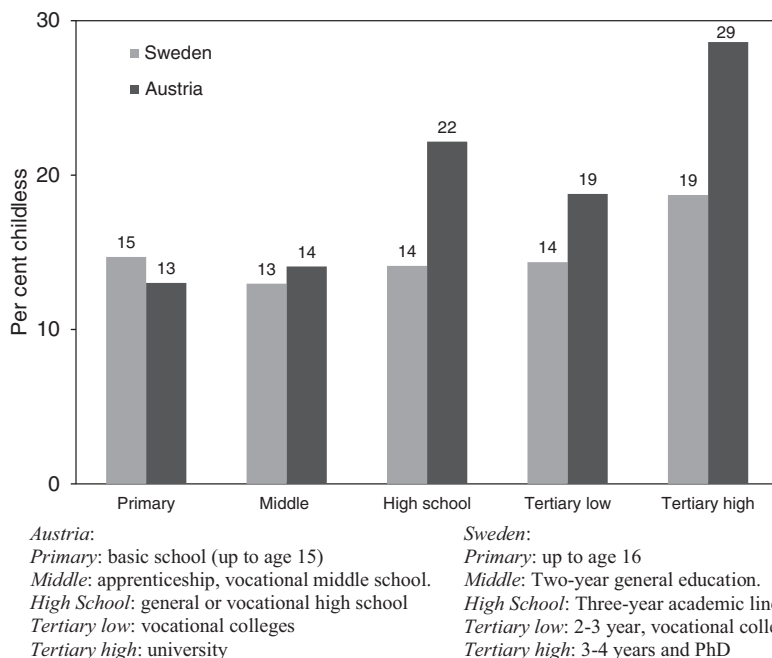
In both Sweden and Austria, the cohorts of women born in 1955–1959 have the same ultimate level of childlessness; namely, 15.7 %. This is somewhat surprising since we would expect to see different levels of childlessness given the institutional and educational differences in the two countries. However, national differences



**Fig. 9.3** Per cent childless by age attained and educational level, Swedish women born in 1955–1959 (Source: Andersson et al. 2009)

become evident when we take the level of educational attainment into account. If we only consider the three most commonly used educational levels – namely, compulsory education, secondary education, and tertiary education – we see no marked differences in childlessness between these three groups in Sweden, although the highly educated women tend to have their children later than less educated women (Fig. 9.3). Even more surprising is the finding that women with only a compulsory education have a slightly higher level of childlessness (15.8 %) than the most educated women (15.0 %) (Andersson et al. 2009).

In Austria, differences in rates of childlessness by education do not level out over the life course of women. The gap in the childlessness rates of women with only a compulsory education (13.0 %) and women with a tertiary education (23.2 %) was ten percentage points. When we use more refined groups of educational attainment (Fig. 9.4), the differences in the patterns in the two countries become even more striking. In Sweden, there are hardly any differences in rates of childlessness between women at the various levels of attainment below the advanced university levels. Only women with a master’s degree (19 %) and women with a licentiate or doctorate (25 %) have higher rates of childlessness than other educational groups, but the rate of childlessness among these very highly educated women is still much lower than the rate among all tertiary-educated women in Austria (29 %). While in Sweden only women with the highest educational attainment are more likely than other women to remain childless, in Austria rates of childlessness are elevated even among women who have an upper-secondary school qualification (Matura). One-fifth (22.2 %) of the women for whom the Matura is their highest level of education remain childless; this rate is eight percentage points higher than the rate among



**Fig. 9.4** Childlessness according to educational attainment in Sweden and in Austria (Source: Neyer and Hoem 2008)

Austrian women who completed vocational middle school or an apprenticeship, and eight percentage points higher than the rate among Swedish women with the same educational attainment. As Figs. 9.1, 9.2, and 9.4 show, childlessness increases more strongly with educational level in Austria than in Sweden. There seems to be a clearer differentiation by educational attainment in Austria at each level of attainment, with the Matura being the boundary between women with average levels of childlessness and those with much higher levels of childlessness.

The distinctly higher rates of childlessness among Austrian women with an advanced education than among the corresponding Swedish women can be seen in Table 9.2. In the table, the childlessness rates of select groups of Swedish and Austrian women with equivalent education (level and field) are presented. The patterns of childlessness among women who were educated to work in the education or health care sector most clearly demonstrate the fundamental differences between Austria and Sweden. At each level of education, Austrian women with this educational background are more likely to be childless than similar women in Sweden, even though some of the requirements for these educational levels are higher in Sweden than in Austria (e.g., for kindergarten/pre-school teachers). The most obvious differences are among women at the university level. More than one-quarter of all Austrian women with a university-level degree in education or health are childless at age 40. Their childlessness rate is more than ten percentage points higher than that of Swedish women with the same educational background, and ten

**Table 9.2** Childlessness of select groups of women by educational field and level in Sweden and Austria (per cent childless, women born 1955–1959)

	Austria	Sweden
<b>Education</b>		
Pre-school teacher child carers	13.5	11.0
Primary school teacher	16.5	10.3
High school teacher	29.1	17.3
<b>Health</b>		
Midwife	10.6	6.4
Nurse	14.5	13.0
Medical doctor	25.4	15.9
<b>Education without <i>Matura</i>/ 2-year upper-secondary education</b>		
Beautician/hairdresser	12.7	9.6
Textile specialist	10.6	13.9
Apprenticeship	9.3	
Vocational middle school	15.2	
Hotel/restaurant business	12.7	22.4
Apprenticeship	11.7	
Vocational middle school	17.9	
Home economics	11.4	21.6
Agriculture	7.4	15.5
University		
Social sciences	37.3	32.9
Theology	33.9	30.9
Humanities	33.1	30.4
Psychology	32.5	32.7
<b>Technical university/natural sciences</b>		
Engineers/technical professions	14.6	19.0
Natural sciences	26.2	22.0

Source: Hoem et al. (2006) and Neyer and Hoem (2008)

percentage points higher than that of Austrian women who were educated in the same field but at a lower level of attainment.

There are similar differentials by educational attainment in other areas of education, such as in fields of education that prepare women to work in the textile, leather, or clothing industries; in hotels and restaurants; in tourism, or in social work. For all of these fields the fraction of Austrian women who are childless increases from around 10 % among women who have completed an apprenticeship, to 15–18 % among women who have a vocational middle school qualification, and to 25 % among those who have a higher vocational school qualification. In Sweden childlessness also increases with educational level, but this relationship is less strong than the relationship between educational field and childlessness (Hoem et al. 2006).

In some areas of education, the results for Austria and Sweden diverge from our initial expectations. This is particularly the case for work in the hotel and restaurant sector, in home economics, or in agriculture. Swedish women who were educated in



these fields are considerably more likely to be childless at age 40 than their counterparts in Austria (Table 9.2, Neyer and Hoem 2008). It is not clear why this is the case. These differences may be attributable to the number of women who pursue these courses of study, or to the structure or nature of the occupations associated with these courses. For instance, more than twice as many women in Austria as in Sweden finished a middle-level certificate that qualifies them to work in the hotel and restaurant industry. The hotel and restaurant sector is much larger in Austria than in Sweden, and the vast majority of businesses are small and family-owned. Thus, many Austrian women work in their own family business. In Sweden, an education in home economics prepares students to administer large (institutional) households, while in Austria education in home economics aimed at preparing women for housekeeping and motherhood. An apprenticeship or vocational middle school qualification with an agricultural orientation is also three times more common in Austria than in Sweden, and these courses often cover home economics, as well.

As we mentioned above, the rates of childlessness among women educated in the humanities, arts, psychology, and theology are similar in Austria and Sweden. The low rates of childlessness in both countries among women who have a university degree in engineering are surprising, particularly as in Austria these women have the lowest rates of childlessness among all university graduates (15 %); even lower than those among women in the same field but with a lower qualification, and considerably lower than women with a degree in the natural sciences. (Fig. 9.2 and Table 9.2).

## 9.4 Education and Childlessness: Discussion and Conclusions

The differences and the similarities in the patterns of childlessness in Sweden and Austria lead us to ask the question of what factors produced them. The present investigation cannot give a definitive answer, because the available data only contain information about whether a woman is childless, and not about the determinants of childlessness. Nevertheless, we will outline what we believe are the most important potential determinants, with a focus on institutional aspects, especially on the educational system, the links between education and labour market, as well as on the role of individual choice and self-selection.

### 9.4.1 *Educational System and Childlessness*

As we have outlined, the Austrian and Swedish educational systems have very different goals and structures. The Swedish system is oriented towards promoting the educational advancement of each individual throughout her/his life course. A

woman therefore has the flexibility to arrange her educational career so that it fits with her other life goals, including having children. It appears that women often make use of this flexibility: in almost one-third of the 60 types of educational fields we analysed, women completed their (final) educational qualification after the birth of their first child (Hoem et al. 2006). More than half of these women were educated to work in the education or health sector, or in another public sector. From the data we have available, we cannot conclude whether it is easier to combine motherhood and education in these fields than in others, or whether the effect we see is attributable to re-education or to continued education after the arrival of the first child. Tesching (2012) showed that in Sweden childless women are twice as likely as mothers to change their educational field. She also showed that mothers who were educated in a female-dominated field that leads to stable employment with strong job protections, mostly in the public sector (e.g., education, health care, and welfare), have much lower risks of changing their field of education than mothers in general and/or mothers who were educated in another field. The risk of pursuing a course of study in another field after becoming a mother is very high among women who were educated in the humanities, the social sciences, journalism, law, and the fine arts and media (Tesching 2012). These findings suggest that women who were educated in these fields find it difficult to continue to work in their chosen occupation after they have become a mother. The findings also indicate that the flexibility of the Swedish educational system, which offers women the option of continuing their education later in life or of retraining for a job that can be more easily combined with raising children, explains at least in part the lower rates of childlessness among Swedish women with specific educational backgrounds and higher educational attainment.

By contrast, as we have noted repeatedly, the Austrian educational system is closed, and is organised in a rather fixed sequential order in which education precedes employment and family formation. Thus, the educational system does not accommodate childbearing. For instance, for apprentices (of our cohorts) who were pregnant or had a child, the maternity and parental leave regulations in the workplace were not coordinated with the rules for vocational school attendance. As a consequence, it was often impossible for female students to complete their apprenticeship if they became pregnant and had a child. At all levels of education, the only way for most women to avoid dropping out was to postpone motherhood until they had completed their desired level of education.

Overall, our results suggest that a flexible educational system is more conducive to parenthood than a closed system: it seems to reduce childlessness among women with long courses of study, as becoming a parent does not threaten the student's possibility to take her final examinations. It allows women (and men) to adapt their educational field to the demands of childrearing, and it makes it easier for them to update their qualifications following interruptions. It can therefore reduce the risk that women will remain childless for educational or occupational reasons.

### **9.4.2 Education and Labour Market**

The outcomes of our investigation lead us to believe that the ways in which education and the labour market are intertwined may influence childbearing behaviour. All of these connections are underpinned by family and gender policies. On the basis of their findings for Swedish women Hoem et al. (2006) identified five clusters of education, each of which is connected to specific labour market and occupational areas. They analysed how each of these clusters leads to a different level of childlessness. The results were later partly confirmed in a cohort study for Norway by Rønsen and Skrede (2010). With our Austrian data, we can check whether the clusters hold for a conservative welfare state, as well.

#### **Educational Fields of Study That Lead to Jobs in the Public Sector**

In both Sweden and Austria, educational fields that prepare students to work in education, health, social work, and law often lead to jobs in the public sector. In both countries, the public sector offers increased job protection, a more stable and secure income, and better parental leave conditions than the private sector. We would therefore expect to find that women who were educated in fields that lead to jobs in the public sector have lower levels of childlessness. However, we find that, first, childlessness rates are lower only among women who are educated to work in female-dominated occupations in the public sector, such as education, health, and social work; whereas women who were educated to work in more male-dominated public sector areas – like law (Austria and Sweden), law enforcement, and library science (Sweden) – do not have childlessness rates that are much lower than those of other women with the same level of education (see also Ohlsson-Wijk 2015). Second, Austrian women with an upper-secondary (Matura), post-secondary, or tertiary degree in educational fields that lead to female dominated jobs in the public sector (such as a degree in high school education) are more likely to be childless than we would expect. This may be in part because for our cohorts, tenure and careers in the public sector were tied to uninterrupted, full-time employment. Taking parental leave or moving to a part-time schedule was incompatible with these requirements.

#### **Fields of Education That Lead to Feminised Occupations in the Private Sector**

Many fields of education lead to jobs in private sector industries in which most of the employees are female: e.g., the food production industry, the textile industry, business administration, personal services (such as the beauty and hairdressing business), and the hotel and restaurant industry. In both Austria and Sweden, women with these educational backgrounds are rarely childless, although there are some

differences in childlessness rates between the countries (see Figs. 9.1 and 9.2). It appears that Swedish women are more likely to be childless if they are educated to work in an occupational field with high levels of employee turnover and with non-standardised working hours, such as the hotel and restaurant industry; and they are less likely to be childless if they are educated to work in sectors with more standardised working conditions. In Austria these relationships seem to be inverted. One reason for this difference could be that in Austria jobs with standardised working conditions usually have higher social status, better working conditions, and higher wages. We generally find that Austrian women with educational backgrounds that lead to occupations with these characteristics are more likely to be childless than women who were educated to work in occupations with lower levels of social prestige and professional gratification.

### **Gender-Mixed Lines of Education with Little Occupational Specialisation**

In both countries childlessness rates are above average among women who chose a gender-mixed line of education without a specific occupational profile. This category includes women who left the educational system after primary school or after a general upper-secondary education without a vocational specialisation. It also includes women with a (non-education) degree in the humanities, fine arts, or general social sciences. Women who have completed educational lines with no specific vocational qualifications tend to find it harder to enter the labour market than women who chose an occupation-specific field of education (Korpi et al. 2003; Lassnig 2013). These uncertainties seem to discourage childbearing.

### **Gender-Mixed Lines of Education with a High Degree of Occupational Specialisation**

A broad spectrum of educational lines are assigned to this category, including preparation to work in secretarial and administrative occupations, and in sectors such as banking and insurance, business administration, business economics, law, journalism, and tourism. These women have been educated for jobs with very different employment prospects, career paths, income levels, and degrees of occupational feminisation. In both countries, women with these educational backgrounds have higher rates of childlessness than comparable women with other educational backgrounds. We assume that women who work in an occupation with a balanced gender distribution face more competition from men and greater (direct or indirect) discrimination at work than women in a more female-dominated occupation, and that these factors may discourage them from having children.

## Male-Dominated Lines of Education

Male-dominated educational lines frequently provide students with the skills needed to work in the private sector, such as in occupations related to engineering, technology, and the natural sciences. Women who are educated in these fields face greater difficulties in entering the labour market than women with other educational backgrounds: specifically, they tend to have a longer job search after completing their education, fewer secure job offers, and fewer opportunities to maintain their employment (Smyth 2003). Contrary to expectations, we find that women who were educated in a male-dominated – and especially in a technical – field are slightly (Sweden) to decidedly (Austria) less likely to be childless than women who were educated in a gender-balanced field. Job uncertainties and the experiences associated with being a “token woman” may account for the particularly low result in Austria, but studies in this country have also shown that women with a technical education often have highly educated parents (Fischer-Kowalski 1985). It is possible that women with university-educated parents find it easier than other women to combine work and family.

### 9.4.3 *Choice of Education, Self-Selection, and Social Environment*

The observed variations in childlessness by type of education in both Austria and Sweden suggest that women factor in their plans for having a family when they choose a specific educational line. Scholars often assume that women who want to have children tend to choose an educational field that will enable them to combine work and motherhood in their preferred form (Hakim 2000). This process may be expected to result in a concentration of women who want to have children in specific educational and occupational fields, which may in turn promote a social environment and social norms which support childrearing (Elster 1991). However, historical investigations of childlessness among women with specific types of education have shown that individual preferences play out differently in different contexts. As a consequence, the levels of childlessness among women with the same educational backgrounds may vary considerably depending on the circumstances in which these women live (Jensen 1973; Cookingham 1984). This leads us to take a more nuanced view of how self-selection and social norms may work:

First, because of the structural differences in the educational systems, the selection processes into educational lines may be quite different in Austria and in Sweden. For instance, the stronger segmentation of the educational system in Austria may mean that not every type of (secondary) education or apprenticeship was available in every region. In these circumstances, parents may send their children to the closest school, and pupils may choose an apprenticeship based on availability.

Second, differences in the organisation of the educational system, in parental leave, in childcare availability, and gender policies may lead to different selection processes. For example, in Austria women (of our cohorts) who wanted to have

children may have tended to opt for shorter educational lines and to avoid longer courses of study. By contrast, in Sweden fertility considerations may play a smaller role in women's educational choices.

Third, the social environment during education and thereafter may lead women to change their preferences regarding childbearing, and to adjust their childbearing behaviour to the norms in their respective educational or occupational field. These shifts in attitudes and behaviour may partly explain the high rates of childlessness among women who were educated in the humanities, the fine arts, or the social sciences; as well as in library science or book selling. In the 1970s and 1980s, these disciplines generated feminist theories which raised fundamental questions about whether reproduction should be the norm for women.

Fourth, differences in social norms may explain the different distributions of childlessness in Sweden and in Austria. The largely uniform pattern of childlessness across educational levels in Sweden suggests that having children is the social norm for all women (and men) in this country, while in Austria remaining childless is a socially acceptable behaviour for highly educated women. Social pressure to have children appears to be stronger and more universal in Sweden than in Austria (Oláh and Bernhardt 2008; Prskawetz et al. 2008). The Swedish education, family, and gender policies tend to encourage conformity with the norm of having children. In Austria, there seems to be more leeway to opt out of or resist the social norm of having children, at least for the highly educated (Oláh and Hobson 2006).

#### ***9.4.4 Education and Childlessness: Should There Be an Individual-Level or an Institutional Approach?***

As we noted in the introduction, the bulk of literature on education and childlessness stresses individual choices over institutional conditions. This may be attributable in part to the dominance of particular theories (like rational choice), but it may also be a consequence of empirical restrictions. Surveys usually contain too few cases to allow scholars to differentiate sufficiently by educational attainment, and comparative research across many countries does not allow researchers to adequately consider differences in educational systems. For our study, we had detailed information about the educational and childbearing histories of all of the women of certain cohorts in two countries. Thus, we had a dataset that was sufficiently large to allow us to distinguish between many educational lines. Focusing on two countries provided us with the opportunity to factor in the structures and the aims of the institutions that are assumed to shape childbearing behaviour. Our results clearly show that commonly reported findings on the link between education and childlessness should not be taken at face value and accepted as being indicative of universal patterns. In line with other scholars, we do not find that highly educated women have always had higher rates of childlessness than less highly educated women. Our results also do not provide unconditional support for the assumption that preferences regarding children guide women's educational choices. Instead, our findings

support the view that institutional conditions modify preferences and behaviour. Our results also underline that an institutional approach which focuses only on family policies is too narrow to explain differentials in childlessness and fertility patterns. It is essential that one adopts a life course perspective on the role of institutions in family formation; i.e., that one considers the different institutions which shape childbearing behaviour over a person's life course. This calls for both a broadening of the institutional approach beyond family policies, as well as a more detailed consideration of institutions beyond the concept of the welfare state. Such an approach would allow scholars to link individual behaviour and institutional conditions with greater confidence, and in ways that provide us with a deeper understanding of childbearing decisions and of the variation in fertility patterns across social groups and across countries.

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## Literature

- Andersson, G., Rønsen, M., Knudsen, L.B., Lappegård, T., Neyer, G., Skrede, K., Teschner, K., & Vikat, A. (2009). Cohort fertility patterns in the Nordic countries. *Demographic Research*, 20, 313–352. <http://www.demographic-research.org/volumes/vol20/14/20-14.pdf>
- Bagavos, C. (2010). Education and childlessness: The relationship between educational field, educational level, employment and childlessness among Greek women born in 1955–59. *Vienna Yearbook of Population Research*, 8, 51–75.
- Becker, G. S. (1960). An economic analysis of fertility. In National Bureau of Economic Research (Ed.), *Demographic and economic change in developed countries. A conference of the Universities-National Bureau Committee for Economic Research* (pp. 209–240). Princeton: Princeton University Press.
- Begall, K., & Mills, M. (2012). The influence of educational field, occupation, and occupational sex segregation on fertility in the Netherlands. *European Sociological Review*, 31, 720–742.
- Bergqvist, C., & Nyberg, A. (2002). Welfare state restructuring and child care in Sweden. In S. Michel & R. Mahon (Eds.), *Child care policy at the crossroads. Gender and welfare state restructuring* (pp. 287–308). New York/London: Routledge.
- Bergqvist, C., Borchorst, A., Christensen, A.-D., Ramstedt-Silén, V., Raaum, N. C., Stykárðóttir, A. (Eds.). (1999). *Equal democracies? Gender and politics in the Nordic countries*. Oslo: Scandinavian University Press.
- Biff, G. (1997). Schule – Wirtschaft – Frauen. In L. Lassnig & A. Paseka (Eds.), *Zum Geschlechterverhältnis im Bildungswesen* (pp. 234–239). Innsbruck: Studienverlag.
- Blossfeld, H.-P., & Huinink, J. (1991). Human capital investment or norms of role transition? How women's schooling and career affect the process of family formation. *American Journal of Sociology*, 97, 143–168.
- Cigno, A. (1991). *Economics of the family*. Oxford: Clarendon Press.
- Cookingham, M. E. (1984). Bluestockings, spinsters and pedagogues: Women college graduates, 1985–1910. *Population Studies*, 38, 349–364.



- Culpepper, P. D. (2007). Small states and skill specificity. Austria, Switzerland, and interemployer cleavages in coordinated capitalism. *Comparative Political Studies*, 40, 611–637.
- Duvander, A.-Z., & Ferrarini, T. (2010). Earner-carer model at the crossroads: Reforms and outcomes of Sweden's family policy in comparative perspective. *International Journal of Health Services*, 40, 373–398.
- Elster, J. (1991). Rationality and social norms. *Archive Européenne de Sociologie*, 32, 109–129.
- Erikson, R., & Jonsson, J. O. (1996). The Swedish context: Educational reform and long-term change in educational inequality. In R. Erikson & J. O. Jonsson (Eds.), *Can education be equalized? The Swedish case in comparative perspective* (pp. 65–93). Boulder: Westview Press.
- Esping-Andersen, G. (1990). *The three worlds of welfare capitalism*. Princeton: Princeton University Press.
- Estévez-Abe, M. (2005). Gender bias in skills and social policies. The varieties of capitalism perspective on sex segregation. *Social Politics*, 12, 180–215.
- Estévez-Abe, M., Iversen, T., & Soskice, D. (2001). Social protection and the formation of skills. A reinterpretation of the welfare state. In P. Hall & D. Soskice (Eds.), *Varieties of capitalism. The institutional foundation of comparative advantage* (pp. 143–184). Oxford: Oxford University Press.
- Fischer-Kowalski, M. (1985). *Bildung. Bericht über die Situation der Frau in Österreich. Frauenbericht 1985*. Band 2. Wien: Bundeskanzleramt.
- Graf, L., Lassning, L., & Powell, J. (2012). Austrian corporatism and institutional change in the relationship between apprenticeship training and school-based VET. In M. Busemeyer & C. Trampusch (Eds.), *The political economy of collective skill formation* (pp. 150–178). Oxford: Oxford University Press.
- Gustafsson, S. (2001). Optimal age at motherhood. Theoretical and empirical considerations on postponement of maternity in Europe. *Journal of Population Economics*, 14, 225–247.
- Hakim, C. (2000). *Work-lifestyle choices in the 21st Century. Preference theory*. Oxford: Oxford University Press.
- Hall, P., & Soskice, D. (Eds.). (2001). *Varieties of capitalism. The institutional foundation of comparative advantage*. Oxford: Oxford University Press.
- Halldén, K. (2008). The Swedish educational system and the ISCED-97. In S. Schneider (Ed.), *The International Standard Classification of Education. An evaluation of content and criterion validity in 15 European countries* (pp. 253–267). MZE: Mannheim.
- Henz, U. (2001). Family formation and participation in higher education: cross-cutting life events? In J. O. Jonsson & C. Mills (Eds.), *Cradle to grave. Life-course change in modern Sweden* (pp. 45–69). Durham: Sociology Press.
- Hobcraft, J., & Kiernan, K. (1995). *Becoming a parent in Europe*. Welfare state program discussion paper series No. 116. London: Suntory and Toyota International Centres for Economics and Related Disciplines.
- Hoem, J. M., Neyer G., & Andersson, G. (2006). Education and childlessness. The relationship between educational field, educational level, and childlessness among Swedish women born in 1955–59. *Demographic Research*, 14, 331–380. <http://www.demographic-research.org/volumes/vol14/15/14-15.pdf>
- Hoem, J. M., Prskawetz, A., & Neyer, G. (2001). Autonomy or conservative adjustment? The effect of public policies and educational attainment on third births in Austria. *Population Studies*, 55, 249–261.
- Jensen, R. (1973). Family, career, and reform. In M. Gordon (Ed.), *The American family in social-historical perspective* (pp. 267–280). New York: St. Martin's Press.
- Jonsson, J. O. (1999). Explaining gender differences in educational choice: An empirical assessment of a rational choice model. *European Sociological Review*, 15, 391–404.
- Kantorova, V. (2004). Education and entry into motherhood. The Czech Republic during state socialism and the transition period (1970–1997). In G. Andersson & G. Neyer (Eds.), *Contemporary research in European fertility. Perspectives and developments* (pp. 246–270). Demographic Research. Special Collection 3, <http://www.demographic-research.org/special/3/10/s3-10.pdf>
- Katzenstein, P. (1985). *Small states in world politics*. Ithaca: Cornell University Press.



- Kiernan, K. (1989). Who remains childless? *Journal of Biosocial Science*, 21, 387–398.
- Korpi, W. (2000). Faces of inequality. Gender, class, and patterns of inequality in different types of welfare states. *Social Politics*, 7, 127–189.
- Korpi, W., de Graaf, P., Hendrickx, J., & Layte, R. (2003). Vocational training and career employment. Precariousness in Great Britain, the Netherlands and Sweden. *Acta Sociologica*, 46, 17–30.
- Kravdal, Ø. (2001). The high fertility of college educated women in Norway. An artifact of the separate modeling of each parity transition. *Demographic Research*, 5, 187–216. <http://www.demographic-research.org/volumes/vol5/6/5-6.pdf>
- Kreyenfeld, M. (2004). Fertility decisions in the FRG and GDR. An analysis with data from the German Fertility and Family Survey. In G. Andersson & G. Neyer, (Eds.), *Contemporary research in European fertility. Perspectives and developments* (pp. 275–318). Demographic Research. Special Collection, 3. <http://www.demographic-research.org/special/3/11/s3-11.pdf>
- Lappegård, T., & Rønsen, M. (2005). The multifaceted impact of education in entry into motherhood. *European Journal of Population*, 21, 31–49.
- Lassnig, L. (2013). Austria's success on the youth labour market – not systematic but voluntaristic. *Lifelong Learning in Europe (LLineE)*, <http://www.lline.fi/en/article/policy/20135/what-are-they-doing-right-3-cases#title0>
- Lassnig, L., & Paseka, A. (Eds.). (1997). *Zum Geschlechterverhältnis im Bildungswesen*. Innsbruck: Studienverlag.
- Leitner, S. (2003). Varieties of familialism. *European Societies*, 5, 353–375.
- Lindahl, L. (2011). Improving the school-to-work transition for vocational students – what can we learn from research? Swedish Institute for Social Research (SOFI), Working Paper 13/2011.
- Marten, C., Neyer, G., & Ostner, I. (2012). Neue soziale Risiken, neue Politiken – Familienpolitischer Wandel in Deutschland, Österreich und der Schweiz. In H. Bertram & M. Bujard (Eds.), *Soziale Welt. Sonderband 19. Zeit, Geld, Infrastruktur. Zur Zukunft der Familienpolitik* (pp. 115–138).
- Martín-García, T., & Baizan, P. (2006). The impact of the type of education and of educational enrolment on first births. *European Sociological Review*, 22, 259–275.
- Maul, K. (2012). *Der Einfluss der beruflichen Tätigkeit auf die Familiengründung*. Würzburg: Ergon Verlag.
- Michelmore, K., & Musick, K. (2014). Fertility patterns of college graduates by field of study, US women born 1960–79. *Population Studies*, 68, 359–374.
- Neyer, G. (2003). Family policies and low fertility in Western Europe. *Journal of Population and Social Security (Population)*, 1, Supplement: 46–93, [http://www.ipss.go.jp/webj-ad/webjournal.files/population/ps03\\_06.asp](http://www.ipss.go.jp/webj-ad/webjournal.files/population/ps03_06.asp)
- Neyer, G. (2009). Bildung und Kinderlosigkeit in Österreich und in Schweden. *Zeitschrift für Familienforschung*, 21, 286–309.
- Neyer, G. (2010). Familienpolitik in Österreich zwischen Beharrung und Veränderung. *Revue d'Allemagne et des pays de langue allemande*, 42, 57–70.
- Neyer, G., & Hoem, J. M. (2008). Education and permanent childlessness: Austria vs. Sweden. A research note. In J. Surkyn, P. Deboosere, & J. Van Bavel (Eds.), *Demographic challenges for the 21st century. A state of the art in demography* (pp. 91–112). Brussels: VUP Press.
- Neyer, G., Hoem, J. M., & Andersson, G. (2013). Kinderlosigkeit, Bildungsrichtung und Bildungsniveau. Ergebnisse einer Untersuchung schwedischer und österreichischer Frauen der Geburtenjahrgänge 1955–59. In D. Konietzka & M. Kreyenfeld (Eds.), *Ein Leben ohne Kinder. Ausmaß, Strukturen und Ursachen von Kinderlosigkeit* (pp. 101–135). Wiesbaden: Springer VS.
- Obinger, H., & Tálos, E. (2010). Janus-faced developments in a prototypical Bismarckian welfare state. Welfare reforms in Austria since the 1970s. In B. Palier (Ed.), *A long goodbye to Bismarck? The politics of welfare reform in continental Europe* (pp. 101–128). Amsterdam: Amsterdam University Press.
- Oláh, L. S., & Bernhardt, E. (2008). Sweden: Combining childbearing and gender equality. *Demographic Research*, 19, 1105–1144. <http://www.demographic-research.org/volumes/vol19/28/19-28.pdf>

- Oláh, L. S., & Hobson, B. (2006). Birthstrikes? Agency and capabilities in the reconciliation of employment and family. *Marriage and Family Review*, 39, 197–227.
- Ohlsson-Wijk, S. (2015). *Family formation at the turn of the new millenium* (Stockholm University Demography Unit Dissertation Series 13). Stockholm: Acta Universitatis Stockholmiensis.
- Oppenheimer, V. K. (1994). Women's rising employment and the future of the family in industrial societies. *Population and Development Review*, 20, 293–342.
- Prskawetz, A., Sobotka, T., Buber, I., Engelhardt, H., & Gisser, R. (2008). Austria: Persistent low fertility since the mid-1980s. *Demographic Research*, 19, 293–360. <http://www.demographic-research.org/volumes/vol19/12/19-12.pdf>
- Rindfuss, R. R., & Bumpass, L. L. (1976). How old is too old? Age and the sociology of fertility. *Family Planning Perspectives*, 8, 226–230.
- Rindfuss, R. R., Morgan, S. P., & Offutt, K. (1996). Education and the changing age pattern of American fertility: 1963–1989. *Demography*, 33, 277–290.
- Rösler, W. (2012). *Strukturwandel und Fertilität. Wie die höhere Berufsbildung der Frau die Geburtenrate beeinflusst. Quantitative Analysen im Zeitverlauf des „zweiten demografischen Übergangs“*, Dissertation. Humboldt University, Berlin.
- Rønsen, M., & Skrede, K. (2010). Can public policies sustain fertility in the Nordic countries?. *Demographic Research* 22, 321–346. <http://www.demographic-research.org/Volumes/Vol22/13/22-13.pdf>
- Seidl, M. (1993). *Einkommensunterschiede zwischen Männern und Frauen im Bundesdienst*. Wien: Wirtschaftsuniversität (Diplomarbeit).
- Smyth, E. (2003). Gender differentiation and early labour market integration across Europe. In I. Kogan & W. Müller (Eds.), *School-to-work transitions in Europe: Analyses of the EU LFS 2000 Ad Hoc Module* (pp. 55–88). Mannheim: Mannheimer Zentrum für Europäische Sozialforschung.
- Statistik Austria. (2014). *Kindertagesheimstatistik 2013/2014*. Wien.
- Surkyn, J., & Lesthaeghe, R. (2004). Value orientation and the second demographic transition (SDT) in Northern, Western and Southern Europe: An update. In G. Andersson & G. Neyer (Eds.), *Contemporary research on European fertility: Perspectives and developments. Demographic Research. Special Collection 3* (pp. 43–86). <http://www.demographic-research.org/special/3/3/s3-3.pdf>
- Tesching, K. (2012). *Education and fertility. Dynamic interrelations between women's educational level, educational field and fertility in Sweden*. (Stockholm University Demography Unit Dissertation Series 6). Stockholm: Acta Universitatis Stockholmiensis.
- van Bavel, J. (2010). Choice of study discipline and the postponement of motherhood in Europe: The impact of expected earnings, gender composition, and family attitudes. *Demography*, 47, 439–458.
- van de Kaa, D. J. (1996). Anchored narratives: The story and findings of half a century of research into the determinants of fertility. *Population Studies*, 50, 389–432.

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# Chapter 10

## Childlessness and Fertility Dynamics of Female Higher Education Graduates in Germany

Hildegard Schaeper, Michael Grotheer, and Gesche Brandt

### 10.1 Introduction

This paper examines the process of family formation, defined as the birth of the first child, of female higher education graduates belonging to different graduate cohorts. Focusing on this particular population allows us to take a closer look at a phenomenon which, although known to exist for some time, has only recently started to receive significant attention in the media and in research: namely, the declining and low birth rates among women with a higher education degree.

For a long time, exact figures for Germany on the proportion of female graduates who were permanently childless were not available. The number of actual births among this group was first recorded by the microcensus of 2008, which provides a more accurate picture of childlessness among women than was previously available (Pöttsch 2010). Analyses of these data have concluded that the share of female graduates who are childless is 29.5%, and far higher than the 19.5% share among other women. There is little indication that this difference is chiefly attributable to a lower desire for children among university graduates. Although there is some evidence suggesting that female higher education graduates are slightly less likely than women with lower educational levels to want children (Dorbritz and Ruckdeschel 2013), and that they have a tendency to subordinate this desire to other aspirations (Passet 2011), women of different educational levels vary much less in their desire to have children than in their actual childbearing. In other words, the gap between

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desire and reality is especially large among highly educated women (Eckhard and Klein 2012).

Both theoretical analyses and empirical studies have pointed out a number of factors which explain why large shares of German women are failing to realise their desire to have children, e.g., the lack of childcare options (especially in western Germany), the lack of a partner (especially among highly qualified women), and the growing significance of paid employment. Whereas in the past a woman's life course tended to be organised predominantly around the family, the social institutions central to the typical female life course now also include career and the labour market. Decisions in one of these spheres are not made in isolation, but depend on developments, decisions, aspirations, and structures in the other sphere.

Thus, in this paper we investigate how and to what extent employment and the labour market affect the transition to motherhood among higher education graduates. Based on theoretical considerations presented in Sect. 10.2, we examine these questions empirically using the graduate studies undertaken by the German Centre for Higher Education Research and Science Studies (DZHW). In Sect. 10.3, we provide further information on these datasets and on the applied statistical methods and variables. The results of the empirical analyses are presented in two parts in Sect. 10.4. First, we examine the process of family formation from the age of 14 onwards. Second, we examine in detail the relationship between occupational career and family formation, focusing exclusively on the period after the first degree was awarded.

## 10.2 Theoretical Basis

### 10.2.1 *General Theoretical Assumptions from a Life Course Perspective*

The analysis of the transition to motherhood is based on life course theory. According to this perspective, actions which are biographically significant and associated with status changes are, like all actions, embedded in the life course and have multiple time references. Such actions take place in the present and are shaped by the current context. But they also refer both subjectively ("in-order-to motives", Schütz 1971: 80) and objectively (intended and unintended consequences) to the future, and in particular to the past: i.e., to biographical experiences, accumulated resources, and decisions and circumstances of the preceding life history. These factors shape biographies and subjectively prompt action ("because motives", *ibid.*).

From a diachronous perspective, the life course resembles a sequence of events, states, or status passages. However, in view of the multidimensional nature of life courses or their synchronous integration in several life domains, it is more appropriate to follow René Levy's (1996: 73) conceptualisation of the life course as a "sequence of participation-position-role configurations." Assuming further that

developments in various areas of life are interdependent (Huinink 1995: 154), family formation can be regarded as a process which depends on the woman's occupational career, as well as other factors, such as her educational and union history.

Furthermore, the life course is part of a social multi-level process (Huinink 1995: 154–155). The actors are situated at the micro level, where they act in relation to their individual, but nonetheless collectively shaped aspirations and preferences; as well as in response to the prevailing opportunities and restrictions. The conceptualisation of these actions as rational—i.e., driven by cost-benefit deliberations and the objective of maximising utility—has become a dominant paradigm in analyses and explanations of fertility decisions. Empirical studies have indicated that the model of rational action has, indeed, a role to play in explaining behaviour (Schaeper and Kühn 2000) and that especially among female graduates family formation is to a large extent the result of a deliberate process of planning, decision-making, and evaluation (Herlyn et al. 2002). In this process, women weigh not only the direct economic costs and the psychological costs (e.g., stress, emotional burdens) of having children, but also the indirect (opportunity) costs, which are related to the forgone benefits of alternative uses of time (e.g., time spent in employment). Women may also consider the benefits of having children: While in modern societies children are seldom seen as sources of income or old-age insurance, they are especially thought to provide psychological and emotional benefits (e.g., personal fulfilment, life enrichment, affection).

When choosing a course of action, individuals refer to their immediate social context; i.e., to partners, peers, and members of their family of origin. This implies, for example, that actors are required to coordinate their life course, decisions, and plans with those of other people (“linked lives”). Furthermore, the individual's actions are embedded in a regional context which provides a variety of opportunity structures (e.g., labour market opportunities, childcare options) and socio-cultural orientation patterns. Finally, actions are framed by the structural and cultural conditions of the society through generally applicable opportunity structures, overarching norms, and interpretive schemes; as well as through largely binding institutions, such as school/university, labour market/occupation, and family.

### ***10.2.2 Specific Assumptions About the Transition to Motherhood Among Female Higher Education Graduates***

The effects of general structural and cultural changes on the timing of family formation and the extent of childlessness are usually assessed by taking the birth year as a proxy variable. Several studies (e.g., Blossfeld and Rohwer 1995) have demonstrated that the transition to motherhood was taking place at progressively higher average ages among women born after the middle of the twentieth century. Accordingly, we would also expect a trend towards fertility postponement among

higher education graduates. However, the graduate cohorts included in our study represent only a relatively short historical period. Furthermore, Blossfeld and Rohwer (1995) found that the cohort effect disappears entirely if educational participation is controlled for. Given the brevity of the historical observation window and the small degree of variability in terms of both the participation in and the duration of education among the graduate cohorts studied, we expect to see only slight cohort differences.

The studies which have investigated the influence of participation in education on family formation have all found that the transition to motherhood is unlikely to take place as long as the prospective mother is in education (e.g., Blossfeld and Rohwer 1995; Schröder and Brüderl 2008; Buhr et al. 2011; Maul 2012). Research has shown that since 1991 the share of higher education students who have children has been around 6–7 % (Middendorff 2008). There are two main reasons why so few students have children. First, because of insufficient economic resources family formation during education appears to be inopportune (Huinink 1995). Second, most young people do not occupy themselves with family-related questions while in education, as they are concentrating on education-related biographical tasks (*ibid.*). If students give any thought to such matters, they generally associate family formation with high opportunity costs and competing demands on their time. Education calls for a large investment of time, and is therefore difficult to reconcile with family commitments (*ibid.*). Students who have children, and especially female students, can expect to take longer to complete their education, or may even be forced to drop out (Middendorff 2008; Heublein et al. 2010). As dropping out of education can have far-reaching negative implications for an individual's future income and career opportunities, having children while in education can give rise to high indirect costs.

These general observations apply to the social conditions prevailing in the Federal Republic of Germany (FRG). We therefore expect to find a significantly reduced inclination towards childbearing during the period of study among both western German respondents and eastern German study participants of the more recent cohorts. It should be noted, however, that the policies of the German Democratic Republic (GDR) attenuated the resource, compatibility, and prospects problems, and, according to Huinink (2000: 216), may have even incentivised starting a family early. In the GDR, several measures were specifically designed to support female students with children. In addition, the financial burdens of supporting a child in the GDR were negligible given the low cost of living, the availability of affordable childcare and housing, and the financial security provided by scholarships, which were augmented by a child benefit (Leszczensky and Filaretow 1990). For these reasons, we can expect to find that the institution effect was much less pronounced among eastern German female higher education graduates who belong to earlier graduate cohorts and began their studies before 1990 or shortly thereafter than among their western German counterparts.

Comparisons of the family formation process and family forms in eastern and western Germany clearly illustrate that significant differences persist, even though alignment processes are taking place in many spheres (Goldstein et al. 2010). A larger proportion of eastern German than western German women have children,



and easterners tend to make the transition to motherhood earlier than westerners (Buhr et al. 2011). However, the proportions of childless women who do not wish to become mothers, and perceptions concerning the ideal family size, have started to converge between east and west (ibid. 187). We therefore assume to find persisting differences, but also increasing similarities between the family formation behaviour of women of the more recent eastern German graduate cohorts and those of their western German counterparts.

Our hypothesis that behaviour patterns are converging is based on the fact that after German reunification, the “gender order” (Pfau-Effinger 1998) and institutional environment of western Germany were introduced in eastern Germany, implying a “structural incompatibility” or, at best, “sequential compatibility” of family and career (Dornseiff and Sackmann 2003). The hypothesis of the enduring difference is supported by the persistence of a specifically eastern German “gender culture”. According to the prevailing role model of the “working housewife and mother”, for example, a woman was expected to be in continuous full-time employment, with only brief interruptions for family leave, while simultaneously maintaining her traditional responsibilities in the home. The transfer of the western German gender order gave rise to a cultural lag in eastern Germany; i.e., the gender culture lagged behind structural change. According to the literature cited by Maul (2012), the “cultural heritage” of the GDR continues to exert an influence up to today.

For western Germany as well, we can assume that the cultural and social structures did not develop in parallel. The FRG’s organisations and institutions of the welfare state, the labour market, and the family have long lagged behind the modern paradigm of womanhood—which is oriented towards independence, employment, and a “double conduct of life” (Pfau-Effinger 1998; Born 2001). This “structural lag” and corresponding “compatibility dilemma” especially applied to well-educated western German women with high career ambitions who consider the usual models for reconciling work and family life, such as taking career breaks and moving to part-time work, as being hardly compatible with their aspirations.

Because of this compatibility issue we can expect to find that a woman may postpone the decision about whether to have a family until the time-consuming process of establishing and consolidating a career, which calls for flexibility and mobility, has been completed; and that this postponement can easily lead to unintended or deliberate childlessness. In view of the resource problem and the problem of prospects, we, in addition, can assume that for a highly educated woman, having a stable and sustainable professional position may be seen as a prerequisite for making the transition to motherhood. We would therefore expect to find, for example, that having a permanent employment contract would positively influence the inclination to form a family. However, the results of empirical studies examining this hypothesis, which is based on educationally diverse samples, is ambiguous. Schmitt (2008) found on the basis of data from the German Socio-Economic Panel (GSOEP) that fixed-term contracts have a negative effect on the entry into motherhood. The analyses of Gebel and Giesecke (2009), on the other hand, indicated that having a temporary employment contract does not have an impact on the transition to

parenthood for either men or women; and Brose (2008) came to the same conclusion for women only.

However, according to the theory of the value of children proposed by Friedman et al. (1994), insecurity or a lack of certainty concerning biographical prospects can also have the opposite effect. To reduce uncertainty, women whose chances of having a stable professional career are poor could have children earlier and more frequently. This assumption is substantiated in family economics by the argument that, for women with diminished career resources, the opportunity costs associated with motherhood—i.e., the temporary loss of earnings and the long-term detrimental impact on a career and social security—are relatively low. Both arguments imply that a mismatch between occupational position and education, or the experience of downward occupational mobility, tends to accelerate family formation; and that having full-time gainful employment and an elevated professional position tends to delay the transition to motherhood. It is, however, possible that the influence of biographical prospects differs depending on educational attainment. Kreyenfeld (2010) found, for instance, that perceiving the economic situation to be uncertain and having concerns about job security has negative effects on family formation among women with high levels of education, but positive effects among women with lower levels of education.

Women's orientations regarding family and career generally are not directly included in quantitative analyses because they are rarely measured before the start of the process being examined. In many cases, researchers can use only rough indicators which are known to correlate with the phenomenon of interest, such as social origin (see below), religious affiliation, educational attainment, or subject area. A number of studies (e.g. Heine et al. 2005) have, for example, found that students who pursue a degree in medicine or teaching tend to have a strong social orientation and relatively weak career ambitions; whereas students who study law, business, or economics tend to be highly materialistic and career-oriented. At the same time, different types of degrees open up different career opportunities. These observations suggest that family formation rates among graduates in different disciplines are likely to vary considerably. Indeed, research conducted in other countries has shown that the field of study is a better predictor of fertility behaviour than the level of education (Neyer et al. in this volume). In light of sometimes competing theoretical arguments and opposing effects of career orientations and resources in some fields of study, it is difficult to put forward a hypothesis regarding the direction of the differences.

Occupational careers continue to be influenced by social origin, irrespective of the level of qualification attained. With respect to higher education graduates, studies have shown (e.g. Hemsing 2001) that parents' social status and education not only have an indirect effect on career success of their children (resulting from the association between choice of subject, higher education institution and social origin); they also have a direct, independent effect. In addition, the social position of the family of origin exerts an influence on the children's career orientation, aspirations, and expectations. We can therefore assume—in line with previous studies



(Blossfeld and Rohwer 1995)—that graduates whose parents have a high social position are more likely than others to postpone family formation.

In recent years, a series of policy measures have been introduced which were designed to alleviate the resource, incompatibility and prospects problems, and thus to increase the birth rate. However, the impact of these policies may take one to two decades to become apparent (Bujard 2011: 37). We therefore do not expect to observe an effect of these measures on the cohorts of female graduates who are the subject of the present study.

## 10.3 Data and Methods

### 10.3.1 Data

The analyses of the family formation process among female higher education graduates are based on the panel studies of higher education graduates conducted by the German Centre for Research on Higher Education and Science Studies (*Deutsches Zentrum für Hochschul- und Wissenschaftsforschung*, DZHW). The DZHW graduate studies cover the entire range of subjects, and include all state-run and state-approved higher education institutions, with minor exceptions.

The survey programme currently spans six graduate cohorts with up to three panel waves. In the survey of the 1989 cohort (who graduated in winter semester 1988/1989 or summer semester 1989 from a higher education institution in the pre-unification territory of the Federal Republic of Germany), 2898 women were observed over an average period of 42 months after graduation. The survey of the 1993 cohort, which for the first time included graduates from eastern Germany, yielded data of 2617 women for an average period of 66 months after graduation. In the surveys of the 1997, 2001 and 2005 cohort, 2739 respectively 3307 and 3828 women were observed over an average period of 70 months after graduation. Finally, in the first and only survey to date of the 2009 cohort, 2980 female graduates who completed a bachelor's degree course were surveyed alongside 3418 female graduates who attended traditional courses which concluded with either a state examination, a *Diplom* degree, or a *Magister* degree. The observation period of this cohort covers an average of 14 months after graduation.

### 10.3.2 Approach and Method

In order to obtain a descriptive overview of the process concerned, the survival functions for all of the graduate cohorts were estimated using the Kaplan-Meier method. The multivariate analyses used techniques of event history analysis. We estimated exponential models assuming a constant rate over time. The

time-dependence of the processes being analysed was taken into account by integrating time-varying covariates (such as current age and educational participation). First, we estimated separate models for eastern Germany and western Germany. Second, we tested the east-west effect in a joint model. All of the results presented here were preceded by a comprehensive examination of theoretically possible interaction effects. In the interests of parsimony and simplicity, only significant interaction effects were included in the final models. Since the DZHW surveys consist in part of disproportionately stratified random samples of graduates, the analyses were performed with Stata statistical software using sampling weights.

### **10.3.3 Model Specification**

Two perspectives are adopted in the analysis of the transition to motherhood. The first strand of analysis looks at all of the graduate cohorts and examines the transition to motherhood from the age of 14 onwards. The process time is therefore the age of the woman. Because of their particular biographies, graduates who belonged to older birth cohorts (pre-1960 cohorts in the west and pre-1965 cohorts in the east) or who qualified for entry into higher education abroad were disregarded. After application of these selection criteria, the sample for the survival analyses consists of 16,233 western German and 3835 eastern German women. The following variables were included in the multivariate models:

**Graduate Cohort** For the most part, the graduate cohorts correspond to specific birth cohorts. In the vast majority of cases, the women in the 1989 graduate cohort were born between 1960 and 1964, and the women in the 1993 graduate cohort were born between 1965 and 1969. However, the subsequent graduate cohorts are somewhat less homogeneous in age. The 2009 cohort also includes graduates of the new, shorter bachelor's degree programmes. These bachelor's degree graduates are on average 2 years younger than the graduates of traditional degree courses. For reasons which will be explained later, the results for the 1989 and 2009 graduates are reported in the survival analyses only.

**Participation in Education** We use two indicators for measuring the effect of being in education: (1) the annually adjusted time-dependent variable "studying for a first degree" (labelled "in first degree course"), which assumes the value one for as long as the respondents meet this criterion (and the value zero upon completion of the first degree); and (2) the annually adjusted time-varying variable "pursuing further higher or professional education (after having completed the first degree)" (labelled "in further education"). Because the effects did not differ, studying for a doctoral degree, studying for a second degree, and participating in professional training were grouped together in this variable.

**Subject of First Degree and Degree Type** For the type of degree, university degrees are distinguished from degrees awarded by universities of applied sciences. For the subject or field of study, three groups are distinguished: (1) social work (universities of applied sciences), teaching, and human medicine; (2) law, business, and economics; and (3) all other subjects.

**Parents' Education** This variable is defined as the educational attainment of the higher status parent. It is represented by three dummy variables: (1) lower secondary school leaving certificate/no school leaving certificate; (2) intermediate school leaving certificate/higher education entrance qualification; and (3) higher education degree.

**Regional Origin** Women graduates who obtained their higher education entrance qualification in the western German federal states are compared with their counterparts from the eastern German states.

**Age** To control for the well-known non-monotonic, bell-shaped age dependence of the rates of entry into first motherhood, two time-varying age variables— $\log(\text{current age}-13)$  and  $\log(45-\text{current age})$ —are included.

The method of episode splitting is used to introduce time-varying covariates into the model. The process time is measured in annual intervals only, and the age variables are adjusted annually. The imprecise measurement of the process time may give rise to an underestimation of the events in the right-censored survey years. For this reason, the models of the first strand of analysis are estimated for the 1993, 1997, 2001, and 2005 cohorts only, as their observation windows are of similar length (number of cases: 9074 western German and 2284 eastern German female respondents providing data for all variables).

The second strand of analysis looks at higher education graduates of the years 1997, 2001, and 2005 who were childless when they finished their studies, and who were born after 1960 for western German women or after 1965 for eastern German women (number of cases: 6470 western German and 1866 eastern German study participants with complete data). The subject of this analysis is the transition to motherhood after graduation, with a focus on the impact of career development and employment situation. In this case, therefore, the process time starts with graduation, and is recorded on a monthly basis. The cohort 1989 and 1993 had to be excluded from the analyses because the questionnaires addressed only the current employment situation. The 2009 cohort was excluded because the observation window of 14 months was too short to allow us to adequately examine the influence exerted by the graduates' employment history and employment situation.

Career progression and the employment situation are represented by the following characteristics:

**Economic Inactivity** (time-dependent), which is contrasted with economic activity and takes on different values: (1) periods of economic inactivity before starting the first job or commencing further training or education ("transitional phase"), (2)

further higher or professional education (further training phases, studying for a doctorate or second degree; labelled “further education”), (3) other periods of economic inactivity lasting no more than 3 months (“interruption of up to 3 months”), and (4) other periods of economic inactivity lasting more than 3 months (“interruption of more than 3 months”). Women in gainful employment who were simultaneously participating in education are deemed to be economically inactive during such periods; those who are formally participating in an apprenticeship or an internship were likewise classified as economically inactive.

**Education-Job Mismatch at Labour Market Entry** (time-constant variable “negative start”), which is given when the first employment position after graduation clearly had a lower status than is warranted by the graduate’s educational qualifications (e.g., unpaid family worker; unskilled, semi-skilled, or skilled worker; lower or middle-grade civil servant; low-level employee).

**Length of Time Between Graduation and First Permanent Employment Contract** (time-constant variable “permanent contract”), for which we distinguish four categories: (1) no permanent contract throughout the entire observation period, (2) first permanent contract obtained in the first 12 months after completion of studies, (3) first permanent contract obtained in the second or third year after graduation, and (4) first permanent contract obtained at a later date.

**Self-Employment** (time-constant) with two categories: never self-employed, and self-employed at least once during the observation period.<sup>1</sup>

**Full-Time Gainful Employment** (time-varying), contrasted with part-time employment.

**Career Development** (time-varying), for which we distinguish between lateral career paths, upward mobility, downward mobility, and discontinuous career patterns. Career development is reconstructed by arranging the employment positions in a hierarchical order: Unpaid family workers; unskilled and semi-skilled workers (Level 1), skilled workers, lower and middle-grade civil servants, low-level employees (Level 2), skilled employees, self-employed individuals with a contract for services/fee contract (Level 3), academically qualified employees without managerial responsibility, high-grade civil servants (Level 4), academically qualified professional employees with intermediate managerial responsibility, self-employed professionals, senior civil servants (Level 5), executive employees, independent entrepreneurs (Level 6).

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<sup>1</sup> Self-employment (excluding contracts for work and services and fee contracts) ranks among the types of employment which—at least during the initial period—entail a certain degree of biographical uncertainty, and which are, as a rule, very time-consuming. It is to be assumed that this time pressure also applies in periods preceding, and during interruptions of, self-employment. The self-employment variable was therefore included as a time-constant characteristic.

**Upward and Downward Mobility** are defined as a job change that was accompanied by an increase or a decrease in rank or position. The initial attainment of a higher ranking position following a mismatch between educational qualification and job status at the time of labour market entry is not, however, classified as an upward move. The time-varying dummy variables retained the value one if the first upward move (downward move) is followed by a second upward move (downward move), or the professional position is no longer subject to change. If a downward move was followed by a step up the career ladder, or an upward move was followed by a downward move, the career was thereafter deemed to be erratic; the variables “upward/downward move” and “downward/upward move” are coded one, irrespective of the subsequent career development. Lateral career paths are therefore employment histories with neither upward nor downward moves.

**Employment Position** (time-varying) based on the results of estimates using the multi-level ranking of occupational positions and for the sake of a clear presentation of results, a distinction is made between only two aggregated categories: the extreme levels 1, 2, and 6; and the intermediate ranks on the career ladder (levels 3, 4, and 5; compare the career levels described above).

**Region of Work** (time-varying). This variable distinguishes between the western German states, the eastern German states, and other countries.

**Work Experience** This control variable has to be included to ensure that for all time-constant variables of the employment history, the reference category consisted exclusively of women who were economically active at least once in the observation period.

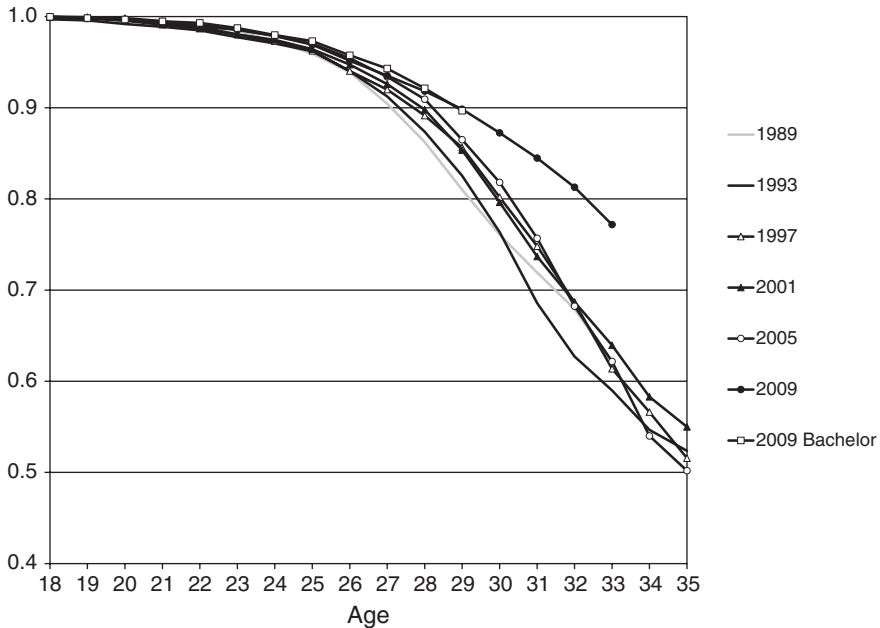
**Graduate Cohort, Subject Area and Type of Degree, Parents’ Education, Age and Regional Origin** These variables are constructed as described above.

All of the covariates of the employment history and career path that are designed as time-varying characteristics are adjusted on a monthly basis. Since the focus of the analysis of the transition to motherhood is on the moment of decision-making, consideration is given not to the graduate’s current employment situation, but to the situation 9 months earlier.

## 10.4 Empirical Findings on the Transition to Motherhood of Higher Education Graduates

### 10.4.1 Family Formation in Different Cohorts

Figure 10.1 depicts the survival functions for different graduate cohorts, which provide information on the probability of the graduates remaining childless up to a given age. The graph reveals that there are relatively small differences between cohorts of western German female graduates. However, these differences become



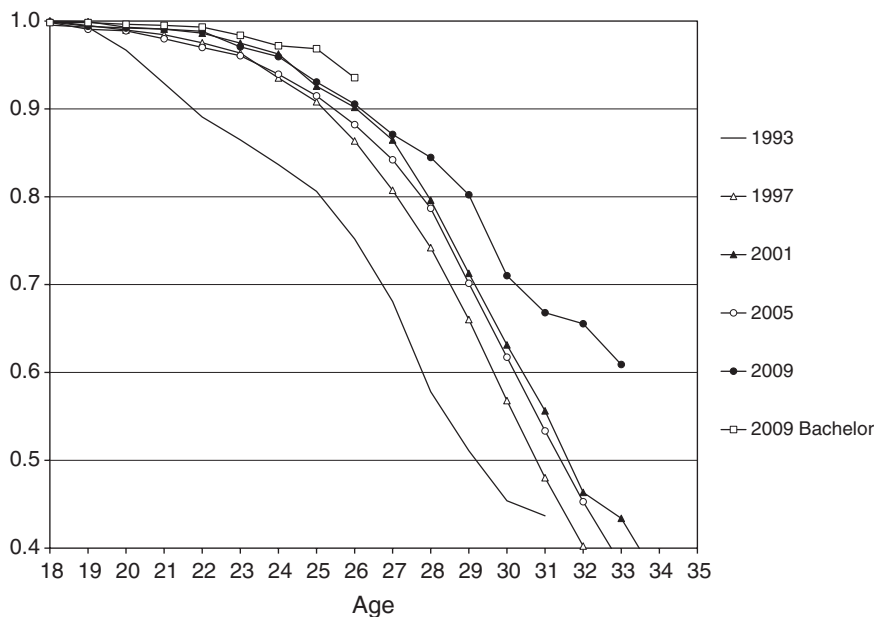
**Fig. 10.1** The transition to motherhood of western German higher education graduates in different graduation cohorts (Kaplan-Meier survival function) (Source: DZHW graduate surveys 1989–2009)

pronounced for the 1997 cohort onwards. Almost 25 % of the “quickest” graduate cohorts—namely, those of 1989 and 1993, for whom the survival functions do not differ significantly—had made the transition to motherhood up to the age of 30, and almost 40 % (1993 cohort) up to the age of 32. In the subsequent graduate cohorts, childbearing was increasingly delayed. In the cohorts 1997, 2001, and 2005, only around 20 % of the women had given birth to a child at the age of 30, and only around 30 % had made the transition to motherhood at the age of 32 (measured against the 1993 cohort, the differences are significant with an error probability of less than .05). The significantly delayed family formation of western German women who graduated from a traditional degree programme in 2009 is particularly striking. An estimated 80 % of them were still childless at the age of 32. We can assume, however, that the differences will be reduced once the observation period for the 2009 cohort more or less matches those currently available for the older cohorts.<sup>2</sup> In the 2009 cohort, no differences can be observed between western

<sup>2</sup>Given the imprecise process time, events which took place at the time of the survey (i.e., at right-censored ages) are underestimated. The second panel waves have shown that, at the ages which were right-censored at the time of the first survey, a series of further events (births) occurred. In addition, the number of births increased sharply in the observation period of the second panel waves. Since the 2009 cohort has been surveyed only once thus far, this means that, for instance, women who were 30 years old at the time of the first survey 1 year after graduation (2009 cohort)

German graduates with a traditional degree and with a bachelor's degree, despite the fact that the majority of women who earned a bachelor's degree subsequently undertook a further period of study.

The trend towards fertility postponement was stronger among higher education graduates in the eastern German states than among their western German counterparts (Fig. 10.2). Only the differences between the 2001 and 2005 cohorts are insignificant. It follows from this finding that, as expected, the first birth rates of eastern and western German graduates are becoming more similar. The changes which took place between the 1993 and 1997 cohorts are striking. Between these two cohorts the probability of giving birth to a first child by the age of 27 dropped from more than 30 % to 20 %. Between the 1997 and 2001 graduate cohorts, a further reduction of six percentage points can be observed. Despite the convergence of cohorts, the east-west differences within cohorts were highly significant for all cohorts. Among the eastern German bachelor's degree graduates in the 2009 cohort, who are even more likely than their western German counterparts to have undertaken a second course of study, family formation was a rare event in the observation period.



**Fig. 10.2** The transition to motherhood of eastern German higher education graduates in different graduation cohorts (Kaplan-Meier survival function) (Source: DZHW graduate surveys 1993–2009)

had given birth to fewer children to date than women who were 30 years old at the time of the second survey 5 years after graduation (other cohorts). These considerations also apply, albeit to a lesser extent, to the 1989 cohort (average observation window of three and a half years). In view of these data artifacts, the 1989 and 2009 cohort were excluded from the multivariate models.

**Table 10.1** The transition to motherhood of higher education graduates in different cohorts (exponential rate models), beta coefficients

	Western Germany Model I		Eastern Germany Model II		Combined Model III		Combined Model IV	
Graduate cohort ( <i>ref.: 1993</i> )								
1997	-0.09		-0.01		-0.12	*	-0.09	
2001	-0.15	*	-0.24		-0.19	**	-0.18	**
2005	-0.15	*	-0.15		-0.17	**	-0.16	**
In first degree course <sup>a</sup> ( <i>ref.: no</i> )	-0.67	**	-1.09	**			-0.72	**
In first degree course <sup>a</sup> × cohort 1993	-0.11		1.24	**				
In first degree course <sup>a</sup> × east × cohort 1993							1.19	**
In first degree course <sup>a</sup> × law/business/economics	-0.58	**	0.41				-0.32	
In further education <sup>a</sup> ( <i>ref.: no</i> )	-0.47	**	-0.35	**			-0.44	**
Subject of first degree ( <i>ref.: other subjects</i> )								
Teaching/medicine/social work (univ. of appl. sciences)	0.43	**	0.32	**			0.40	**
Law/business/economics	-0.06		-0.29	*			-0.11	
University degree ( <i>ref.: awarded by univ. of appl. sc.</i> )	-0.05		0.27	**			-0.05	
University degree × east							0.34	*
Parents' education ( <i>ref.: lower secondary school leaving cert./no school leaving cert.</i> )								
Intermediate school leaving cert./Higher education entrance qualification	-0.06		0.19				0.08	
Higher education degree	0.13	*	0.19				0.13	**
Log(age-13) <sup>a</sup>	5.41	**	4.32	**	5.42	**	5.08	**
Log(45-age) <sup>a</sup>	2.55	**	2.14	*	2.31	**	2.36	*
Regional origin eastern ( <i>ref.: western</i> )					0.73	**	0.46	**
East × cohort 1993					0.41		0.02	
Constant	-25.03	**	-20.41	**	-24.42	**	-23.57	**
Cases	9074		2284		11,398		11,358	
Events	2979		1032		4022		4011	
Log likelihood initial model	-4650		-914		-5645		-5623	
Log likelihood final model	-2146		-312		-2700		-2473	

Source: DZHW graduate surveys 1993–2005

Note: <sup>a</sup> time-varying; \* p < .05, \*\* p < 0.01

According to the multivariate analysis (Table 10.1, Model I) the cohort differences for western German graduates are similar to those estimated by survival analysis (only the difference between the 1993 and 1997 cohort is not significant). However, the marked differences between the eastern German graduates in the 1993



cohort and those in the later cohorts disappear (Table 10.1, Model II). This result is attributable to the conditional effect of studying which varied in eastern Germany with the year of graduation. While this institution effect is highly significant in the west and has the expected negative sign—indicating that the inclination to make the transition to motherhood is significantly reduced during a period of study—a similar effect in the east is observable only in the more recent graduate cohorts. As indicated by the highly positive interaction effect “in first degree course  $\times$  cohort 1993”, the institution effect among those in the 1993 graduate cohort—the majority of whom began their studies before German reunification—did not play a role. The second institution effect, which refers to a further phase of education after the first degree, is significant and negative for all eastern German graduates, but is less pronounced than among western German graduates.

As anticipated, graduates from different fields of study have very different family formation rates. Graduates in western and eastern Germany who earned a teaching or a medical degree, or a degree in social work awarded by a university of applied sciences, tend to make the transition to motherhood far sooner than graduates in other subjects. This result, which is in line with analyses of other datasets for Germany (Maul 2012) and for other countries (synoptic overview in Maul 2012, see also Neyer et al. in this volume), is found even without controlling for the birth-postponing effect of undertaking a further phase of education.

As we also expected, graduates of law, business, and economics have significantly lower transition rates. However, in western Germany the reduced inclination of these graduates to form a family exists only for the period of study for the first degree (see the negative and significant interaction effect “in first degree course  $\times$  law/business/economics”). Once they have completed their studies, western German law, business and economics graduates give birth to their first child only marginally later than graduates of the study programmes grouped together in the reference category. However, the difference to graduates who studied social subjects remained significant. By contrast, among eastern German law, business, and economics graduates, the transition rates are a little higher during the period of study for the first degree, and are significantly lower afterwards. In this case as well, the family formation rates are much lower than among graduates of social subjects.

Contrary to our assumption that, given their greater career resources and aspirations, women from a family with a higher social status would postpone family formation to a greater extent, parents’ qualifications actually produce only a slight and sometimes even an opposite effect among higher education graduates. For example, western German graduates born to parents with a higher education degree make the transition to motherhood slightly, but still significantly more often than other western German women.

In keeping with all of the other known studies, the age of higher education graduates has the expected non-monotonic effect on the family formation rate. This age dependence reflects a conglomeration of different factors which influence the timing of family formation. Apart from the biological limits of fertility, they include social and milieu-specific age conventions, the current state of career development (more on this below), and, finally, psychological preconditions. Personal maturity

appears to be a major prerequisite for motherhood: for example, the reasons students give for not starting a family while studying include that they are “too young and inexperienced, and were still developing their personalities or finding their way in life”, and are thus not yet “ready or able to accept the responsibility for a child” (Middendorff 2003: 22). The increasing participation in education may therefore have triggered an increasing postponement of family formation, not only because it is considered difficult or inopportune to have a baby while in education and training, but also because prolonged participation in education has contributed to an extension of adolescence.

Although the survival analyses detected an east-west difference in family formation among higher education graduates as well, they also showed that a partial alignment has taken place over time. This finding is confirmed by the multivariate analyses: higher education graduates from the eastern German federal states, even if they belong to the younger graduate cohorts (from 1997), continue to have their first child earlier than western German graduates (Table 10.1, Model III). The fertility behaviour of eastern and western German degree holders has, however, converged. As indicated by the positive interaction effect “east × cohort 1993”, the east-west difference in the transition rate is significantly larger in the older graduate cohorts than in the more recent ones. To a large extent, however, this convergence is a result of a marked decrease in the inclination of women to make the transition to motherhood while in education. This insight was provided by the fourth estimation model, which took into account the fact that in the east the institution effect varies with the year of graduation, and therefore included the interaction “first degree × east × cohort 1993”. In this model, the interaction effect “east × cohort 1993” was no longer significant. Once they had completed their studies, eastern German graduates belonging to the more recent graduate cohorts were not making the transition to motherhood any later than women in the older cohorts. Although the east-west effect itself was smaller in the combined model that included all of the variables (Table 10.1, Model IV), it remained significant at the one per cent level.

### ***10.4.2 Family Formation and Employment History***

Theoretical approaches which refer to one of the rational choice models of behaviour, and which posit that parenthood can be a strategy for reducing uncertainty, have suggested that because of economic uncertainty or lower opportunity costs associated with family formation, women with fewer career resources and opportunities have their first child earlier than women with good career and income prospects. This hypothesis is supported by our finding that the women in the sample of the western German degree holders who experienced downward occupational mobility or were unable to obtain a permanent employment contract were more inclined to start a family (Table 10.2, Model I). Also in line with these theoretical predictions is the finding that the transition to motherhood is delayed among women who have a very high professional position (level 6 on the career ladder). On the

other hand, upwardly mobile women do not have lower transition rates than female higher education graduates with lateral employment paths. Interruptions of employment and a career start which do not match the graduates' level of education did not accelerate family formation. Women who have a low professional position do not have their first child earlier than those who were employed in a higher position. These findings tend to support the hypothesis that the reliability of both *career* and *economic* prospects is a precondition of motherhood for highly qualified women (Kreyenfeld (2010) reached a similar conclusion).

Even after the characteristics of the employment history and professional situation are controlled for, the analysis indicate that the 2001 and 2005 graduate cohorts had their first child a little bit later than the 1997 cohort; however, the effect was not always significant.

The overall effect of economic inactivity on the timing of the first birth is negative: employed women are the first to make the transition to motherhood. When looking at the reasons for interruptions in employment, we find that participation in education is the most important factor in the west. Among female higher education graduates from eastern Germany, however, this "institution effect" is considerably and significantly weaker. This is indicated by the interaction effect "further phase of education  $\times$  east Germany" estimated in the combined model (Table 10.2, Model III). For eastern German graduates, participation in education do not delay family formation to the same extent as it do among western German women. The transition to motherhood is similarly unlikely to have taken place in the transitional phase between graduation and starting a first job or a further phase of education. Relatively brief periods of economic inactivity for other reasons do not significantly reduce the inclination to form a family, but prolonged interruptions in employment for other reasons have a strong negative effect.

It has been shown that the transition to fatherhood is not affected by uncertainty in the employment biography arising from temporary employment contracts (Tölke 2005; Schmitt 2008). For highly qualified women, the situation appears to be different. The transition to motherhood is fostered by both very insecure employment conditions (no permanent employment contract throughout the entire observation period) and an early stabilisation of the employment situation.

Our analysis shows that the sooner graduates from both western and eastern Germany are in permanent employment, the more likely they are to start a family. Family formation is also positively influenced by the attainment of an intermediate professional position. By contrast, self-employment, which generally entails a substantial time commitment and—at least in the initial start-up period—biographical uncertainties, exert a negative influence.

Furthermore, the transition rate is lower among western German women who are working full time 9 months before giving birth, possibly because of high opportunity costs. In the eastern German federal states, however, the number of hours female higher education graduates were working does not play a significant role. Compared with western German graduates, the family formation behaviour of eastern German women was less dependent on their career path and employment pattern. The east-west effect estimated in the combined model (Table 10.2, Modell III)

**Table 10.2** The transition to motherhood after graduation in different cohorts: the effect of career development (exponential rate models), beta-coefficients

	Western Germany		Eastern Germany		Combined	
	Model I		Model II		Model III	
Graduate cohort ( <i>ref.: 1997</i> )						
2001	-0.11		-0.22		-0.13	*
2005	-0.07		-0.12		-0.09	
Economic inactivity <sup>a</sup> ( <i>ref.: economic activity</i> )						
Transitional phase	-1.25	**	-0.97	**	-1.18	**
Further education	-1.64	**	-0.88	**	-1.63	**
Interruption of up to 3 months	-0.29		-0.04		-0.24	
Interruption of more than 3 months	-1.03	**	-0.93	*	-1.00	**
Further education × east Germany					0.63	**
Negative start ( <i>ref.: no</i> )	0.02		-0.23		0.04	
Permanent contract ( <i>ref.: never</i> )						
Within 12 months after graduation	-0.28	**	-0.41	**	-0.31	**
2–3 years after graduation	-0.43	**	0.68	**	-0.5	**
Later	-1.00	**	-1.31	**	-1.06	**
Self-employment ( <i>ref.: no</i> )	-0.31	**	-0.30		-0.30	**
Full-time employment <sup>a</sup> ( <i>ref.: part-time</i> )	-0.25	**	0.06		-0.18	**
Intermediate occupational position <sup>a</sup> ( <i>ref.: levels 1, 2 &amp; 6</i> )	0.32	**	0.26		0.30	**
Career development <sup>a</sup> ( <i>ref.: no change</i> )						
Upward move	0.15		0.05		0.13	
Downward move	0.33	*	-0.26		0.22	
Upward/downward move	0.17		0.69	*	0.28	
Downward/upward move	-0.12		0.32		0.01	
Region of work <sup>a</sup> ( <i>ref.: western Germany</i> )						
Eastern Germany	0.47	**	0.31	**	0.33	**
Abroad	-0.21		-0.53		-0.29	
Subject of first degree ( <i>ref.: other subjects</i> )						
Teaching/medicine/social work (univ. of appl. science)	0.41	**	0.17		0.35	**
Law/business/economics	0.02		-0.26		-0.05	
University degree ( <i>ref.: awarded by univ. of appl. science</i> )	-0.07		0.23	*	-0.00	
Parents' education ( <i>ref.: lower secondary school leaving cert./no school leaving cert.</i> )						
Intermediate school leaving cert./Higher education entrance qualification	0.16	**	0.04		0.14	*
Higher education degree	0.18	**	-0.10		0.15	*
log(age–13) <sup>a</sup>	7.08	**	1.67	**	6.29	**
log(45–age) <sup>a</sup>	3.96	**	— <sup>b</sup>		3.56	**
No work experience ( <i>ref.: work experience</i> )	2.25	**	2.05	**	2.20	**

(continued)

**Table 10.2** (continued)

	Western Germany		Eastern Germany		Combined	
	Model I		Model II		Model III	
Regional origin eastern Germany ( <i>ref.: western Germany</i> )					0.42	**
Constant	-35.75	**	-9.24	*	-32.41	**
Cases	6470		1866		8336	
Events	1744		747		2491	
Log likelihood initial model	-4939		-1218		-6198	
Log likelihood final model	-4168		-1021		-5205	

Source: DZHW graduate surveys 1997–2005

Note: <sup>a</sup> time-varying, <sup>b</sup> not useful to estimate because of the small age range observed; \*  $p < .05$ ; \*\*  $p < .01$

is significant even after controlling for all of the included career characteristics. In other words, the transition to motherhood among the female graduates from eastern Germany continues to be more natural and less dependent on the fulfilment of pre-conditions than among their western German counterparts.

In terms of career development, the effects of downward mobility are most notable: compared with other mobility patterns, western German graduates make the transition to motherhood much earlier if they experience a downward move without a subsequent or prior upward move. Among eastern German graduates, the transition to motherhood is more likely when a downward move was preceded by an upward move.

Finally, we comment on the region of employment. While being employed abroad tends to reduce the transition rate, the differences between working abroad and working in western Germany are not significant. For both eastern and western German female higher education graduates, economic activity in eastern Germany increase the inclination to start a family. It appears plausible that this finding is related to the more favourable opportunity structures in the east, especially the greater availability of public childcare.

Our empirical findings on the association among female higher education graduates in Germany between fertility behaviour on the one hand and the occupational career and the employment situation on the other are inconsistent with several theoretical explanations. They are not in line with arguments originating from family economics, the claim that family formation reduces uncertainty, or the argument that family formation depends on secure career and economic prospects. Instead, the results suggest that there is a more differentiated explanation for fertility behaviour: in the years immediately after graduating, women tend to focus on consolidating their career and securing their occupational and economic positions. In the current conditions, career-minded women—and, as a general rule, female graduates are career-oriented—risk the long-term impairment of their employment opportunities if they have a child before embarking on a career or entering permanent employment. In order to establish a career path that can be taken up again after family

formation, women hold off on motherhood until they have attained a stable employment position. Only if there appears to be little or no prospect of consolidating and stabilising their employment situation—or if it seems unlikely that further postponement of family formation will result in the desired employment security—will graduates make the transition to motherhood more frequently and quickly.

## 10.5 Summary and Discussion

Adopting a multi-level life-course perspective and using quantitative analyses, this paper has examined the relationship between the fertility behaviour of highly qualified women and their educational and employment histories, as well as their current employment status and career situation.

Reflecting the general trend, we found that female higher education graduates were delaying the birth of their first child to an increasing extent. At first glance, the results for the 2009 graduate cohort, which suggest a considerably lower propensity to make the transition motherhood, were particularly striking. It is, however, important to note that the analyses were based on a very short observation period, and that the imprecise process time, which was measured in years, resulted in an underestimation of the family formation rate.

While we found that differences between the family formation processes of eastern and western German women persist, we also observed a convergence. However, the approximation was solely attributable to the behaviour of eastern German graduates who entered higher education after German reunification, and who were much less likely to have had their first child while enrolled in higher education. This institution effect played only a marginal role among eastern German higher education graduates who began their studies during the GDR era. However, for subsequent generations of students it appears to be as relevant as for western German students. As a consequence of this relationship of interdependence and mutual exclusion between participation in education and family formation, highly qualified women are not starting to plan a family until they reach an age when the most biologically opportune time for the transition to motherhood has already ended.

To some extent, the sharp decline in the inclination of eastern German students to start a family before graduating can be attributed to the increased opportunity costs of family formation while in education. As the forms of support provided to students with children in the GDR have been eliminated, and the financing of participation in higher education has become less secure, many student parents in eastern Germany now also have to shoulder not only the double burden of attending university and childcare, but often the triple burden of studying, raising a child, and having a job. The increased uncertainty of the career prospects of higher education graduates is likely another contributor to the cautious attitude towards starting a family among eastern German undergraduates. As they are no longer guaranteed a job upon graduating, they must prepare for the possibility of unemployment. Thus, students face an exacerbated resource problem which threatens the economic basis of family formation.

Despite the greater uncertainty of their career prospects, graduates from eastern Germany still make the transition to motherhood more quickly and frequently than western German higher education graduates. This finding can be explained by the persistence of the eastern German gender culture, in which working mothers and institutional childcare are viewed as normal, and by the greater availability of childcare in eastern Germany.

Qualitative analyses have shown that women's deliberations concerning family formation are shaped to a large extent by this question of how to reconcile work and family. They have also described how this compatibility problem can give rise to an ambivalent attitude among career-focused women, and ultimately to fertility postponement (Kühn 2004). A solution to the reconciliation issue is complicated not only by inadequate childcare services and the expectation that highly qualified employees will be flexible and mobile, but also by the prevailing labour market conditions governing career development. Part-time employment has negative connotations, and is associated with a lack of commitment, availability, and motivation; as well as by a lack of professional or career ambition. It is not surprising, therefore, that women with elevated professional aspirations or abundant career resources postpone family formation, or even forego having children; or that, conversely, women reduce their career development efforts in anticipation of the transition to motherhood. This relationship between family formation on the one hand and professional ambition and career development and resources on the other was also reflected to some extent in our results on the fertility decisions of female higher education graduates. However, our findings also pointed to another, more important aspect of the timing of family formation: namely, the issue of career consolidation and the establishment of stable professional prospects. A woman's decision about if and when to make the transition to motherhood essentially depends on whether she has achieved a stable employment status and has been able to accumulate sufficient work experience. Only if these conditions are met is she likely to assume that her career ambitions can again be pursued after having a child. On the other hand, attention may turn to family formation if over a prolonged period of time a woman has had negative experiences in the labour market which indicate that her outlook for attaining stable employment is poor, and that attaining a secure and challenging occupation is likely to remain out of reach. Unless a highly qualified woman clearly prioritises having a family, the tendencies mentioned above, together with participation in further qualification phases, may mean that family formation will not become a focal point of her biographical reflections until several years after graduation.

It remains to be seen whether family policy measures that have been adopted will have the desired impact on female degree holders as well, motivating and allowing them to have children earlier and more often. Given the very significant role career consolidation plays in shaping the fertility behaviour of women (and men), and the growing prevalence of fixed-term employment contracts (Rehn et al. 2011), a sceptical view of the ability of family policy measures alone to halt or even reverse the trend towards the progressive postponement of family formation appears to be justified.



## Literature

- Blossfeld, H.-P., & Rohwer, G. (1995). West Germany. In H.-P. Blossfeld (Ed.), *The new role of women: Family formation in modern societies* (pp. 56–76). Boulder: Westview Press.
- Born, C. (2001). Modernisierungsgap und Wandel. Angleichung geschlechtsspezifischer Lebensführungen? In C. Born & H. Krüger (Eds.), *Individualisierung und Verflechtung. Geschlecht und Generation im deutschen Lebenslaufregime* (pp. 29–53). Weinheim/München: Juventa.
- Brose, N. (2008). Entscheidung unter Unsicherheit – Familiengründung und -erweiterung im Erwerbsverlauf. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 60, 34–56.
- Buhr, P., Huinink, J., Boehnke, M., & Maul, K. (2011). Kinder oder keine? Institutionelle Rahmenbedingungen und biographische Voraussetzungen für die Familiengründung und -erweiterung in Ost- und Westdeutschland. In J. Brüderl, L. Castiglioni, & N. Schumann (Eds.), *Partnerschaft, Fertilität und intergenerationale Beziehungen. Ergebnisse der ersten Welle des Beziehungs- und Familienpanels* (pp. 175–201). Würzburg: Ergon.
- Bujard, M. (2011). *Familienpolitik und Geburtenrate. Ein internationaler Vergleich*. Berlin: BMFSFJ.
- Dorbritz, J., & Ruckdeschel, K. (2013). Kinderlosigkeit – differenzierte Analysen und europäische Vergleich. In D. Konietzka & M. Kreyenfeld (Eds.), *Ein Leben ohne Kinder. Ausmaß, Strukturen und Ursachen von Kinderlosigkeit* (2nd ed., pp. 253–278). Wiesbaden: Springer VS.
- Dornseiff, J.-M., & Sackmann, R. (2003). Familien-, Erwerbs- und Fertilitätsdynamiken in Ost- und Westdeutschland. In W. Bien & J. H. Marbach (Eds.), *Partnerschaft und Familiengründung. Ergebnisse der dritten Welle des Familien-Survey* (pp. 309–348). Opladen: Leske + Budrich.
- Eckhard, J., & Klein, T. (2012). Rahmenbedingungen, Motive und die Realisierung von Kinderwünschen. Erkenntnisse aus dem westdeutschen Familiensurvey. In H. Bertram & M. Bujard (Eds.), *Zeit, Geld, Infrastruktur – zur Zukunft der Familienpolitik* (pp. 231–251). Baden-Baden: Nomos.
- Friedman, D., Hechter, M., & Kanazawa, S. (1994). A theory of the value of children. *Demography*, 31, 375–401.
- Gebel, M., & Giesecke, J. (2009). Ökonomische Unsicherheit und Fertilität. Die Wirkung von Beschäftigungsunsicherheit und Arbeitslosigkeit auf die Familiengründung in Ost- und Westdeutschland. *Zeitschrift für Soziologie*, 38, 399–417.
- Goldstein, J., Kreyenfeld, M., Huinink, J., Konietzka, D., & Trappe, H. (2010). *Familie und Partnerschaft in Ost- und Westdeutschland. Ergebnisse im Rahmen des Projektes „Demographic Differences in Life Course Dynamics in Eastern and Western Germany“*. Rostock: Max-Planck-Institut für demografische Forschung. [http://www.demogr.mpg.de/publications/files/3988\\_1287680847\\_1\\_familie\\_und\\_partnerschaft\\_ost\\_west.pdf](http://www.demogr.mpg.de/publications/files/3988_1287680847_1_familie_und_partnerschaft_ost_west.pdf). Accessed 8 Aug 2014.
- Heine, C., Spangenberg, H., Schreiber, J., & Sommer, D. (2005). *Studienanfänger in den Wintersemestern 2003/04 und 2004/05*. Hannover: HIS.
- Hemsing, W. (2001). *Berufserfolg im Lebenslauf. Der Einfluss von Humankapitalinvestitionen, privaten Bindungen und Arbeitsmarktstrukturen auf den Berufserfolg ehemaliger Gymnasiasten*. Doctoral Dissertation, Universität Köln. <http://kups.ub.uni-koeln.de/684/1/11w1431.pdf>. Accessed 7 Aug 2014.
- Herlyn, I., Krüger, D., & Heinzlmann, C. (2002). Späte erste Mutterschaft – erste empirische Befunde. In N. F. Schneider & H. Matthias-Bleck (Eds.), *Elternschaft heute. Gesellschaftliche Rahmenbedingungen und individuelle Gestaltungsaufgaben* (Sonderheft zur Zeitschrift für Familienforschung, Vol. 2, pp. 121–162). Opladen: Leske + Budrich.

- Heublein, U., Hutzsch, C., Schreiber, J., Sommer, D., & Besuch, G. (2010). *Ergebnisse einer bundesweiten Befragung von Exmatrikulierten des Studienjahres 2007/08. Ursachen des Studienabbruchs in Bachelor- und in herkömmlichen Studiengängen*. Hannover: HIS.
- Huinink, J. (1995). *Warum noch Familie? Zur Attraktivität von Partnerschaft und Elternschaft in unserer Gesellschaft*. Frankfurt/Main: Campus.
- Huinink, J. (2000). Bildung und Familienentwicklung im Lebensverlauf. *Zeitschrift für Erziehungswissenschaft*, 3, 209–227.
- Kreyenfeld, M. (2010). Uncertainties in female employment careers and the postponement of parenthood in Germany. *European Sociological Review*, 26, 351–366.
- Kühn, T. (2004). *Berufsbiografie und Familiengründung. Biografiegestaltung junger Erwachsener nach Abschluss der Berufsausbildung*. Wiesbaden: VS Verlag für Sozialwissenschaften.
- Leszczensky, M., & Filaretow, B. (1990). *Hochschulstudium in der DDR. Statistischer Überblick*. Hannover: HIS.
- Levy, R. (1996). Zur Institutionalisierung von Lebensläufen. Ein theoretischer Bezugsrahmen. In J. Behrens & W. Voges (Eds.), *Kritische Übergänge. Statuspassagen und sozialpolitische Institutionalisierung* (pp. 73–113). Frankfurt/Main: Campus.
- Maul, K. (2012). *Der Einfluss der beruflichen Tätigkeit auf die Familiengründung*. Würzburg: Ergon.
- Middendorff, E. (2003). *Kinder eingeplant? Lebentwürfe Studierender und ihre Einstellung zum Studium mit Kind* (HIS-Kurzinformation A, Vol. 4). Hannover: HIS.
- Middendorff, E. (2008). *Studieren mit Kind. Ergebnisse der 18. Sozialerhebung des Deutschen Studentenwerks durchgeführt durch HIS Hochschul-Informations-System*. Bonn: Bundesministerium für Bildung und Forschung.
- Passet, J. (2011). Kinderlosigkeit im Lebensverlauf: Wie wichtig ist das Lebensziel, Kinder zu bekommen, im Vergleich mit anderen Lebenszielen? *Bevölkerungsforschung Aktuell*, 32, 7–11.
- Pfau-Effinger, B. (1998). Arbeitsmarkt- und Familiendynamik in Europa – Theoretische Grundlagen der vergleichenden Analyse. In B. Geissler, F. Maier, & B. Pfau-Effinger (Eds.), *FrauenArbeitsMarkt. Der Beitrag der Frauenforschung zur sozio-ökonomischen Theorieentwicklung* (pp. 177–194). Berlin: Edition sigma.
- Pötzsch, O. (2010). Cohort fertility: A comparison of the results of the official birth statistics and of the Microcensus survey 2008. *Comparative Population Studies – Zeitschrift für Bevölkerungswissenschaft*, 35, 185–204.
- Rehn, T., Brandt, G., Fabian, G., & Briedis, K. (2011). *Hochschulabschlüsse im Umbruch. Studium und Übergang von Absolventinnen und Absolventen reformierter und traditioneller Studiengänge des Jahrgangs 2009*. Hannover: HIS.
- Schaeper, H., & Kühn, T. (2000). Zur Rationalität familialer Entscheidungsprozesse am Beispiel des Zusammenhangs zwischen Berufsbiographie und Familiengründung. In W. R. Heinz (Ed.), *Übergänge. Individualisierung, Flexibilisierung und Institutionalisierung des Lebensverlaufs* (Zeitschrift für Soziologie der Erziehung und Sozialisation, Beiheft 3, pp. 124–145). Weinheim: Juventa.
- Schaeper, H., Grotheer, M., & Brandt, G. (2013). Kinderlosigkeit – differenzierte Analysen und europäische Vergleich. In D. Konietzka & M. Kreyenfeld (Eds.), *Ein Leben ohne Kinder. Ausmaß, Strukturen und Ursachen von Kinderlosigkeit* (2nd ed., pp. 47–80). Wiesbaden: Springer VS.
- Schmitt, C. (2008). *Labour market integration and the transition to parenthood. A comparison of Germany and the UK*. (SOEPpapers on Multidisciplinary Panel Data Research No. 119). Berlin: Deutsches Institut für Wirtschaftsforschung. [http://www.diw.de/documents/publikationen/73/diw\\_01.c.88337.de/diw\\_sp0119.pdf](http://www.diw.de/documents/publikationen/73/diw_01.c.88337.de/diw_sp0119.pdf). Accessed 8 Aug 2014.
- Schröder, J., & Brüderl, J. (2008). Der Effekt der Erwerbstätigkeit von Frauen auf die Fertilität: Kausalität oder Selbstselektion? *Zeitschrift für Soziologie*, 37, 117–136.

- Schütz, A. (1971). Das Wählen zwischen Handlungsentwürfen. In A. Schütz (Ed.), *Gesammelte Aufsätze, Bd. 1: Das Problem der sozialen Wirklichkeit* (pp. 77–110). Den Haag: Nijhoff. English edition: Schütz, A. (1962). Choosing among projects of action. In A. Schütz (Ed.), *Collected papers 1: The problem of social reality*. The Hague: Nijhoff.
- Tölke, A. (2005). Die Bedeutung von Herkunftsfamilie, Berufsbiografie und Partnerschaften für den Übergang zur Ehe und Vaterschaft. In A. Tölke & K. Hank (Eds.), *Männer – das, vernachlässigte Geschlecht in der Familienforschung* (pp. 98–126). Wiesbaden: VS Verlag für Sozialwissenschaften.

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