Fertility decisions in the FRG and GDR
An analysis with data from the
German fertility and family survey

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by

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Abstract. The aim of this paper is to compare family policies and fertility patterns in the former German Democratic Republic (GDR) and the German Federal Republic (FRG). Among other aspects, both societies particularly differed in the integration of women into the labor market. By contrasting the fertility development in these two societies, this paper aims to illuminate how women's education and employment relates to fertility decisions in societal contexts that support (in the case of the GDR) and hamper (in the case of the FRG) the compatibility between work and family life. Data for this analysis comes from the German Fertility and Family Survey (of the year 1992). We provide descriptive statistics for all birth parities, but we limit the multivariate event history analysis to first births only.

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1 Introduction

The New Home Economics and the Second Demographic Transition Theory are presumably the two 'grand' fertility theories that explain behavior in industrialized countries. Both theories have in common that they assign women's position in society and particularly in the labor market a prominent role in the fertility decline that has occurred in virtually all western societies since the 1960s. According to the Second Demographic Transition Theory, ideational changes are the driving force behind behavioral change. In this context, Lesthaeghe (1995) names 'female emancipation' as a central element of his theory of secular fertility decline. The New Home Economics does not question preferences and values, but nevertheless assumes that some exogenous factors have contributed to an increase in women's wages, education and employment. The key assumption is that childrearing and women's employment can barely be made compatible. Against this premise, it is understood that work oriented women, highly educated women and/or those with higher earnings will rather refrain from parenthood (Becker 1993). It seems important to point out here that the economic fertility theory is deeply rooted in standard human capital approaches (Mincer 1974). This means that education is regarded as an investment in human capital that yields equivalent returns in the labor market. Within the economic framework, women's educational attainment has therefore been used as a useful indicator for expected labor market earnings, whereas ideational theories have rather stressed the role of education as a mediating variable for novel values, ideas and life-styles. All in all, it has been suspected that the increase in female education, employment and work orientation is part of an irreversible process that eventually jeopardizes fertility.

Both frameworks – the New Home Economics and the Second Demographic Transition Theory – have in common that they were sketched against the backdrop of western societies of the 1960s and 1970s. They may have been valid in the past when the decline in fertility coincided with a change in gender roles and an increase in women's education and employment. Today, most welfare states have responded to the change in gender roles and female employment by accommodating work and family life. It is widely acknowledged by now that a liberation of gender roles and an increase in women's employment and education not necessarily pose a threat to reproduction, but that family policies and labor market institutions impinge on this relationship (Rindfuss and Brewster 1996; Rindfuss et al. 1996; McDonald 2000). Perhaps, it was the

contribution by Esping-Andersen (1999) which has been most salient in pointing out that countries that provide more favorable constraints for the compatibility of work with family life are nowadays the ones experiencing higher fertility rates. Vice versa, countries whose family polices still hinge upon the idea of women as caregivers are suppressing fertility. Whatever, comparative welfare state research has cast a new light on demographic change by moving welfare state institutions into the focus of attention (Gauthier 1996; Sainsbury 1997; Gornick et al. 1998; Dingeldey 2001; Neyer 2003).

Scandinavian countries have frequently been named as role models of welfare states that most actively responded to the change in gender role and women's employment. This has primarily been achieved through a high coverage of public day care for children of all ages, flexible parental leave regulations with a high level of income replacement and a system of individual taxation that – in contrast to many countries of central Europe – provides no 'housewife bonuses'. In this societal context, women's employment was no longer considered as a barrier to fertility, but instead taken for granted, and a stable employment situation of both partners was often seen as a prerequisite for family formation (Hoem 1990; Ellingsæter and Rønsen 1996; Andersson 2000). While Scandinavian countries are largely regarded as the forerunners of 'family-friendly work-policies' which support women's employment and the modernization of gender roles, it has virtually remained unnoticed that most Eastern European states had introduced similar policies during the time of state socialism.

This paper deals with family policies and fertility patterns in the former German Democratic Republic (GDR) and the former German Federal Republic (FRG). Looking at the fertility patterns in Germany prior to unification might be instructive for several reasons. It might help to better understand fertility behavior after unification when fertility rates declined rapidly in East Germany (Eberstadt 1994; Witte and Wagner 1995; Adler 1997; Kreyenfeld 2003). Even though it is clear that this decline was largely due to an unprecedented increase in the age at first birth, it is still unclear which factors have contributed to this development. The FRG and the GDR are two countries that share the same language and cultural background, but they displayed divergent political and economic systems. In terms of the political and economic structure, these systems particularly differed in the integration of women into the labor market. Contrasting the fertility development in the two societies might illuminate how women's education and employment affects fertility decisions in societal contexts that

support (in the case of the GDR) and hamper (in the case of the FRG) the compatibility between work and family life.

The data for this analysis comes from the German Fertility and Family Survey (FFS) which has been conducted in July of the year 1992. The FFS contains complete fertility, educational and employment histories of the birth cohorts 1952-1972. Although it was surveyed in the middle of 1992, we restrict this analysis to the pre-unification period (or more precisely, before November 1989). The birth cohorts 1952-1972 entered their reproductive period largely during the 1980s. Therefore, our analysis primarily reflects this historical time frame. In the following part (Section 2), we discuss the institutional constraints of the former GDR and FRG. Special attention is given to the integration of women into the labor market. In Section 3, we develop our main hypotheses on the relationship between women's education, employment and fertility in different societal contexts. Section 4 describes the data set and the variables, and Section 5 contains the empirical analysis for which we employ event history techniques to investigate the transition to the first child. We limit the multivariate analysis to first births since East and West Germans particularly differ in the timing of first parenthood. Section 6 draws together the main results.

2 Institutional constraints

2.1 Institutional constraints in the GDR

The most glaring characteristic of the former East Germany surely was the central organization of the economic system. The production of goods and services was centrally planned, firms were primarily public owned, wages were basically centrally set and earning differences were rather narrow. The state provided an encompassing health care system, public housing, public education, public day care, public transportation and subsidized food prices (Vortmann 1988; Schmähl 1992; Frerich and Frey 1993; Szydlik 2002; Trappe and Rosenfeld 1998). Although access to higher education was fairly restrictive in a sense that only about 12 percent of each cohort were admitted to university education, the general idea was to provide the whole working population with a trained qualification (Greinert 1995; Huinink et al. 1995; Zühlke 2000). Article 24 of the former East German constitution guaranteed the 'right to work' which was replaced in 1961 by the 'right and duty' to gainful employment. A moral pressure to work and the lack of institutions giving support to non-workers, such as social benefits or unemployment insurance, drew people into the labor market (Frerich and Frey 1993: 175).

From 1972 onwards, East Germany's family policies were explicitly directed towards increasing fertility. There are several factors that had contributed to population goals becoming an important part on the political agenda of the GDR. Although fertility in both East and in West Germany had drastically declined since the end of the 1960s (see Figure 1), the fertility decline had a more immediate impact on the population size of the GDR, given that there was fairly little immigration. Furthermore, the East German government legalized abortion and provided free access to oral contraceptives in 1972 (Obertreis 1986: 300ff.). In order to counteract the anticipated negative effect on fertility, several family policy measures were introduced in the subsequent years (Gysi and Speigner 1983; Cornelius 1990; Frerich and Frey 1993: 412f.; Dorbritz and Fleischhacker 1995: 163f.; Huinink 1997). On the one hand, these policies contained measures that supported an early family formation and the compatibility between work and family life. On the other hand, they contained special allowances for higher parity births. For example, a paid parental leave ('Babyjahr') was granted for second and

higher order births. Working mothers with three or more children were given extra holidays and they were allowed to reduce their working hours. Larger families were given priority access to larger housing spaces and public holiday camps. The most important monetary transfer was arguably the 'marriage loan'. Couples who married could apply for an interest-free loan of 5,000 Marks, i.e. a credit that was intended to help them with acquiring furniture and household appliances (Cromm 1998: 477). Upon having children, a portion of this loan was paid off. That is 1,000 Marks of the repayments were cancelled at the birth of a first child, another 1,500 Marks with a second child and another 2,500 Marks when a third child was born. Child benefits also varied by child parity. For example, in 1972 the monthly child benefits were 20 Marks for the first, but 50 for the third child (see Table 1).

A very pervasive characteristic of East German policies was the strong commitment to integrating women into the labor market (Obertreis 1986: 74ff.; Trappe 1995; Trappe and Rosenfeld 2000). Compared to West Germany, where tax relieves for one-earner households encouraged women's withdrawal from the labor market, this was not the case in the GDR. Instead, a low wage level, the absence of a widow's pension, and restricted possibilities to claim maintenance of a divorced husband put pressure on women to seek employment (Berghahn and Fritzsche 1991: 144ff.; Frerich and Frey 1993: 396). Apart from the economic pressure to be employed and an ideology that glorified the working woman, various public policies supported the compatibility between work and family life. One of the most important measures was the 'Babyjahr', which was introduced in 1976. After the birth of a second or higher order birth (and since 1986 also after the birth of a first child), women were offered to take a year of paid leave.[1] In contrast to West German parental leave regulations, the 'Babyjahr' offered a relatively high level of income replacement. It would surely be oversimplifying to assume that public policies resolved all incompatibilities between work and family life (Trappe 1995; Trappe and Rosenfeld 2000). However, an encompassing public day care system which included highly flexible opening hours of the day care centers crucially relieved the tension between work and family life. Considering that there was a strong pressure to be employed, a relative abundance of vacant positions, a high compatibility between work and family life, East German women were basically drawn into full-time employment.

Table 1: Family Policies in the GDR

	1950s	1960s	1970s	1980s
Interest-Free Loan*) (in GDR Mark)			**1972** Marriage loan of 5000 for couples who married before age 26. Repayments partly cancelled out on birth of a child	**1980s** Increase in the age limit to age 30 **1986** Increase of marriage loan to 7000
Birth Grant*) (in GDR Mark)	**1950** 100 for 3rd child 250 for 4th child 500 for 5^{th+} child **1958** 500 for 1st child 600 for 2nd child 700 for 3rd child 850 for 4th child 1000 for 5^{th+} child		**1972** 1000 on child bith	
Child Benefits**) (in GDR Mark)	**1950** 20 for 4th child 25 for 5^{th+} child	**1967** 60 for 4th child 70 for 5^{th+} child **1969** 50 for 3rd child 60 for 4th child 70 for 5^{th+} child	**1972** 20 for 1st child 20 for 2nd child 50 for 3rd child 60 for 4th child 70 for 5^{th+} child	**1987** 50 for 1st child 100 for 2nd child 150 for 3^{rd+} child
Maternity Leave	14 weeks		**1972** Prolongation to 18 weeks **1976** Prolongation to 26 weeks	
Parental Leave ('Babyjahr')			**1972** Paid leave for single mothers when no place in daycare available (Amount: usual sick pay) **1976** One year of paid leave for mother with two or more children	**1984** 18 months of paid leave for mothers with three or more children **1986** One year of paid leave for all mothers
Reduced Working Hours			**1972** Reduced working hours for mothers with three or more children **1976** Reduced working hours for mothers with two or more children	
Extra Holidays			**1972** Extra holidays for mothers with two or more children	
Child Sick Leave			**1972** Paid leave for single mothers with a sick child	**1984** Extended to mothers with three or more children **1986** Extended to mothers with two or more children

Notes: *) lump-sum **) monthly

Source: Cromm (1998: 473ff.); Cornelius (1990: 310ff.); Frerich and Frey (1993: 391ff.); Koch and Knöbel (1986: 21ff.); Obertreis (1986: 287ff.); Trappe (1995: 39ff.)

2.2   Institutional constraints in the FRG

In respect to the compatibility between work and family life, the societal context of West Germany strongly differed from the one in the East. Although first legislation on parental leave benefits were enacted already in 1979 (when a six month period of parental leave was introduced for working mothers), the general set-up of the institutional framework was nevertheless devoted to the traditional 'male-breadwinner/female-housekeeper family' (Gauthier 1996: 155; Gornick et al. 1998; Esping-Andersen 1999: 65; Treas and Widmer 2000: 1431). Presumably most significant in this context is the way in which FRG-policies adhered to the system of income splitting, which, due to the progressive tax schedule, provides substantial tax relives for traditional family forms. Comparing fourteen industrialized countries, Sainsbury (1997: 195) concludes that the German tax system imposes "the most severe penalties on a working wife". This statement has been based on a cross-national comparison of policies of the 1990s. During the 1980s, the German tax system has not stood out in the same way since many countries had some kind of tax relieves for non-working housewives at that time (Dingeldey 2001). Yet, it still seems noteworthy that there is an amazing continuity in the German tax system –i.e. all attempts to abolish the splitting component have swiftly been taken off the political agenda. While most European countries introduced individual taxation by the beginning of the 1990s, not even German unification - evidently a historical opportunity - promoted any institutional change.

The public pension and health care system provides further credits for traditional family types. For example, married non-working wives are covered, without any additional payments, by the health insurance of the working spouse. They are entitled to a widow's pension which grants them about 60 percent of the pension of the deceased spouse. In the same logic, there exists the possibility to claim maintenance in case of divorce. The most important ground on which maintenance claims can be raised is the care for a child, in which case a person would be expected to be unable to proceed to gainful employment. Tax and transfer privileges are reserved to married couples, which is in line with German Law which puts marriage and the family under the special protection of the Constitution (Grundgesetz für die Bundesrepublik Deutschland, Artikel 6). The salient role of marriage in the (West) German tax and transfer system has been vividly discussed in the literature, and it has been claimed that German

policies reinforce a married woman's dependency on the working spouse, particularly in terms of her social security claims (Pfaff 1997; Sainsbury 1999).

Yet, it is presumably not the tax and transfer system alone that renders the FRG to a familialistic welfare regime. Instead, it is an interplay of various institutions which favor traditional family types and create an attitude where mother's employment is still regarded as uncommon and harmful to the development of children (Braun et al. 1994; Scott 1999; Sundström 1999; Treas and Widmer 2000; Stier et al. 2001). A pivotal role surely plays the public daycare system. However, it would still be over-simplifying to diagnose a mal-functioning public childcare system in the case of West Germany. It needs to be acknowledged that there has been almost complete coverage of public daycare for preschool children (ages 3-6) since the 1980s. The important aspect is rather that the childcare system is rooted in Fröbel's humanistic idea to educate children and provide a preparatory phase before regular school starts.[2] When public childcare was expanded (which took place largely during the 1970s) such educational goals were high priority on the agenda. Childcare as a measure to support mother's employment had not been part of the picture then, and, interestingly, has never become a serious consideration in West German childcare policies. For that reason, public childcare provides only part-time care with rather inflexible opening hours; so inflexible that it has been argued it could even provide the condition for supporting women's part-time employment (Spieß und Büchel 2003; Hank and Kreyenfeld 2003). It is evidently also important that schools are generally run part-time as well and that there exists hardly any additional care for school-aged children (Gottschall and Hagemann 2002). The provision of public daycare for infants (0-3) and school-aged children has remained on an amazingly stable low level of less than five percent since World War II. In almost all other European countries there has been an increase in daycare for children below 3 (OECD 2001: 46), but not so in West Germany.

Since the introduction of the 1979 parental leave regulation, the duration of leave has consecutively been extended to currently three years (Table 2). While it was initially reserved to mothers only, father also have been offered to take parental leave (since 1992).[3] From this perspective, West German parental leave regulations appear more progressive than East German regulations, where only women were entitled to parental leave. However, in practice, the West German leave system entrenches traditional gender roles even more strongly than the East German one does. Couples are entitled to a monthly childrearing benefit of currently 307 Euro (600DM from 1986-1992). A sum

of 307 Euro is evidently nowhere near a regular full-time income. On top of this, parental leave benefits are income related. Eligibility criteria decline sharply after six months and only couples with an annual net income of less than 16,470 Euro are eligible to the full payment. Perhaps, this low-income replacement is the major reason why West German men hardly ever use parental leave (Beckmann 2001: 6). In any case, the person who takes leave will inevitably be dependent on the partner's income or on transfer payments.

In East Germany, family policies entailed an explicit pro-natalistic orientation. In West Germany, by contrast, family policies were exclusively viewed from the perspective of the families' well-being (Gauthier 1996: 123; Speigner 1989). Still, child benefits entailed parity specific incentives also in West Germany. From 1975-1981, child benefits amounted to 50 DM for the first, 70 DM for the second and 120 DM for the third child (Table 2). It is obviously difficult to compare these monetary transfers to the benefits that were paid in the GDR, given the very different structure of the economic system and the different consumption opportunities in both countries. Hence, even comparisons to other European countries are far from clear-cut. Matters are complicated by the fact that subsidies to families with children are rarely paid through a unified measure. Child benefits are only part of the total family subsidies and they are usually connected to a rather intangible tax and transfer system. Researchers who nevertheless made the attempt to compare the different European family tax systems mostly came to the conclusion that the West German system ranges quite highly in its generosity to support families with children (Sainsbury 1997: 171; Alber 2002; Gauthier 2002).

In conclusion, the institutional arrangement of West Germany differed from the East German one particularly in the way in which women were integrated into the labor market. While full-time employment was universal in the GDR, the care for a child was only considered in West Germany as a highly legitimate reason to withdraw from the labor market. Moreover, a 'housewife bonus' in the tax and transfer system assured that this family model was economically feasible. In this sense, the West German system was not only familialistic because of its' lack of public initiative to free women from care obligations (Esping-Andersen 1999: 45), but also stood out as exceptionally supportive to traditional "female-housekeeper/male breadwinner" families. This is particularly true for the 1980s, which is the historical time period on which this study is primarily focused.

Table 2: Family Policies in the FRG[4]

	1950s/1960s	1970s	1980s	1990s-2002
Child Benefits *) ('Kindergeld') (in DM) (since 2002 in Euro)	**1955** 25 for 3rd+ child **1961**[b)] 25 for 1st child 40 for 2nd+ child	**1970**[b)] 25 for 1st child 60 for 2nd-4th child 70 for 5th+ child **1975** 50 for 1st child 70 for 2nd child 120 for 3rd+ child	**1981** 50 for 1st child 120 for 2nd child 240 for 3rd+ child **1983**[b)] 50 for 1st child 100 for 2nd child 220 for 3rd+ child 240 for 4th+ child	**1990**[b)] 50 for 1st child 130 for 2nd child 220 for 3rd child 240 for 4th+ child **1996**[a)] 200 for 1st child 200 for 2nd child 300 for 3rd child 350 for 4th+ child **2002**[a)] € 154 for 1st child € 154 for 2nd child € 154 for 3rd child € 179 for 4rd+ child
Family Allowance **) ('Kinderlastenausgleich/ Kinderleistungsausgleich') (in DM) (since 2002 in Euro)	**1950** 400 for 1st child 250 for 2nd child 700 for 3rd+ child **1962** 1200 for 1st child 1680 for 2nd child 1800 for 3rd+child	**1975** abolished	**1983** 432 for 1st+ child **1986** 2484 for 1st+child	**1990** 3024 for 1st+ child **1992** 4104 for 1st+ child **1996**[a)] 6264 for 1st+ child **1997**[a)] 6912 for 1st+ child **2002**[a)] € 3648 for 1st+ child
Maternity Leave[c)] ('Mutterschaftsurlaub')	**1952** Paid leave for 6 weeks before 6 weeks after childbirth **1965** Paid leave for 6 weeks before and 8 weeks after childbirth			
Parental Leave[c)] ('Erziehungsurlaub', since 2001, 'Elternzeit')	**1952** equivalent to sick pay	**1979** 6 months after childbirth	**1986** 10 months **1988** 12 months **1989** (June) 15 months	**1990** (June) 18 months **1992** 3 years
Childrearing Benefit *) ('Erziehungsgeld') (in DM) (since 2002 in Euro)		**1979**[c)] Equivalent to sick pay (for 6 months after childbirth)	**1986**[b)] 600 (for 10 months) **1988**[b)] 600 (for 12 months) **1989** (June)[b)] 600 (for 15 months)	**1990** (June)[b)] 600 (for 18 months) **1993**[b)] 600 (for 24 months) **2001**[b)] 600 (for 24 mo.) or 900 (for 12 mo.) **2002**[b)] € 307 (for 24 mo.) or € 460 (for 12 mo.)
Child Sick Leave			5 days	**1992** 10 days for 1st child 20 days for 2nd+ child Single parents: 25 days for 1st child 50 days for 2nd+ child

Notes: *) monthly **) annually [a)] Child benefits or family allowances can be claimed [b)] income related [c)] only working mothers.

Source: BMA (1994, 2000); Frerich and Frey (1996); Lampert (1996); Wingen (1997)
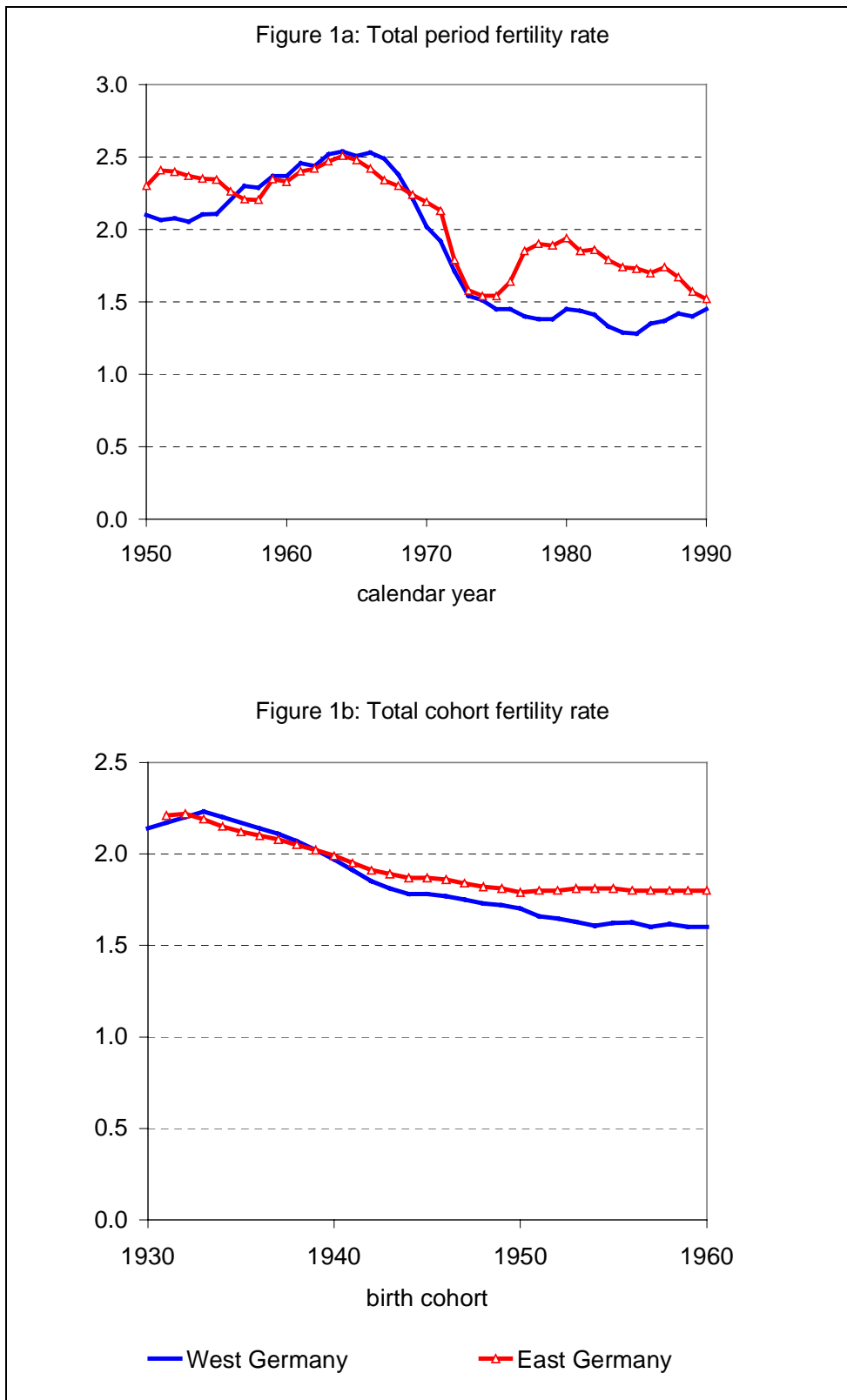
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2.3   General fertility development

Despite the different economic and social conditions in the two Germanies, the period fertility rates took a very similar development until the early 1970s (Höhn and Dorbritz 1995: 156-157; Heilig et al. 1990: 16). Figure 1a shows that the total fertility rate (TFR) declines from a level of 2.5 in the middle of the 1960s to only 1.5 in 1972. In the mid-1970s, though, fertility rates diverge. While the West German TFR remained on a low level of around 1.5, East Germany's TFR increased to almost 2 children per woman.   Since the East German government launched a package of pro-natalistic policies during the 1970s, it appears as if the fertility rates responded to these measures (Dinkel 1984; Büttner and Lutz 1990).   However, in the middle of the 1980s, East Germany's TFR declined, and at the time of unification, the total fertility rates in the two Germanies converged again at a level of 1.5. Against this background, researchers have argued that East German population policies were fairly ineffective in increasing fertility. Dorbitz and Fleischhacker (1995: 171) maintain that the East German experience shows that population policies are unable to alter the overall fertility trend. Wendt (1997: 126) argues that "despite the clear pro-natalist direction and substantial expenditures for social political programs, the target of raising the number of children to three or more per family was not achieved."

It is undisputed that East German family policies failed to increase fertility above replacement level. Nevertheless, public policies strongly shaped fertility behavior, which is particularly obvious in comparison to the West German situation. Despite the convergence of period fertility rates, fertility behavior in East and West differed. This pertains to differences in the timing of first birth, pronounced parity specific differences, but also to the level of completed fertility.

Figure 1b shows the cohort fertility rates of the women born between 1930 and 1960. For West Germany, a gradual decline in completed fertility can be witnessed. For East Germany, cohort fertility rates initially declined, but remained at a stable level for the cohorts born after 1940, which may suggest that public policies had put a halt to a further decline in fertility (Büttner and Lutz 1990; Cornelius 1990: 315). East Germans of the 1955 cohort had 0.2 children more than their West German counterpart. Considering that fertility rates in most industrialized countries are below 2, a difference in 0.2 children per woman can be considered as quite substantial.

Figure 1: Total fertility rate

Figure 1a: Total period fertility rate

calendar year

Figure 1b: Total cohort fertility rate

birth cohort

—— West Germany   ——△—— East Germany

Notes: West German cohort fertility rates were compiled by using the age-specific fertility rates provided by the Statistisches Bundesamt (1999a: 190ff.). For the cohorts who are still of childbearing age, we imputed missing information by using the fertility schedule of the previous cohort. East German cohort fertility rates were provided upon personal correspondence with the German Institute for Population Research (BiB 1999).
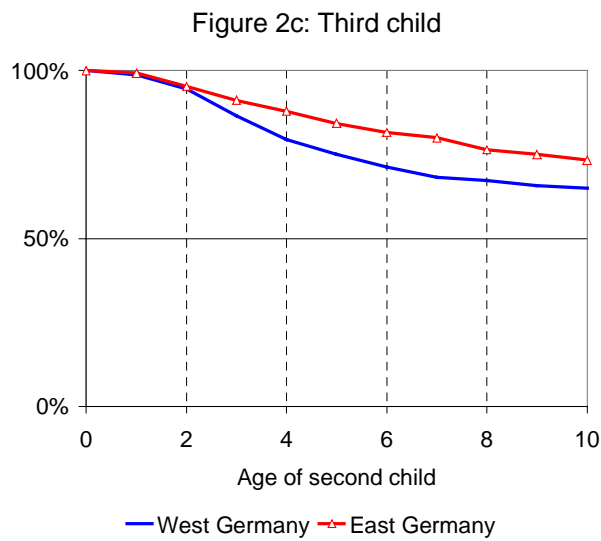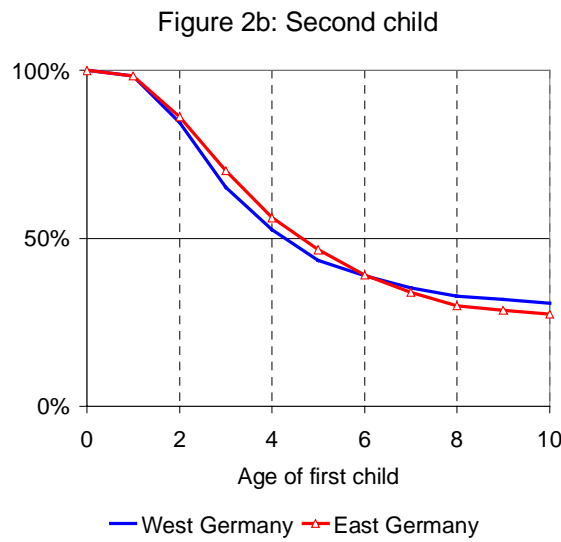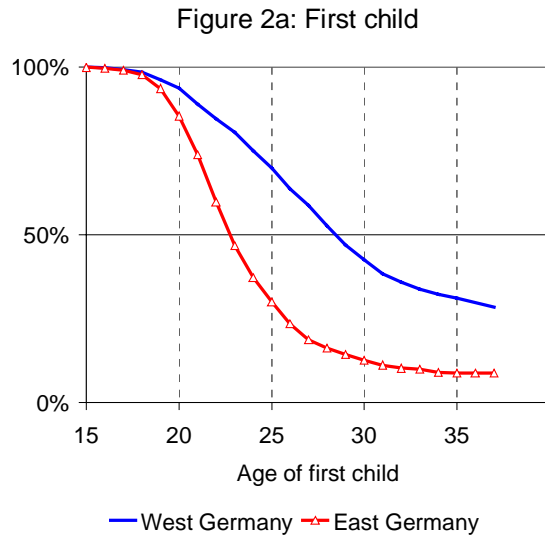
Source: BiB (1999); Statistisches Bundesamt (1999a)

Apart from the differences in completed fertility, there were large differences in the timing of parenthood. In the GDR, childbearing concentrated around the ages 20 to 25 and having children beyond age 30 was rather uncommon.[5] In West Germany, by contrast, the age at parenthood has steadily increased for the cohorts born after 1950 and, at the same time, the variation in the age at birth has become wider. In order to exemplify the differences in the timing of parenthood, Figure 2 displays the survival curves for the transition to the first, second and third child. We employed data from the German Family and Fertility Survey, which will also be used for the subsequent multivariate analysis. In the West, the median age at first birth was roughly 28, while it was around age 22 only in the East.[6] There were also very pronounced differences in the percentage of women who ultimately remain childless. In East Germany, childlessness was around 10 percent, while it was 25 to 30 percent in the West, which is presumably one of the highest levels of childlessness worldwide.

The transition pattern to the second child was, with a median duration of roughly 3.5 years, fairly the same in both countries.[7] Despite these similarities, one needs to take into account that West German women were certainly much older when they had their second child. Also, they encountered a lower probability to have a first child, which means that the population at risk of second birth was smaller than in East Germany (see below).

Third birth risks were much lower in the East than in the West, which is particularly surprising in the light of the policies that were explicitly directed towards the third child in the GDR. The most frequently cited explanation for this pattern is that East German women were required to work full-time, which was barely compatible with raising two children, and the third child was considered to be the critical extra burden that was considered unbearable (Höhn 1992: 10). Although women with three children were given extra days of holidays, working hours were fairly rigid. Possibly, raising three children demanded more flexible working hours than were provided in the centrally planned economy of East Germany that in addition offered little part-time opportunities (Obertreis 1986: 305ff.). Another reason is possibly the restricted housing situation in the GDR.
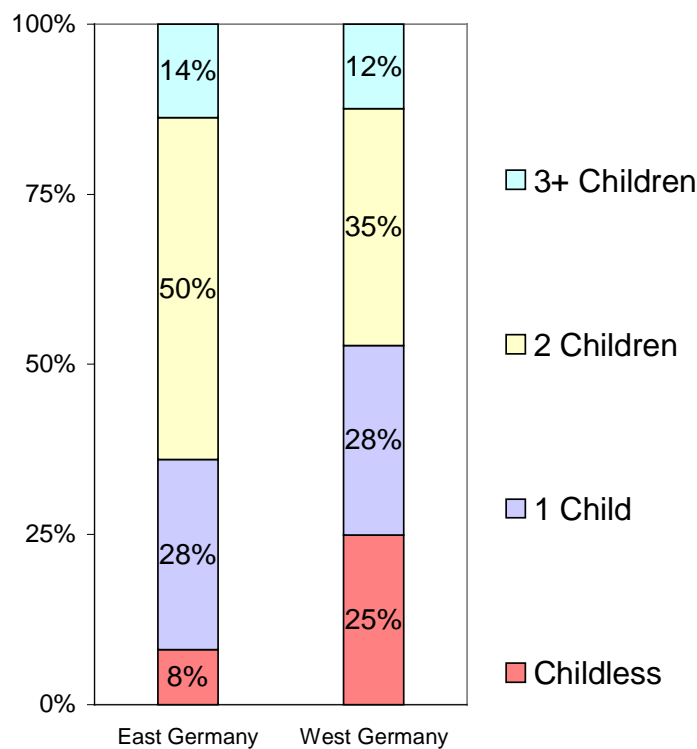
Figure 2: Kaplan-Meier survival curves, right-censored in 1990[8]

Figure 2a: First child

Figure 2b: Second child

Figure 2c: Third child

Source: German Family and Fertility Survey 1992 (own estimates)

Figure 3 displays the final family size distribution. The most striking aspect about this figure are the high percentages of childless women in the West. Furthermore, the East-West differences in the percentages of two-child families are quite pronounced. Fifty percent of all East German women had two children, while this was the case for only 35 percent in West Germany. This result might come as a surprise since we previously pointed out the similarities in the spacing of the second child in the two Germanies. However, one needs to take into account that the transition rates represent conditional probabilities. Since East Germans experienced a higher progression to the first child, the risk population for the transition to the second children was much higher in the East.

Figure 3: Family size at ages 35-39 (cohorts 1952-1957)

Source: German Family and Fertility Survey 1992 (own estimates)

3 Theoretical considerations

3.1 Employment and childrearing as incompatible life-domains

As already stipulated in the introduction, one standard assumption of the New Home Economics is the incompatibility between work and family life and the traditional division of household tasks. Parenthood and female employment are basically considered as mutually exclusive life-domains. Therefore, women are urged to decide between a family and an employment career as two exclusive life-tracks. Since career-oriented women are subject to higher opportunity costs of childrearing, they will be more likely to remain childless. Women who are less attached to the labor market will have children, withdraw from the labor market and devote their energies to childrearing and household tasks. To what extent, however, is this framework applicable to the East and West Germany of the 1980s?

Arguably, the FRG fits extremely well the predictions of the standard economic framework. Particularly in the 1980s, household tasks were shared according to traditional gender roles, and the tax and transfer system favored the single-earner/male-breadwinner family (see above). Children and mother's employment were incompatible and women reduced their working hours or even gave up their employment career with the birth of the first child (Lauterbach 1994; Kurz 1998). Since the West German set-up matches well the assumptions of the standard neoclassic framework, one would expect that the behavior of women in the FRG complies to the common predictions of this model: Female employment and education should be negatively associated with fertility.

3.2 Employment and childrearing as compatible life-domains

The framework of an incompatible work and family sphere might describe sufficiently well the situation in West Germany of the 1980s. However, this model does not match the conditions in the countries of Eastern Europe during communism. A major premise of this model − the incompatibility of childrearing and employment − was not been

applicable then. The pivotal question in this context is: How does women's education and employment relate to fertility when women are not primarily confined to childrearing tasks?

It would certainly be naïve to believe that public policies freed parents completely from childrearing tasks. In other words, also in countries where daycare coverage is high, children still have an inhibiting effect on their mother's (and increasingly also their father's) employment activities. Women might search for less demanding jobs or they may reduce their working hours to balance work and family life. Furthermore, they may postpone fertility plans in order to find a more stable employment position before they venture family formation.

However, the fertility choices in a 'traditional' and a 'family-work friendly' regime is of a rather different nature. In a traditional regime, children and employment are considered as two exclusive domains and the question is whether to have children *or* to have an employment career. In a regime that supports mother's employment, the pivotal question is how to *combine* both domains most effectively. This moves another question into the focus of attention, namely how to *time* fertility in accordance with an employment career. In other words, in a 'traditional setting' the choice is to either have children or to have an employment career. The decision problem in a 'family-work friendly' regime is: When in the employment career is it most appropriate to set up a family?

3.3 The timing of fertility

3.3.1 Educational participation and fertility timing

The most consistent finding in the empirical literature on fertility timing is the negative effect of *educational participation* on first birth risks. This effect has been reported for many countries and for female educational participation, male educational participation, school enrollment, university education and vocational training (Hoem 1986; Rindfuss et al. 1988; Klein and Lauterbach 1994; Kravdal 1994; Santow and Bracher 2001). Blossfeld and Huinink (1991) explain this finding by monetary and normative

constraints that render parenthood and student roles to mutually exclusive states. Completion of education is an integral part of the transition to adulthood and most people will feel the need to establish themselves in the labor market before they start family formation. Parenthood will ultimately curb migrational flexibility, an aspect that might put them at critical disadvantage at labor market entry. Liefbroer and Corijn (1999: 55) highlight the time commitment that is necessarily for any kind of education. They maintain that educational participation is extremely time-consuming and family formation would jeopardize the successful completion of a study program. As a consequence, having a child at an early age would eventually put the future working career at stake.

It is indisputable that family formation will drastically curb the time necessary for a study program. However, there still must be an amalgam of various reasons, such as monetary constraints, normative pressures, compatibility problems and uncertainties about the future employment career which render educational participation and parenthood to mutually incompatible activities. In this sense, public policies can relieve the tension between parenthood and educational participation by providing childcare opportunities and monetary support to students. Societies should therefore differ in the way that educational participation inhibits family formation. Furthermore, one needs to consider that family formation is a life-course decision. A person will compare the possibilities of having children during education with the possibilities of having children at a later age. In anticipation of a demanding and time-intensive career track, a woman could as well come to the conclusion that she better initiates childbearing before she enters the labor market. If she follows this strategy, she can minimize career interruptions in her subsequent employment career (De Wit and Ravanera 1998: 46).

This argument might not be relevant at all in a labor market where employment careers are barely predictable. However, in the centrally planned labor market of the former communist countries, employment careers were highly predetermined. In this sense, it might have frequently been a rational strategy for university graduates in East Germany to initiate childbearing before labor market entry.

3.3.2 Education attainment and fertility timing

Apart from educational participation, the *educational level* has been identified as an important factor in the fertility postponement (Marini 1984; Rindfuss et al. 1996). More highly educated women are expected to be more career oriented, to proceed more challenging and steeper career tracks, to face higher opportunity costs of childrearing than their lower educated counterparts, and should therefore be more sensitive to the timing of their employment interruption (Huinink 1995; Gustafsson 2001; Taniguchi 1999). Since job stability is expected to increase with job tenure, it is argued that particularly highly educated women postpone family formation to several years after labor market entry until they have settled into stable employment (Liefbroer and Corijn 1999: 54; Brewster and Rindfuss 2000: 282).

However, the effect of the educational level on first birth risks has not been fully assessed empirically yet. Dispute arises over whether educational differences in fertility (and marriage) timing are largely due to differences in the length of educational participation (Oppenheimer 1988; Blossfeld and Huinink 1991). Event history-type models that control for the educational level as well as educational participation show only equivocal results. Blossfeld and Huinink (1991) report a positive effect of women's educational attainment after they control for the occupational characteristics. Santow and Bracher (1991) noticed a divergent effect of education, depending on the marital status of the respondent. DeWit and Ravanera (1998) and Liefbroer and Corijn (1999) show how the effect of education on first birth risks interacts with the respondent's age. These models often differ in the way in which they define educational level, which might partially account for divergent empirical findings. However, the results also show how sensitive the effect of women's education is to the specification of the model.

Apart from such modeling issue, there is every reason to believe that the effect of education on fertility also depends on the societal context. A critical aspect, again, is whether public policies are such that a woman can afford a career interruption. In a highly flexible labor market, women will behave differently than in a labor market where institutional constraints support labor market re-entry and offer mechanisms that protect a devaluation of human capital. Compared to the West German situation, employment interruptions had a much lesser negative impact on future employment

prospects in the highly regulated East German labor market. Various mechanisms protected from downward mobility and assured that a woman could proceed with her working career after labor market re-entry. Not only was the coverage with public day care important which assured a swift return to the labor market, but also the fact that formal qualifications were more decisive for job placement than mere performance on the job (Solga and Konietzka 1999). From this perspective, one would expect that women's educational attainment had a much less pervasive impact on family formation in East than in West Germany.

3.3.3 Unemployment and fertility timing

Regarding other aspects than education, there is less consistency in the literature of what leads to a deferred fertility transition. One reason for fertility delay may be that couples need to acquire sufficient economic resources before they opt for parenthood. Since labor market earnings are the major source of income for most couples, it has been suspected that birth risks increase with accumulated work experience (Kravdal 1994; Santow 2001: 351). In the same logic, labor market insecurities, such as unemployment, would lead to a postponement of fertility. During unemployment, income is low and the future course of the employment career is uncertain. Most couples would perceive this as an inadequate economic situation for family formation.

A critical question is whether male and female unemployment has the same impact on the postponement of fertility. Again, the societal context is important to make predictions on the effect of employment on fertility. In a male-breadwinner regime, male unemployment should have the most pervasive negative impact on fertility. When the male is the major provider of the family, the couple will postpone family formation until he has reached a sufficiently stable economic position.

Regarding female unemployment, one might argue that it supports fertility, since it reduces the opportunity costs of childrearing. However, this hypothesis imposes strong assumptions on a person's ability to synchronize unemployment and childrearing. It might sound trivial to note that conception and childbirth is nine months apart and that there is additional waiting time between the decision to get pregnant and conception. This 'fuzzy time' (Courgeau and Lelievre 1992) makes is hard to believe that a woman

will try to get pregnant in response to her present unemployment. Hypotheses that address the role of female employment in fertility should also take this waiting time into account. One straightforward hypothesis could be that unemployed women are more reluctant to enter a new employment position if they anticipate that they would soon start family formation. It is also possible that some women deliberately withdraw from the labor market in anticipation of family formation. In both cases, a positive effect of women's unemployment on first birth risks does not necessarily need to have a causal meaning.

In a societal context, where both partners contribute equally to the household income and where female employment is universal, one would expect that male and female unemployment should have the same negative impact on first birth risks. For Scandinavian countries, for which this argument has been posited, there is, however, no consistent empirical evidence of whether female unemployment indeed has a depressing effect on fertility. Hoem (2000) and Santow and Bracher (2001) report some negative effects of aggregate unemployment on fertility in Sweden. Kravdal (2002) observed similar findings for Norway. However, he only finds weak effects of individual unemployment on fertility transitions. Vikat (2004) shows for the case of Finland that it is primarily unemployment among the highly educated women that contributes to a reduction of first birth risks.

Regarding East Germany, one could claim that it resembles the Scandinavian situation. Both partners are expected to be working and to contribute to the family income. Unemployment of either of the patterns should therefore defer fertility transition. However, there is one vital difference to the Scandinavian situation. Unemployment did virtually not exist and full-time employment was universal in the centrally planned economy of East Germany. Therefore, there will have been only few women in the GDR who were out of work before childbirth.

4 Data and methods

In the following section, we investigate how women's education and employment affect first birth risks in the two former Germanies. The empirical analysis is based on data from the German Fertility and Family Survey (FFS). The FFS is part of an international project designated to produce comparable data sets for the analysis of fertility and family dynamics in European countries. It has been conducted in about 25 member states of the United Nations Economic Commission for Europe (Population Activity Unit 2000). Since 1992, there has been an English core questionnaire available and countries that participated in the FFS have been expected to comply with this core questionnaire when they set up the surveys in their countries. For all countries, there is a standard data file for cross-national comparison and the 'original' national data file. For this analysis, we use the data from the national FFS (Pohl 1995). The German FFS was surveyed in 1992 and it consists of roughly 10,000 respondents who are of German nationality, who live in private households and who were between the ages of 20 to 39 at the time of interview (the birth cohorts 1952-1972). It consists of four representative subsamples, i.e. it is stratified by gender (male and female) and by region of residence (East and West Germany). We restrict our sample to female respondents, of which there are 5,996 in the German Fertility and Family Survey. We do not include male respondents into the analysis, because of the relatively small size of the male sample. We omit respondents with invalid or incomplete fertility histories (152 cases), who report a birth before age 15 (23 respondents) or report that they have an adopted, foster, or stepchild (75 respondents). This leaves a valid sample with 5,746 respondents, of which 2,890 were living in West and 2,856 in East Germany.[9]

4.1 Dependent variable

We study the transition to first *pregnancy,* i.e. we backdate the date of childbirth by nine months.[10] The process time (i.e., the baseline hazard) is the age of the respondent measured in months since January of the year she turned age 15. Since we restrict the analysis to the former East and West Germany, we censor the cases at the fall of the Berlin Wall (November 1989). This leaves the West German sample with 1,199 and the East German sample with 1,944 first pregnancies.
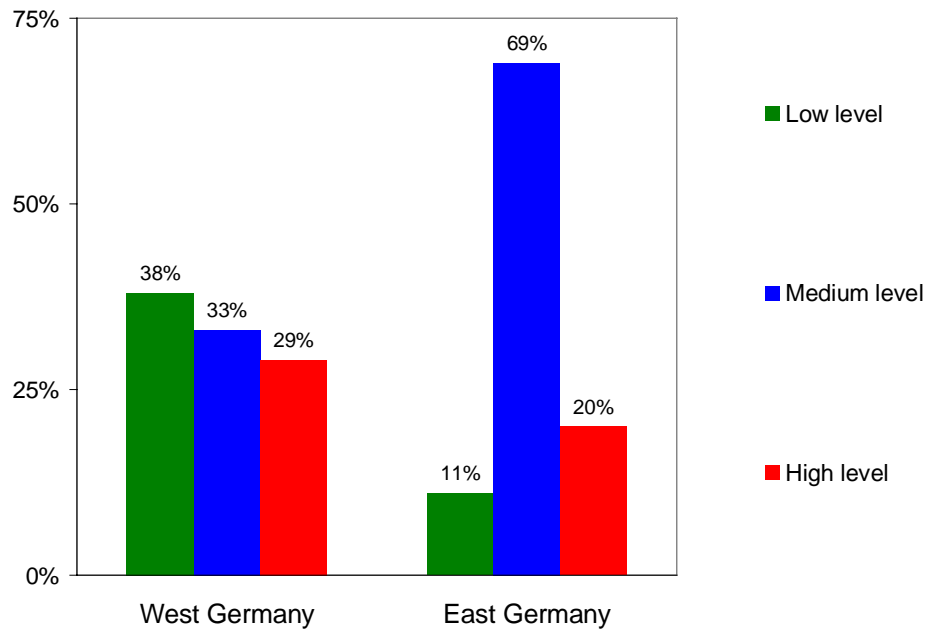
4.2 Covariates

One of the key independent variables in the subsequent analysis is the woman's educational attainment. Despite major differences in the political and economic system, the educational systems in the two Germanies were fairly comparable. Primary education started at age six and lasted for four years. The subsequent secondary education can be divided into a lower, medium and higher educational level. In West Germany, youngsters who completed primary education were channeled into the three major school types: 'Hauptschule', 'Realschule' and 'Gymnasium'. In East Germany, all youngsters attended the 'Allgemeinbildende Polytechnische Oberschule' (POS). Secondary school could be completed after the 8th or 10th grade, or a student could proceed to the 'Erweiterte Oberschule' to take the 'Abitur'. Both Germanies had a vocational training system, which offered two to three years of training in a certified occupation (Greinert 1995; Solga and Konietzka 1999; Zühlke 2000). Youngsters who completed their secondary education with an 'Abitur' were entitled to proceed to university, which offered study programs for the duration of three to five years.

Figure 4 displays the distribution of the sample by the highest secondary school degree (measured at the time of interview). The figure reflects the differences in the educational policies. While the East German population was quite homogenous in respect to school degrees, in West Germany respondents are distributed almost equally on the three categories.
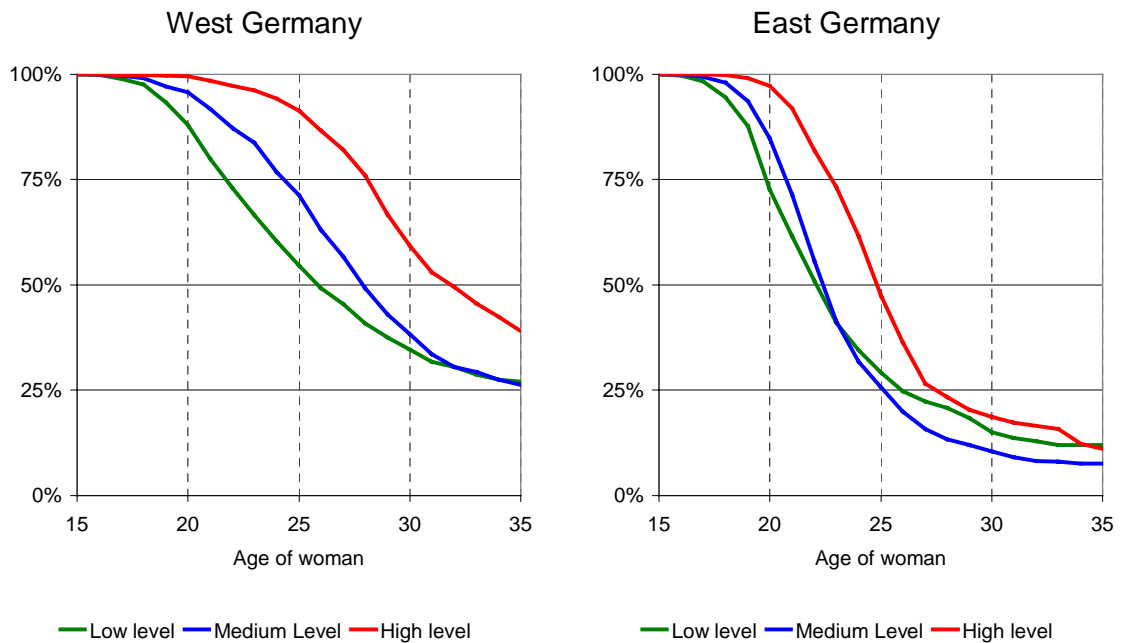
Figure 5 delineates the first birth patterns by woman's highest school degree.[11] It shows that West German women are much older at first birth and are more likely to be childless at age 35 than East German women are. The level of childlessness among West German women with a low and a medium school degree is roughly 25 percent, but it is about 40 percent (!) for women with an 'Abitur'. In the case of East Germany, there are hardly any educational differences in childlessness. Still, more highly educated women were two years older when they had their first child than women who completed secondary education at a lower level.

Figure 4: Educational attainment among East and West German women

Notes: see Figure 5

Figure 5: Kaplan-Meier survival curve to first child, right censored in 1990

Notes: (1) Low level: less than POS 10. Klasse/ Realschulabschluss; Medium level: POS 10. Klasse/ Realschulabschluss; High level: Abitur (2) The educational level refers to the highest level at the time of interview.

Source: German Family and Fertility Survey 1992 (own estimates)

In our subsequent event history model, we measure educational attainment by a time-varying covariate that distinguishes between the three basic *school degrees*: 'Abitur' (which we denote as a high level), 'POS 10. Klasse' or 'Realschulabschluss' (denoted as medium level) and less than 'POS 10. Klasse' or Realschulabschluss (denoted as low level). Since school degrees are earned already at the ages 16 to 18, they are practically fixed factors in the process of family formation. We nevertheless enter them as time-varying covariates into the event history model, since our process time starts already at age 15. Apart from the three levels, the variable 'school degree' has therefore an additional realization for periods when respondents are still attending secondary school.[12]

Another important variable is the *activity status* of the respondent. We distinguish between continued educational participation, employment and inactivity. Educational participation includes periods in university education and vocational training. Periods when respondents are attending secondary education are already captured through the time-varying covariate for 'school degree' (see above). Unfortunately, periods of unemployment are not surveyed in a sufficiently precise manner that we could distinguish between unemployment and other forms of inactivity. This also means that we are unable to distinguish between women who deliberately withdraw from the labor market in the anticipation of parenthood and women who are subject to unemployment.

In order to capture the effect of policy changes, we use the *calendar period* as a time-varying covariate. We distinguish the periods 1967-1979, 1980-1985 and 1986-1989. Arguably in the case of the GDR, one of the most important turning points is the year 1972 when the pro-natalistic policies were introduced. Unfortunately, we are unable to address how behavior changed during this time, since our sample mainly consists of respondents who reached childbearing age in the 1980s. Therefore, the most important cut point for our analysis is rather the year 1986. In West Germany, the parental leave regulations were extended in this year. Since 1979, working women in the FRG were allowed to take 6 months of parental leave, paid at the rate of the usual sick pay. The new regulation offered a 10 months period of leave which was now combined with an income-related childrearing benefit of only 600 DM (see Table 2). In East Germany, the parental leave regulations ('Babyjahr') was extended to all birth parities during the same time. Prior to 1986, paid parental leave was only given to second and higher order

births and to unmarried women. Therefore, the change of regulations might have had a positive effect on the transition to the first child. By using calendar period as a public policy indicator, we can surely not rule out that we pick up other changes, which have occurred simultaneously or follow a similar time trend.

In some parts of the analysis, we employ various background characteristics of the respondents. We use *size of the place* where the respondent grew up and distinguish between communities of less than 10,000 inhabitants, small towns of 10,000 to 100,000 and big cities of 100,000 and more inhabitants. The other background characteristics are the *number of siblings*, assuming that respondents who stem from bigger families develop a higher family orientation. We distinguish respondents who were an only-child, who had one sibling and who had more than one brother or sister. We furthermore control for the respondent's level of *religiosity*. We distinguish respondents who report that they are very religious or somewhat religious and those who are not so. Religiosity was surveyed at the date of interview and we therefore have to assume that religiousness is a stable trait that does not change over the life course. Finally, we construct a variable for whether the parents of the respondent had been divorced.

4.3   Method and structure

We apply event history techniques to the analysis of first pregnancy risks (for details, see e.g., Allison 1984; Yamaguchi 1991; Blossfeld and Rohwer 2001). The process time is the age of the mother and the baseline hazard is modeled as a piecewise constant function. This means that the baseline is partitioned into several segments. The hazard rates are constant for these pre-defined time segments, but they can vary across them. In our analysis, the cut points are at the exact ages 20, 22, 24, 26, 28, 30 and 34. We control for a set of time-varying (such as period) and time-constant (such as religiosity) covariates. When $ln\ h(t)$ is the natural log of the intensity of the event, $h_0(t)$ the baseline (which is the woman's age represented as a piecewise constant hazard), x_1 a matrix of time-constant covariates, $x_2(t)$ a matrix of time-varying covariates, β_1 and β_2 parameter estimates, one yields the following general relationship

$$ln\ h(t) = h_0(t) + \beta_1 x_1 + \beta_2 x_2(t)$$

In order to estimate the model, we use the event history module in STATA 8.1 and the extension for piecewise constant models provided by Jesper Sorensen (Stata Corporation 2003). We estimate separate models for East and West Germans. In a first step, we apply a stepwise procedure by which we investigate how the effect of the school degree is influenced by the inclusion of further covariates. The second part of the analysis is devoted to interaction models. The model is multiplicative and assumes that the effect of the covariates on the hazard of the occurrence of the event is the same across ages. We relax this assumption by allowing for interaction effects between the basic time variable (woman's age) and woman's school degree. Furthermore, we employ an interaction between the duration since labor market entry and school degree in order to investigate whether some groups of women accelerate childbearing with increasing time in the labor market.

5 Results

5.1 West Germany

Table 3 reports the results from the stepwise model. Let's first turn to the West German situation. The age schedule is not very compressed. Only at the ages below 21 and above 30 there is a discernable decline in birth risks. Regarding the effect of calendar period, we find a significantly negative time trend (Model 1a). Compared to the situation during the 1970s, there was a clear drop in first birth risks at the beginning of the 1980s.

The effect of women's education is negative, very strong and highly significant. Compared to women with a medium education level, first birth risks are cut by forty percent for women with an 'Abitur' or by 50 percent compared to women with a low educational level (Model 1b).[13] After controlling for continued educational participation, the effect of the school degree becomes less strong (Model 1c). This is compatible with the fact that persons with an 'Abitur' were more likely to proceed to university education during which they postponed parenthood. Being in the educational system strongly reduces first birth risks: They are cut by more than 70 percent for women who are in vocational training or in university education (compared to being employed). Women who are not employed and not studying encounter highly elevated first birth risks compared to active women.

The inclusion of further personal background characteristics does not change the results (Model 1d). Neither does the size of the place of origin nor whether the parents were divorced. Being religious increases relative first birth risks by 12 percent. The number of siblings is apparently a very important predictor for fertility. Coming from a larger family increases first birth risks by almost 70 percent. That the inclusion of personal background characteristics does not change the negative gradient of education suggests that background characteristics are less significant in the education and fertility nexus than frequently expected.

5.2 East Germany

In East Germany, first birth risks are highest at ages 21-26 and they rapidly level off thereafter. Regarding the effect of the calendar period, there is no difference in first birth risk for the period 1967-1979 and 1980-1985, which corresponds to the observation that the age at first birth has been on a fairly constant level for most parts of the time that the GDR existed. This aspect is worth pointing out since at the beginning of the 1980s, major changes in first birth patterns occurred in West Germany (see above). What one finds for East Germany, though, is a significant decline in first birth risks at the end of the 1980s. This finding could mean that births were postponed already before the demise of the East German system. It also means that policy changes (such as the introduction of the 'Babyjahr' for first births) had obviously not resulted in more rapid family formation. However, one can surely not rule out that the drop would have been even sharper without these policy measures.

Regarding the effect of education, we find that women with 'Abitur' encounter a reduced first birth risk. However, contrary to the results for West Germany, this effect completely vanishes after we control for educational participation. This suggests that the educational difference in the age at first birth in East Germany can be explained fully by differences in the length of educational participation. Interestingly, women with a low school degree encounter fairly low first birth risk, which is also opposite to the finding for West Germany. Presumably, one needs to take into account that the overwhelming majority of East German women had a medium school degree ('POS 10. Klasse'). Therefore, persons with less than 'POS 10. Klasse' must have been a fairly particular group in the societal context of the GDR.

Regarding the effect of women's educational participation, we find that it reduces first birth risks by roughly fifty percent. This means that also in East Germany women postponed parenthood while they underwent education. Yet, educational participation was still more compatible with family formation than in the FRG (see above).

Contrary to the situation in the West, there is a negative effect of inactivity on first birth risks, i.e. relative risks are reduced by about 15 percent compared to employed women. In principle, one could contend that this fits the idea that in a regime where family and work are compatible, women's employment is a prerequisite for family formation. One must, however, take into account that in the German Democratic Republic, public policies not only supported the compatibility of work and family life, but women's full-time employment was basically a universal moral obligation. It was simply very

unusual to be out of work and inactivity may rather indicate some physical impairment, which also relates to the fecundity of the respondent.

The background characteristics have a strong grip on fertility – with the exception of parental divorce. Having two or more siblings increases first birth risks by 40 percent. Coming from a big city reduces first birth risk by roughly 25 percent. The effect of religiosity is a bit puzzling since it reduces first birth risks by 16 percent. This is surprising since one would generally expect that religious people are also more traditionally orientated and therefore encounter higher fertility rates. In order to understand this pattern, one presumably has to take into account that religion was rather suppressed by the communist ideology of the government. Therefore, being religious may be seen as a somewhat deviant behavior in the GDR. Despite the strong impact of the background variables on first birth risks, the effect of women's education remains unchanged.

Table 3: Results from event history model, relative risks of the transition to first pregnancy

	West Germany			
	Model 1a	Model 1b	Model 1c	Model 1d
Age of respondent*)				
15-20	0.002	0.003	0.006	0.004
21-22	0.005	0.005	0.007	0.005
23-24	0.007	0.007	0.008	0.006
25-26	0.009	0.010	0.010	0.007
27-28	0.012	0.012	0.012	0.009
29-30	0.012	0.012	0.012	0.009
31-34	0.008	0.007	0.007	0.005
35-37	0.005	0.005	0.004	0.003
Calendar period				
1967-1979	1	1	1	1
1980-1985	0.74 ***	0.79 ***	0.79 ***	0.81 ***
1986-1989	0.65 ***	0.73 ***	0.74 ***	0.78 ***
School Degree				
In secondary school		0.12 ***	0.07 ***	0.07 ***
Low		1.18 **	1.02	1.00
Medium		1	1	1
High		0.60 ***	0.80 **	0.82 **
Activity Status				
In university or vocational training			0.26 ***	0.26 ***
Employed			1	1
Inactive			1.58 ***	1.58 ***
Size of place of origin				
Small village				1
Medium sized town				1.07
Big city				0.87 *
Number of siblings				
Only child				1
One sibling				1.28 ***
Two or more siblings				1.68 ***
Religiosity				
Not religious				1
Religious				1.12 *
Parent's divorce				
No divorce				1.04
Divorce				1
Model fit				
Log Likelihood (0)	-4308	-4308	-4308	-4308
Log Likelihood	-2249	-2095	-1960	-1930

Notes: Flag variables for missing information for women's education; religiosity and size of city of origin were also added to the regression.
*) absolute risks in months
***: p ≤ 0.01 **: 0.01≤ p ≤ 0.05 *: 0.05≤ p ≤0.10
Source: German Family and Fertility Survey 1992 (own estimates)

Table 3 (continued): Results from event history model, relative risks of the transition to first pregnancy

	East Germany			
	Model 1a	Model 1b	Model 1c	Model 1d
Age of respondent*)				
15-20	0.004	0.008	0.013	0.009
21-22	0.018	0.020	0.024	0.016
23-24	0.020	0.023	0.025	0.017
25-26	0.020	0.023	0.024	0.017
27-28	0.012	0.014	0.014	0.010
29-30	0.010	0.012	0.012	0.009
31-34	0.006	0.007	0.007	0.005
35-37	0.000	0.000	0.000	0.000
Calendar period				
1967-1979	1	1	1	1
1980-1985	1.06	1.02	1.01	1.00
1986-1989	0.86 **	0.83 ***	0.80 ***	0.81 ***
School Degree				
In secondary school		0.11 ***	0.14 ***	0.14 ***
Low		0.85 **	0.79 ***	0.79 ***
Medium		1	1	1
High		0.69 ***	0.93	0.97
Activity Status				
In university or vocational training			0.49 ***	0.49 ***
Employed			1	1
Inactive			0.81 **	0.85 *
Size of place of origin				
Small village				1
Medium sized town				1.02
Big city				0.78 ***
Number of siblings				
Only child				1
One sibling				1.33 ***
Two or more siblings				1.43 ***
Religiosity				
Not religious				1
Religious				0.84 ***
Parent's divorce				
No divorce				0.97
Divorce				1
Model fit				
Log Likelihood (0)	-3802	-3802	-3802	-3802
Log Likelihood	-2451	-2452	-2119	-2085

Notes: Flag variables for missing information for women's education; religiosity and size of city of origin were also added to the regression.
*) absolute risks in months
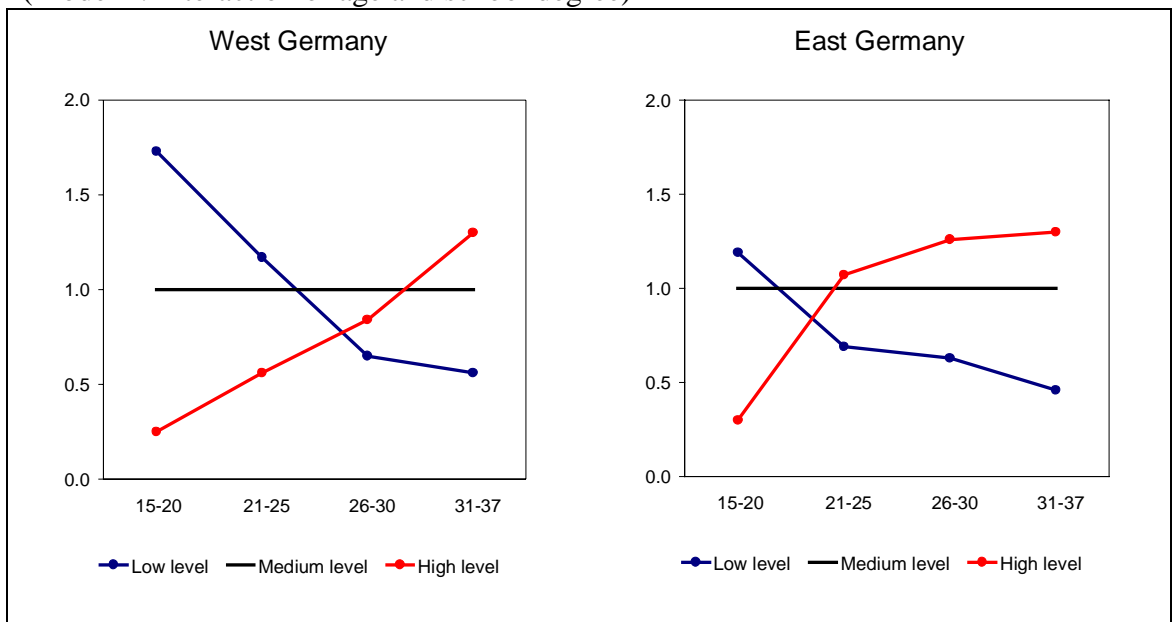***: $p \leq 0.01$ **: $0.01 \leq p \leq 0.05$ *: $0.05 \leq p \leq 0.10$
Source: German Family and Fertility Survey 1992 (own estimates)

5.3   Interaction models

In both East and West Germany, educational participation is a highly relevant predictor for first birth risks. This particularly applies to West Germany, but the effect is also discernable for East Germany. It has also some implications for model specification, particularly if one considers that depending on the secondary school degree at age *x*, the length of subsequent educational participation varies. Women with an 'Abitur' will be more likely to proceed to university education during which they postpone parenthood. This means that first birth risks for women with an 'Abitur' are low at younger ages and they will increase later in life.

In order to exemplify this aspect, we employed an interaction of the baseline (woman's age) and her initial education level (Figure 6). Due to small sample sizes, we had to aggregate the woman's age levels into broader categories. For both East and West Germany, we find that first birth risks strongly decline with age for women with a low school degree level, whereas they accelerate with age for the more highly educated.

Figure 6: Event history model, relative risks of the transition to first pregnancy (Model 2: Interaction of age and school degree)
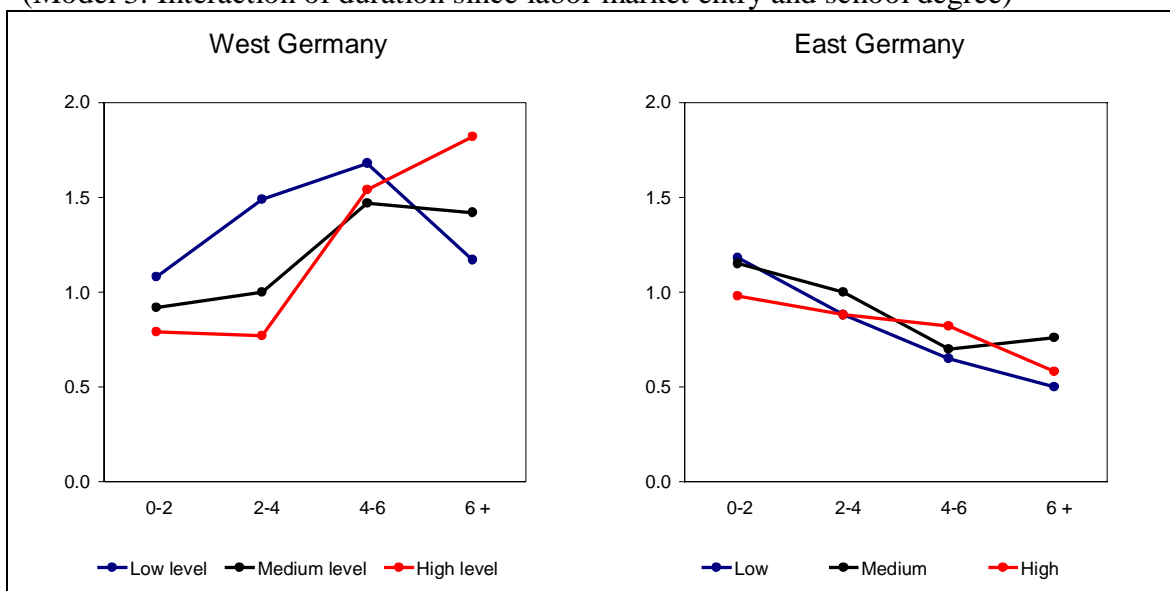

Notes: (1) Controlled for age (baseline), calendar period, activity status, size of place of origin, number of siblings, religiosity, parent's divorce. (2) For each age group, risks are given relative to that of a person with a medium educational level.

Figure 7 finally reports an interaction of school degree and duration in the labor market. To simplify matters, we used the date of completion of education as a proxy for the date of labor market entry. The duration in the labor market was divided into: less than 2 years, 2 to less than 4 years, 4 to less than 6 years, 6 and more years.

In East Germany, first birth risks are highest immediately after labor market entry and they level off thereafter. This pattern is discernable for all educational groups. In West Germany, there exist some educational differences in the effect of duration in the labor market on first birth risks. Particularly the more highly educated tend to postpone parenthood several years after labor market entry. But also for women with low and a medium school degree, first birth risks are low immediately after labor market entry and are highest after four to six years of work experience. In sum, there are pronounced societal differences in the relationship between the duration in the labor market and childbirth. While East German women accelerate childbirth immediately after labor market entry, West German women tend to postpone parenthood to several years after they have entered the labor market.

Figure 7: Event history model, relative risks of the transition to first pregnancy (Model 3: Interaction of duration since labor market entry and school degree)

Notes: Controlled for age (baseline), calendar period, size of place of origin, number of siblings, religiosity, parent's divorce, educational participation. For each group, risks are given relative to that of a person wit a medium school degree who has been in the labor market for 2-4 years.

6 Conclusion and discussion of results

In this paper, we contrasted childbearing patterns in the FRG and GDR to demonstrate the pervasive role of institutional constraints for the relationship between female employment, female education and fertility. In the centrally planned economy of the GDR, public policies not only supported mother's employment, but women and men's full-time employment was a universal moral obligation. To name a few public policies that characterized the East German situation: a high coverage of full-time daycare, one year of parental leave combined with a high level of income replacement, low employment uncertainties due to a highly structured and centrally planned labor market. On the other hand, there is the West German system, widely known to represent the typically central European type of a conservative welfare state regime. The institutional constraints in the former West Germany were fairly supportive to traditional family types where the woman devotes her time to childrearing tasks; public policies that encouraged mother's employment or favored dual-earner families did virtually not exist. The public policies which best characterize the West German set-up are presumably the 'housewife bonus' in the tax system and the inflexible childcare system that is almost exclusively devoted to the educational aspects of pre-school education.

The major findings from the empirical investigation can be summarized as follows:

- We find very strong and distinct differences in fertility behavior in the two Germanies. Apart from differences in the total number of children, which was higher in the GDR than in the FRG, there were glaring differences in the *age at first parenthood*. While the median age at childbirth was roughly 22 in the East, it was 6 years higher in the West.

- Childlessness was very low in the GDR and there were no differences in *childlessness* between highly educated and other women. In contrast, childlessness was very widespread in the West, and there were big differences by educational groups. At the age of 35, about 40 percent of the West German women with an 'Abitur' were still childless.

- We find that women with an 'Abitur' encountered reduced first birth risks in both Germanies. In East Germany, these differences disappear after the inclusion of educational participation into the event history model, which suggests that *educational differences in the timing of fertility* were largely driven

by differences in the length of educational participation. This is supported by the interaction between 'duration in the labor market' and 'educational level'. In East Germany, all educational groups initiated childbearing shortly after labor market entry. In West Germany, fertility was low after labor market entry and particularly the highly educated postponed parenthood several years after labor market entry.

- While *female employment* supported first birth transitions in the East, it hampered it in the West.

The multivariate analysis of first birth risks can be summarized in a way that the relationship between women's education, employment and fertility followed a completely different pattern in the two Germanies. As such, our empirical results nicely fit our theoretical argumentation that the effect of women's education and employment in fertility is responsive to the institutional constraints. However, the empirical investigation had to leave some issues unresolved:

Most importantly, one needs to stress that we used a conventional event history model with the current employment status as a time-varying covariate. This means that we measure employment status before childbirth (or more precisely, while being at risk of childbirth). However, even in a regime where female employment and childrearing are incompatible, women usually work until they get pregnant. It is not the actual employment status but the *anticipation* that childbirth will be incompatible with employment that influences fertility decisions. In other words, women may refrain from parenthood because they anticipate that childbirth will be followed by a labor market withdrawal after childbirth. A model with current employment status to predict subsequent first birth risks is unable to capture such aspects. In order to grasp fully how women's employment chances affect fertility, one eventually requires indicators of the *structural constraints* that support work and family life. Additionally, indicators of how women and men *perceive* the compatibility of childrearing and employment (surveyed in a prospective manner) might also be useful in order to get a better understanding of the fertility-employment nexus.

Acknowledgement

References

Adler, M. A. (1997). "Social change and decline in marriage and fertility in Eastern Germany", *Journal of Marriage and the Family* 59(1): 37-49.

Alber, J. (2002). "Allmählicher Umbau bei nach wie vor deutlichen nationalen Unterschieden. Analysen zu jüngsten Wandlungstendenzen in westlichen Wohlfahrtsstaaten", *Informationsdienst Soziale Indikatoren* 28: 1-6.

Allison, P.D. (1984). *Event History Analysis, Regression for Longitudinal Event Data.* California, Sage Publications.

Andersson, G. (2000). "The impact of labour-force participation on childbearing behavior: pro-cyclical fertility in Sweden during the 1980s and the 1990s", *European Journal of Population* 16: 293-333.

Becker, G.S. (1993). *A Treatise on the Family.* Enlarged edition. Cambridge (Massachusetts). Harvard University Press.

Beckmann, P. (2001). "Neue Väter braucht das Land! Wie stehen die Chancen für die stärkere Beteiligung der Männer am Erziehungsurlaub?", *IAB Werkstattbericht* Nr. 6.

Berghahn, S., Fritzsche, A. (1991). *Frauenrecht in Ost und Westdeutschland: Bilanz, Ausblick.* Berlin. Basisdruck-Verlag.

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(1):143-168.

Blossfeld, H.P., Rohwer, G. (2001). *Techniques of Event History Modeling: New Approaches to Causal Analysis.* 2nd edition. Mahwah (New Jersey). Lawrence Erlbaum.

Braun, M., Scott, J., Alwin, D.F. (1994). "Economic necessity or self-actualization? Attitudes toward women's labour-force participation in East and West Germany", *European Sociological Review* 10(1): 29-47.

Brewster, K.L., Rindfuss, R.R. (2000). "Fertility and women's employment in industrialized nations", *Annual Review of Sociology* 26: 271-296.

Bundesinstitut für Bevölkerungsforschung (BiB) (1999). Age and parity specific fertility rates for East German birth cohorts 1937-1958. Wiesbaden. (Provided as a personal communication to Jürgen Dorbritz , BiB).

Bundesministerium für Arbeit und Sozialordnung (BMA) (1994). *Übersicht über das Sozialrecht.* 3.rd revised and enlarged edition. Bonn.

Bundesministerium für Arbeit und Sozialordnung (BMA) (2000). *Übersicht über das Sozialrecht.* 6.th revised and enlarged edition. Bonn.

Büttner, T., Lutz, W. (1990). "Estimating fertility responses to policy measures in the German Democratic Republic", *Population and Development Review* 16(3): 539-555.

Cornelius, I. (1990). "Familien- und Bevölkerungspolitik der DDR", *Arbeit und Sozialpolitik* 8/9: 308-316.

Courgeau, D., Lelievre, E. (1992). *Event History Analysis in Demography.* Oxford: Oxford University Press.

Cromm, J. (1998). *Familienbildung in Deutschland. Soziodemographische Prozesse, Theorie, Recht und Politik unter besonderer Berücksichtigung der DDR.* Opladen. Westdeutscher Verlag.

De Wit, M.L., Ravanera, T.R. (1998). "The changing impact of women's educational

attainment on the timing of births in Canada", *Canadian Studies in Population* 25(1): 45-67.

Dingeldey, I. (2001). "European tax systems and their impact on family employment patterns", *Journal of Social Policy* 4: 563-672.

Dinkel, R. (1984). "Haben die geburtenfördernden Maßnahmen der DDR Erfolg?", *IFO-Studien: Zeitschrift für empirische Wirtschaftsforschung* 30: 139-162.

Dorbritz, J., Fleischhacker, J. (1995). "Der Übergang von der Bevölkerungs- zur Familienpolitik in den neuen Bundesländern – ein Beitrag zum Familienpolitischen Diskurs in Deutschland", *Zeitschrift für Bevölkerungswissenschaft* 20(2): 159-185.

Eberstadt, N. (1994). "Demographic shocks after communism: Eastern Germany, 1989-93", *Population and Development Review* 20(1): 137-152.

Ellingsæter, A. L., Rønsen, M. (1996). "The dual strategy: motherhood and the work contract in Scandinavia", *European Journal of Population* 12: 239-260.

Esping-Andersen, G. (1999). *Social Foundations of Postindustrial Economies.* Oxford: Oxford University Press.

Frerich, J., Frey, M. (1996). *Handbuch der Geschichte der Sozialpolitik in Deutschland. Band 3: Sozialpolitik in Deutschland bis zur Herstellung der deutschen Einheit.* 2nd edition. München: Oldenbourg Verlag.

Frerich, J., Frey, M. (1993). *Handbuch der Geschichte der Sozialpolitik in Deutschland. Band 2: Sozialpolitik in der Deutschen Demokratischen Republik.* München. Oldenbourg Verlag.

Gauthier, A.H. (1996). *The State and the Family. A Comparative Analysis of Family Policies in Industrialized Countries.* Oxford: Clarendon Press.

Gauthier, A.H. (2002). "Family policies in industrialized countries: Is there convergence?", *Population* 57(English edition): 447-474.

Gornick, J.C., Meyers, M.K., Ross, K.E. (1998). "Public policies and the employment of mothers: a cross national study", *Social Science Quarterly* 79(1): 35-54.

Gottschall, K., Hagemann, K. (2002). "Die Halbtagsschule in Deutschland: Ein Sonderfall in Europa?", *Aus Politik und Zeitgeschichte* Nr. 41–42: 12-22.

Greinert, W.D. (1995). *The Dual System of Vocational Education and Training in the Federal Republic of Germany. Structure and Function.* 2nd revised edition. Stuttgart: Holland and Josenhans.

Gustafsson, S.S. (2001). "Optimal age at motherhood. Theoretical and empirical considerations on postponement of maternity in Europe", *Journal of Population Economics* 14(2): 225-247.

Gysi, J., Speigner, W. (1983). *Changes in the Life Patterns of Families in the German Democratic Republic.* Berlin. Academy of Sciences of the GDR. Institute of Sociology and Social Policy.

Hank, K., Kreyenfeld, M. (2003). "A multilevel analysis of child care and women's fertility decisions in Western Germany", *Journal of Marriage and Family* 65: 584-596

Heilig, G., Büttner, T., Lutz, W. (1990). "Germany's population: turbulent past, uncertain future", *Population Bulletin* 45(4): 3-43.

Hoem, B. (2000). "Entry into motherhood in Sweden. The influence of economic factors on the rise and fall in fertility, 1986-1997", *Demographic Research* 4(2).

Hoem, J. M. (1990). "Social policy and recent fertility change in Sweden", *Population and Development Review* 16(4):735-748.

Hoem, J.M. (1986). "The impact of education on modern family-union initiation", *European Journal of Population* 2: 113-133.

Höhn, C. (1992). "Population relevant policies before and after unification in Germany", in: Krishnan, P. (et al.) (eds.): *Readings in Population Research*. Dehli (India): 4-23.

Höhn, C., Dorbritz, J. (1995). "Zwischen Individualisierung und Institutionalisierung – Familiendemographische Trends im vereinten Deutschland", in: Nauck, B., Onnen-Isemann, C. (eds.): *Familie im Brennpunkt von Wissenschaft und Forschung*. Neuwied. Luchterhand: 149-174.

Huinink, J. (1995). "Familienentwicklung und Haushaltsgründung in der DDR: Vom traditionellen Muster zur instrumentellen Lebensplanung?", in: Nauck, N. (et al.) (eds.): *Familie und Lebensverlauf im gesellschaftlichen Umbruch*. Stuttgart: Enke: 39-55.

Huinink, J. (1997). "Vergleichende Familienforschung: Ehe und Familie in der ehemaligen DDR und der Bundesrepublik Deutschland", in: Vascovics, L. (ed.): *Familienbilder und Familienrealitäten.*Opladen. Leske und Budrich: 308-325.

Huinink, J., Mayer, K. U., Trappe, H. (1995). "Staatliche Lenkung und individuelle Karrierechancen: Bildungs- und Berufsverläufe", in: Huinink, J. (et al.) (eds.).: *Kollektiv und Eigensinn: Lebensverläufe in der DDR und danach*. Berlin. Akademie-Verlag: 88-143.

Klein, T., Lauterbach, W. (1994). "Bildungseinflüsse auf Heirat, die Geburt des ersten Kindes und die Erwerbsunterbrechung von Frauen", *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 46(2): 278-298.

Koch, P., Knöbel, H.G. (1986). *Familienpolitik der DDR im Spannungsfeld zwischen Familie und Berufstätigkeit von Frauen*. Pfaffenweiler: Centaurus-Verlagsgesellschaft.

Konietzka, D., Kreyenfeld, M. (2002). "Women's employment and non-marital childbearing: A comparison between East and West Germany in the 1990s", *Population-E* 57(2): 331-358.

Kravdal, Ø. (1994). "The importance of economic activity, economic potential and economic resources for the timing of first births in Norway", *Population Studies* 48(2): 249-267.

Kravdal, Ø. (2002). "The impact of individual and aggregate unemployment and fertility in Norway. Demographic Research 6 (10): 262-294.

Kreyenfeld, M. (2000): "Changes in the Timing of First Birth in East Germany after Re-Unification", *Schmollers Jahrbuch – Zeitschrift für Wirtschafts- und Sozialwissenschaften* 120(2): 169-186.

Kreyenfeld, M. (2003). "Crisis or adaptation reconsidered: A comparison of East and West German fertility in the first six years after the 'Wende'", *European Journal of Population* 19(4): 303-329.

Kurz, K. (1998). *Das Erwerbsverhalten von Frauen in der intensiven Familienphase ein Vergleich zwischen Müttern in der Bundesrepublik Deutschland und den USA*. Opladen: Leske und Budrich.

Lampert, H. (1996). *Priorität für die Familie: Plädoyer für eine rationale Familienpolitik*. Berlin. Duncker und Humblot.

Lauterbach, W. (1994). *Berufsverläufe von Frauen*. Frankfurt: Campus.

Lesthaeghe, R. (1995). "The second demographic transition in western countries: an interpretation", in: R. Lesthaeghe, K. Oppenheim Mason and A. M. Jensen, (eds): *Gender and Family Change in Industrialized Countries* (Oxford, Claredon Press): 17-62.

Liefbroer, A., Corijn, M. (1999). "Who, what, and when? Specifying the impact of educational attainment and labour force participation on family formation", *European Journal of Population* 15(1): 45-75.

Marini, M..M. (1984). "Women's educational attainment and the timing of entry into parenthood", *American Sociological Review* 49(4): 491-511.

McDonald, P. (2000). "Gender equity, social institutions and the future of fertility", *Journal of Population Research* 17(1): 1-16.

Mincer, J. (1974). *Schooling, Experience, and Earning.* New York: National Bureau of Economic Research.

Neyer, G. (2003). "Family policies and low fertility in western Europe", MPIDR Working Paper 2003-021.

Obertreis, G.(1986). *Familienpolitik in der DDR 1946-1980.* Opladen: Leske und Budrich.

OECD (2001). *Starting Strong. Early Childhood Education and Care Policy.* Paris: OECD.

Oppenheimer, V. K. (1988). "A theory of marriage timing", *American Journal of Sociology* 94(3): 563-591.

Pfaff, A.B. (1997). Soziale Sicherung der Frau im zukünftigen Sozialstaat: Veränderte Rahmenbedingungen und Gestaltungsperspektiven. *Jahrbücher für Nationalökonomie und Statistik* 216(4/5): 454-477.

Pohl, K. (1995). *Familienbildung und Kinderwunsch in Deutschland: Design und Struktur des deutschen FFS.* Bundesinstitut für Bevölkerungsforschung (BiB) (ed.). Materialien zur Bevölkerungsforschung Nr. 82a. Wiesbaden.

Population Activity Unit (2000). *Fertility and Family Surveys.* (http://www.unece.org/ead/pau/ffs)

Rindfuss, R.R., Brewster, K.L. (1996). *Childrearing and fertility.* Population and Development Review 22(Supplement): 258-289.

Rindfuss, R.R., Morgan, P.S., Swicegood, G. (1988). *First Births in America: Changes in the Timing of Parenthood.* Berkeley. University of California Press.

Rindfuss, RR., Morgan, P.S., Offutt, K. (1996). "Education and the changing age pattern of American fertility: 1963-1989", *Demography* 33(3): 277-290.

Sainsbury, D. (1997). "Taxation, family responsibilities, and employment", in: Sainsbury, D. (ed.): *Gender and Welfare State Regimes.* Oxford: Oxford University Press: 185-209.

Sainsbury, D. (1999). *Gender, Equality and Welfare States.* Cambridge: Cambridge University Press.

Santow, G., Bracher, M. (2001). "Deferment of the first birth and fluctuating fertility in Sweden", *European Journal of Population* 17(4): 343-363

Schmähl, W. (1992). "Sozialpolitik und Systemtransformation: zur Bedeutung und zur Veränderung von Sozialpolitik im Prozeß der deutschen Vereinigung", in: Schmähl, W. (ed.): *Sozialpolitik im Prozeß der deutschen Vereinigung.* Frankfurt am Main. Campus-Verlag: 26-58.

Scott, J. (1999). "European attitudes towards maternal employment", *International Journal of Sociology* 19: 151-186.

Solga, H., Konietzka, D. (1999). "Occupational matching and social stratification: Theoretical insights and empirical observations taken from a German – German comparison", *European Sociological Review* 15(1): 25-47.

Speigner, W. (1989). "Bevölkerungspolitik – Bestand der Sozial- und Gesellschaftspolitik", in: Akademie der Wissenschaften der DDR (ed.).: *Demographie DDR 1970-1987.* Berlin: 2-11.

Spieß, C.K., Büchel, F. (2003). "Effekte der regionalen Kindergarteninfrastruktur auf das Arbeitsangebot von Müttern", in: Schmähl, W. (eds.): *Wechselwirkungen zwischen Arbeitsmarkt und sozialer Sicherung* II, Reihe „Schriften des Vereins für Sozialpolitik". Berlin: Duncker & Humblot: 95-126.

Stata Corporation (2003). *Stata Reference Manual. Release 8*. College Station (Texas). Stata Press.

Statistisches Bundesamt (1999a). *Bevölkerung und Erwerbstätigkeit. Gebiet und Bevölkerung*

1997. Fachserie 1, Reihe 1. Stuttgart: Metzler-Poeschel.

Statistisches Bundesamt (1999b). *Bevölkerungsstatistische Übersichten 1946-1989.* (Teil V). Sonderreihe mit Beiträgen für das Gebiet der ehemaligen DDR. Heft 32. Wiesbaden.

Stier, H., Lewin-Epstein, N., Braun, M. (2001). "Welfare regimes, family-supportive policies, and women's employment along the life-course", *American Journal for Sociology* 106(6): 1731-1760.

Sundström, E.(1999). "Should mothers work? Age and attitudes in Germany, Italy and Sweden", *International Journal of Social Welfare* 8(3): 193-205.

Szydlik, M. (2002). "Vocational education and labour markets in deregulated, flexibly coordinated and planned societies", *European Societies 4(1)*: 79-105.

Taniguchi, H. (1999). "The timing of childbearing and women's wages", *Journal of Marriage and the Family* 61(4): 1008-1019.

Trappe, H. (1995). *Emanzipation oder Zwang? Frauen in der DDR zwischen Beruf, Familie und Sozialpolitik.* Berlin. Akademie Verlag.

Trappe, H., Rosenfeld, R.A. (1998). "A comparison of job-shifting patterns in the former East Germany and the former West Germany", *European Sociological Review* 14(4): 343-368.

Trappe, H., Rosenfeld, R.A. (2000). "How do children matter? A comparison of gender earnings inequality for young adults in the former East Germany and the former West Germany", *Journal of Marriage and the Family* 62(2): 489-507.

Treas, J., Widmer, E.D. (2000). "Married women's employment over the life course: attitudes in cross-national perspective", *Social Forces* 78(4): 1409-1436.

Vikat, A. (2004). "Women's labor force attachment and childbearing in Finland", Rostock, MPIDR Working Paper WP-2004-001

Vortmann, H. (1988). "Soziale Sicherung in der DDR", *Aus Politik und Zeitgeschichte* B 32: 29-38.

Wendt, H. (1997). "The former German Democratic Republic: The standardized family", in: Kaufmann, F.X. (et al.) (eds.): *Family Life and Family Policies in Europe.* Volume I: Structures and Trends in the 1980s. Oxford. Clarendon Press: 114-154.

Wingen, M. (1997). *Familienpolitik: Grundlagen und aktuelle Probleme.* Bonn: Bundeszentrale für politische Bildung.

Witte, J. C., Wagner, G.G. (1995). "Declining fertility in East Germany after unification: A demographic response to socioeconomic change", *Population and Development Review* 21(2): 387-397.

Yamaguchi, K. (1991). *Event History Analysis.* Newbury Park.Sage.

Zühlke, S. (2000). *Beschäftigungschancen durch berufliche Mobilität? Arbeitslosigkeit, Weiterbildung und Berufswechsel in Ostdeutschland.* Berlin. Sigma-Verlag.

Endnotes

1   Unmarried women were already granted the 'Babyjahr' after the birth of the first child. When the percentage of non-marital births increased in the subsequent years, this was largely attributed to special treatments for unmarried women (Konietzka and Kreyenfeld 2002).

2   Friedrich Fröbel (1782-1852), a German educationalist, is largely considered as the founder of the 'Kindergarten' idea.

3   Since 2001, it is also possible to work up to 30 hours during parental leave.

4   It would have been beyond the scope of this paper to give a full account of all policy changes that have occurred in the FRG. Particularly for child benefits, only major changes are reported in this table.

5   In the year 1985, for example, only about 15 percent of all births were births to women aged 30 and over in the GDR. In the FRG, this applied to 35 percent of all births.

6   The FFS does not contain foreign nationals, who, in general, are younger at first birth. Therefore, the median age at first birth in the total population might be slightly lower than that we calculated on the basis of the FFS. This might be of some importance to the West where most foreigners live.

7   Note that the FFS primarily covers the 1980s. The second birth pattern of the 1980s is presumably different from the earlier pattern. After the implementation of pro-natalistic policies, birth intervals shortened which also contributed to the increase in period fertility rates in the GDR (Büttner and Lutz 1990; Speigner 1989: 42). During the 1980s, however, the duration between the first and the second birth increased again (Statistisches Bundesamt 1999b: 176ff.).

8   These figures display the transition pattern to the first, second and third birth. Cases are censored nine months after the fall of the Berlin Wall.   In the multivariate analysis, however, we analyze the transition to the first *pregnancy* and we censor the cases at the fall of the Berlin Wall.

9   In this study, an East German is defined as a person living in the territories of eastern Germany at the time of interview. A West German is a respondent living in the territories of west ern Germany at the time of interview.   Therefore, respondents who have migrated beteen East and West Germany are partially wrongly classified.

10 For improved readability, we employ the term 'first birth risks' although the multivariate analysis deals with first conception risks.

11 Same as in the figure 4, school degrees were constructed using the highest level at the time of interview. In practice, school degrees are earned at such an early age that they reflect the educational level at an age before a woman enters her 'reproductive period'.

12 Instead of secondary school degrees, we could have distinguished between respondents with a vocational training and a university degree. We decided to use school degrees instead of tertiary degrees for several reasons. First, tertiary

degrees had been surveyed in an ambiguous fashion in the German FFS. Several East German respondents reported that they had received a 'Fachhochschulabschluss', even though the former system of the GDR did not provide such kind of a degree. Second, school degrees are earned early in life, but nevertheless affect subsequent employment and educational chances. Since they are already fixed at an early age, one could claim that they are fairly exogenous to fertility. In other words, a woman with a high preference for children might be reluctant to enter university education. This would entail that fertility choices affect educational choices. Issues of reversed causation should matter to a much lesser extent to secondary school degrees. Finally, it would have been misleading to employ secondary education together with tertiary education. The secondary and the tertiary educational system were strongly interwoven in East and West Germany. As such, both variables are highly related and pick up similar characteristics.

13   The relative risk for 'high level' compared to 'low level' is calculated as follows: 0.60/1.18.