

Federal Institute for Population Research
Friedrich-Ebert-Allee 4
D-65180 Wiesbaden
Tel. +49+611 752363
Fax +49+611 753960
E-Mail BIB-2499@T-ONLINE.DE

24.07.2003

Gert Hullen

The Second Decline of Fertility in Germany

Introduction

The total fertility rate in Germany fell from 2.5 to 1.5 from 1964 (the peak of the Baby Boom) to 1974, and fluctuated around 1.35 thereafter in western Germany. In the former DDR it was around 1.75, due to an emphatic pro-natalist policy. After the fall of the „Wall“ 1989 and German reunification the TFR in eastern Germany dropped sharply to beneath 0.8. In western Germany the TFR is still low despite growing efforts to relieve the situation of families with children (*Dorbritz/Gärtner* 1995, 360 ff.).

As can be seen the first great decline in fertility after World War II had already taken place before the subjects analyzed in our survey became old enough to establish a family. So the theme of my paper is the most present second decline of fertility and the search for some explanations.

----- Fig. 1 -----

Results from the Family and Fertility Survey (FFS)

Data base

The German Family and Fertility Survey is part of the international project “Fertility and Family Surveys in Countries of the ECE Region”, undertaken by the Population Activities Unit (PAU) of the Economic Commission for Europe (UN/ECE) with financial support from the United Nations Population Fund. The objectives of the FFS project are, among other things, to collect comparable survey data on fertility and the family in Europe and North America during the 1990s and to conduct and publish a series of national and cross-national studies on the basis of these data.

The German sample contains about 10,000 persons, aged 20 to 39 years, 6,000 of them female, 4,000 male. Half of the interviews were done in Eastern Germany. The survey took place in 1992 and is to be analysed by the Federal Institute for Population Research (BIB) at Wiesbaden.

The first child

One of the primary goals of the Family and Fertility Survey was to determine the biographical influences affecting the number of children born to individual women. Thus the study touched upon one of the most important topics in population research: The secular decline in births in Germany and all industrialised countries that began a century ago and was interrupted only briefly following the Second World War. With the advent of the birth-control pill in West Germany in 1961 and in the former GDR in 1965, women gained access to an effective method of birth-control which offered them the option to decide whether to accept or avoid pregnancies. From that point on, births have been subject to a previously unknown degree of planability, and norms pertaining to sex and family life have undergone significant change. In fact, *Roussel*, referring to the period before and after 1960, contends that “What had been desired had become practicable and ceased to be forbidden, thus suddenly becoming the norm” (*Roussel* 1994,82).

Theoretical approaches to an explanation of the decline in fertility place considerable emphasis upon rational considerations on the part of parents. In addition, there are relatively unrelated explanations attributing efforts to preserve the species to causes related to cultural macro- and micro-structures. At this point it is possible to provide only a rough overview of these arguments. (*Hullen* 1995, 112 f.):

1. Economic effects: Parents have certain ideas about what children cost. Relevant are not only the direct additional costs for housing, food and education – reduced by the amount of government support payments – but also the alternative earning opportunities available to the mother (opportunity costs). The heuristic explanations based upon family economics suggest that parental consideration of costs and benefits affect their decisions regarding the birth of children. The assumption that fertility declines in the presence of rising income for women and a corresponding increase in opportunity costs for children has been confirmed by a number of empirical studies (*G. Becker* 1982, *G. Becker* 1991, *Cigno* 1991, *Gustafsson* 1991, *Zimmermann/de New* 1991).
2. Cultural effects: Incremental differences in norms among religious and language groups, ethnic communities, regions and other social groups have often been cited as conditions affecting differences in fertility. The most commonly recognised differences are those that distinguish between urban and rural areas (see *Birg/Flöthmann/Reiter* 1990). With respect to the fact that the demographic transition has taken place in nearly all western European countries during the past one hundred years, the thesis has been proposed that this is not the result of a range of broadly differing socio-economic structures but of cultural effects instead (*Knodel/van de Walle* 1982; for an opposing view see *Guinane/Okun/Trussell* 1994). Changing values, emerging primarily as fruits of the student and women’s movements, are seen as a significant cause of the current „second demographic transition”, which comprises a decreasing number of

marriages, a rise in the divorce rate and a decline in fertility (*van de Kaa 1987, Lesthaeghe 1992, Lüscher et al. 1990, Honneth 1993*).

3. Historical dynamics, life-cycle factors: Fertility behaviour is undoubtedly influenced as well by biographical models experienced in the family and among acquaintances and neighbours (*Birg/Flöthmann/Reiter 1990*). Such influences serve to explain differences that arise under otherwise equal socio-economic and cultural conditions.

The results of the FFS study are to be used to examine the validity of these complex explanations. In the language of event analysis, the objective is to determine the influence of certain variables on the “waiting period” prior to the birth of a child – in this case the first child. It should be noted, therefore, that the initial concern is the timing of births, which although certainly related to fertility is not to be equated with it. In contrast to traditional cross-sectional analyses (see *Dorbritz/Schwarz 1996*), event analysis can be used to take into account cases in which no child has yet been born (censored cases). The variables used should reflect the characteristics present at the beginning of the waiting period; characteristics which appear later, such as educational levels at the time of the interview, would be regarded as proxy variables. A number of hypotheses should be presented at the outset.

For biological reasons, women bear children only between the ages of approximately 15 and 45; men father children at not less than age 15. Within this age-group range, birth distribution is skewed to the left, with maximum values for women reaching a maximum during the third decade of life (Hypothesis 1).

Also self-evident is the fact that the fertility of those surveyed who have partners will be higher than that of those without partners, with fertility being highest among married people. (Hypothesis 2).

Persons with no or very low income will tend to postpone birth due to the relatively high costs of having children. This applies to both genders (H3). Opportunity costs for children, however, can only be compared for women, due on the one hand to biological factors and on the other to gender differences determined by traditional patterns of task distribution in the household. Women with high incomes or earning opportunities have a lower propensity to have children. (H4). These last two hypotheses are in accordance with more recent studies (*Blossfeld/Jaenichen 1993*) in which a distinction is made between an educational status effect (“still attending an educational institution” vs. “end of education”) and a level effect (education level) (*Blossfeld/Jaenichen 1993*).

With respect to themes of importance from the perspective of the women's movement, personal self-realisation and material independence, concerns centred upon greater autonomy in living with partners rather than relationships with children. Thus it can be assumed that changes in values did not influence the respondents of the FFS study directly, but instead only indirectly via the effect of decreased nuptiality (H5). Unmarried people and those living in consensual unions simply have fewer children.

Individuals who have grown up with several siblings will show a stronger inclination to have children. (H6).

The political turnabout of 1989 and reunification with West Germany in 1990 represent a special influence upon demographic behaviour in eastern Germany (H7).

Age at first birth

The overview of the mean ages at the birth of the first child and of the percentage of those interviewed who had children (Table 1) reveals major differences not only between genders but also between eastern and western Germany. Men in western Germany became fathers for the first time at age 30 - 32, while men in eastern Germany experienced fatherhood at 26 - 27 years of age. Women in western Germany had their first child at age 26 - 28, women in eastern Germany at age 22.¹ Thus both the regional and the gender-based differences amounts to four years.

--- Table 1 ---

The product-limit estimators for birth distribution also show the percentage of those surveyed who will remain childless. Assuming that hardly anyone will become a mother or father after the age of 36, more than 35 per cent of western German men and over 20 per cent of western German women born during the years 1952 to 1972 will remain childless, compared to only 20 per cent of eastern German men and about 10 per cent of eastern German women. The differences in the curves are worthy of note: As expected, the "eastern German" curves look like illustrations of logistic functions, whereas the "western German" curves appear to represent exponential functions. In Figs. 2 and 3, the estimates for ages of women bearing children for the first time are differentiated according to birth cohorts. The results for western Germany show a rise in the average age from

¹ The average age at the birth of the first child of those interviewed in the FFS study is not to be equated with the age of **married** mothers at the birth of their first child as identified by the Federal Bureau of Statistics. In the case of western Germany, the two figures are for the most part the same. However, the values estimated for eastern Germany on the

27 to 28 years among the three oldest cohorts. That is not particularly significant. A more marked increase in age at first birth appears evident in the youngest cohort: While the oldest western German female cohorts had 20 per cent of their births by the age of 21, that level was not achieved by the youngest cohort until age 24, i.e. a full three years later. If this trend continues, the average age at first birth will reach 30 years.

--- Fig. 2 ---

--- Fig. 3 ---

--- Fig. 4 ---

The birth distributions for the three oldest female cohorts in eastern Germany (Fig. 4) are virtually the same. It is entirely possible to view the slightly lower first birth ages of the 1957-62 cohorts as the consequence of pro-natalist measures undertaken from 1979 to (see *Büttner et al* 1987). This effect has receded again in the third cohort. The youngest cohort consisting of those 20-24 years of age in 1992 has been affected by the political events of 1989/90. The average age at first birth within this group sank to 23.5 years – still significantly lower than that of western German women of the same age but clearly indicating a move towards equalisation.

Event analysis for the first child

Further analysis of conditions governing the birth of the first child is based upon a substantially expanded complex of variables. Tables 3 and 4, for women and men, respectively, present four different event-analysis models distinguished by the variables possibly affecting the event characterised as “first child”. Calculations were made on the basis of the exponential approach. The list of values is headed by the non-time-dependent variables “East” and “cohort”, indicating region of residence at the time of birth or, in censored cases, the region of residence at the time of the interview. The next values listed are time-dependent. The terms $\log(\text{age}-15)$ and $\log(45-\text{age})$ are used in modelling the fertile phase of women. In the interest of simplicity it is also assumed that men become fathers during this age range.² The variable “East*after Nov. 89”

basis of the FFS study are significantly lower than those appearing in the official statistics due to the comparatively larger proportion of illegitimate children.

² The fact that men can also father children after the age of 45 is not contradicted by this approach. As the maximum age of those interviewed in the FFS study was 39, the setting of an upper age limit has no bearing on the event analysis.

stands for the influence of the political turnabout of 1989 on demographic behaviour. “Education” is used as a proxy for the education level achieved prior to first births. The term “end of education” indicates that interview subjects no longer have the status of school or university students, etc. The dummy variables “married” and “CU” characterise marriages and consensual unions. “Change residence” represents a change of residence beyond state borders, and “employed” signifies gainful employment. The dummy variables „skilled occupation” and “higher profession” identify persons surveyed who held jobs requiring formal occupational training or even a tertiary education, regardless of whether they held such jobs on an uninterrupted basis until the time of the birth of a child or beyond. These variables are proxies for income opportunities. The terms “siblings”, “size of home community” and “parents divorced” represent three additional non-time-dependent features. The variable “Religion” is also regarded as related to family origin. The answers from “1 Catholic”, “2 Protestant”, “3 other” and 4 “none” to the relevant survey question are regarded as an inverse ordinal ranking of religious beliefs. Finally, the decline in fertility that understandably accompanies increasing age is examined by cohort.³

The periods prior to first births were divided into two-year increments and further differentiated on the basis of the life-cycle events end of education, marriage or entry into a consensual union, change of residence and the (last) commencement of gainful employment as well as the date November ,1989 (episode splitting). This led to a total of more than 46,000 episodes among women and over 56,000 among men..

At the outset it is clear that the estimated hazard rate functions improved consistently for both genders from Model 1 to Model 3. This shows that the respective added variables had a significant influence upon fertility.⁴

Women

Let us begin with the women (Table 2), who surely play a more decisive role in the birth of children than men:

The tendency of women in eastern Germany to have children was more than double that of women in western Germany. Understandably, this tendency rose – in both East and West – beginning at age 15 and began to decline once again at age 45. The decline in births following the political turnabout in the former GDR in 1989

³ The references for dummy variables were: West, in training, unmarried, no consensual union, no change of residence, not gainfully employed, unskilled occupation, parents not divorced. Cohorts, education, siblings, size of home community, religion and interaction variables generated from these variables are dynamic.

⁴ The improvement of a model is established by means of a log-likelihood final. The expected value is a figure showing an increase over the previous model corresponding the additional degrees of freedom. If the actual value is larger, the improvement is considered significant.

is expressed as a reduction in the propensity to have children of approximately 30 per cent. The tendency of women with high occupational qualifications and those with academic educations to have children was roughly 10 per cent lower for each group. On the other hand, that tendency rose markedly with the end of training or education. The extent to which this is attributable to the interruption of education or training due to the impending birth of a child cannot be determined on the basis of this study. Aside from age, the existence of a male partner, as could be expected, had the greatest impact on fertility. The tendency of married women to have children is about 150 per cent higher, while even that of women living in consensual unions is about 110 per cent higher than that of women in neither group.

The fact that a change of residence exercises an influence on fertility is understandable in light of the correlation between household's enlargement and a change of residence. Coincidences of this kind are only partially identified in the FFS, as the study records only changes of residence across state borders and not the more characteristic moves from the city to the country or the suburbs. Gainful employment of women had no significant influence on the inclination to have children. It does mean that gainfully employed women have the same propensity as others. This is understandable in view of the work protection regulations for mothers and their entitlement to government financial support during the early child-raising years (*Erziehungsgeld*). The fact that women working at jobs requiring formal occupational training or even a tertiary education have a one third lower tendency to have children than women in unskilled occupations will need to be examined in a comprehensive interpretation of the data.

The higher the number of siblings in each woman's own family, the greater the tendency to have a child of her own – a difference of five per cent for each sibling. The size of the home community lowered the tendency by three per cent with each step on the eight item scale. Other variables related to personal origin, such as the divorce of women's parents or religious beliefs, played no appreciable role.

Model 4 confirms that the variable „Cohort“ has no influence for women.

Men

The results of the event analysis for men (Table 3) need to be examined consistently in relationship to those for women (Tab. 2). Although it is obviously not permissible to form “synthetic marriages”, insights into partner relationships can nevertheless be gained from decisions about having a child. A number of close correlations

can be identified in the effects of variables upon men and women. On the other hand, there are also considerable differences to be found between expectant mothers and fathers-to-be.

While the “fatherhood inclination” of men in eastern Germany is also higher than that of western German men, the difference, at 70 per cent, is lower than the difference in the tendency to have children among women (130 per cent). Men born between 1957 and 1967 had a slightly higher propensity to become fathers than the youngest cohort, which served as a reference group (model 4). Otherwise, however, there were no significant differences, either for men or for women, among the cohorts.

Age factors had effects similar to those observed among women: In younger years, the tendency to have children increased, eventually peaking at a point around age 30, as had been assumed, and then declining at a more rapid rate from then on. The political turnabout in the East brought a 40-per-cent reduction in the tendency of men to have children. The figure is much more significant than that shown for women (about one third). The education level of the men, carefully isolated from occupational position, had a noticeable influence: The tendency to have children rose as education levels rose. As already indicated, the opposite tendency was observed for women. Another gender-related difference is reflected in the fact that the end of education had less impact on the tendency to have children among men, i.e. that they more frequently had not yet concluded their education by the time the first child was born. As expected, married men show a greater tendency to become fathers than unmarried men, and men living in consensual unions are more likely to have children than those without stable partner relationships. The coefficients of both variables are higher for men than for women.

While changes of residence – involving in this case moves across state borders – had nearly no influence for men, gainful employment proved to be the most efficient co-variable (aside from age and the presence of a female partner) for the first child. This is strongly counteracted by the influence of occupational position, however. In comparison to those surveyed who worked in unskilled occupations (reference category), men in skilled occupations showed a 25-per-cent lower tendency to have children. Arithmetically, this figure nearly equates to lowest value for the propensity to have children among women in skilled occupations. The explanation provided below is quite different, however.

To a smaller extent than women, men who had a larger number of siblings were more likely to have children, whereas divorces between parents of respondents of both sexes showed no effect. In contrast to women, the

tendency of men from larger home communities to have children was lower to a highly significant degree. Religious beliefs produced no effect. These gender-related differences will also require further explanation below.

--- Table 2 ---

--- Table 3 ---

Summary interpretation

The FFS data provide the basis for a revealing portrayal of the development in fertility among people in the age group 20 - 39 currently living in western and eastern Germany. In the West, these children of the Baby Boom had their first child between the ages of 26 and 28 (women) and 30 and 32 (men), respectively, much later than their mothers and about four years later than the equivalent cohorts in eastern Germany. In the West, only slight differences were identified among the three oldest cohorts. In the case of the youngest cohort, a renewed tendency to postpone first births is now apparent – not only in eastern Germany, where it is largely attributable to the political turnabout of 1989.

Several hypotheses were presented at the outset regarding the influence of age and other characteristics of the persons interviewed upon the birth of a first child. The event analysis quite naturally confirmed that fertility increases beginning at age 15 and then decreases by age 45, almost to zero among women and to a lesser degree among men (Hypothesis 1). In order to illustrate the probability of having a child, one can imagine a left-skewed curve covering the age range from 15 to 45 (or above) reaching its peak at the average age of women at the birth of their first child. This has been true thus far only for women in eastern Germany. The distribution function of the curve shows the S-shape generally expected for demographic processes (logistic function). It is characterised by a relatively high frequency of first births at its turning point. The curve for women in western Germany identified in the FFS, on the other hand, showed an equal distribution of births between the ages of 20 and 30 (represented as a straight line). This is an astounding phenomenon that makes us curious to know what other factors had become more important in decisions regarding birth aside from biological and traditional determinations.

The presence of a partner is a biological prerequisite for the birth of child. The social norm dictates that one is living with this partner in a lasting, stable partnership, if not as a married couple, then at least within a common household. If we consider the substantial decline in nuptiality in the recent decades in Germany, it must surprise us to discover that the effects of partnership relationships appear so stable in the event-analysis models. One would have expected to find in Model 5 at least, which differentiates among the cohorts, an increase in the influence of partnerships (Hypothesis 2).

For women, the end of education clearly marks the point at which family-building begins. For men, however, the significance of this event is much lower (Hypothesis 3). This is explainable in terms of the fact that men were probably in a better position to continue their education even in the presence of children. The superior benefits provided to student mothers in eastern Germany apparently did not suffice, statistically speaking, to compensate for the gender difference. The significance of the end of education for the birth of the first child provides support for an explanation of the difference in birth distributions mentioned above: School and training programs in eastern Germany followed a more uniform pattern and thus lead to a concentration of births within a range of only a few years. In western Germany, the age distribution of women reaching the end of their education was wider; accordingly, births are thus distributed more uniformly over the entire third decade of life.

It should be emphasised at this juncture once again that the tendency to have children decreased among women with higher education levels, whereas it rose in the comparable male cohorts. The tendency to have children also decreased for both sexes among those who worked or had worked in skilled occupations/professions. Since education and occupation stand as proxy variables for income opportunities, lower birth tendencies are easily explainable with reference to the fact that opportunity costs for the first child rose along with the income opportunities for women (Hypothesis 4). There is little doubt that parents with higher incomes are better equipped to harmonise family and work, by making use of child-care provided from outside the family, for example. With respect to the birth of the first child, however, this apparently applies only to men, and then only under certain conditions, as the decline in the tendency to have children associated with lower occupational qualification suggests. In any event, it can be contended that better educated women in the age group otherwise most likely to have a first child have not yet reached the attainable higher income level (see

Rindfuss/Morgan/Offutt 1996) or that during this time they have achieved occupational/professional positions of importance with respect to further professional advancement.

As addressed above in Hypothesis 5, none of the influences of changes in the value system qualifies as a periodic effect. If at all, these changes have affected all those surveyed in the same way, so that no differences appear among the age sub-groups. It is possible, however, that more precise studies will one day support the conclusion that the changing-values theory, applied so persuasively to demography, is simply not amenable to empirical investigation.

The family and environmental origins of those surveyed appear to have personal significance with respect to the realisation of the desire to have children of their own. The number of siblings certainly exercised an important influence upon first births among women, and to a lesser extent among men (H6). In addition, the size of the home community had a surprising (negative) effect. One explanation may be that family structure traditions, at least in rural areas, are male-dominated – as in the case of the self-employed and the specific characteristics of their family structures.

In conclusion a comment is in order upon the importance of the political turnabout of November 1989 (H7). This event reduced the tendency of men in eastern Germany to have children by 40 per cent, that of eastern German women, however, by “only” one third. Thus men were affected to a greater degree than women, but not because other influential variables were overshadowed by the turnabout (there is no limitation of beta coefficients in the event analysis); it does appear, however, that the ensuing increase in personal opportunities and greater degrees of freedom in eastern Germany prompted men more than women to postpone the formation of long-term family relationships (in regard to this line of thinking see *Birg 1991, Conrad et al 1996*). This explanation, supported to a certain extent by the recognition that illegitimate births in eastern Germany decreased to a comparatively lesser degree than legitimate births, will need to be more closely assessed on the basis of the FFS data.

Literature

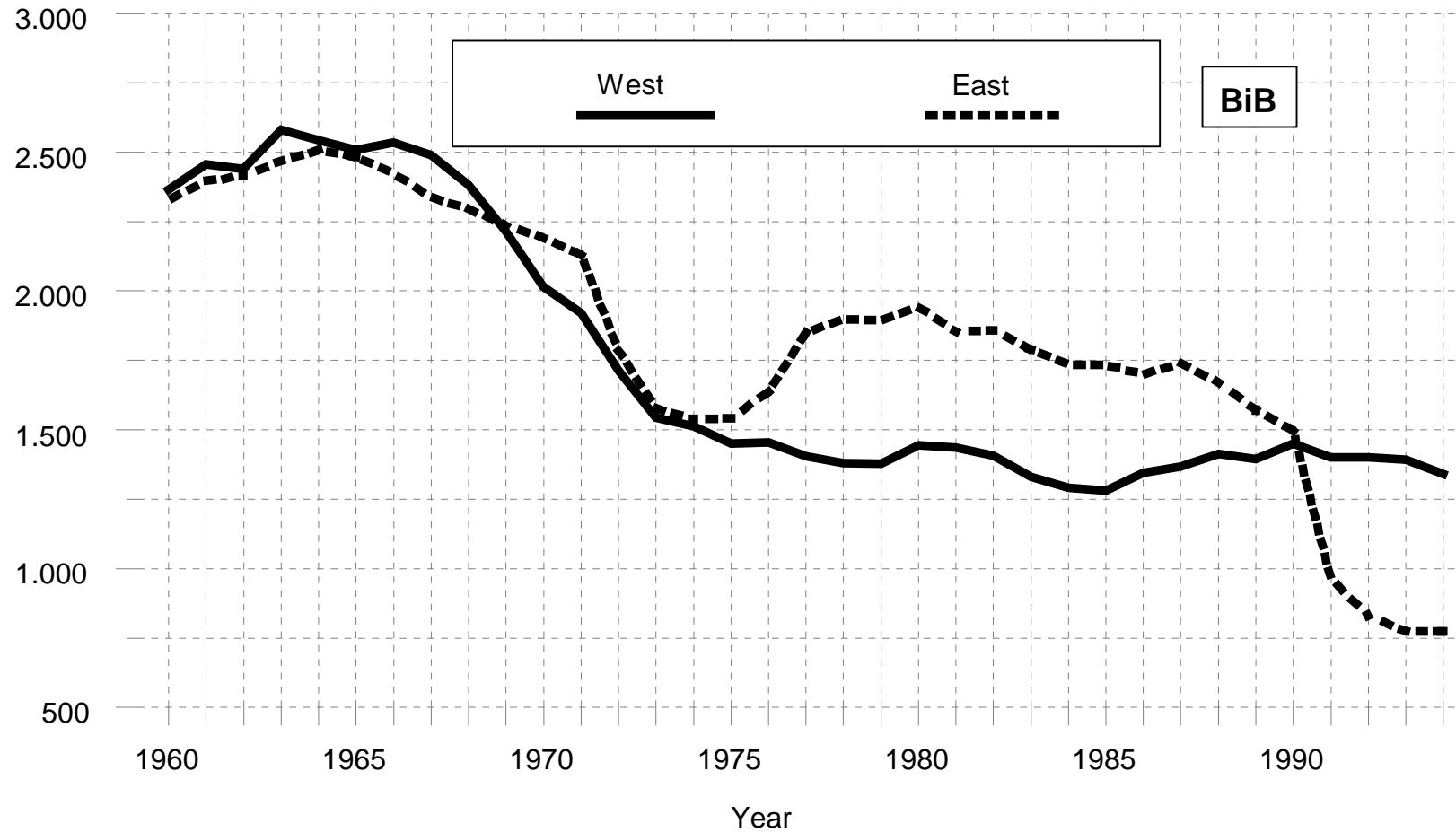
Becker, Gary S., 1991, A Treatise on the Family (1981). Harvard Press, Cambridge/London

Becker, Gary S., 1982, Der ökonomische Ansatz zur Erklärung menschlichen Verhaltens (am. 1976). Mohr, Tübingen

- Birg, Herwig, 1991, A biographic/demographic analysis of the relationship between fertility and occupational activity for women and married couples. In: Femal Labour Market Behaviour and Fertility. Ed. J.J. Siegers et al. Springer, Berlin, 133-157
- Birg, Herwig/Flöthmann, E.-Jürgen/Reiter, Iris, 1991, Biographische Theorie der demographischen Reproduktion. Campus, Frankfurt/New York
- Blossfeld, Hans-Peter/Jaenichen, Ursula, 1993, Bildungsexpansion und Familienbildung. In: Der Familienzyklus als sozialer Prozeß. Ed. A. Diekmann und St. Weick. Duncker & Humblot, Berlin, 165-193
- Büttner, Thomas/Lutz, Wolfgang/Speigner, Wulfram, 1987, Some Demographic Aspects of Aging in the German Democratic Republic. IIASA, Laxenburg (WP-87-116)
- Cigno, Alessandro, 1991, Economics of the Family. Clarendon, Oxford
- Conrad, Christoph/Lechner, Michael/Werner, Welf, 1996, East German Fertility After Unification: Crisis or Adaptation? Population and Development Review 22,2,331-358
- Dorbritz, Jürgen/Gärtner, Karla, 1995, Bericht 1995 über die demographische Lage in Deutschland. Zeitschrift für Bevölkerungswissenschaft 20,4,339-448
- Dorbritz, Jürgen/Schwarz, Karl, 1996, Kinderlosigkeit in Deutschland - ein Massenphänomen? Analysen zu Erscheinungsformen und Ursachen. Zeitschrift für Bevölkerungswissenschaft 21,3,231-261
- Guinnane, Timothy W./Okun, Barbara S./Trussell, James, 1994, What Do We Know About the Timing of Fertility Transitions in Europe? Demography 31,1,1-20
- Gustafsson, Siv, 1991, Neoklassische ökonomische Theorien und die Lage der Frau: Ansätze und Ergebnisse zu Arbeitsmarkt, Haushalt und der Geburt von Kindern. In: Vom Regen in die Traufe. Ed. K.U. Mayer u.a. Campus, Frankfurt, 408-421
- Honneth, Axel, 1993, Zum Wandel familialer Lebensformen. Merkur 47,59-64
- Hullen, Gert, 1995, Frauenbiographien. Ergebnisse der retrospektiven Befragung zu Familien- und Erwerbsbiographien 35- bis 60jähriger Frauen. Bundesinstitut für Bevölkerungsforschung, Wiesbaden (Materialien zur Bevölkerungswissenschaft, H. 83)
- Kaa, Dirk van de, 1987, Europe's second demographic transition. Population Bulletin 42,1
- Knodel, John/Walle, Etienne van de, 1982, Fertility Decline: European Transition. In: International Encyclopedia of Population. Ed. J.A. Ross. The Free Press, New York, Bd. 1, 268-275
- Lesthaeghe, Ron, 1992, Der zweite demographische Übergang in den westlichen Ländern: Eine Deutung (The second demographic transition in Western Countries: An interpretation. Brüssel: Vrije Universiteit, 1991). Zeitschrift für Bevölkerungswissenschaft 18,3,313-354
- Lüscher, Kurt/Schultheis, Franz/Wehrspaun, Michael (Hrsg.), 1990, Die „postmoderne“ Familie. Familiäre Strategien und Familienpolitik in einer Übergangszeit (1988). Universitätsverlag, Konstanz, 2. Aufl.
- Rindfuss, Ronald R./Morgan, S. Philip/Offutt, Kate, 1996, Education and the changing age pattern of American fertility: 1963-1989. Demography 33,3,277-290
- Roussel, Louis, 1994, Fertility and family. In: European Population Conference, 23.-26. März 1993, Genf, Proceedings. United Nations, New York/Genf, Vol. 2, 35-110
- Zimmermann, Klaus F./de New, John P., 1991, Labour market restrictions and the role of preferences in family economics. In: Female Labour Market Behaviour and Fertility. Ed. J.J. Siegers, J. de Jong-Gierveld, E. van Imhof. Springer, Berlin, 158-172

Figure 1: Total fertility rates in the old federal territory and in the former GDR, 1950 - 1994

per 1000 women



Source: Federal Statistical Office, own results

Figure 2: Age of parents at birth of first child (WM = western male; WF = western female; WM = eastern male; OF = eastern female)

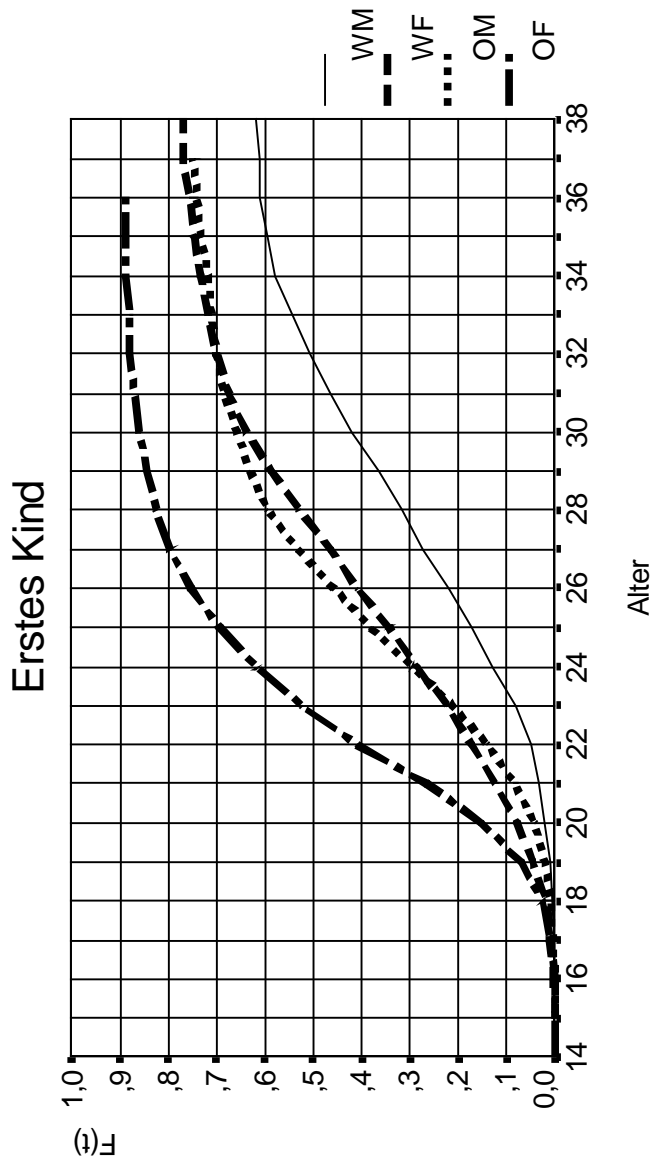
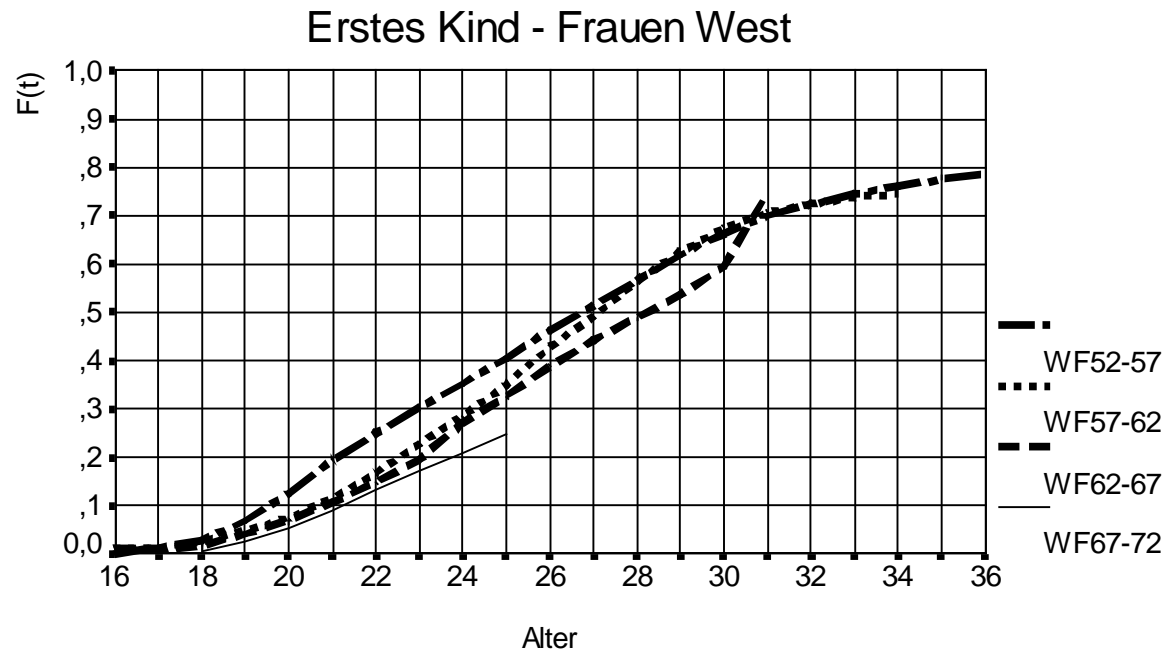
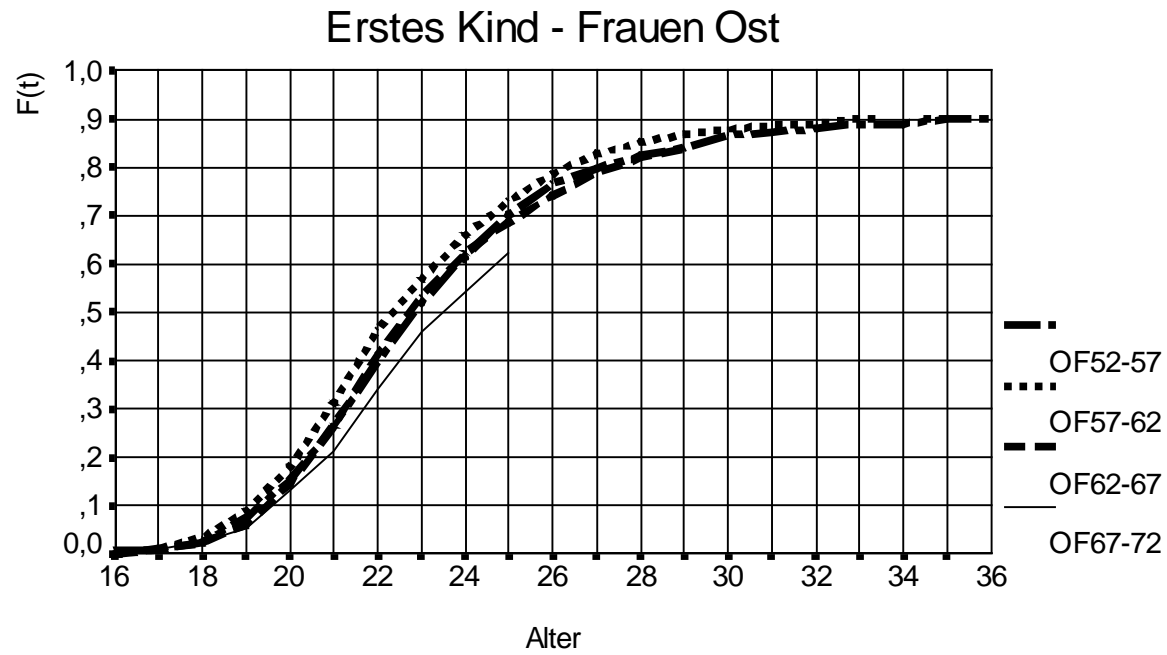


Figure 3: Age at birth of first child by cohorts - western women



BIB II 1 - FFS - 3111 (Produkt-Limit-Schätzung)

Figure 4: Age at birth of first child by cohorts - eastern women



BIB II 1 - FFS - 3112 (Produkt-Limit-Schätzung)

Table 1: Median age (product-limit estimator) of first births and frequency (non-censored cases for 1992 in per cent) by gender, cohort and region of residence at the time.

```

*****
                Median      non-
                age        censored (%)
                *****  *****
                male  female male   female
                *****  *****  *****  *****
*****

First child

West

1952-57/35-39 y.      30.2  26.7   65   79
1957-62/30-34 y.      31.6  27.1   55   73
1962-67/25-29 y.      30.0  28.1   29   49
1967-72/20-24 y.       .      .     5   17

East

1952-57/35-39 y.      25.9  22.8   78   90
1957-62/30-34 y.      26.2  22.2   73   89
1962-67/25-29 y.      26.8  22.7   54   81
1967-72/20-24 y.       .     23.5  15   42

```

Table 2: First child - Women - Regression coefficients and relative risks

Destination	Variable	Model 1 β	exp(β)	Model 2 β	exp(β)	Model 3 β	exp(β)	Model 4 β	exp(β)
First child	Const	-39,04***	,00	-39,07***	,00	-39,00***	,00	-39,28***	,00
	East	,85***	2,34	,86***	2,36	,81***	2,26	,81***	2,25
	cohort	,00	1,00	-,01	,99	-,01	,99	.	.
	log[age-15]	1,49***	4,44	1,49***	4,44	1,49***	4,45	1,49***	4,44
	log[45-age]	4,78***	119,65	4,82***	123,66	4,80***	121,30	4,81***	123,10
	East*afterNov89	-,41***	,66	-,45***	,64	-,43***	,65	-,35***	,71
	EDUC	-,10***	,90	-,06**	,94	-,05**	,95	-,06**	,95
	educ. end	,50***	1,65	,51***	1,66	,50***	1,66	,51***	1,67
	married	,90***	2,45	,91***	2,48	,91***	2,49	,91***	2,49
	CU	,75***	2,11	,76***	2,13	,74***	2,09	,73***	2,08
	change res.	.	.	,21***	1,23	,20***	1,22	,19***	1,21
	employed	.	.	,05	1,05	,04	1,04	,04	1,05
	skilled occ.	.	.	-,40***	,67	-,40***	,67	-,41***	,66
	higher prof.	.	.	-,48***	,62	-,48***	,62	-,48***	,62
	siblings	.	.	.	.	,05***	1,05	,04***	1,05
	size home com.	.	.	.	.	-,03***	,97	-,02***	,98
	parents div.	.	.	.	.	-,03	,97	-,03	,97
	religiosity [-]	.	.	.	.	,02	1,02	,02	1,03
	l[45-a]*52-57	.	.	.	.	.	.	,03*	1,03
	l[45-a]*57-62	.	.	.	.	.	.	,05***	1,05
l[45-a]*62-67	.	.	.	.	.	.	,04**	1,04	
N events			4024		4024		4024		4024
N cases			6155		6155		6155		6155
Person years			147834		147834		147834		147834
LL-Start			-28527		-28527		-28527		-28527
LL-Final			-22056		-21993		-21970		-21958

β = regression coefficient; exp(β) = relative risk; LL = Log-Likelihood; * = p<0,05; ** = p<0,01; *** = p<0,001
 Source: BIB-FFS (10012 20 to 39 years old, 1992) 19 Feb 97

Table 3: First child - Men - Regression coefficients and relative risks

Destination	Variable	Model 1		Model 2		Model 3		Model 4	
		β	exp(β)	β	exp(β)	β	exp(β)	β	exp(β)
First child	Const	-39,23***	,00	-37,77***	,00	-37,79***	,00	-37,76***	,00
	East	,53***	1,71	,54***	1,71	,54***	1,71	,54***	1,71
	cohort	-,05	,96	-,05	,95	-,04	,96	.	.
	log[age-15]	1,58***	4,86	1,50***	4,47	1,50***	4,49	1,49***	4,42
	log[45-age]	4,60***	99,50	4,37***	79,10	4,38***	79,81	4,31***	74,74
	East*afterNov89	-,52***	,60	-,52***	,60	-,52***	,60	-,47***	,63
	EDUC	,04	1,04	,09**	1,09	,09**	1,10	,09**	1,09
	educ. end	,26***	1,30	,10	1,10	,09	1,10	,10	1,10
	married	1,14***	3,14	1,10***	2,99	1,10***	3,01	1,10***	3,01
	CU	1,23***	3,43	1,19***	3,29	1,19***	3,29	1,18***	3,26
	change res.	.	.	-,14	,87	-,17*	,85	-,16*	,85
	employed	.	.	,74***	2,09	,73***	2,07	,73***	2,07
	skilled occ.	.	.	-,30***	,74	-,29***	,75	-,29***	,75
	higher prof.	.	.	-,50***	,61	-,45***	,64	-,45***	,64
	siblings	.	.	.	.	,03*	1,03	,03*	1,03
	size home comm.	.	.	.	.	-,04**	,96	-,04**	,96
	parents div.	.	.	.	.	,07	1,08	,07	1,07
	religiosity [-]	.	.	.	.	-,01	,99	-,01	,99
	l[45-a]*52-57	.	.	.	.	.	.	,06**	1,06
	l[45-a]*57-62	.	.	.	.	.	.	,07**	1,07
l[45-a]*62-67	.	.	.	.	.	.	,06**	1,06	
N events		1877		1877		1877		1877	
N cases		4059		4059		4059		4059	
Person years		106077		106077		106077		106077	
LL-Start		-14114		-14114		-14114		-14114	
LL-Final		-10787		-10678		-10669		-10664	

β = regression coefficient; exp(β) = relative risk; LL = Log-Likelihood; * = p<0,05; ** = p<0,01; *** = p<0,001
Source: BIB-FFS (10012 20 to 39 years old, 1992) 19 Feb 97