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Comparing East and West Germany before Reunification

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Comparing East and West Germany before Reunification

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Women's Fertility and Employment Decisions under Two Political Systems – Comparing East and West Germany before Reunification

Abstract

Over the last decades fertility rates have decreased in most developed countries, while female labour force participation has increased strongly over the same time period. To shed light on the relationship between women's fertility and employment decisions, we analyse their transitions to the first, second, and third child as well as their employment discontinuities following childbirth. Using new longitudinal datasets that cover the work and family life of women in the Federal Republic of Germany (FRG) and the German Democratic Republic (GDR) allows for taking into account two political regimes and drawing conclusions about the relevance of institutional factors for fertility and employment decisions. Our results suggest that in both parts of Germany women's probability of having a first child is negatively correlated with both employment and educational achievement. Regarding second and third birth risks, this negative correlation weakens. Analysing women's time spent out of the labour market following childbirth we find that in the East almost all mothers return to work within 18 months after birth. In the West, however, this proportion is much smaller and at the age when the child starts nursery school or school, women re-enter the labour market at higher rates. These results point to a strong influence of institutional circumstances, specifically the extent of public daycare provision. A multivariate analysis reveals a strong correlation between a woman's employment status prior to birth and her probability of re-entering the labour market afterwards.

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1. Introduction

In most European countries female labour force participation has increased remarkably during the last three decades. At the same time, fertility rates have declined and are now essentially below the replacement rate all across Europe (cf. Eurostat 2009, OECD 2002). The conflicting developments of fertility and female labour force participation are often interpreted as a negative relationship between these variables (e.g. Becker 1993, Willis 1973). On the one hand, a woman's employment raises her opportunity costs of childrearing and has a negative impact on her probability of giving birth to a child. Mainly highly educated women with high income from labour earnings should therefore have an incentive to forgo parenthood or postpone it. On the other hand, the birth of a child leads women to interrupt their career or even withdraw from the labour market to take care of their children. Thus, women with children are characterised as a group with a reduced labour market attachment.

In recent years, however, some Scandinavian countries – notably Sweden – showed both a high female participation rate and a relatively high fertility rate. Thus, it appears that under certain institutional conditions women do seem to be able to reconcile work and motherhood, such that the negative relationship between fertility and employment trends observed at the country level must not necessarily be the case. In Germany, which is characterised by both low fertility and comparatively low labour market attachment of women, especially mothers, several policies have been introduced in recent years to counteract that trend.[2] However, whereas child benefits and paid parental leave have been increased, a lack in the supply of public daycare for children up to the age of three still exists.

Using a new longitudinal dataset on women born between 1939 and 1945, this paper analyses the fertility and employment behaviour of women in the Federal Republic of Germany (FRG) and the German Democratic Republic (GDR). We observe women until retirement in the

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[2] Cf. BMFSFJ (2009) for an overview of recent family policies in Germany and, in particular, the discussion and evaluation of the new parental leave regulation in Kluve and Tamm (2009a).

year 2004 and 2005 respectively, i.e. effectively covering the work and family situations of German women over the second half of the Twentieth Century. In particular, this allows for taking into account the two different political regimes of East and West Germany over most of our observation period, especially during that time of women's lifecycle when fertility decisions are made. Behavioural differences between East and West could then be an indicator for the relevance of institutional factors in this context.

In the empirical analysis, we first give a comparative overview of fertility behaviour of women in East and West Germany, analysing the determinants that affect a woman's decision to have a child. The second part focuses on the discontinuities in women's employment spells due to childbirth. In addition to a comparison between times spent out of the labour market of mothers in East and West Germany, the factors driving the decision to return to work are analysed.

Section 2 gives some insight into the economic theory of fertility and employment and provides a brief overview of the institutional background in the former FRG and the former GDR. We also discuss existing evidence for Germany and other European countries. The data we use are presented in section 3, along with a description of the event history method used in the empirical analysis. Results are discussed in section 4, and section 5 concludes.

2. Fertility: Theory and Evidence

2.1 Theoretical and institutional background

The economic theory of fertility is based on the assumption that employment and childrearing are alternative activities. By maximising her own benefit a woman has to decide between the two. Which alternative she chooses mainly depends on her opportunity costs of childrearing (Becker 1960, Willis 1973). Highly educated women with high income face the highest opportunity costs of childrearing and should thus have the greatest incentive to forgo parenthood or postpone it to more mature ages, in order to avoid a regression in their career paths.

In contrast, unemployed or less qualified women, whose opportunity costs of childrearing are relatively small, are expected to exhibit a higher fertility rate (Liefbroer and Corijn 1999).

While employment and education are assumed to have a negative impact on a woman's fertility behaviour, they are conversely assumed to have a positive effect on her probability to return to the labour market after childbirth. Highly educated women with high income should have the greatest incentive to return to the labour market relatively soon after childbirth, whereas unemployed or low educated women should have smaller incentives. Therefore, it is assumed that a woman's probability of re-entering the labour market increases with her potential loss of human capital and her opportunity costs of childrearing, respectively (Joesch 1994).

In addition to individual characteristics, the institutional background in a country – such as parental leave and maternity protection regulations, as well as availability of public daycare – likely influences the fertility and employment behaviour of women. The following empirical analysis is based on women who have spent the fertile part of their life (mainly the 1960s and 1970s) in Germany before reunification. As GDR and FRG differed notably in their family policies and labour market institutions, women in either part of the country could be expected to show differences in their fertility and employment behaviour.

The institutional framework in the FRG was designed to facilitate the traditional gender roles, i.e. women predominantly acted as mothers and housewives, while men were seen as "breadwinners" (Trappe and Rosenfeld 2000). The tax system of "income splitting"[3], the coverage of married women by national health insurance as well as their entitlement to a widow's pension created little incentive for married women to get back to work after childbirth. Furthermore, returning to work after childbirth was hampered by the absence of parental leave regulations, which were introduced for the first time in 1979. Before 1979, maternity protection for mothers

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[3] "Income splitting" is a system of tax relief related to marital status, in situations where one spouse has considerably higher earnings than the other. The basic idea is to shift some of the taxable income to the low wage earner, and thus shifting the high wage earner to a lower tax bracket, reducing total tax payment of the household.

only lasted up to eight weeks after childbirth. However, public day care for children aged up to three years almost did not exist in West Germany, so that mothers who wished to return soon had to rely on paternal care or care in social networks. Prior to the German educational reform ("Bildungsreform") in the 1970s, childcare for children aged three to six was only provided for about 30 to 40 per cent of all children. Afterwards, the supply of places at nursery schools increased remarkably. In 1996, a constitutional right to a part-time place at a nursery school was introduced (Hank, Kreyenfeld and Spieß 2003). However, still in the 1990s, only 14 per cent of the places at nursery schools in West Germany provided full-time care (Kreyenfeld 2001).

Whereas the aim of social policies in the FRG was to allow women to stay out of the labour force after childbirth, integrating women and mothers into the labour market was the major public policy goal of the GDR. Low wage levels and the absence of a widow's pension created incentives for women to stay employed. In contrast to West Germany, where part-time employment played a decisive role for women and especially mothers, East German women were, due to lack of part-time positions, drawn into full-time employment (Kreyenfeld 2000, 2001).

In the 1960s, the government of the GDR realised that the high labour force participation of women was associated with a decreasing fertility rate and thus introduced an array of family policies targeted at supporting mothers in their work-life balance (Trappe and Rosenfeld 2000). One fundamental policy in this context was the establishment of a comprehensive network of public daycare. At the beginning of the 1970s, one third of the children aged up to three had access to full-time daycare. In subsequent years, places at nurseries continued to be expanded considerably, until a provision rate of 80 per cent was reached before reunification. The same applies to the provision rate for places at nursery schools, which increased from 65 per cent in the early 1970s to full coverage in 1989. Additionally, some structural differences between the public child care system in the FRG and GDR existed: While public daycare in West Germany was predominantly part-time care, the daycare system in Eastern Germany contained full-time care for

all children, flexible opening hours as well as meals at lunchtime (Kreyenfeld 2001, 2004, Trappe and Rosenfeld 2000). A further policy aiming at integrating female employment and childrearing in the GDR was the introduction of the "baby year" (Babyjahr) in 1979 which allowed mothers to take one year of paid parental leave after the birth of a second or third child. In 1989, the "baby year" was extended to also cover first births (Kreyenfeld 2001, Trappe and Rosenfeld 2000).

2.2 Evidence for Germany and Europe

Previous studies for several European countries, mainly focusing on individual characteristics in analysing fertility and participation decisions, conclude that employment has a negative effect on women's decision of giving birth (Liefbroer and Corijn 1999 and Kalwaij 2000 for the Netherlands; Liefbroer and Corijn 1999 for Belgium; Hoem and Hoem 1989 and Hoem 2000 for Sweden). For Germany, Kreyenfeld (2001, 2004), Dornseiff and Sackmann (2003), Kreyenfeld and Mika (2006), Schröder (2006) and Bernhard and Kurz (2007) analyse how a woman's employment situation influences her probability of giving birth. With the exception of Kreyenfeld (2004), who finds a reduced first birth risk for East German women not participating in the labour market, all studies conclude that the probability of childbearing is lower for employed women than for women not employed at the time of conception. However, the lowest transition rates to the first and the second child respectively arise for women who are still in education and therefore face the highest opportunity costs (Hank, Kreyenfeld and Spieß 2003, Kreyenfeld 2000, 2001, 2004, Schröder 2006).

Moreover, a woman's educational achievement affects her fertility behaviour. While Baizán and Camps (2005) for Spain, Kalwaij (2000) for the Netherlands as well as Hank, Kreyenfeld and Spieß (2003), Kreyenfeld (2000, 2001, 2004) and Schröder (2006) for Western Germany find that educational attainment has a negative impact on first birth risks, the results for East Germany are contradictory: Hank, Kreyenfeld and Spieß (2003) and Kreyenfeld (2001, 2004)

find no significant effect of education on fertility, but Kreyenfeld (2000) finds a positive one.

In addition to country-specific analyses, several cross-national studies analysing the influence of institutional factors on the fertility behaviour of women have been conducted. Apps and Rees (2001), Adséra (2004) as well as Seyda (2003) conclude that countries that support women in combining work and family are able to weaken or even reverse the negative relation between employment and fertility, other than countries not offering such support. Besides parental leave regulations, the flexibility of the labour market and the tax system in a country, and especially the availability of childcare have an important influence on the compatibility of work and family and therefore on the fertility behaviour of women.

Moreover, numerous studies – including Gustaffson et al. (1996), Dex et al. (1998), Gustafsson, Kenjoh and Wetzels (2001), Pylkkänen and Smith (2004), Kenjoh (2005), Pronzato (2005, 2007), Paull (2006), Rönsen and Sundström (1996) – have analysed the determinants of labour market participation after childbirth in different European countries. Almost all of these studies find the highest probability of returning to the labour market for those women who had been employed before giving birth. Only Gustafsson, Kenjoh and Wetzels (2001) find no impact of a woman's employment situation in Sweden, and Pylkkänen and Smith (2004) even find a significantly higher probability for formerly unemployed women in Denmark. For Germany, Gustaffson et al. (1996), Ondrich, Spieß and Yang (1996, 2001), Hank and Kreyenfeld (2000), Gustafsson, Kenjoh and Wetzels (2001), Büchel and Spieß (2002), Bender, Kohlmann and Lang (2003), Weber (2004) and Kenjoh (2005) support the findings of the European studies.

Furthermore, the accumulated human capital (as measured by educational achievement), work experience, and income are factors that influence a woman's decision about returning to the labour market. With the exception of Gustafsson et al. (1996) for Sweden and Gustafsson, Kenjoh and Wetzels (2001) for the Netherlands, Sweden, and Germany who cannot find any impact of education on the transition rate to employment, all studies indicate that women with the highest

investments in human capital have the biggest incentives to return to the labour market after childbirth and therefore show the highest transition rates as well.

Besides such similarities, also differences between countries exist. Gustafsson et al. (1996), Gustafsson, Kenjoh and Wetzels (2001) and Pronzato (2005, 2007) show that countries which differ in their institutional background (especially regarding parental leave regulations, opportunities of part-time employment and public child care) also show differences regarding mothers' transition rates from taking care of their child back to work. Additionally, Gustafsson et al. (1996), Ondrich, Spieß and Yang (1996), Bender, Kohlmann und Lang (2003) as well as Kenjoh (2005) find changes in the employment behaviour of women within a country over time.

3. Data and Method

We use a new longitudinal dataset on individuals receiving statutory pension in 2004 or 2005 for the first time. These data contain monthly information about an insurant's employment history from the first appearance in the statutory pension insurance until retirement. This includes precise information on women's time spent out of the labour market due to the birth of a child and therefore enables us to investigate the employment behaviour of women around childbirth. In addition, we are able to conduct separate analyses for women living and starting a family in East and West Germany, under the old regimes. Differences in woman's behaviour could then be an indicator for the relevance of institutional factors in this context.

3.1 Data

The sample for the empirical analysis is extracted from the *Scientific Use File Vollendete Versichertenleben 2004 (SUFVVL2004)* and the *Scientific Use File Vollendete Versichertenleben 2005 (SUFVVL2005)*. The *SUFVVL2004* (*SUFVVL2005)* contains a 5-per cent-sample of all individuals receiving statutory pension in 2004 (2005) for the first time. Merging the two data sets

generates monthly information for 77,047 individuals, of which 39,707 are women. An entitlement to a pension implies previous contribution payments to the statutory pension insurance for at least 5 years, typically accruing from employment subject to social security contributions. In addition to this, individuals receiving benefits from the Federal Employment Agency or sickness benefits are compulsorily insured by the German pension scheme. The data do not, however, cover persons who have been employed as civil servants or agricultural workers or have been a member of a pension scheme for a professional group all their working life (Kreyenfeld and Mika 2006).

The data comprise demographic characteristics of the insured person as well as information about the year and month of birth of his/her children. Information about an individual's marital status, however, is not included, so that a connection to a potential partner cannot be established. Information about an individual's highest level of education arises from the annual report of the employer and is recorded since 2000. Thus, an education variable is only available for those who were employed during the last few years before retirement. We consider this – likely selective – group separately in the analysis.

Moreover, the data contain monthly information about an individual's employment history from the first appearance in the statutory pension insurance to retirement, i.e. essentially covering the entire working career on a month-by-month basis. Not only periods of employment are recorded, but also labour force states such as schooling, vocational training, unemployment, and particularly periods of child care. A distinction between full-time employment and part-time employment, however, cannot be made. Additionally, information about an individual's monthly "earning points" is included. One earning point per year implies that a person receives the average annual income of all insurants in the statutory pension insurance. The monthly earning points therefore reflect an individual's relative earnings situation within this month.[4]

Kreyenfeld and Mika (2006) compare the *SUFVVL2004* with the population statistics and

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[4] Note that wages are censored above the social security contribution ceiling. Women's wages at young ages, however, will hardly be affected by censoring.

find that 5 per cent of the West German and 1 per cent of the East German women are not included in the data due to a short period of employment. In West Germany, these women are therefore assumed to have a higher number of children on average, so that the average number of children in the *SUFVVL2004* (and potentially in the *SUFVVL2005* as well) could be underestimated. Furthermore, women born after 1939 (1940), i.e. women who retired early, are underrepresented in the *SUFVVL2004* (*SUFVVL2005*). In order to receive a pension before reaching the statutory retirement age of 65 years, women had to be employed for at least 15 years and pay contributions to the statutory pension for at least ten years after the age of 40. Thus, they represent a selective population more strongly attached to the labour market and with a smaller number of children, a fact which has to be taken into account in the analysis.

Another data issue concerns a legal provision that allowed West German women to make use of a reimbursement after marriage ("Heiratserstattung"). Until 1967, female insurants getting married were entitled to receive a pay-out of their so far accumulated insurance contributions. Therefore, women who made use of this entitlement and never returned to employment afterwards are not included in the data. Women who received a pay-out and returned to the labour market later on are included, but show missing values for the period of pay-out. However, until 1972 these women were also entitled to settle repayments for their refunded insurance contributions and that way retrieve their pension claim. Indeed, the proportion of women making use of such repayments is not known, but as the conditions for repayments have been particularly favourable (see subsequent comments), a high usage can be assumed (Kreyenfeld und Mika 2006). Thus, the vast majority of the German population should be covered by the statutory pension insurance data.

A major difficulty in connection with these repayments concerns the correctness of the earning points data of women. Repayments could be made for a part or the whole period of pay-out, so that only these times could then be refilled. Due to deflation and a valuation of the repayments with the then average pay it was thereby profitable to settle repayments in the

maximum amount of the social security contribution ceiling for times in the distant past. In the data the information about the income of West German women settling repayments do therefore not comply with their actual income within this time, but will be overestimated. According to Stegmann (2006), the proportion of women making use of repayments amounts to 12 per cent. Unfortunately, an identification of these women in the data is not possible. However, assuming that due to the conditions for repayments being particularly favourable all these women settled a repayment in the maximum amount and that only a marginal proportion of women below the age of thirty actually realises such a high income, women setting repayments can be identified in the data set by offering earning points on or above the social security contribution ceiling. In West Germany, 3,785 women with earning points in the amount of the social security contribution ceiling for at least one month between 1953 and 1967 can be found. This corresponds to 11.4 per cent of all women, i.e. the vast majority of the virtual 12 per cent can be identified. This makes it possible to include the earning points of women who did not make use of repayments (in the maximum amount) in our analysis.

3.2 Empirical Method

We investigate women's transitions to the first, second, and third child as well as their transitions into employment after childbirth. The analysis is restricted to women born between 1939 and 1945 in Germany who are German citizens and residents. Women giving birth under the age of 14 are excluded. A classification of East and West Germans is based on a variable indicating an individual's lifetime share spent in East Germany. Following Stegmann (2006), a woman is allocated to East Germany, if she has spent at least 30 per cent of her lifetime there. In the empirical analysis, a woman's employment situation as well as her earning points are included as covariates.

The data contain five employment states, (i) education (schooling, university or vocational

training), (ii) employment, (iii) unemployment, (iv) illness, and (v) inactivity. "Employment" covers both employment subject to social security contributions and self-employment. "Inactivity" is a residual category covering the remaining employment situations mainly consisting of periods for which no information about the insured is available. As unemployment virtually did not exist in the former GDR, it is only included for West Germany. The earning points are annualised and summarised to six categories that reflect an individual's income in percentage of the average income of all persons insured. Since earning points do not only accrue from employment, but also from other activity states such as unemployment or child care, they are solely incorporated for times in which employment subject to social security contributions or self-employment actually occurs.[5]

Table 1 contains a descriptive analysis of women's employment behaviour around childbirth in East and West Germany. The bottom panel of the table shows the analysis for the subsample with information about the level of education. East and West German women differ sharply in their labour market participation, and this difference increases with the number of children: Whereas 85 per cent of the East German and 67 per cent of the West German women are employed before their first birth, this relation turns out to be 63 per cent (East) to 15 per cent (West) before the birth of the third child. In West Germany, a much higher percentage of women receive an above-average income before the birth of their first child. It can be assumed that, for the most part, these women made use of repayments for reimbursements. Thus, when analysing the fertility and employment behaviour of West German women around first childbirth, only women who did not set repayments (in the maximum amount) are included. For an analysis of second and third birth, however, the whole population is included.[6]

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[5] A detailed description of the variables can be found in table A1 in the Appendix.

[6] Comparing the subgroup of women not making use of repayments with the whole West German population at the time of second and third pregnancy hardly shows any differences in the employment behaviour of these groups. Furthermore, it can be assumed that only a small percentage of women got married after the birth of their first child.

Looking at the bottom panel, as expected, West German women with educational information available show a considerably higher labour market attachment than all West German women, whereas East German women with educational information differ hardly from the whole population.

< Table 1 about here >

Our empirical approach uses event history analysis suitable for the analysis of transitions between several states, such as women's transitions from childlessness to the birth of the first child[7], or their transitions into employment after birth. The period between two events is typically referred to as a spell, while the duration of a spell is described by a nonnegative random variable T. If no event occurs within the observation period and the exact duration of the spell is unobserved, the spell is right-censored. The probability distribution of duration can be specified by the cumulative distribution function which expresses the probability that an event occurs up to time t:

$$F(t) = \Pr(T \leq t). \tag{1}$$

The corresponding density function is $f(t) = dF(t)/dt$. Additionally, the probability distribution of T can be specified by the survivor function which constitutes the complementary probability to the distribution function:

$$S(t) = 1 - F(t) = \Pr(T > t). \tag{2}$$

The distribution and survivor functions express the unconditional probability of an event taking place. The hazard rate

$$\lambda(t) = f(t)/S(t) = \lim_{\Delta t \to 0} \left(\frac{\Pr(t \leq T < t + \Delta t \mid T \geq t)}{\Delta t} \right) \tag{3}$$

depicts its conditional probability, i.e. the probability that an event takes place at time t, provided

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[7] To be precise, when speaking of "transitions to birth" we actually look at "transitions to conception", i.e. we date forward births by 9 months. Otherwise, our estimates of exit rates from inactivity would not adequately consider the fact that women expecting to give birth withdraw from the labour force at some point in time prior to birth.

that no event has occurred before.

As a functional form for duration the exponential distribution with parameter $\gamma > 0$ and $\lambda(t) = \gamma$ is chosen. To allow for flexibility of the hazard rate, we use a piecewise constant model which comprises a division of the baseline hazard into several predefined intervals. Within an interval, the hazard rate is constant, but it can vary between the intervals.[8] The model is estimated using a likelihood function. Let the indicator variable d_i be 1, if the i-th spell is uncensored and 0, if censored. Then the likelihood function is

$$L(\theta) = \sum_{i=1}^{n} d_i \ln f(t_i, \theta) + \sum_{i=1}^{n} (1 - d_i) \ln S(t_i, \theta). \qquad (4)$$

The likelihood function takes the value of the density function $f(t_i, \theta)$, if the spell is completed at t_i, and the value of the survivor function $S(t_i, \theta)$, if the spell is censored at t_i (Kiefer 1988). Regarding women's employment interruptions, the status of child care for one child does not only end with a return to work, but also with the birth of another child. Thus, we estimate a competing risks model that allows for a separate analysis of transitions into different states. The random variable T_j, $j = 1, \ldots, K$ describes the time to a transition into the j-th of K states. For every individual, only the transition occurring in the shortest distance can be observed, i.e. $T = \min(T_1, \ldots, T_k)$. An indicator variable δ specifies which of the K risks had occurred: $\delta = j$ if $T = T_j$. Thus, the hazard rate for the j-th risk is equal to

$$\lambda_j(t) = \lim_{\Delta t \to 0} \left(\frac{\Pr(t \leq T < t + \Delta t, \delta = j \mid T \geq t)}{\Delta t} \right). \qquad (5)$$

Assuming that the competing risks are independent of each other, a separate analysis of transitions into different states is possible (Klein and Moeschberger 2003).

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[8] In the following description, the piecewise constant model is disregarded.

4. Empirical Results

4.1 Fertility Behaviour

A first assessment of the fertility behaviour of women in East and West Germany is provided by estimated survival functions of the transitions to the first, second, and third child. Figure 1 shows the percentage of women being childless at a specific age. As information about a woman's month of birth is not included in the data, the January of the year of her 14th birthday is used as starting point. Thus, women's ages at first birth are overestimated by half a year on average. At the age of 23, half of the East German women have at least one child, whereas West German women reach this percentage only at the age of 25. The percentage of women remaining childless until the age of 45 amounts to 11 per cent in the West and 8 per cent in the East.

< Figures 1, 2, 3 about here >

When examining second and third births, the period between first and second birth and between second and third birth is used as analysing time. Figure 2 displays the survival function of the transition to the second child and shows that West German women do get a second child at higher rates and sooner after the birth of their first child than East German women. The higher transition rate of West German women also becomes apparent when examining the transition to the third child (figure 3): While 36 per cent of the East German women with two children get another, 44 per cent of the West German women do so.

To analyse the determinants influencing fertility we estimate the model described in section 3.2 for the transition to the first, second, and third child separately. The analysis is related to Kreyenfeld and Mika (2006) who use the *SUFVVL2004* only, but extends it by including earning points of West German women in the estimations and by an additional analysis for women with information about the highest level of education. The employment states as well as the earning points of women are included as time-varying covariates. When analysing the transition to the second and third child, women's ages at first birth are additionally controlled for. Moreover, a

variable indicating whether the first birth was a twin birth is included for the transition to the third birth.

Estimation results for the transition to the first, second, and third child are shown in table 2. In West Germany, unemployment and inactivity have a strong positive impact on the transition to the first child. Compared to women in employment, unemployed women have a 54 per cent and inactive women an 88 per cent higher risk of first birth. In East Germany, however, the effect of inactivity on first birth risks is not significant. In both parts of Germany, women who are still in education show the smallest transition rates to the first child. Their first birth risks are reduced by about 65 per cent (West) and 58 per cent (East), respectively, compared to employed women. Furthermore, serious illness has a significant negative impact on the transition to the first child in West Germany.

< Table 2 about here >

Regarding the effect of women's wages, considerable differences between West and East Germany emerge. Whereas in the West a woman's income is significantly negatively correlated with the first birth risk, for East German women with an above-average income the chance of giving birth to a first child is increased by more than a quarter compared to women with a medium income. To explain this pattern, one could argue that East German women were better able to reconcile work and family and could therefore return to work soon after childbirth. Thus, their high wages did no longer increase their opportunity costs of childrearing, but positively contribute to the household income and hence to their decision about starting a family (Kreyenfeld 2001).

Estimates for women with educational information are displayed in table 3. In both parts of Germany, there is a negative relationship between educational attainment and the transition to the first child. Compared to the reference group, having a university degree reduces first birth risks by 30 per cent (West) and 21 per cent (East), respectively. On the contrary, West German women having solely a secondary school level show increased first birth risks compared to the reference

18

group. The results suggest that educational achievement and employment on the one hand and fertility on the other hand are negatively associated with each other. Particularly in West Germany women with the most unfavourable employment prospects, i.e. women being unemployed or having a low educational level and income show the highest transition rates to the first child. Women, however, with high education or who are still in education face the highest opportunity costs of childrearing and are most likely to postpone parenthood.

< Table 3 about here >

Columns 2 and 5 of table 2 show the estimation results for the transition to the second child. In East Germany, none of the employment states has a significant effect on women's transitions to the second child. In West Germany, women not participating in the labour market show the highest transition rates to the second child, whereas women being in education show the lowest ones (marginally significant). In line with first birth risks, the varying effects of women's income on the decision about a child in East and West Germany can be seen.

A striking result appears for the subsample with educational information in West Germany (column 2 of table 3), where in addition to women with the lowest educational level, those having a university degree show the highest transition rates to the second child. A positive relationship between educational achievement and second birth risks in West Germany is also found by Huinink (1995), Kreyenfeld (2001), Köppen (2004) and Bernhard and Kurz (2007). Mothers with a university degree are often argued to constitute a selective population: Despite their comparatively high opportunity costs of childrearing, they gave birth to a first child and therefore seem to be very family oriented. Thus, they are assumed to get a second child with a higher probability compared to women being less educated. However, such a "polarization of fertility behaviour" (Kreyenfeld 2001) cannot be confirmed by this analysis, since the proportion of women having a university degree does not increase with the number of children (see table 1). As in most studies the positive impact of education on second birth risks vanishes when controlling

for the educational achievement of the partner (e.g. Huinink 1995, Köppen 2004, Kreyenfeld 2001), assortative mating seems to be a more adequate explanation: Due to educational selection into marriage, highly educated women often have a highly educated partner who, at the same time, has the earnings potential to support a larger family.[9] However, using event history analysis, a distinction between a variable´s impact on the probability and the duration of an event taking place cannot be made. Thus, it can also be argued that highly educated women do not get a second child more often, but sooner after first birth in order to minimise the period of time spent out of the labour market. In East Germany, however, a woman's educational achievement has no impact on the transition to the second child (column 4, table 2).

Finally, estimates for the transition to the third child are shown in columns 3 and 6 of table 3. With exception of inactivity, which is positively correlated with third birth risks in both parts of the country, none of the employment coefficients is statistically different from one. The same applies to the coefficients concerning women's wages. Only women in the lowest income categories show a significantly increased transition rate to the third child.[10] In accordance with results for the transition to the second child in West Germany, women with the lowest and the highest educational achievement show the highest transition rates to the third child in both parts of Germany (see columns 3 and 6 of table 3).

While the empirical findings of the transition to the second and third child are largely coherent with the results of the analysis of first birth risks, it can also be seen that the decision about starting a family considerably differs from the decision about further children. Women's employment status, income and educational attainment do affect the transition to the first child, but these effects weaken or become insignificant when regarding second or third birth risks. It could be argued that the decision about further children does no longer depend on a woman's current

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[9] For an analysis of assortative mating in Germany cf. Blossfeld and Timm (2003) or Schmidt and Winter (2009).

[10] Additionally, West German mothers getting twins at first birth show a considerably increased transition rate, whereas this effect is not statistically significant in the East.

employment situation, but is mainly affected by the employment and financial situation of her partner (Köppen 2004, Kreyenfeld 2001). However, it must generally be noted that women's fertility decisions are not only affected by their employment situation prior to birth, but also some type of reverse causation is possible. A high fertility rate of women with the lowest employment prospects, for example, could also be caused by the fact that – by anticipation of their future family planning – more family oriented women tend to lower their human capital investments and seek more mother-friendly jobs (Budig and England 2001, Ziefle 2004). Thus, the direction of the causal relationship between employment and fertility behaviour is ambiguous.

4.2 Female Employment Behaviour after Childbirth

a. Patterns of returning to the labour force

In order to analyze the duration of women's withdrawal from the labour force *postpartum* we estimate hazard rates of labour market transitions after childbirth for East and West Germany. A woman is considered to return to the labour force if she moves into any employment status other than child care (such as education, employment, unemployment) for the first time after birth. As periods of child care are included in the data for a maximum of ten years, the observation period is restricted to this time.[11] As in the previous section, we analyse transitions into employment after birth of the first, second, and third child separately. Women who have a further child before returning to the labour market are treated as right-censored. Estimation of this competing risks model assumes that both risks – returning to the labour market and getting a further child – are independent of each other. If, however, women either include their future family planning in their

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[11] Although periods of child care are taken into account for ten years, a small proportion of (West German) mothers shows missing values within this period. Unfortunately, the explanation for these missing values is unknown. Thus, two specifications were estimated. First, women showing missings within the period of child care were considered to return to the labour market at that time. Second, times of missing values were added to the period of child care, which ended only once a transition into another employment state occurs. Since estimates from these two models differ very little, only the results of the first specification are reported.

decision about returning to the labour market or postpone the birth of a further child to first continue their career, this assumption may lead to biased estimates. We therefore conduct an additional analysis for women getting their last child (for which we exclude women with more than three children[12]).

Figures 4 and 5 show the hazard rates of the transition into employment after the birth of the first, second, third and last child for West and East Germany separately. In the West, within ten years after first childbirth (top panel) 45 per cent of the women return to the labour market, while in the East 87 per cent do so. In addition to the particularly high hazard rates between 6 months and 18 months *postpartum*, there is an apparent increase in transition rates after three years and 7.5 years in West Germany. This pattern would be in line with the fact that, due to lack of childcare facilities for children up to the age of three, a high proportion of West German mothers goes back to the labour market when their first child reaches nursery school age. Additionally, transition rates increase at the time when the child enters school.[13] In East Germany, a high proportion of mothers re-enters the labour market before their first child is aged one and a half years. Afterwards, however, an increase of the hazard rate cannot be detected. Thus, while West German women seem to be affected in their decision about returning to the labour market by the lack of public daycare, for East German women the possibility (perhaps also some pressure) to go back to work promptly after childbirth existed.

< Figures 4, 5 about here >

Looking at the second panel of figures 4 and 5, within ten years after birth of the second child, 40 per cent of West German women re-enter the labour market, relative to 87 per cent in the

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[12] In our data, 11 per cent of West German and 8 per cent of East German women with already three children have further children.

[13] In fact, if one considers that the average age at school enrolment in Germany has been six and a half years, an increase of the hazard rate one year later seems to be somewhat late. But as schooling hours, especially during the first year of school, have been rather irregular, it could be argued that mothers postponed their return to work until a stabilisation of the situation had occurred.

East. Compared to the first child, the increase of the hazard rate after three and seven years, respectively, is more pronounced in the West, which could be explained by the prevalence of the two-child family in West Germany: Two-thirds of the women having one child get a second one within the next six years (see figure 2), whereas this proportion falls to one-third after the second birth (see figure 3). Also in East Germany having a child of six years leads women to re-enter the labour force at higher rates. Thus, in spite of having access to public daycare, some proportion of East German mothers goes back to work only when their child enters school.

In West Germany 33 per cent and in East Germany 85 per cent of the mothers re-enter the labour market within a decade after the birth of their third child (panel 3). Thus, with an increasing number of children the proportion of mothers returning to work remains comparatively constant in the East, whereas it decreases in the West. In both parts of the country, most mothers re-enter the labour market before the child reaches the age of two and afterwards no increase of the hazard rate emerges. Whereas – subject to the availability of childcare facilities – most women try to go back to work after the birth of the first or second child as soon as possible, this is not necessarily the case after the third birth.

Finally, the bottom panel of figures 4 and 5 looks at hazard rates regarding the last child, after the birth of which 51 per cent of West German and 97 per cent of East German women re-enter the labour market within ten years. The trend of the hazards is similar to first births: While a slight increase of the hazard after three years and 7.5 can be observed in the West, this is not the case for the East. Again, in the West this pattern of returning to work is likely adapted to the availability of nursery school and school-starting age.

In sum, these results suggest that in West Germany mothers' probability of returning to the labour market is considerably affected by the age of the youngest child. Both our findings and those of previous studies (Bender, Kohlmann and Lang 2003, Weber 2004) support the hypothesis about the incompatibility of childrearing and employment in West Germany. Due to the lack of

childcare facilities, mothers were not able to return to employment until their child enters (nursery) school. However, this pattern might have also been exacerbated by society's prevailing model of the traditional male breadwinner and corresponding reservations against an employment of mothers, as they were expected to reduce or give up work to take care of their children. In East Germany, on the other hand, comprehensive provision of public daycare, the lack of financial coverage by the partner as well as social expectations regarding their continuous employment certainly contributed to mothers re-entering the labour market as soon as possible.

b. Determinants of returning to the labour force

Besides the patterns of return, we analyse the determinants of the probability that a woman returns to the labour market after childbirth. We focus on the births of the first and the last child. As time-constant covariates, women's employment states as well as their earning points 9 months before the respective birth are included. Additionally, the year of birth of the mother and that of her child are included as dummy variables. As above, we estimate additional specifications for the subsample with educational information.

Estimation results for employment transitions after birth of the first child are shown in columns 1 and 2 of table 4. As expected, a woman's employment status prior to birth is strongly correlated with her probability of re-entering the labour market *postpartum*. For West German women who are unemployed at time of first pregnancy, the probability of returning to the labour market after birth is reduced by almost two-thirds compared to employed women. The same applies to women not participating in the labour market. Compared to the reference group, their probability of returning to employment is reduced by 70 per cent in the West and 52 per cent in the East.

< Table 4 about here >

Moreover, East German mothers in education before birth show a transition rate that is

24

increased by 94 per cent, whereas this effect is not significant for West German mothers. Regarding the effect of women's wages, a positive relationship between income level and the probability of re-entering the labour market can be found in the East. Only women receiving an income of 20 to 40 per cent of the average income face a transition rate which is increased by 16 per cent compared to the reference group. West German women of this income category, however, show a returning probability which is reduced by 10 per cent. Besides this, women's wages have no significant effect in the West.

Estimation results for the subsample with information about education (columns 1 and 2 of table 5) show an increasing transition rate for women with university degree as well as for women with a high school diploma and a vocational training degree, for both parts of the country. The analysis so far therefore provides evidence that a woman's probability of re-entering the labour market is mainly affected by her employment status prior to birth. Women facing the highest loss of human capital during time out of the labour market – highly educated women with substantial income and women still in education – show the highest probability of returning to employment early after childbirth. In contrast, women not participating in the labour market or women earning lower incomes show a considerably lower probability of re-entering the labour market.

< Table 5 about here >

The estimated coefficients of the child's birth cohort are shown in figure 6, with the reference category representing women giving birth to their first child in 1965. Women's probability of re-entering the labour market in West Germany decreased from 1959 to 1971 and then stabilised until the mid-1970s. Afterwards, hardly any coefficients are statistically different from one. These findings are supported partly by Bender, Kohlmann and Lang (2003) who observe a downward trend in the return probability until 1986 with a brief stabilisation taking place in the mid-1970s. With exception of the considerably high transition rates for mothers in 1960, 1961 or 1974, none of the calendar time coefficients are statistically significant in the East. Hence, a trend

in the employment behaviour of East German women cannot be detected.

< Figure 6 about here >

As decisions about returning to the labour market or getting a further child could potentially depend on each other, we additionally analyse women's transitions to the labour market after birth of the last child. Estimation results are displayed in columns 3 and 4 of table 4. Again, a woman's employment status prior to birth is strongly correlated with her employment behaviour after birth. In both parts of the country, being unemployed or not participating in the labour market at time of conception has a strong negative impact on the probability of returning to the labour market. In contrast, East German women still in education show a transition rate which is considerably higher compared to employed women. In the West, no such effect is found. In both East and West, women's wages prior to birth are positively correlated with the probability of re-entering the labour market, but this effect is much more pronounced in the East.

Estimation results for women with educational information are shown in columns 3 and 4 of table 5. Similar to first births, having a high school diploma and a vocational training degree positively influences a woman's probability of returning to work in both parts of the country, whereas the positive effect of having a university degree is now only significant in the West.[14] In sum, a positive relationship between a woman's human capital and her probability of re-entering the labour market after birth of the last child can be shown.

Regarding the coefficients on number of children, a puzzling finding emerges: In East Germany, the more children a woman has, the higher her probability of going back to work after childbirth. The transition rate increases by 46 per cent for women with two children and by 54 per cent for women with three children, compared to women having one child. Hence, this finding

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[14] Regarding the results for West German women with information about educational attainment, the previously positive effect of women's wages is not significant anymore. However, an additional analysis without controlling for educational attainment for this subgroup shows results that hardly differ from these results, so the difference in the income effect can be traced back to the selectivity of the subsample.

contradicts the hypothesis that women with more children are less career-oriented and would return to the labour market with lower probability after childbirth.

A positive correlation between number of children and mothers' probability of re-entering the labour market is also found by Ondrich, Spieß and Yang (1996) and Weber (2004). However, since both do not analyse the birth of the last child but the birth of any child, a reduced transition rate into employment of women with one child could be explained by their higher probability of getting a further child. In our case, a different explanation is required. First, one can argue that some of the women deliberately decide to only have one child and therefore want to spend particularly much time with it, so that they go back to work comparatively late after childbirth. Furthermore, as this effect was found only for East Germany, it could be traced back to the fact that women's employment substantially contributed to the household income there. Thus, as financial strain grows with an increasing number of children, the exigency of mothers to return to employment and support their family financially also increases.

Finally, figure 7 shows the estimated coefficients for the child's year of birth to investigate any cohort dependence in the transition rates. Again, until the early 1970s a significant downward trend in women's probability of returning to employment after the last childbirth can be seen in West Germany, which is similar to the trend we found after the first birth. In addition to this, a decreasing return probability starting in the middle of the 1970s can be seen for East German women.

5. Conclusion

This paper analyses and compares the fertility and employment behaviour of women in the Federal Republic of Germany (FRG) and the German Democratic Republic (GDR). Apparent differences in their behaviour should then be an indicator for the relevance of institutional factors in this context. The analysis is based on the *SUFVVL2004* and the *SUFVVL 2005*, two longitudinal

data sets covering the entire working career on women born between 1939 and 1945 in Germany. Using event history analysis techniques, we investigate women's fertility behaviour as well as their return to work after childbirth.

Our estimates of women's transitions to the first child support the hypothesis of a negative relationship between employment and education on the one hand and fertility on the other hand. In both parts of the country, women facing less promising career prospects and the lowest opportunity costs of childrearing show the highest probability of starting a family (early in life). In contrast, this probability is lowest for women with the highest potential loss of human capital during an absence from the labour market, i.e. highly educated women and women in employment. Also regarding second and third birth risks, probabilities are higher for women facing the lowest opportunity costs of childrearing, although the influence of human capital characteristics weakens. Thus, the decision about further children seems to be affected by other factors as well, such as the employment situation of her partner, which we cannot explicitly control for.

The patterns of mothers' time spent at home after childbirth differ considerably between East and West Germany. In the East – regardless of the number of children – the majority of mothers return to work within one and a half years after birth, and generally return rates are much higher than in the West. This certainly points to the importance of comprehensive provision of full-time daycare, even for the very young children. Societal expectations regarding mothers' labour force participation might have also played a role.

In the West, the proportion of mothers returning is much smaller and decreases with the number of children. Additionally, a mother's probability of returning to the labour market is significantly affected by the age of her youngest child. Indeed, West German mothers seem to be most likely to return to a job at the points in time when the youngest child either starts nursery school (age three) or school (age six or seven). This pattern would be in line with institutional circumstances – no public daycare until age three, at best part-time nursery school until school

starts – but also with low societal acceptance regarding working mothers with young children.

Our multivariate analysis of the returning behaviour of women after birth of their first and their last child reveals a strong correlation between a woman's employment state prior to birth and her probability of re-entering the labour market afterwards. In both parts of Germany, women without employment or with a low income *prepartum* show the lowest transition rates back into the labour market *postpartum*. In contrast, women with high education and/or high income show the highest probability of returning to employment. The results on employment transitions are very similar for the first child and for the last child. That is, although in a woman's (work) life getting the first child and the last child constitute different points in time (for most women), the determinants that influence the decision to return *postpartum* seem to be almost the same.

Our data cover women who became mothers mainly in the 1960s and 1970s. The implications of our findings can thus not be fully extrapolated to the present situation, because since then several family policies have been implemented, which might have led to changes in fertility and employment behaviour. The most relevant policy measure in this context was the introduction and continuous extension of paid parental leave, incentivising women to become mothers and parents to increase child care efforts (Kluve and Tamm 2009a). The fact that our findings point to the importance of comprehensive provision of public daycare is reflected by increasing policy efforts over the last years to provide such daycare facilities on a broad scale. Still, 20 years after reunification, large differences in daycare provision between the former Eastern and Western parts exist.

Moreover, even though long job-protected maternity leave with high benefit entitlements contributes to a reduction in opportunity costs of childrearing for parents, women intending to return to work after childbirth are still hampered by the incompatibility of childrearing and employment in Germany. This is frequently due to the fact that the sufficiently flexible or part-time working arrangements that the mothers desire – often simply because only part-time daycare

is available – are not offered by employers (Kluve and Tamm 2009b). Hence, with a labour force participation rate of 44.3 per cent for mothers with children below the age of five, Germany still lags behind the rest of Europe (Bertelsmann Foundation, 2007). While in other European states such as France or the Scandinavian Countries appropriate family policies have been introduced over the last decades, the need to support mothers in their work-life balance became a matter of debate in Germany only during the last few years. Recently, the German Government has set the target of continuously expanding childcare facilities for children up to the age of three until a provision rate of one third is achieved in 2013 (Federal Government 2007). In light of our results on pre-unification data, this is clearly a step in the right direction.

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Figure 1: Percentage of women being childless at a specific age (survival function)
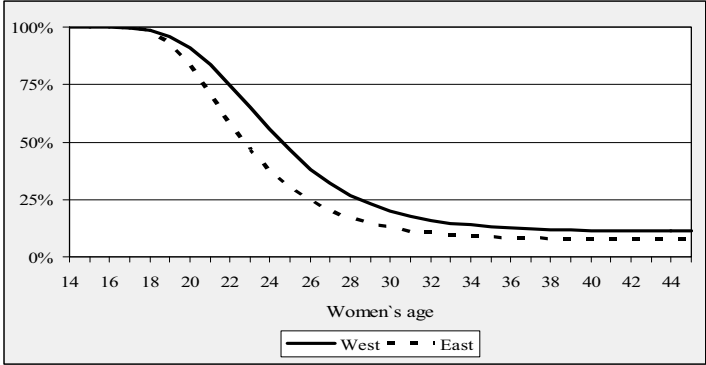
Figure 2: Percentage of women having two children depending on the age of the 1st child
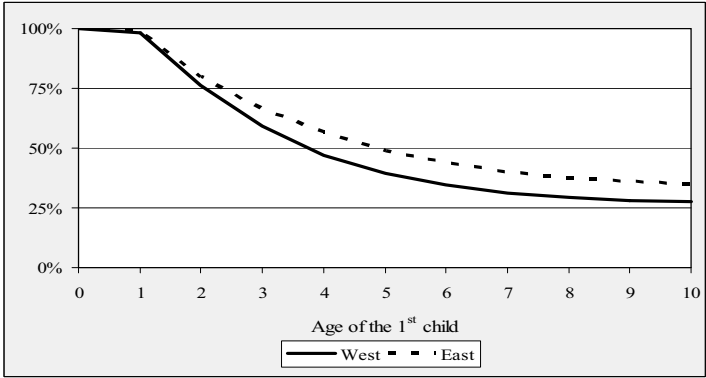
Figure 3: Percentage of women having three children depending on the age of the 2nd child
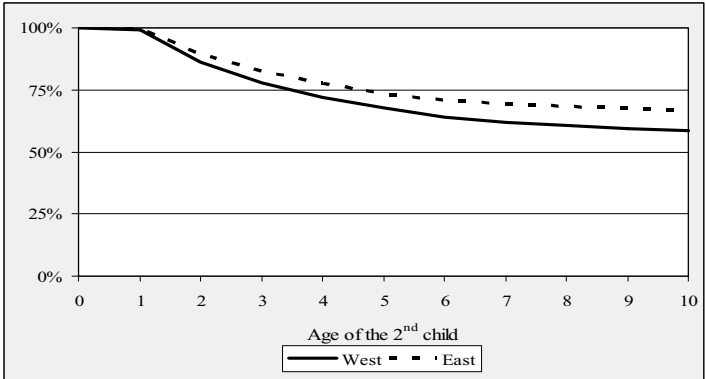
Source (Figures 1-3): FDZ-RV - SUFVVL2004/2005, own estimations.

Figure 4: Hazard rates of women's transitions into the labour market after 1st , 2nd, 3rd, and last birth (West)
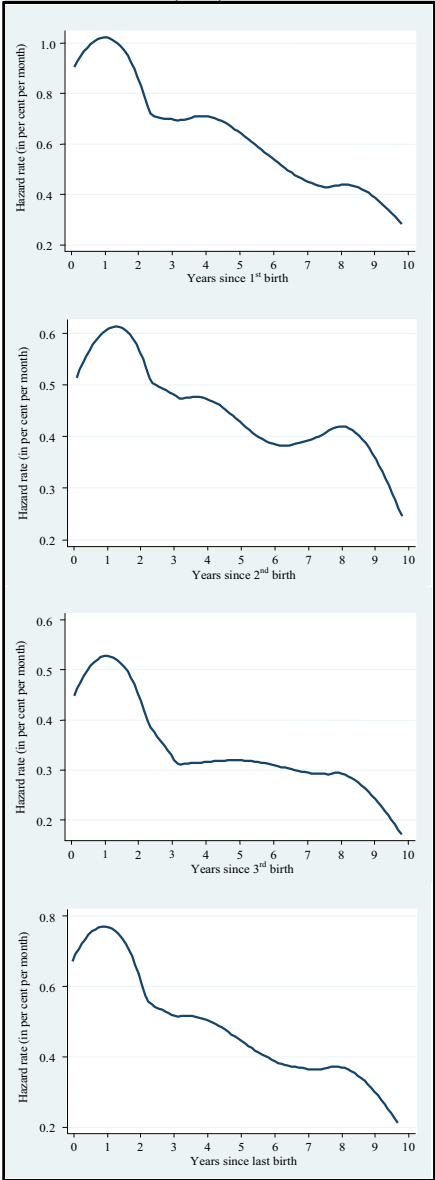
Figure 5: Hazard rates of women's transitions into the labour market after 1st , 2nd, 3rd, and last birth (East)

Source: FDZ-RV - SUFVVL2004/2005, own estimations.

Source: FDZ-RV - SUFVVL2004/2005, own estimations.

36
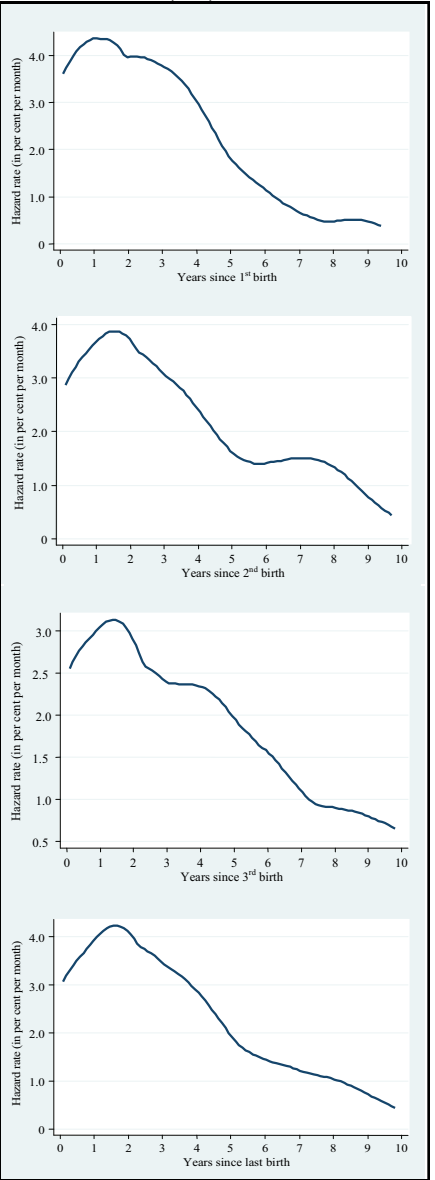
Figure 6: Women's relative risks of returning to the labour market after first childbirth depending on the child's birth cohort
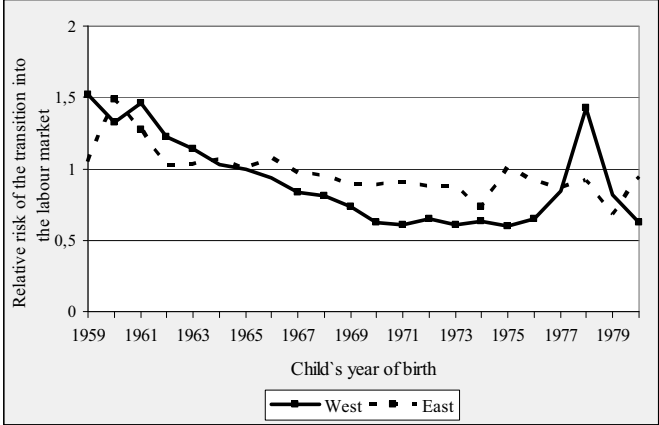
Notes: (1) Significant coefficients (5-per cent-level) are identified by a marking.

(2) Reference category: Women having their first child in 1965.

Source: FDZ-RV - SUFVVL2004/2005, own estimations.

Figure 7: Women's relative risks of returning to the labour market after last childbirth depending on the child's birth cohort
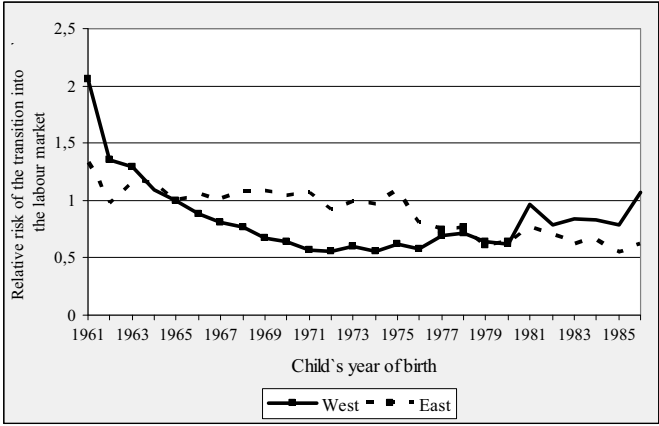
Notes: (1) Significant coefficients (5-per cent-level) are identified by a marking.

(2) Reference category: Women having their last child in 1965.

Source: FDZ-RV - SUFVVL2004/2005, own estimations.

Table 1. Descriptive Statistics

	All women					
	West Germany			East Germany		
	1st birth	2nd birth	3rd birth	1st birth	2nd birth	3rd birth
Employment state						
Education	2.41	0.12	0.05	11.18	1.86	0.27
Employment	66.62	21.93	14.82	84.52	72.21	63.27
Unemployment	2.75	0.31	0.33	0.00	0.00	0.07
Illness	0.15	0.09	0.09	0.37	0.51	1.07
Inactivity	30.55	77.54	84.71	3.92	25.43	35.33
Percentage of the average income						
0 to 20 per cent	1.71	3.39	6.07	1.08	3.34	5.27
20 to 40 per cent	7.49	21.00	27.73	4.32	10.66	15.60
40 to 60 per cent	19.48	29.32	29.84	11.75	21.45	25.71
60 to 80 per cent	26.58	22.56	18.31	32.72	28.60	26.77
80 to 100 per cent	20.50	12.70	10.30	33.24	21.08	15.81
100 to 140 per cent	12.87	8.76	6.25	14.55	11.96	8.96
140 per cent and more	11.36	2.27	1.50	2.34	2.91	1.90
Number of women	*18,207*	*17,480*	*7,666*	*5,912*	*4,145*	*1,500*

	Women with information about educational achievement only					
	West Germany			East Germany		
	1st birth	2nd birth	3rd birth	1st birth	2nd birth	3rd birth
Employment state						
Education	3.40	0.29	0.00	13.11	2.66	0.47
Employment	75.35	28.48	21.31	83.63	74.85	68.03
Unemployment	0.24	0.37	0.34	0.00	0.00	0.16
Illness	0.12	0.16	0.00	0.48	0.50	1.10
Inactivity	20.89	70.70	78.35	2.79	21.99	30.24
Percentage of the average income						
0 to 20 per cent	1.29	2.54	6.08	0.69	2.54	3.01
20 to 40 per cent	4.97	17,40	17.99	2.88	7.70	11.81
40 to 60 per cent	16.18	28.34	28.31	9.34	17.94	23.15
60 to 80 per cent	27.49	22.83	21.43	28.96	27.11	26.85
80 to 100 per cent	25.22	14.65	12.70	36.96	23.49	19.68
100 to 140 per cent	16.39	12.24	11.64	18.40	17.60	12.96
140 per cent and more	8.46	1.99	1.85	2.76	3.61	2.55
Highest educational achievement						
Secondary school level, no vocational training degree	21.02	26.39	34.89	12.50	13.48	18.11
Secondary school level, vocational training degree	74.07	69.44	61.10	69.10	69.39	67.87
High school diploma, no vocational training degree	0.50	0.57	0.62	0.34	0.40	0.31
High school diploma, vocational training degree	1.71	1.41	1.07	4.48	3.71	2.36
University (of applied science) Degree	2.67	2.19	2.31	13.62	13.03	11.34
	5,773	*5,105*	*1,774*	*2,944*	*1,996*	*635*

Note: Percentage of women being in a particular state 9 months before the respective birth.
Source: FDZ-RV - SUFVVL2004/2005, own estimations.

Table 2. Women's relative risks of the transitions to the first, second, and third child

	First birth		Second birth		Third birth	
	West Germany	East Germany	West Germany	East Germany	West Germany	East Germany
Employment state						
Education	**0.35*****	**0.42*****	**0.65***	**1.17**	**0.61**	**0.89**
	(-19.72)	(-18.48)	(-1.95)	(1.28)	(-0.97)	(-0.22)
Employment	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Unemployment	**1.54*****	-	**1.14**	-	**0.77**	-
	(2.82)		(0.92)		(-1.24)	
Illness	**0.59*****	**0.78**	**0.82**	**0.95**	**0.87**	**1.02**
	(-2.70)	(-1.18)	(-0.78)	(-0.22)	(-0.37)	(0.06)
Inactivity	**1.88*****	**1.14***	**1.68*****	**1.06**	**1.31*****	**1.37*****
	(25.81)	(1.91)	(14.74)	(1.19)	(3.82)	(3.91)
Percentage of the average income						
0 to 20 per cent	**1.24*****	**1.11**	**1.16**	**1.15**	**1.35****	**1.51*****
	(2.95)	(0.77)	(1.59)	(1.30)	(2.16)	(2.63)
20 to 40 per cent	**1.29*****	**1.21*****	**1.38*****	**1.23*****	**1.10**	**1.42*****
	(6.61)	(2.60)	(6.51)	(3.11)	(1.08)	(3.38)
40 to 60 per cent	**1.15*****	**1.12****	**1.18*****	**1.17*****	**1.03**	**1.23****
	(4.94)	(2.38)	(3.73)	(3.07)	(0.33)	(2.34)
60 to 80 per cent	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
80 to 100 per cent	**0.86*****	**0.92****	**0.89****	**1.01**	**0.99**	**1.04**
	(-5.29)	(-2.45)	(-2.09)	(0.20)	(-0.11)	(0.39)
100 to 140 per cent	**0.76*****	**0.92***	**0.84*****	**1.15****	**0.80**	**0.95**
	(-8.35)	(-1.95)	(-2.63)	(2.16)	(-1.60)	(-0.41)
140 per cent and more	**0.63*****	**1.28****	**1.15**	**1.65*****	**1.01**	**0.85**
	(-4.46)	(2.52)	(1.24)	(4.35)	(0.05)	(-0.65)
Log-likelihood	**-14,264**	**-4,674**	**-36,922**	**-9,480**	**-22,894**	**-4,832**
Number of women	*17,310*	*6,356*	*23,431*	*6,005*	*17,546*	*4,132*
Number of events	*14,638*	*5,912*	*17,480*	*4,145*	*7,666*	*1,500*

Notes: (1) Estimating first birth risks for West Germany, women not making use of repayments for reimbursement are included only.

(2) Additional controls: (i) first birth: age; (ii) second birth: time since first birth, age at first birth; (iii) third birth: time since second birth, age at first birth, first birth was twin birth.

(3) z-statistics in parenthesis.

(4) ***: p ≤ 0.01; **: 0.01 < p ≤ 0.05; *: 0.05 < p ≤ 0.1.

Source: FDZ-RV - SUFVVL2004/2005, own estimations.

Table 3. Women's relative risks of the transitions to the first, second, and third child
(subsample with information about educational achievement only)

	First birth		Second birth		Third birth	
	West Germany	**East Germany**	**West Germany**	**East Germany**	**West Germany**	**East Germany**
Employment state						
Education	**0.40***	**0.47***	**0.91**	**1.42****	**0.00**	**0.85**
	(-11.06)	(-11.28)	(-0.36)	(2.31)	(-0.02)	(-0.27)
Employment	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Unemployment	**1.53**	-	**1.04**	-	**0.60**	-
	(1.51)		(0.15)		(-1.20)	
Illness	**0.48***	**0.96**	**1.57**	**0.93**	**0.00**	**1.09**
	(-1.94)	(-0.16)	(1.26)	(-0.22)	(-0.03)	(0.22)
Inactivity	**2.00***	**1.30****	**1.62***	**1.09**	**1.20**	**1.32****
	(15.60)	(2.22)	(8.38)	(1.24)	(1.60)	(2.25)
Percentage of the average income						
0 to 20 per cent	**1.27***	**1.27**	**1.14**	**1.12**	**1.31**	**1.14**
	(1.68)	(0.98)	(0.78)	(0.64)	(1.14)	(0.43)
20 to 40 per cent	**1.15***	**1.26***	**1.30***	**1.09**	**0.75***	**1.40****
	(1.83)	(1.82)	(3.13)	(0.77)	(-1.75)	(1.98)
40 to 60 per cent	**1.11****	**1.21****	**1.11**	**1.13**	**0.86**	**1.25**
	(2.18)	(2.50)	(1.45)	(1.51)	(-1.02)	(1.63)
60 to 80 per cent	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
80 to 100 per cent	**0.86***	**0.98**	**0.88**	**1.04**	**0.97**	**1.00**
	(-3.39)	(-0.45)	(-1.44)	(0.56)	(-0.19)	(-0.01)
100 to 140 per cent	**0.76***	**0.93**	**0.86**	**1.17***	**1.02**	**0.81**
	(-5.24)	(-1.22)	(-1.62)	(1.87)	(0.11)	(-1.21)
140 per cent and more	**0.69****	**1.31****	**0.91**	**1.50***	**0.85**	**0.69**
	(-2.44)	(2.01)	(-0.49)	(2.64)	(-0.40)	(-1.15)
Highest educational achievement						
Secondary school level, no vocational training degree	**1.13***	**1.07**	**1.17***	**1.04**	**1.51***	**1.35***
	(3.51)	(1.15)	(4.08)	(0.62)	(8.02)	(2.85)
Secondary school level, vocational training degree	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
High school diploma, no vocational training degree	**1.08**	**1.41**	**1.28**	**1.31**	**1.66***	**0.73**
	(0.35)	(1.09)	(1.33)	(0.76)	(1.66)	(-0.44)
High school diploma, vocational training degree	**0.89**	**0.87**	**1.59**	**0.81***	**1.00**	**0.90**
	(-1.09)	(-1.54)	(1.23)	(-1.74)	(-0.00)	(-0.40)
University (of applied science) degree	**0.70***	**0.79***	**1.33****	**1.07**	**1.69***	**1.51***
	(-4.05)	(-4.05)	(2.96)	(0.95)	(3.25)	(2.94)
Log-likelihood	**-5,333**	**-2,234**	**-11,304**	**-4,615**	**-5,789**	**-2,111**
Number of women	*6,244*	*3,154*	*7,392*	*2,969*	*5,134*	*1,987*
Number of events	*5,003*	*2,944*	*5,105*	*1,996*	*1,774*	*635*

Notes: (1) Estimating first birth risks for West Germany, women not making use of repayments for reimbursement are included only.
(2) Additional controls: (i) first birth: age; (ii) second birth: time since first birth, age at first birth; (iii) third birth: time since second birth, age at first birth, first birth was twin birth.
(3) z-statistics in parenthesis.
(4) ***: $p \leq 0.01$; **: $0.01 < p \leq 0.05$; *: $0.05 < p \leq 0.1$.

Source: FDZ-RV - SUFVVL2004/2005, own estimations.

Table 4. Women's relative risks of the transitions into the labour market after the birth of their first and their last child

	First child		Last child	
	West Germany	East Germany	West Germany	East Germany
Number of children				
One			**1.00**	**1.00**
Two			**1.05***	**1.42***
			(1.79)	(10.21)
Three			**1.10***	**1.55***
			(2.74)	(9.27)
Employment state				
Education	**0.98**	**1.94***	**0.91**	**1.84***
	(-0.33)	(12.04)	(-0.85)	(5.89)
Employment	**1.00**	**1.00**	**1.00**	**1.00**
Unemployment	**0.38***	-	**0.49***	-
	(-3.80)		(-4.41)	
Illness	**0.85**	**0.84**	**0.53***	**0.70***
	(-0.64)	(-0.68)	(-2.38)	(-1.76)
Inactivity	**0.30***	**0.48***	**0.31***	**0.31***
	(-36.78)	(-9.50)	(-33.14)	(-23.30)
Percentage of the average income				
0 to 20 per cent	**0.68**	**0.86**	**0.71***	**0.73***
	(-3.66)	(-0.92)	(-3.28)	(-2.85)
20 to 40 per cent	**0.90***	**1.16***	**0.91***	**0.73***
	(-2.01)	(1.79)	(-1.81)	(-4.80)
40 to 60 per cent	**0.97**	**0.88***	**0.95**	**0.84***
	(-0.86)	(-2.23)	(-1.25)	(-3.43)
60 to 80 per cent	**1.00**	**1.00**	**1.00**	**1.00**
80 to 100 per cent	**0.95**	**1.13***	**1.01**	**1.07**
	(-1.27)	(3.05)	(0.13)	(1.58)
100 to 140 per cent	**0.96**	**1.45***	**1.14***	**1.45***
	(-0.81)	(7.55)	(2.59)	(7.39)
140 per cent and more	**1.05**	**1.50***	**1.09**	**1.82***
	(0.29)	(3.73)	(0.68)	(6.06)
Log-likelihood	**-23,054**	**-9,222**	**-25,253**	**-8,639**
Number of women	*18,619*	*5,554*	*18,933*	*5,217*
Number of events	*8,313*	*4,834*	*9,606*	*5,036*

Notes: (1) Regarding first births in West Germany, women not making use of repayments for reimbursement are included only.
(2) Additional controls: Duration of time-out, mother's year of birth, children's year of birth.
(3) z-statistics in parenthesis.
(4) ***: $p \leq 0.01$; **: $0.01 < p \leq 0.05$; *: $0.05 < p \leq 0.1$.
Source: FDZ-RV - SUFVVL2004/2005, own estimations.

Table 5. Women's relative risks of the transitions into the labour market after the birth of their first and their last child (subsample with information on educational achievement only)

	First child		Last child	
	West Germany	**East Germany**	**West Germany**	**East Germany**
Number of children				
One			**1.00**	**1.00**
Two			**1.07***	**1.46***
			(1.82)	(7.90)
Three			**1.06**	**1.54***
			(1.06)	(6.64)
Employment state				
Education	**1.01**	**1.68***	**0.77***	**1.86***
	(0.97)	(8.19)	(-1.65)	(4.52)
Employment	**1.00**	**1.00**	**1.00**	**1.00**
Unemployment	**0.59**	**-**	**0.39***	**-**
	(-1.47)		(-3.66)	
Illness	**0.74**	**0.99**	**0.30***	**0.99**
	(-0.59)	(-0.03)	(-2.35)	(-0.05)
Inactivity	**0.31***	**0.60***	**0.32***	**0.32***
	(-21.74)	(-4.05)	(-21.83)	(-15.59)
Percentage of the average income				
0 to 20 per cent	**0.71***	**1.39**	**0.87**	**0.57***
	(-1.70)	(1.19)	(-0.84)	(-3.18)
20 to 40 per cent	**0.78***	**1.06**	**0.90**	**0.77***
	(-2.38)	(0.41)	(-1.26)	(-2.60)
40 to 60 per cent	**1.05**	**0.97**	**0.94**	**0.89**
	(0.73)	(-0.32)	(-1.01)	(-1.53)
60 to 80 per cent	**1.00**	**1.00**	**1.00**	**1.00**
80 to 100 per cent	**0.98**	**1.14***	**1.00**	**1.13***
	(-0.42)	(2.27)	(0.07)	(2.06)
100 to 140 per cent	**1.06**	**1.37***	**1.13***	**1.53***
	(0.82)	(4.47)	(1.83)	(6.14)
140 per cent and more	**0.82**	**1.33***	**0.97**	**1.69***
	(-0.87)	(1.96)	(-0.16)	(3.84)

Continued on the next page.

Table 5 (contd.)

	First child		Last child	
	West Germany	East Germany	West Germany	East Germany
Highest educational achievement				
Secondary school level, no vocational training degree	**1.08*** (1.78)	**0.92** (-1.28)	**1.07*** (1.75)	**0.88**** (-2.10)
Secondary school level, vocational training degree	**1.00**	**1.00**	**1.00**	**1.00**
High school diploma, no vocational training degree	**1.00** (0.01)	**1.61** (1.40)	**1.33** (1.15)	**0.73** (-0.89)
High school diploma, vocational training degree	**1.40**** (2.42)	**1.44***** (3.75)	**1.29**** (2.00)	**1.27**** (2.47)
University (of applied science) degree	**1.73***** (4.48)	**1.56***** (6.92)	**1.68***** (5.00)	**1.10** (1.52)
Log-likelihood	**-8,517**	**-4,521**	**-9,935**	**-4,282**
Number of women	*6,217*	*2,759*	*6,387*	*2,658*
Number of events	*3,326*	*2,475*	*4,273*	*2,615*

Notes: (1) Regarding first births in West Germany, women not making use of repayments for
reimbursement are included only.
(2) Additional controls: Duration of time-out, mother's year of birth, children's year of birth.
(3) z-statistics in parenthesis.
(4) ***: $p \leq 0.01$; **: $0.01 < p \leq 0.05$; *: $0.05 < p \leq 0.1$.
Source: FDZ-RV - SUFVVL2004/2005, own estimations.

Appendix

Table A1: Description of variables

Part 1: Fertility Behaviour	
Analysing time *First birth* *Second birth* *Third birth*	Time between a woman's 14th year of birth and first conception. Time between first birth and second conception. Time between second birth and third conception.
Variable	**Definition**
Age	Time-varying binary variables, indicating a woman's age.
Age at first birth	Time-constant binary variables, indicating a woman's age at first birth.
Time between births	Time-varying binary variables, indicating time since first birth and time since second birth respectively.
Twin-birth	Binary variable that equals one if the first birth was a twin-birth.
Employment state	Time-varying binary variables, indicating women's employment state in the respective month. We distinguish between (1) education (schooling, vocational training, and university education), (2) employment (employment subject to social security contributions and certain forms of self-employment), (3) unemployment, (4) illness (months, in which sickness benefits or disability pensions are received), and (5) inactivity (covers the remaining employment situations, i.e. times of childrearing or home care, but mainly consists of times, in which no information about the insured is available).
Percentage of the average income	Time-varying binary variables, indicating women's relative earnings in the respective month in percentage of the average income of all insurants. Only included for months, in which employment subject to social security contributions or self-employment actually occurs.
Highest educational achievement	Time-constant binary variables, indicating women's highest educational degree. We distinguish between (1) secondary school level, no vocational training degree, (2) secondary school level, vocational training degree, (3) high school diploma, no vocational training degree, (4) high school diploma, vocational training degree, and (5) university (of applied science) degree. Information about the highest educational achievement is only included for women who have been employed in any month between 2000 and 2005.

Continuation: Description of variables

Part 2: Employment Behaviour after Childbirth	
Analysing time	Time between a woman's respective birth and her first transition into any employment state other than child care afterwards.
Variable	**Definition**
Duration of time-out	Time-varying variables, indicating a mother's duration of time spent out of the labour market following childbirth.
Mother's year of birth	Time-constant binary variables, indicating a mother's year of birth.
Child's year of birth	Time-constant binary variables, indicating the child's year of birth.
Number of children	Time-constant binary variables, indicating a mother's number of children.
Employment state	Time-constant binary variables, indicating women's employment state nine months before respective birth. We distinguish between (1) education (schooling, vocational training, and university education), (2) employment (employment subject to social security contributions and certain forms of self-employment), (3) unemployment, (4) illness (months, in which sickness benefits or disability pensions are received), and (5) inactivity (covers the remaining employment situations, i.e. times of childrearing or home care, but mainly consists of times, in which no information about the insured is available).
Percentage of the average income	Time-constant binary variables, indicating women's relative earnings nine months before respective birth in percentage of the average income of all insurants. Only included for months, in which employment subject to social security contributions or self-employment actually occurs.
Highest educational achievement	Time-constant binary variables, indicating women's highest educational degree. We distinguish between (1) secondary school level, no vocational training degree, (2) secondary school level, vocational training degree, (3) high school diploma, no vocational training degree, (4) high school diploma, vocational training degree, and (5) university (of applied science) degree. Information about the highest educational achievement is only included for women who have been employed in any month between 2000 and 2005.