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Intergenerational Aspects

The Economics of Fatherhood: An Analysis of Men in East and West Germany

By James C. Witte and Gert G. Wagner*

Summary

This paper uses data from the GSOEP to look at the relationship between labor force status and fatherhood among men in East and West Germany. The main analytical question is the extent to which differences in fertility may be explained by variation in employment and economic security. Using the pre-reunification period in the west as a baseline, we consider the degree to which the unprecedented fertility decline in the eastern states follows from the tenuous labor market position of eastern German young people — men as well as women. Furthermore, it is hoped that the paper's comparative perspective will contribute to a more nuanced account of the processes of assimilation that are part and parcel of German reunification.

1. Introduction:

Males and the Economics of Fatherhood

Demographers have generally viewed reproductive behavior from the woman's point of view. In part, the traditional demographic perspective is justified on analytical and conceptual grounds. Quite simply, female reproductive behavior is easier to measure: births are easier to record than conceptions. Furthermore, demographers have long grappled with the so-called "two-sex problem." Systematic gender differences in the age at which men and women participate in a variety of social behaviors, combined with variation in cohort sizes, often lead to conflicting results depending on whether the analysis is based on women or men.

Beyond the analytical justification for focusing on women in the study of fertility, there is a biological basis for this emphasis as well. As a biological process the expenditure of energy associated with reproductive behavior is not equally distributed. Biological anthropologists note that relatively minor changes in diet and physical exertion may interfere

with female reproductive function, while it appears that dramatic environmental change or physical strain are needed to disrupt male reproductive function (Ellison 1994; Campbell and Leslie 1995).

Adapting this model to the social environment suggests that male reproductive behavior should be far less sensitive to social change than female reproductive behavior.

However, our focus is on fatherhood, not fertility. Analytical and practical concerns motivate this emphasis as well. While it is quite common for surveys to ask women to provide a fertility history, males are rarely asked to do the same¹. Thus, as detailed below, our analysis is based not on biological fatherhood, but rather on a particular social form of fatherhood: living with one's child. Looking at parenthood, gender-based differences in the expenditure of energy are presumably not as extreme, though by no means absent. With increasing calls for gender-based equality, there have been changes that, on the whole, probably amount to less differentiation in the roles of mothers and fathers. In most industrialized countries it has become easier for women to combine childrearing and paid labor outside the home; meanwhile, many young men are taking a more active role in childrearing. However, given the considerable differences that remain, it is likely that labor force status and economic security affect the choice of men to become fathers in a different way than they affect the choices of women to become mothers.

The relationship between employment status and fertility for women has been the subject of a long-standing debate as to whether unemployment decreases or increases the fertility rate (Butz and Ward 1979, 1995; Zimmermann and DeNew 1991; Dinkel 1994). Two effects, each influencing the fertility rate in an opposite manner, are plausible and likely: unemployment lowers the opportunity costs of caring

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¹ An exception here is the U.S. Census Bureau's Survey of Income and Program Participation (SIPP), which includes a fertility history question for all respondents in one of its topical modules. In general, however, the question is considered too invasive, particularly as the data quality is presumed to be suspect.

for a child and *increases* the fertility rate; unemployment reduces the budget available to care for a child and *decreases* the fertility rate. The balance struck between these two effects depends, in large part, on the resources available to a woman to lower the costs of child care (see Spiess 1997), as well as the value of her paid labor. In addition to the latter effect, in market-oriented economies there are long-term costs due to the subsequent devaluation of human capital associated with an interruption in employment (see Ott 1992).

Consistent with this model, since reunification economic circumstances have divided women in eastern Germany into two groups based on their employment status (Witte and Wagner 1995b). There are only minimal opportunity costs of childbearing for women outside the employment system, since they are likely to remain there until the eastern German labor market rebounds in future times. In addition, because the replacement rate of unemployment insurance benefits in eastern Germany is relatively high, the economic situation of an unemployed person is not particularly difficult (see Frick et al. 1995). On the other hand, the opportunity costs of having a child are quite high for employed women. If a woman remains outside the employment system beyond the three-year parental leave period, she is likely to experience difficulty reentering the labor force, making leaving the labor force to have a child quite costly². However, the fundamental problem of combining childrearing and employment is postponed until the child begins school at the age of six or seven (see Witte and Wagner 1995b). The alternative is to restrict the subsequent interruption to employment, returning to work before parental leave benefits expire. Ancillary problems either real or perceived by employers and co-workers such as restricted labor market flexibility (e.g., mobility) and a lower level of job commitment (e.g., willingness or ability to work overtime) remain even if a woman finds child care and returns to work.

The growing importance of female labor force participation and its complex relationship to fertility have forced demographers to reconsider the standard view of the relationship between the economic circumstances of men and fertility patterns in industrialized society. In this view, the industrial revolution established a gender division of labor that clearly separated women and men in the type of work they did as well as in the locus of their productive effort. The male became the "breadwinner," who brought home the means for the family to participate in an economy that was increasingly dependent on cash transactions (Bernard 1981). In this context, the standard male model treats children like consumer goods: "other things being equal, couples with higher income will have more children, just as they will have more cars and more European vacations" (Butz and Ward 1995, p. 670). As income fluctuates with the business cycle, fertility follows suit: fertility rates increase in times of prosperity and fall when the economy turns down.

The efficacy of this simple, straightforward model has, however, been challenged by changes in female labor force participation. Men are no longer the sole intermediaries between the business cycle and fertility. Prosperity still increases male incomes, but it also raises the opportunity costs of childbearing for women. These developments force us to reconsider the relationship between economic circumstances and fertility and redefine the economic bases of fatherhood. German reunification provides an ideal context for this question as it has been a period of profound change in the eastern German economy and has been accompanied by dramatic demographic change as well.

2. Recent Eastern German Fertility Trends

Though there were any number of significant and unanticipated consequences of reunification, the immediate decline in eastern German fertility stands out as particularly striking. Vital statistics clearly indicate that the fertility rate in the former East Germany dropped sharply after reunification (see, for example, Eberstadt 1994). The total fertility rate fell from 1,517 births for each 1,000 women in 1990 to 830 births for each 1,000 women in 1992. Moreover, it has not rebounded but remains stable at a low level, 774 births in 1993 and an estimated 750 births in 1994. Decreased fertility is not specific to any one age group but cuts across the childbearing years, although there is a slightly greater decline among women of younger ages.

Births in the first ten months of 1995 increased by 4 percent relative to the same time period in 1994, which amounts only to an additional 2,662 births throughout all of eastern Germany (Dorbritz 1996). It is far too early to conclude if this marks a turning point and, if so, just how high eastern German fertility will climb. Indeed, it is too soon to accurately decompose the recent increase into births attributable to increased fertility among relatively young women and births among older women who put off having children in the first four years following reunification. The definitive answer will only be known once these cohorts of women have concluded their childbearing years. Until then, demographers must rely on projections, which can be improved if we have a better understanding of the determinants of fertility. The results presented below are intended to add to this understanding by exploring the economic bases of fatherhood.

3. Data:

The German Socio-Economic Panel

Our analyses of the individual level correlates of changing patterns of fertility in Germany are based on data from the German Socio-Economic Panel (GSOEP) (see Wagner

² An exception may be young women, such as teachers, who occupy civil service positions that provide tenure for life. In such instances, job security would presumably have little impact on fertility decisions.

et al. 1993). Due to the variety of individual-level socioeconomic variables collected by the GSOEP, our analysis of fertility may go beyond standard demographic projections based on vital statistics and time-series analysis methods that have changed little since they were first developed in the 1920s (Ryder 1990).

The analyses presented below are based on two analytical files. The first looks at men aged 16 to 51 in West Germany during the years from 1984 to 1988. These data are intended to provide a baseline and cover the period just before reunification, so as not to confuse the general effects of economic circumstances on fatherhood with those specific to reunification. Our analyses of the same age group of men in the eastern states are also based on five years of GSOEP data, but for the years following reunification (1990 to 1994).

Though drawn from different time periods, the two data sets are constructed in a very similar manner. The dependent variable used in our analyses is whether or not a man becomes a father in 1985 to 1988 in West Germany or in 1991 to 1994 in eastern Germany. Our definition of fatherhood is very specific: a respondent becomes a father if at the time of the survey he shares a household with a child who was born since the previous data collection³. We view paternity in a social rather than a biological sense, and we overlook fathers who do not live with their children.

Due to the small number of births (114) that take place in the eastern sample, our models use relatively few covariates. Taking into account the natural biological lag between conception and birth, each of the covariates comes from the year prior to the observation of whether or not the male becomes a father. Thus, while the dependent variable comes from data collected between 1985 and 1988 in West Germany and 1991 and 1994 in eastern Germany, data for the independent variables were collected between 1984 and 1987 in West Germany and 1990 and 1993 in eastern Germany. The primary covariates used include: age, marital status, whether or not there are other children in the household, household income, and the employment status of the man and his partner, if he is married to or living with a woman. As more data accumulate, more detailed models may be possible, but here our primary interest is examining the effects of employment and unemployment rather than simply maximizing the share of explained variance.

Our multivariate models pool the birth data for each male respondent. The fertility outcomes for each observation, i.e., each male year at risk of becoming a father, are treated as dichotomous indicator variables. Logistic regression techniques are then used to regress the dichotomous outcomes on a set of independent variables. The resulting model may be seen as a discrete time hazard model, where the estimated coefficients are interpreted as indicating the effect of the variables on the fertility rate or, alternately, on the conditional probability of giving birth in a time period equal in length to the discrete time interval here, one year

(see Allison 1982). In our multivariate analyses we include a dummy variable for the year of observation to test whether the probability of giving birth systematically varies across the years under consideration⁴.

Theoretically one would want to separately model first births and higher parity births. However, due to the small number of births in the eastern sample we are unable to make this distinction. Thus, we model all births together, but in our multivariate analyses we introduce a dummy variable indicating whether or not the man lived with other children.

Additional variables are included in our models for control purposes. Fertility rates clearly vary by age. Using the 20 to 25-year old age group as a reference category, we include dichotomous variables to identify three additional age groups: 18 and 19-year-olds, 26 to 30-year-olds and 30 to 35-year-olds. Lower rates of fatherhood among younger men may be attributed in large part to the fact that they have not yet completed their education. In future work we intend to directly measure school enrollment status to determine whether there are additional age effects as well.

4. Findings

Table 1 provides basic, univariate, descriptive statistics for the two samples used in our analyses. One of our main concerns is the extent to which male reproductive behavior, in particular the determinants of fatherhood, in eastern Germany has moved in the direction of patterns found in West Germany. A prior step, however, requires a comparison of the basic characteristics of the two populations "at risk" of becoming fathers, i.e., males between the ages of 16 and 51 in the eastern and western states. The West German sample is intended to represent the determinants of fatherhood in "normal," pre-reunification West Germany. The eastern German sample is designed to represent male reproductive behavior of a population reacting to large-scale social change.

Comparing the two samples, it is immediately evident that the West German sample is noticeably younger than the East German sample. For example, approximately one in five West German males (21.5 percent) in the sample were aged 16 to 24 in 1987, but only 11.4 percent of the sample of East German males were that age in 1994. While this says nothing about the distribution of young men in their early twenties, it does indicate that the proportion of males about to enter the age when men are most likely to become fathers (ages 25 to 34) is disproportionately smaller in the

³ "Grandfathers" do not occur in either sample.

⁴ Though a common technique, this pooling procedure does violate the standard assumption of independent observations, since individual men contribute multiple observations to the analyses. Subsequent analyses should make use of statistical techniques to account for clustering effects.

Table 1

Descriptive Statistics for Men from Western and Eastern Germany
in percents

	West Germany					East Germany				
	1984	1985	1986	1987	All Years	All Years	1990	1991	1992	1993
Age										
16 to 24	24.2	24.2	23.4	21.5	23.3	15.2	18.8	16.6	13.0	11.4
25 to 34	29.9	28.6	27.8	29.1	28.8	28.7	30.5	28.6	28.0	27.1
35 to 44	26.7	26.4	26.2	25.6	26.2	28.3	25.9	28.5	29.2	30.1
44 to 51	19.2	20.8	22.6	23.8	21.7	27.9	24.8	26.4	29.8	31.4
Marital Status										
single	34.2	34.9	33.5	33.0	33.9	17.8	19.2	18.5	17.3	15.8
cohabiting	4.9	4.4	4.1	4.4	4.4	6.7	7.0	6.2	6.5	7.0
married	54.6	54.1	54.6	54.3	54.4	71.0	68.8	71.0	72.2	73.0
divorced or widowed	2.1	2.3	2.7	3.0	2.5	4.4	5.0	4.4	4.0	4.2
Percent with other child in household	48.3	46.1	43.6	41.7	44.8	49.8	52.0	49.8	49.3	47.6
Percent single parents	4.3	4.4	5.1	5.4	4.8	2.6	3.0	2.8	2.4	2.4
Percent of married and cohabiting partners employed	42.6	45.3	43.6	47.8	44.9	71.9	83.9	73.9	63.8	63.8
Mean household income	3,182	3,274	3,418	3,536	3,359	2,673	2,039	2,440	2,968	3,422
Number of cases	2,279	2,297	2,291	2,268	9,135	6,050	1,699	1,544	1,445	1,362

Source: German Socio-Economic Panel (GSOEP); authors' estimates.

eastern states. Fewer than half of the males in the West German sample were beyond the peak fatherhood years, but more than 60 percent of the men in the East German sample were aged 35 or older in 1993. Moreover, looking further into the future, we know that the preschool cohorts born in the post-reunification baby bust in East Germany are quite small; when they reach childbearing age, regardless of the fertility rate, a relatively small number of births is to be expected.

Turning to marital status, Table 1 indicates a further difference between the two samples. Considerably fewer West German males aged 16 to 51 are married or cohabiting than in the eastern German sample. No doubt, this is due in part to the younger age composition of the West German sample; but it also reflects the younger average age at first marriage found in the former East Germany. Marriage rates have declined in the eastern states since reunification at a pace nearly equal to that of the change in fertility however, as with fertility, the most recent marriage statistics indicate a slight increase (Dorbritz 1996).

Table 1 also indicates that eastern German men are somewhat more likely to already be living in a household with children. This result, too, is most likely an amalgam of the older age composition of the eastern sample and the legacy of its fertility patterns. Observers familiar with eastern German family patterns, including its large proportion of out-of-wedlock births, may be surprised to note that

there is little difference in the percentages of single fathers in the two samples. Keep in mind, however, that the vast majority of single-parent households are female-headed.

Looking at the percentage of males employed in the two samples, Table 1 clearly indicates the different economic contexts in which members of the two samples found themselves. Throughout the four years in the former West Germany approximately one-quarter of the males sampled were not employed. While some of these young men were involuntarily unemployed, the majority were out of the labor force by choice and were pursuing vocational or academic degrees. In terms of short-term choices about fatherhood, both unemployment and enrollment in schooling are predicted to diminish the likelihood of becoming a father.

Looking at the eastern states, we note that in 1990 over 90 percent of the sample were employed full- or part-time. Since they were also slightly older, they were more likely to have completed their education. Furthermore, prior to reunification, there was legally no unemployment in East Germany and all persons not working were "not in the labor force." By 1993, however, their employment rate had dropped 16 percentage points, almost to the pre-reunification West German rate. Compared to the relatively stable unemployment level that prevailed when the sample of men in the West was making decisions about fatherhood, the sample of eastern German men made decisions in a time of considerable economic uncertainty, indeed.

Others have observed that the employment costs of reunification have fallen even more heavily on women. The data in Table 1 on the employment status of the female partners of married and cohabiting men in the sample — about two-thirds of the West German and over three-quarters of the eastern German males — support this contention. In the former West Germany, over the four-year period there appears to have been a modest gain in employment among the partners of these men. In the post-reunification eastern states, on the other hand, while 84 percent of these women were employed in 1990, only 64 percent were employed in 1993. As a result the gap between the employment rate for eastern German men and their spouses/partners grew in the years following reunification and quite possibly the economic balance of power within the household shifted — as more men took over the traditional sole "breadwinner" role.

Against this backdrop, the variation in mean household income experienced by the two samples ought to be viewed

with caution. The values reported in Table 1 are postgovernment incomes unadjusted for inflation. Over the four-year period in the former West Germany, mean household income grew by a modest 11 percent; in the four years after reunification average household income in the eastern states dramatically increased by 68 percent.

Table 2 reports logistic regression coefficients obtained when a dichotomous dependent variable indicating whether or not each male respondent shared a household with a newborn child in the following year is regressed on the set of independent variables described in Table 1. The left panel of Table 2 represents the baseline model of the determinants of fatherhood in West Germany. On the whole, these results present a picture that is quite consistent with the standard economic model of fatherhood. Compared to single men, married and cohabiting men are significantly more likely to become fathers in the following year. Somewhat surprisingly the same is true of divorced and widowed men though the effect is not nearly as strong

Table 2

Logistic Regression for Fatherhood
Dependent Variable: Man Became a Father between Years t-1 and t?, 0/1

Covariates at t-1	West Germany		East Germany	
	Logistic Regression Coefficient	Wald Statistic	Logistic Regression Coefficient	Wald Statistic
Married living with spouse	2.85**	79.64	0.84*	2.99
Living with partner not married	2.02**	30.60	1.67**	12.55
Divorced or widowed	1.54**	5.38	-0.01	0.00
Other children aged 16 or younger in household	-0.39**	8.10	8.73	1.25
Single parent	0.74	1.69	-7.01	0.06
Employed full- or part-time	0.49**	4.03	0.44	0.28
Partner employed if married or cohabiting	-0.17	1.54	-0.41*	3.31
Natural log of household income	-0.13	0.68	-0.68**	4.79
Aged 24 or younger	-1.13**	10.65	0.48	2.07
Aged 35 to 44	-1.21**	79.74	-1.81**	30.25
Aged 45 or older	-3.17**	109.72	-1.00**	6.09
Birth year (1986)	0.27*	2.77	—	—
Birth year (1987)	-0.00	0.00	—	—
Birth year (1988)	0.40**	6.47	—	—
Birth year (1992)	—	—	0.62**	5.01
Birth year (1993)	—	—	-0.37	1.55
Birth year (1994)	—	—	-0.15	0.63
Constant	-3.93**	9.87	-7.02	0.75
Number of observations		8,707		5,917
Number of births		350		114
McFadden Pseudo R ²		0.17		0.24

*) p < .10. — **) p < .05. — Note: Reference categories in employment status (unemployed or out of labor force); marital status (single); children in household (no child aged 16 or under in household); age (25 through 34); birth year (1985 for West Germans, 1991 for East Germans).

Source: German Socio-Economic Panel (GSOEP); authors' estimates.

and most likely reflects a variety of social processes⁵. West German males are also significantly less likely to become fathers if they already live in a household with children. In keeping with the standard economic model, the probability of fatherhood increases in the West German sample if a man is employed moreover, if he is married or cohabiting it is unaffected by the employment status of his partner.

The results for the eastern German sample are shown in the right panel of Table 2. Compared to the West, the impact of being married is relatively small. In the eastern states, where out-of-wedlock births made up nearly half of all births prior to reunification, cohabitation has a stronger effect on subsequent fatherhood than marriage. For the eastern German sample the coefficients associated with other children in the household and single parenthood are large and yet statistically insignificant. Most likely these results may be traced to measurement error that comes from confusing children and siblings.

More interesting to note is a clear East/West difference in the significance of employment status of men and their partners. In contrast to the West, the employment status of eastern German males is not significantly correlated with fatherhood in the following year; however the employment status of their partners is. Married or cohabiting east German men whose partners are employed are less likely to become fathers than those whose partners are not employed. This finding challenges the standard economic model of fertility. In the eastern states the rapidly changing economic context has produced a situation where the simple income effects of male employment status are decidedly outweighed by the opportunity costs of women leaving the labor force. Furthermore, the statistically significant negative relationship between household income and

the probability of fatherhood also speaks against a purely economic model that views children as a more or less standard normal consumer good. In fact, the more income an eastern German male's household has, the less likely it is that he will be a father in the coming year.

In addition to demographic and labor market data, the GSOEP also collects a variety of attitudinal data as well. Most relevant for this paper are a series of questions regularly posed to respondents regarding their concerns and worries. Table 3 summarizes the responses given by eastern German males between 1990 and 1993 as to their concerns and worries about the general economic climate, their own personal economic situation, and job security. These results indicate relatively high overall levels of concern: over one-third of the male respondents expressed great concern in each of these areas. Only about one-quarter of the employed respondents said they had no concerns about their own job security, and even fewer, about 10 percent of all respondents, said they had no concerns regarding their own personal economic situation or the general economic situation. Table 3 indicates, however, that these concerns are not associated with the likelihood of becoming a father. The standard economic model of male fertility would suggest that men with fewer economic worries would be more likely to become fathers — yet none of these variables is significantly associated with whether or not a man becomes a father. Moreover, when these variables are added to the model presented in Table 2 the effect of concerns and worries remains insignificant.

⁵ For example, the divorce may be the result of the male's involvement with a new partner, or these respondents' prior marital history may be a proxy for unmeasured characteristics that incline the person toward a family.

Table 3

Economic Concerns and Worries of Eastern German Men by Fatherhood Status in Following Year
in percents

	Concerns and Worries at Time t-1					
	About the Economy in General		About Personal Economic Situation		About Job Security	
	No Child _t	Child Born _t	No Child _t	Child Born _t	No Child _t	Child Born _t
Great concern	39.6	36.2	32.4	36.2	33.5	34.0
Some concern	52.0	56.9	56.2	51.7	42.6	37.7
No concern	8.4	6.9	11.4	12.1	24.0	28.3
Number of cases	5,904	116	5,906	116	5,043	106
χ^2	1.16		0.95		1.39	
P of χ^2	0.55		0.62		0.50	

Note: The worries and concerns are reported in 1990 to 1993 and births occur in 1991 to 1994.

Source: German Socio-Economic Panel (GSOEP); authors' estimates.

5. Discussion

At first glance, the obvious question raised by our findings centers on the apparent insignificance of men's own economic circumstances in determining whether or not they are likely to become fathers. Though it may fly in the face of popular belief, other researchers have raised similar questions. Certainly there is good reason and much promise in pursuing research that seeks to understand how and why traditional male models of fertility may no longer be viable.

This said, our findings incline us to favor a different question. How can it be that the likelihood of a married or cohabiting male becoming a father is more closely associated with the employment status of his spouse than his own employment status? The gender-based division of labor upon which the "breadwinner" and "homemaker" roles rest may well be socially constructed, but that makes it no less real. Nor does it negate the fact that these roles

have been handed down from generation to generation. Why have they changed, why here, and why now?

This line of questioning brings us full circle. Impressed by the failure of the standard male model of fertility, we set out to identify the economic factors that *really* influence male reproductive factors. We did not find them. It may well be that the single most important conclusion to take from our findings is that a simple, male-oriented economic model of fatherhood just does not work. Pohl (1995) makes an interesting point in this regard when she notes that not only the eastern Germans are particularly effective contraceptors, but also that the methods most frequently employed (oral contraceptives and the IUD) are methods that women control. The same may be said for abortion as well, though access to abortion for eastern German women has been greatly reduced since reunification. The link between the economic characteristics, particularly attitudes such as their economic concerns and worries, and fatherhood may be weak, in large part because men play a secondary role in fertility decisions.

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