Girls preferred?
Changing patterns of gender preferences in the two German states[i]

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Notes

Abstract

Parental preferences for the sex of children are a prominent subject of study in some Asian and African countries where sex-selective behavior has led to skewed sex-ratios. In Europe or North-America, by contrast, cross-sectional data does not reveal any clear pattern of sex-preferences. However, this does not mean that people are indifferent to the sex of their children. Taking a longitudinal perspective, this paper shows how sex-preferences in Germany have changed over time and in response to changes in welfare regime. Based on German cohort data, event-history models reveal a significant boy-preference among women born before 1910 during the German Reich. After the world war II, women in West-Germany never developed a clear sex-preference, but cohorts born in the former German Democratic Republic (GDR) show a significant preference for girls. This pattern is absorbed by the pro-family policy that was launched by the socialist regime during the seventies. In conclusion, the paper argues that the process of modernization does not neutralize sex-preferences as is often assumed. Rather, it may give rise to diverging sex-preferences depending on the specific type of welfare regime.

(182 words)

Introduction

Demographic patterns are macro-phenomena at the population level. But they are caused by micro-mechanisms at the individual level. Parental preferences for the sex of their children are a prominent example for such a micro-mechanism. Often, "the desire for a son is the father of many daughters" (Seidl 1995), because it induces parents to have children until they receive a child with the preferred sex. Thus, it has often been argued, and shown empirically, that in Asian countries with a strong boy-preference, the fertility rate will not drop below replacement level (Talwar 1975; Arnold 1985; Koenig, Foo 1992, Arnold 1997). However, if the rate drops while the son-preference remains pervasive, as in South-Korea or China, sex selective abortion and discrimination cause an increasingly skewed sex-ratio (Park, Cho 1995; Zeng Yi et. al 1993; Arnold 1997).

No such pattern is discernible in Europe or North America. The fertility rate has dropped significantly since the turn of the century, and has fallen well below replacement level in nearly all developed countries. Germany's TFR, for example, was 1.3 in 1996. Nevertheless the sex-ratio among newborns is fairly balanced. For this reason, sex-preferences have received little attention in the literature. Most studies on sex-preferences in developed countries focus on North America, but they do not show a clear picture (for an overview, cf. Marleau, Maheu 1998). Some studies provide evidence of a son-preference among both men and women (Dinitz et al. 1954; Peterson, Peterson 1973; Moeschl et al. 1978), while others suggest the contrary conclusion for female respondents (Clare, Kiser 1951; Hammer 1970; Hammer, McFerran 1988; Pooler 1991). Women who are pregnant for the first time seem to have a girl-preference for their first-born (Wolkind,

Zajicek 1981; Stattin, Klackenberg-Larsson 1991), but the reverse is true among those who wish to have only one child (Gray, Morgan 1976; Krishnan 1987).

Research from Norway and Sweden (Brunborg 1987, Schullström 1996) demonstrate that the probability of having a third child is significantly higher if the first two children are of the same sex. Yet, there is no evidence for such pattern in Austria (Hoem, Prskawetz, Neyer 1999). Also, a recent comparison of 17 European countries demonstrates large variation from country to country (Hank, Kohler 1999).

Based on these findings most authors conclude that sex-preferences are disappearing in developed countries (Marleau, Saucier 1996, 463; Schullström 1996). The explanation, often implicit, is that the process of modernization leads people to be indifferent with respect to the sex of their children. It undermines religious commitment, weakens male privileges, and enhances the status of women (Marleau, Maheu 1998, 1035), thus eliminating the factors usually invoked to explain the son-preference of traditional societies (Larsen, Chung, Das Gupta 1998).

However, neither the empirical finding nor the theoretical explanation are completely convincing. A balanced sex-ratio does not imply that women don't follow a sex-specific stopping rule. If women complete their fertility history after they have born a child of their preferred sex, and assuming that there is no sex-selective behavior (abortion, malnutrition, etc. Cf. Arnold 1997), the sex-ratio of newborns will not be skewed on an aggregated level. What is more, gender preferences vary across advanced industrial countries, as Hank and Kohler (1999) show for Europe. This variance cannot be accounted for by general categories such as modernization, urbanization, or secularization. Finally, modernization refers to a long-term process of social transformation, while most analyses of sex-preferences are based on cross-sectional data. Hence, whether or not modernization has an influence on sex-preferences cannot be read off these analyses.

In this paper, I argue that modernization does not necessarily neutralize sex-preferences. Rather it gives rise to different welfare regimes which, in turn, account for different fertility decisions and different gender preferences. Gender preferences are defined as optimal stopping decisions. The welfare state influences gender preferences through two distinct channels: financial transfers and service provision.

Financial transfers: the welfare state provides financial insurance against temporary risks, such as sickness or unemployment, as well as the long-term risk of old age. However, the level of welfare benefits varies greatly across welfare regimes. I hypothesize that the likelihood of a son-preference will decrease as the generosity of transfer payments increases. The reasoning is simple. The expectation of generous welfare benefits reduces the value of a son as a source of income in times of distress.

Welfare services: the welfare state also provides services which partly stand in for functions formerly performed by the family: child rearing, nursing care, support for the elderly. Again, the level of service provision varies widely across welfare regimes. I hypothesize that the likelihood of a girl-preference will increase as the welfare state provides more services. There are basically two reasons for this. Both of them have to do with the fact that more welfare services usually also imply a higher participation rate of women in the labor market. One problem for working women is that the welfare state substitutes some but not all family functions. This is especially true for household work. As has often been observed in countries with high female labor force participation such as Sweden or the former GDR, the traditional household obligation for women does not change. Women carry a double work-load (Sørensen, Trappe 1995; Trappe 1995). Having a girl makes it easier for mothers to cope, since girls usually "produce" more household welfare than boys. Also, girls often provide more immaterial support to their elderly

parents than boys. Even if the welfare state provides an ample range of services, parents often need help to make use of these offers in their individual situation.

In the rest of this paper, I will test these hypotheses against German longitudinal data. The data include mothers that were born between 1892 and 1974 and who had their children during the time of the German Reich, the Weimar Republic, Nazi Germany, the former German Democratic Republic, or the Federal Republic of Germany. Each time period had its own distinct welfare institutions, reflecting both the state of modernization of German society as well as different conceptions of welfare (Hockerts 1998).

Background

The strong boy-preference in traditional societies derives mostly from the desire for the continuity of the lineage and the household, from the desire to have someone to perform religious rites, and from the need for material support in old age (Larsen, Chung, Das Gupta 1998, 317; Das Gupta 1987, 92). In the process of modernization these traditions tend to deteriorate and eventually disappear. State and church become separate. The social order is reorganized on the basis of the principle of equality of rights rather than origin or sex. Family help and solidarity is replaced by welfare institutions. It is no longer the family that protects people against the major risks of life. Sickness, unemployment and old age are insured by social security systems. This transformation changes incentives for individual behavior (cf. e.g. Mayer, Schoepflin 1989).

The Bismarckian welfare state of the late 19th century was focused. on old-age pensions and health care. Rooted in a paternalistic three-class society, it served as a reference point

for the development of other European welfare states. After the turn of the century, the German welfare state expanded rapidly in terms of size and depth (Lampert 1996, 63pp). The constitution of the Weimar Republic in 1919 created a legal foundation for a democratic welfare regime benefiting a constantly growing circle of people. Between 1933 and 1945, the Nazi Regime eradicated all democratic welfare institutions and abused welfare policy for racist puposes. Social groups that were not considered biologically valuable were excluded while others, e.g. mothers with many children, were particularly supported. Even so, compared to the succeeding regimes the German welfare state remained a basic, means-tested welfare state until 1945. It offered minimal financial support but was nevertheless status-orientied.

After world war II, Germany was divided into two separate states, each belonging to another political hemisphere. East Germany, being firmly integrated into the Eastern Bloc, established an equalizing welfare state that gave priority to the working population. Access to welfare benefits were associated with participation in the labor force. As a result, the employment rate among women was high. Until 1970 East Germany's welfare policy focused on education, health and the establishment of health and safety standards at work (Lampert 1996). Family policy was primarily directed towards establishing social equality of men and women in the labor market (Trappe 1995; Huinink, Wagner 1995).

During the 1970s, the directions of welfare policy were partially redefined. Transfer payments after retirement were increased and differentiated according to profession. A pro-family policy created decisive incentives for mothers to have more children (Schulz 1998; Speigner, Winkler 1990). For example, loans given to young families could be paid off by having a second and third child. Child care was inexpensive and widely available. In 1976 working hours for mothers with two children were reduced, holidays extended and a fully-paid one-year "baby pause" introduced which was granted after the birth of a second

child. For a short time, the policy had the desired effect. The total fertility rate rose from 1.58 in 1975 to 1.94 in 1980, diverging from the West German trend. However, during the 1980s fertility dropped again, although it remained higher than in West Germany. It can be said that the socialist welfare regime was a status-equalizing and service-heavy system (Hockerts 1998). Thus, Conrad (1998, 102 ff.) draws parallels between the socialistic East German and the social-democratic Swedish welfare regime.

In contrast, West Germany implemented a transfer-heavy and status-preserving welfare regime. The West German constitution gives high priority to individual liberty and leaves substantive welfare aims open. As a consequence, the West German welfare state is based primarily on monetary transfers. Contributions to and benefits from the welfare system are wage related. Unemployed receive unemployment benefits in relation to their last wage. Widows and widowers receive pension payments accordingly to the contributions of their spouses. Compared to East Germany, the female employment rate is low. Esping-Andersen (1990) classified the West-German welfare state as a conservative paternalistic regime. It was transferred to East Germany after reunification in 1990.

These differences between welfare regimes provide explanations for the changeover from a boy-preference to a girl-preference. The basic welfare regime of the German Reich assumed a sex-specific division of labor and provided little protection for older people. Apart from Germany's privileged civil servants many retirees remained economically dependent on their children. Therefore parents who had their children before 1945 should have a son-preference.

A girl is advantageous, however, when support and old-age care cannot be purchased. Biological daughters are a source of household help (Trappe 1995) and they are the major care givers for elderly parents (Soldo et al. 1990; Dwyer, Coward 1991; Henretta et al. 1997). In addition, a woman who is gainfully employed later in life has money at her

disposal. Therefore she can support her parents both financially and emotionally. As a consequence, one should expect a girl-preference among people who were born and had their children in the former GDR.

Furthermore, the West-German welfare state is "first of all a welfare state of the elderly" (Guillemard 1983, 3; Esping-Andersen 1996). Pension funds and public health care enable old and frail people to become increasingly independent economically from their families. The separation of economic and emotional interests should lead one to expect that the meaning of a child has changed in West Germany as well. The preference for a son should be weak or should even have disappeared. A clear preference for girls, however, will not emerge because, in the context of the West-German welfare state both boys and girls are functional substitutes for their parents. The advantage of girls is a higher likelihood that they provide services for their parents while the advantage of boys is the higher likelihood that they earn the extra-income necessary to buy extra service and care in the market place.

Measures

Preferences for a specific sex of a child can be measured through attitudes or behavior. I focus on the latter because social desirability might present a distorted picture in an interview situation. Stopping choices, on the other hand, have an objective demographic outcome without changing the sex-ratio of the children born. Boy or girl preferences are seen when parents stop having further children after having received a child of their

preferred sex. Since Germany has a total fertility rate at present of 1.3, I focus on transition to parity two.

According to the literature (Huinink 1989; 1995; Klein 1989; 1995; Larsen, Chung, Das Gupta 1998; Hank, Kohler 1999; Hoem, Prskawetz, Neyer 1999; Hoem 1993) characteristics of the individual woman and her personal milieu indicate the modernity of circumstances and should have an immediate impact on fertility chances and decision making. The present analysis controls for the mother's age at first birth, which fixes the probability of a further child. The marital status of the mother is also of importance, as is her educational background and employment situation. In the analysis marital status is a dummy variable that distinguishes between married and unmarried women. Education is a continuous variable and is measured as cumulated years of education. The priority accorded to having a job is measured by a dummy variable that distinguishes women who remained full-time employed or return to full-time employment one year after they have given birth to their first child from all others. An interaction term between this full-time employment indicator and the sex of the first child should shed more light into the incentive structure of a mother who prefers girls to boys.

The social milieu of a mother, her origin, and her social relations provide further reasons why she has children. The exact number of siblings and the father's profession mirror the family background. The latter category is coded as a dichotomous dummy variable and distinguishes farmers from non-farmers. By this it also provides information whether the respondent grew up in a rural or an urban environment. Religious commitment might have an effect on the number of children and is added as a dichotomous dummy variable (members versus non-members of a church) to the model. The fact that the woman's partner owns his own business could be influential, since one could be interested in having

an heir for the business. A dummy variable that distinguishes between self-employed versus not self-employed partners captures this effect.

Finally, indicators of the welfare regime define the overall changing incentive structure. Birth cohorts decide to have children at different historical moments. A distinction between East and West Germany captures the two different welfare regimes. Another indicator measures the influence of the pro-family policy of the former GDR after 1976 by distinguishing between second births before and after the policy was implemented.

Data and Methods

The analysis is based on the German Socio-Economic Panel (GSOEP). This survey was first conducted in 1984 by the German Economic Research Institute and has been repeated annually since then. East Germany has been part of the sample since 1990. This analysis is based on the set of female respondents who participate in at least one of the 15 waves and have at least one child. The sample includes 5,854 women born between 1892 and 1978. The GSOEP provides detailed socio-economic information as well as retrospect information about annually birth, marital and employment histories, which allows us to calculate event-history models.

Table 1. Number of births (GSOEP)

Births	Frequency	Percent
1	1,956	33.4
2	2,437	41.6
3	898	15.3
4	342	5.8
5	122	2.1
6	53	0.9
7	20	0.3
8	16	0.3
9	7	0.1
10	2	0.0
11	1	0.0
Total	5,854	100

Table 2. Sample and cohort Description

Cohort	Number of cases	Mean number of children	Range of birth dates of 1st child	Range of birth dates of 2nd child
…-1909	254	2.51	1913-1947	1919-1950
1910-1919	402	2.34	1928-1959	1929-1960
1920-1929	754	2.36	1938-1971	1941-1971
1930-1939	937	2.41	1948-1979	1950-1978
1940-1949	1,055	2.00	1957-1989	1960-1993
1950-…(total)	2,452	1.82	1966-1997	1968-1997
1950-…(East)	986	1.79	1966-1997	1968-1996
1950-…(West)	1,466	1.84	1967-1997	1969-1997

The Kaplan-Meier estimator depicts the probability of and time duration between the first and second births. The survival functions are calculated separately and plotted by the sex of the first child and by cohort (Kaplan, Meier 1958).

A piece-wise constant model investigates if cohort preferences remain significant even when crucial individual and social variables are controlled for. This model is particularly helpful for this analysis because the form of the time dependence of the transition process, which is based on birth dates recorded by year only, is not known (Blossfeld, Rohwer 1995, 110). The crucial assumption for a piece-wise constant model is that only a baseline

rate, which is determined by periodic constants, can vary across time periods while the covariates have the same (proportional) effects in each period (Rohwer, Pötter 1998).

The model defines the transition rate from parity one (*a*) to parity two (*b*) as

$$r_{ab}(t) = \exp\left\{\alpha_p^{(ab)} + X^{(ab)}\alpha^{(ab)}\right\} \text{ if } p_{t-1} \leq p < p_{t+1},$$

where $\alpha_p^{(ab)}$ is a constant coefficient that refers to the *p*th time period, $X^{(ab)}$ is a vector of covariates, and $\alpha^{(ab)}$ is an associated vector of coefficients that do not vary across the given time periods. Piece-wise constant models were run for the whole sample.

To examine whether the pro-family policy of the former GDR influenced the sex-preference of mothers a parametric model was calculated for the East German sub-sample. The sample includes mothers who were born after 1950 and had their first child before 1991 (N=860). A piece-wise constant model is not appropriate for this part of the analysis because the chosen time periods in the model are highly correlated with the policy covariate. Instead I chose a sickle model (Diekmann, Mitter 1983, 1984; Blossfeld, Rohwer 1995, 193) due both to the non-monotonic transition rate to parity two that is found in the first piece-wise constant models and to the fact that numerous mothers will never have a second child[i].

This model defines the transition rate from parity one (*a*) to parity two (*b*) as

$$r_{ab}(t) = a_{ab}t\exp\left\{-\frac{t}{b_{ab}}\right\},$$

$$a_{ab} = \exp\left\{A^{(ab)}\alpha^{(ab)}\right\}$$

$$b_{ab} = \exp\left\{B^{(ab)}\beta^{(ab)}\right\}$$

where $r_{ab}(t)$ is a non-monotonic, bell-shaped transition rate, $A^{(ab)}$ and $B^{(ab)}$ are vectors of the covariates, and $\alpha^{(ab)}$ and $\beta^{(ab)}$ are the associated coefficient vectors. As no

transition-specific effects of the independent variables are hypothesized, the covariates are only included in the α - term.
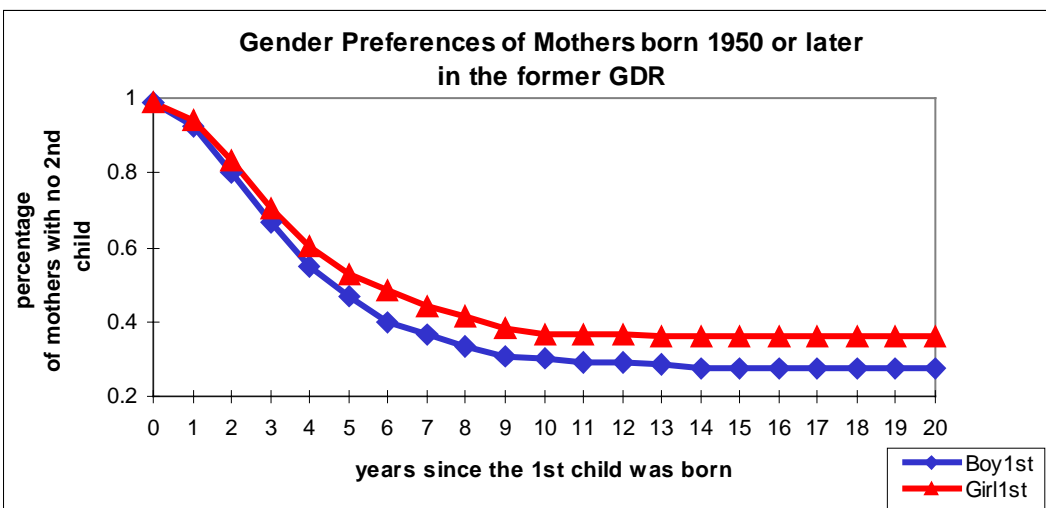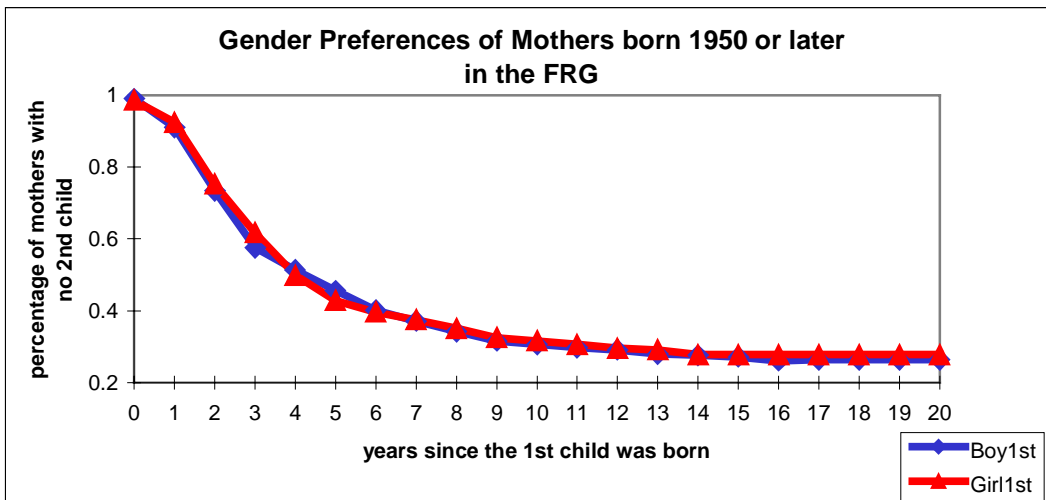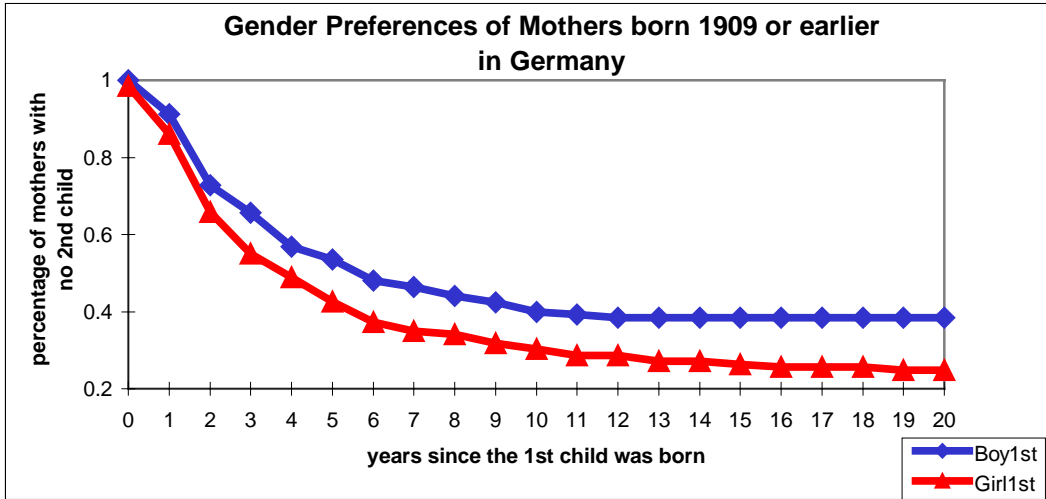
Findings

Shifting waiting times to second birth

If sex-specific preferences prevail, one should expect to find a shorter time span to the next birth and a higher progression ratio for women who have not had a child of their preferred sex compared to those who have had a child of the desired gender. Further, it is assumed that older cohorts will have a son-preference. Younger West German cohorts are assumed not to have an explicit sex-preference. Only their East German counterparts prefer girls.

Figure 1 illustrates the changing pattern over time. The oldest cohort of women who were born before 1910 and had their children between 1913 and 1950 (N=254) show a significant son-preference (p=.022)[ii]. The median waiting time to a second child was 4 years for women with a daughter and 6 years for women with a son. Historical upheavals such as the two world wars, the economic crisis of 1923 and 1929, and the reconstruction years after 1945 should explain why mothers waited comparatively long before having their second child or why they stopped having children after the first child. Although the historical period made it difficult to realize family planning, this did not prevent women from wanting to have a boy.

Graph 1: Shifting Gender Preferences among East- and West-German Cohorts

Gender Preferences of Mothers born 1909 or earlier in Germany

percentage of mothers with no 2nd child

years since the 1st child was born

Boy1st
Girl1st

Gender Preferences of Mothers born 1950 or later in the FRG

percentage of mothers with no 2nd child

years since the 1st child was born

Boy1st
Girl1st

Gender Preferences of Mothers born 1950 or later in the former GDR

percentage of mothers with no 2nd child

years since the 1st child was born

Boy1st
Girl1st

This preference pattern changed among younger cohorts. Women who were born after 1950 in West Germany (N=1466) apparently have no sex-preference at all. The survival curves for boys and girls coincide. The picture becomes more complete if one also focuses on women of parity two. The 414 women who already have two children of the same sex are more likely to have a third child than women (N=393) who have two children of mixed sex. This difference is significant (p=.021), although the annually-coded birth category is too broad to capture this effect in the median waiting time, which is 3 years for each group. The lack of a sex-preference at parity one and the preference for a sex-mixed pair at parity two show that the West German welfare regime preserves a gender-specific role difference. For this reason the utility is maximized if parents have children of both sexes.

In contrast to this pattern, East German women born after 1950 (N=986) reveal a significant girl-preference (p=.013). From 504 women who had a boy first, 328 had a second baby (65.1%). But only 57.7% of women who had a girl (278 out of 482), went on to have another child. The median waiting time is 5 years after a boy and 6 years after a girl. A preference for girls is also visible at parity two, where women with two boys are more likely to have another child than women who have at least one girl. However, there are only 121 third births, which makes the result neither significant nor reliable.

Multivariate models of individual and social differences

Multivariate models cope with restricted sample size by estimating simultaneously the different effects that are hypothesized. Table 3 lists the relative influence[iii] of the various time and individual factors on the transition to a second child.

Table 3. Relative risks of second birth in Germany by birth-cohorts born 1909 or earlier; 1910-1919, 1920-1929, 1930-1939, 1940-1949, 1950 or later

Variable/Category[1]	Model 1 Relative risk		Model 2 Relative risk			Model 3 Relative risk			Model 4 Relative risk		
Period 1 (0-2 years)	0.06 ***	(696)	0.07 ***			0.08 ***			0.08 ***		
Period 2 (2-3 years)	0.22 ***	(1,028)	0.27 ***			0.30 ***			0.34 ***		
Period 3 (3-4 years)	0.22 ***	(784)	0.27 ***			0.30 ***			0.34 ***		
Period 4 (4-6 years)	0.16 ***	(962)	0.20 ***			0.23 ***			0.26 ***		
Period 5 (6-9 years)	0.09 ***	(670)	0.12 ***			0.13 ***			0.15 ***		
Period 6 (9-14 years)	0.03 ***	(450)	0.04 ***			0.05 ***			0.05 ***		
Period 7 (14- ... years)	0.002**	(1,264)[2]	0.003***			0.003***			0.003***		
Sex of first child: girl			0.95		(2,821)	0.96			0.97		
East Germany			0.94	+	(1,859)	0.97			0.97		
Cohort … -1909			0.61 ***		(254)	0.73 **			0.80 +		
Cohort 1910-1919			0.73 **		(402)	0.77 **			0.79 *		
Cohort 1920-1929			0.76 ***		(754)	0.80 **			0.78 **		
Cohort 1940-1949			0.77 **		(1,055)	0.76 ***			0.76 ***		
Cohort 1950 - …			0.87 *		(2,452)	0.82 **			0.78 ***		
Cohort … -1909 x girl			1.52 * *			1.30			1.25		
Cohort 1910-1919 x gir1			1.13			1.11			1.09		
Cohort 1920-1929 x girl			1.04			1.03			1.04		
Cohort 1940-1949 x girl			1.09			1.07			1.05		
Cohort 1950-… x girl			1.05			1.01			1.01		
Cohort 1950-… x girl1 x East Germany			0.80 **			0.82 *			0.83 *		
Age at 1st birth						0.94 ***	(5,854)		0.94 ***		
Married						3.27 ***	(5,582)		3.19 ***		
Years of education						1.01 ***	(3,661)		1.01 ***		
Fulltime employment during the same or one year after 1st child was born						0.85 ***	(2,071)		0.84 ***		
Member of church						1.15 **	(2,320)		1.17 ***		
Partner is self-employed									1.10 ***	(703)	
Number of siblings									1.04 ***	(3,426)	
Father was a farmer									1.15 ***	(112)	
Sample size	5,854		5,854			5,854			5,854		

Source: German Socio-Economic Panel; + 0.1 level of significance using the Wald test statistic; * 0.05 level of significance using the Wald test statistic; ** 0.01 level of significance using the Wald test statistic; *** 0.001 level of significance using the Wald test statistic. Figures in brackets indicate sample frequencies.

[1] Reference categories are omitted. They represent either the opposite for dichotomous variables or in the case of the multinomial cohort variable the missing birth cohort 1930-1939.

[2] Period 7 includes censored cases.

Model 1 depicts the transition process in seven time periods corresponding to the distribution of the second births. The rate pattern is non-monotonic. The probability of having a second child decreases over time, but it decreases hardly during the same year or one year after the first child was born. The most likely time span for having a second child is between two and six years after the first birth. After this time it is increasingly unlikely that a woman will have another child.

To trace back the alleged sex-preference shift in more detail, more and equally spaced cohorts are defined and included in model two. The cohorts reflect different historical periods. The oldest and youngest group of women, born either before 1910 or 1950 and later are open categories. The former captures the period of the German Kaiserreich, the later covers the period of the two German states after world war II.

The models seem to confirm the prediction. The sex of the first child as well as living in East-Germany has no timeless influence on the transition to parity two. Cohorts differ significantly in their reproductive behavior. Women born between 1930 and 1939 are the most likely to have a second child. They are the mothers of the German baby-boom during the 1960s. All older and younger women have a significantly lower risk to get a second child.

Interaction effects are important as predicted. Women born in the first decade of this century who had a girl as their first child have a risk of transition to parity two of 1.52 relative to women who were born on average thirty years later. The significant difference between the two cohorts is understandable if one takes the historical background of their life-course into account. While the oldest women received children at a time of severe economic and political crisis, the younger reference group started a family primarily during a period of sizeable economic growth in both parts of Germany. All younger cohorts do not differ systematically. However, a three-way interaction reveals the significant effect

hypothesized. East German women who were born 1950 or later and who had a girl as their first child have a significantly lower risk of receiving a second child (- 20%) than their reference group, which was older[iv] and/ or had a boy and/or were born in West Germany.

Model 3 tests how far individual characteristics explain this preference change. The significance level of the first interaction disappears, when age at first birth, the educational and religious background of the mother, being married and full-time are included in the model. These variables elucidate some of the connection of women's emancipation and fertility. However, the girl preference of the East-German cohort does not disappear. The interaction pattern remains even if indicators of the origin and the social network are included (Model 4). A self-employed partner increases the probability of having a second child by 10%[v]. The number of siblings and a father who was a farmer have a systematic impact, too, but none of these factors capture the preference change.

If social policy defines the incentive structure of (some) individual decisions, the pro-family policy that was initiated in the former GDR in the 1970s should have had an impact on the fertility behavior of women. To check this assumption a further analysis was undertaken exclusively with East German women born in 1950 or later who received their first child before 1991.

Table 4. Relative risks of second birth for cohorts born 1950 or later with the first child born before 1991 in East Germany

Variable/ Category[3]	Model 1 Relative risk	Model 2 Relative risk	Model 3 Relative risk		Model 4 Relative risk	
Constant	0.13 ***	0.15 ***	0.21 ***		0.03 ***	
Sex of first child: girl		0.82 * (418)	0.80 **		0.92	
Age at 1st birth			0.92 ***	(860)	0.98	
Married			3.28 ***	(793)	1.59 +	
Years of education			1.02 *	(798)	1.01	
Fulltime employment during the same or one year after 1st child was born			1.07	(582)	1.05	
Member of church			1.09	(149)	1.01	
Partner is self-employed			1.13 *	(127)	1.10	
Number of siblings			1.07 ***	(613)	1.04 +	
Father was a farmer			0.97	(25)	1.04	
Pro-family policy : second child born after 1977 and before 1990					6.93 ***	(421)
Sex of first child: girl **x** fulltime employment during the same or one year after the 1st child was born					1.05	(417)
Sample size	860	860	860		860	

Source: German Socio-Economic Panel. + 0.1 level of significance using the Wald test statistic; * 0.05 level of significance using the Wald test statistic; ** 0.01 level of significance using the Wald test statistic; *** 0.001 level of significance using the Wald test statistic. Figures in brackets indicate sample frequencies.

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[3] Reference categories are omitted. They represent the opposite for the dichotomous dependent variables.

Table 4 presents the results. The risk of having a second child is 18% lower among East German women whose first child was a girl rather than a boy (model 2). This significant effect remains even if individual characteristics are taken into account (model 3). The picture, however, changes crucially, when one distinguishes between children that were born before and those born after the pro-family policy was implemented. Non of the individual and social milieu characteristics remain significant. Model (4) reveals the important impact of family policy on fertility behavior in general and on sex-preferences in particular. The pro-natalistic measures changed the sex-preferences of the mothers for the first child.

This preference shift seem not to be explained by the higher welfare production of girls in the household. The interaction of a fulltime employment and the sex of the first child is not significant. However, a plausible explanation might be that welfare transfers outweigh the advantages of a one girl family by overcompensating the disadvantages of a second child. In this sense two children are expected to produce more welfare than only one girl.

Summary and Discussion

It is well-established in demography that parents in traditional societies prefer sons to daughters, owing to a strict sex-specific division of labor. This preference pattern leads in some countries to high fertility rates. In others, where fertility has dropped rapidly, it leads to sex-selective discrimination and a skewed sex-ratio. In advanced societies (most of)

these sex-discriminative traditions have been lost. The fertility rate decreases but the sex-ratio among newborns remains balanced. The general conclusion has been that sex-specific preferences of parents disappear in the course of modernization.

However, this conclusion is usually based on cross-sectional data. Longitudinal analyses, tracing the impact of modernization variables over time, are lacking. This paper fills in the gap. It argues that modernization does not neutralizes sex-preferences. Rather it gives rise to different welfare regimes which have a differential impact on sex-preferences. German longitudinal data was used to check this intuition. Comparing German data has two advantages. First, the change in preferences can be traced over time. And second, in East- and West-Germany two modern but completely different welfare regimes can be analyzed under almost experimental conditions.

The main result can be summarized as "welfare policies matter". The significant son-preference that was found among the oldest cohort had disappeared already in a cohort that was only ten years younger. And it never returned. It seems that the second world war is the dividing line between traditional and modern fertility patterns in Germany. The foundation of a socialist regime in East Germany in 1949 then established a new incentive structure for a preference-shift.

A service-heavy and status-equalizing welfare system that focused on children and the working population, and allowed for a high level of female labor force participation while it placed the elderly population at a disadvantage, attached a positive significance to a female child. However, this preference was completely absorbed by a family policy that gives privileges to women with higher parity. While the analysis confirms that the modernization process tends to weaken the son-preference, it also shows that modernization cannot account for the emergence or non-emergence of a girl-preference. This means that even among developed countries there will be significant differences in preference patterns.

Although the analysis provides a fairly detailed picture of the changing political, social and individual milieu in which German women decided to have a further child, several important aspects could not be addressed in this study. First, the data are limited in size. Especially the oldest cohort is comparatively small, too small to distinguish between the date of birth of the mother, date of marriage and the date of birth of the children. At least, there is no chronological overlapping between the last-born child of the oldest cohort and the first-born member of the youngest cohort. Second, the dates of birth are only given in calendar years. This is less crucial, however, as the analysis focuses primarily on stopping behavior, not on detailed transition patterns. A re-analysis with a logistic regression model for discrete transition time yielded similar results.

Third, the analysis is restricted to the transition from first to second child. Again, data limitations prevented a further analysis. Moreover, it is doubtful whether the decision to have a second child is based on the same motives as the decision to have a third child. For advanced societies authors have shown theoretically and empirically that the costs of a child depend crucially on the number of siblings already born. (Becker 1981; Tölke 1989). Further, the West German regime creates high hurdles for mothers with three or more children regarding participation in the labor force. As a consequence, the preference pattern we have discovered should not be simply generalized to all transitions. Even so, the analysis of the transition to parity two includes 75% of all mothers in the sample and is therefore an important result.

In conclusion, fertility decisions in modern societies encompass various different gender preferences. The welfare system and its linkage with the labor market is a crucial incentive factor that mothers take into consideration when they decide to have a second child. Further analysis with larger sample sizes and international data should prove to what extent these results can be generalized. What can be predicted at this point is that fertility

preferences in Germany will be governed to a large extent by the development of the welfare regime. But the increasing female labor force participation and the growing "burden of aging" should increase the value of a daughter since she assumes both the role of a breadwinner and that of a caregiver. In the future, the average girl may well wish to become the mother of a one-daughter family.

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Notes

i Huinink (1989) used for the same transition an exponential model with time-dependent covariates and included two duration covariates to model the process from the first to the second child as an age dependent and logistic bell-shaped curve. He confirmed a right-skewed distribution like in the sickle model. A reanalysis of his modeling approach with a time-dependent employment covariate gives the same results along with a significant effect of the age at first birth.

ii Significance information about the survival distribution of the Kaplan Meier estimators refer to log rank tests.

iii A value of one indicates no effect, a value below one represents a negative, a value above one a positive influence. The seven period variables however have to be interpreted differently. Here a value of zero indicates no effect, higher values represent higher risks.

iv The same effect appears when the cohorts are not pooled but divided into the previous 6 groups.

v The interaction between the self-employment status and the sex of the previous child is not significant.