

Has East Germany Overtaken West Germany?

Recent Trends in Order-Specific Fertility

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ONE OF THE most remarkable demographic developments in the last decade of the twentieth century was the fertility response to the collapse of Communism. In virtually all countries of the former Eastern Bloc, fertility declined with the demise of the Communist systems to unprecedentedly low levels (Eberstadt 1994; Witte and Wagner 1995; Sobotka 2004; Frejka and Sobotka 2008; Billingsley 2010). Nowhere was the fertility response so drastic and abrupt as in East Germany.¹ The fall of the Berlin Wall, which marked the end of the German Democratic Republic (GDR), left its immediate imprint in the monthly fertility rates, which declined almost exactly nine months thereafter. In 1992, East German period fertility rates reached a record low level of 0.8 children per woman. Had the GDR still been in existence, this would probably have been the lowest TFR ever recorded for a country.

With the reunification of Germany in October 1990, the GDR ceased to be a country and a radical and swift transformation of East German society began. The central question for many researchers at the time was whether, and under what conditions, the East German fertility rate would start to recover (Eberstadt 1994; Witte and Wagner 1995; Conrad, Lechner, and Welf 1996). Optimists predicted a swift convergence of fertility behavior, arguing that institutional constraints in the two parts of Germany would converge as well. The pessimistic view pointed to extremely unfavorable economic conditions in the East, which were not projected to improve substantially in the foreseeable future. If it is assumed that fertility rates reflect economic conditions, it should be expected that East German fertility would remain permanently below West German levels.

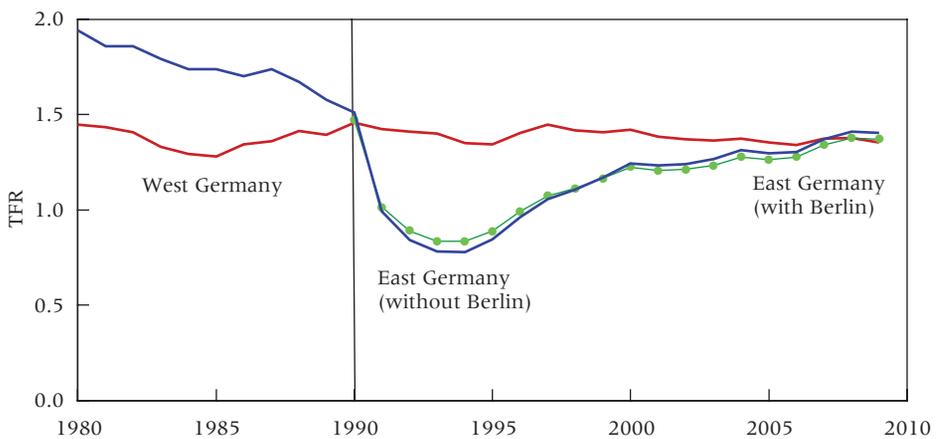
In 2008—18 years after reunification—period total fertility rates in East and West Germany did indeed converge. In both parts of the country, the current TFR is 1.4. Admittedly, the fertility rates of both populations have

met at a very low level. However, the fact that East Germany's period fertility has caught up with West Germany's suggests that the East has overcome the "demographic shock" (Eberstadt 1994) that was diagnosed in the period after reunification. It also suggests that, in terms of fertility behavior, the "two Germanys" have finally also reunited, signifying a large step toward social unification.

We can also approach this fertility development from another perspective. East German period fertility has been steadily rising in recent years, while the West German rate seems to have stalled at a level of 1.4 children since the 1970s. What might look like a convergence of behavior could actually be a cross-over. If we disregard Berlin—whose population mainly belonged to West Germany before reunification—we can conclude that East Germany has already overtaken West Germany (see Figure 1). Is it plausible that women are having more children in the East than in the West despite the relatively poor economic conditions in the former? Will the total fertility rate in both parts of the country move in tandem in the future? Or can we expect that the East German TFR will increase even further, while the West German rate will remain at an unchanging low level?

Ideally, the TFR is a measure of the total number of children a woman bears over her lifetime. Being a period measure, it is, however, distorted by changes in the ages at which women have their children (Hajnal 1947; Ryder 1964; Ní Bhrolcháin 1992; Bongaarts and Feeney 1998). Additionally, the TFR

FIGURE 1 Total fertility rate in East Germany and West Germany, 1980–2009



NOTE: Until 1990, West Germany also includes West Berlin and East Germany includes East Berlin. After 1990, West Germany does not include any part of Berlin. For East Germany, the graph displays separate time series with and without Berlin. Because of a regional reform (which took effect at the beginning of 2001), it is not possible to differentiate Berlin along the former territorial borders of East and West Germany.
SOURCE: Human Fertility Database (2011).

summarizes fertility across all birth orders. Both aspects—namely, differences in the timing of births and differences in order-specific fertility behavior—are important for understanding fertility dynamics in contemporary societies. Prior studies have revealed that East and West German women differ considerably in the ages at which they have their first child, if any. In addition, differences in transition rates to second and third births have been reported (Kreyenfeld 2003; Huinink 2005; Mayer and Schulze 2010). What might look like a convergence of behavior, based on changes in the TFR, might in fact be pure coincidence. Instead, the similarity of East and West German TFRs might conceal divergent patterns of behavior.

The East German case is instructive for several reasons. First, it helps us to understand the fertility changes that have occurred across Eastern Europe in recent decades. The fertility response in East Germany, drastic and immediate, reflects the speed at which the societal and economic transformation took place. As such, East Germany may provide an indication of what direction fertility in other Eastern European countries will take. It is, however, easier to understand fertility developments in East Germany than in other former Communist countries. East Germany can be directly compared to West Germany, as both are under the same legal and political institutions—a considerable advantage in analysis. Second, the East German case also challenges our ideas about the relationship between economic conditions and fertility. It seems paradoxical that East German period fertility has caught up with the West German rate, even though the economic situation is still much less favorable in the eastern part of the country. Furthermore, the greatest increase in the period fertility rate is observed for the late 1990s, a time when economic growth was stagnant. Third, the West German case is of interest because it is one of the countries with the longest continuous history of low fertility, and period fertility measures show no sign of increase, in contrast to recently rising fertility in most other low-fertility populations (Goldstein, Sobotka, and Jasilioniene 2009).

In this article, we (a) examine the factors that might explain persisting East/West differences in fertility dynamics, (b) conduct an order-specific fertility analysis of trends in TFR, and (c) project completed fertility for recent birth cohorts. We draw on two new data sources. First, we use recently available data from the Human Fertility Database (2011). We also draw upon perinatal statistics, which enable us to conduct an order-specific fertility analysis for Germany. In contrast to German vital statistics, which until recently did not distinguish children by birth order, perinatal statistics provide a clear indication of the parity of the mother at each birth (Kreyenfeld et al. 2010). This enables us to present a more detailed account of the order-specific fertility behavior in the two parts of Germany. Furthermore, it enables us to generate a tempo-adjusted TFR, which has not been previously available for Germany.

Convergence in constraints and attitudes?

When fertility rates declined in the period following the fall of the Berlin Wall, a lively debate ensued about the causes of the sudden drop in births. The collapse of the Communist system seemed an ideal field experiment that would enable us to understand how individuals respond to radically changing economic and social constraints (Witte and Wagner 1995: 387). A dominant view at the time was that the decline in fertility was a sign of societal “shock,” a “crisis,” or even an indication of societal “anomie” (Eberstadt 1994; Adler 1997; Philipov and Dorbritz 2003). Other researchers reflected upon the new personal opportunities that opened up after reunification. Individualization, self-actualization, and career advancement were assumed to be strong forces that led young East German women and men to postpone having children (Beck-Gernsheim 1997). Disagreement arose, however, about whether East German fertility would continue to remain below West German levels, and whether East Germans would eventually “westernize” their behavior (Conrad, Lechner, and Welf 1996: 332). Today, two decades after reunification, we see that many of these assumptions and interpretations appear wrong.

The first mistake was regarding the speed of the transformation. The Unification Treaty, ratified on 3 October 1990, had nullified the legal and political system of the German Democratic Republic, replacing it with the system of the German Federal Republic. While this legal transformation was swift, the transformation of the East German economy followed a much slower path. The prior hope of a steady convergence of economic conditions had been abandoned by the end of the 1990s, when growth in wages and productivity showed indications of slowing in East Germany (Emmerich and Walwei 1998; Brenke and Zimmermann 2009). East Germany continues to grapple with high unemployment rates. Moreover, East German wages have never reached parity with the West, nor have East Germans acquired private property to an extent that even remotely approaches West German levels. Given these enduring gaps in earnings and wealth, it is not surprising that distinct differences remain in how East and West Germans respond to their economic circumstances and the security of their jobs (see Table 1).

Researchers also failed to accurately predict how slowly the two societies would converge in value structures, attitudes, and beliefs. At the time of reunification, it was commonly thought that, because the two regions shared a common cultural heritage, East and West German attitudes and values would swiftly converge. However, this expectation failed to take into account how all-encompassing the exposure to 40 years of Communism had been. The oppressive policies of the East German government had effectively erased religion and religious practice from everyday life. A distinct legacy of this Communist past is the fact that East Germany today is one of the most secularized areas in the world (Pollack 2002). In 1992, a large majority of the

TABLE 1 Socioeconomic indicators in East Germany and West Germany, 1990, 2000, and 2008

	East Germany			West Germany		
	~1990	~2000	~2008	~1990	~2000	~2008
Economic indicators						
Unemployment rate ^a	10.2	18.5	14.5	6.2	8.4	7.8
Average annual earnings of employees (in euros) ^b	15,200	26,400	29,300	26,700	32,400	35,200
Households with housing property (%) ^c	26	32	32	40	44	44
Economic attitudes						
Worried about finances (%) ^d	30	22	26	12	13	17
Worried about job security (%) ^e	39	20	19	12	9	10
Religion in society						
Without religious affiliation (%) ^f	66	71	74	12	13	16
Maternal employment and child care						
Full-time employed mothers (%) ^g	74	58	50	23	20	19
Children ages 0–3 in day care (%) ^h	56	37	41	2	3	12

^aRefers to the years 1991, 2000, and 2009. Source: Bundesagentur für Arbeit (2010).

^bRefers to the annual earnings of employees ("Arbeitnehmerentgelte je Arbeitnehmer, Inland") for the years 1991, 2000, and 2009. Source: Statistisches Bundesamt (2010a).

^cRefers to the years 1991, 2000, and 2008. Source: Frick and Grimm (2010: 657).

^dRefers to the years 1990, 2000, and 2008. Represents the share of respondents who declared themselves "very worried" about their financial situation. Source: Wagner, Frick, and Schupp (2007), German Socio-Economic Panel, authors' estimates based on sample A and C.

^eRefers to the years 1990, 2000, and 2008. Represents the share of employed respondents who declared themselves "very worried" about the security of their jobs. Source: Wagner, Frick, and Schupp (2007), German Socio-Economic Panel, authors' estimates based on sample A and C.

^fRefers to the years 1992, 2000, and 2008. Source: ALLBUScompact/GGSScompact (1980–2008), authors' estimates.

^gRefers to the years 1991, 2000, and 2008. Estimates based on the German micro-census were provided to the authors by Esther Geisler. Refers to mothers aged 18–45 who have at least one child age 18 or younger. West Berlin was included in West Germany.

^hRefers to the years 1990, 2002, and 2009. Data for the years 1990 and 2002 are "provision rates" (share of available day-care places per 100 children). Data for the year 2009 are "usage rates" (share of children in day care per 100 children). Source: Statistisches Bundesamt (1992, 2004, 2010b).

population (66 percent) in East Germany stated that they had no religious affiliation, compared to only 12 percent in West Germany (Table 1). Since then, the share of the population with a religious affiliation has declined even further in the East, partly because of the adoption of West German tax regulations, which include a "church tax."²

In some other respects, too, the East German population remained distinct from West Germany's. This observation applies to the educational stratification of the population, which is still more homogeneous in the East owing to a relatively low share of university graduates and a small share of East Germans with a very low level of education (Huinink, Mayer, and Trappe 1995). Differences in the social strata of the two societies can also be seen in the ethnic composition of the two parts of Germany. Related to the

contrasting migration policies of the FRG and of the former GDR, the share of foreign-born persons is still substantially lower in the east than in the west. This situation is also relevant for understanding fertility in East and West Germany, as foreign migrants to Germany have higher fertility compared to the fertility of the native population (Milewski 2010).

Another striking difference between the two parts of the country is the divergence in attitudes regarding maternal employment. West Germans tend to be highly concerned about the adverse effects of maternal employment on the well-being of children—exemplified by the strong disapproval of the so-called *Rabenmutter* (Raven Mother) who neglects her infant—while East Germans generally do not share this worry (Scott 1999; Treas and Widmer 2000). This difference in attitudes toward maternal employment corresponds to a much higher share of East German mothers working full-time. In 2008, only 19 percent of West German mothers with a child or children aged 18 or younger were employed full-time, compared with 50 percent of such East German mothers (Table 1). The availability of public day care also plays an important role in this context. Several researchers have asserted that reunification resulted in a sharp decline in the availability of childcare in the East (Rindfuss and Brewster 1996: 273), and in extensive privatization of day care centers (Adler 1997: 44). In fact, however, there was no sharp reduction in the availability of public child care in the East. Instead, East Germans are still privileged in the sense that work and family life are highly compatible owing to the wide availability of public day care places for children below age three.

Thus, the early predictions that the two societies would swiftly converge have not materialized. It is essential to note here, however, that the claims that East Germany needed to be “modernized” or “westernized” were oversimplified. While the East German economy has indeed lagged behind West Germany’s, the East German family model in many respects may be seen as more “modern” than the West German model. East German women mostly work full-time, they have access to a wide range of day care facilities, and their male partners are more likely to perform housework and child care tasks than their more traditional counterparts in the West (Trappe and Sørensen 2006).

The most significant misjudgment that researchers made was related to the interpretation of demographic indicators. Some analysts had diagnosed crisis-related East German fertility behavior from simply looking at the drop in the period total fertility rate. The convergence of the East German TFR toward the West German level at the end of the 1990s was consistently interpreted as a convergence of fertility behavior in East and West Germany. Retrospectively, we conclude that this perception arose out of an interpretation of basic demographic indicators that failed to take into account the differences in the timing of motherhood between East German and West German women prior to reunification. We now examine these differences.

Fertility in the wake of reunification

Until the demise of the Communist system, levels of lifelong childlessness in East Germany never exceeded 12 percent. In West Germany, on the other hand, starting with women born in the 1950s, childlessness increased steadily to about 20 percent for more recent cohorts (see Table 2). Despite the sharp differences in first-birth patterns, the rates of progression to a second child were similar in the two parts of Germany. About 70 percent of women who had a first child went on to have a second. A noteworthy characteristic of East German fertility, however, was a low progression rate to a third child. This pattern is surprising, given that the pronatalist policies of the GDR provided various incentives to have a large family (Frerich and Frey 1993). A common explanation for the low third-birth intensities is the all-encompassing labor market integration of women in the East. The normal weekly work schedule exceeded 40 hours, and more flexible work arrangements (such as part-time work) that might have been more compatible with larger families were neither available nor contemplated by the East German government (Höhn and Schwarz 1993). In addition, the limited access to private housing has been cited as a possible reason for the unwillingness of East Germans to have a third child (Frerich and Frey 1993; Kreyenfeld 2008).

In 1989, two different fertility regimes existed in the two parts of Germany. The most important difference between the two systems was in women's age at first-time parenthood. In 1989, West German women were roughly age 27 when they had their first child, while their East German counterparts were, at age 22, five years younger (Kreyenfeld 2002, 2003).

TABLE 2 Completed fertility of East German and West German women by age 45, birth cohorts 1950–54, 1955–59, and 1960–64

	East Germany			West Germany		
	1950–54	1955–59	1960–64	1950–54	1955–59	1960–64
Distribution by parity (%)						
Childless	9	10	12	17	19	21
One child	28	27	31	25	23	22
Two children	47	47	42	38	38	38
Three children	12	12	11	14	14	13
Four and more children	4	5	4	6	6	5
All women, age 45	100	100	100	100	100	100
Parity progression ratios						
0→1	0.91	0.90	0.88	0.83	0.81	0.79
1→2	0.69	0.70	0.65	0.70	0.72	0.72
2→3	0.25	0.27	0.26	0.34	0.34	0.32

NOTE: Berlin is included in East Germany.

SOURCE: Estimates based on data from the 2008 micro-census. Data were provided through personal correspondence by Robert Herter-Eschweiler (German Federal Statistical Office).

Given these differences, a convergence of East German to West German behavior would have required a substantial rise in the age at parenthood in the East. As a result, fertility in the East would have been temporarily depressed by tempo effects.³

Opportunities for conducting the order-specific fertility analysis that would help us to identify such tempo distortions are, however, limited. With German reunification, the legal framework of the GDR was replaced by West German regulations. This also applied to regulations governing the collection of demographic data. While GDR statistics recorded births by birth order, statistics in the West did not. With the ratification of the Unification Treaty, East and West German statistics were harmonized. As a consequence, order-specific birth information was no longer available for the East, and vital statistics did not provide answers to the questions of whether and to what extent the age at first-time childbearing had increased in East Germany.⁴

Several survey datasets can be used to investigate fertility behavior. By piecing together the various survey-based results, it is possible to derive a more or less coherent picture of the changes in fertility behavior in East Germany after reunification. Most importantly, these survey data indicate that East German women who were childless at reunification postponed parenthood until the higher ages typical of West Germany. Yet despite the large increase in the age at first birth, East German women remained younger at first childbirth than their counterparts in the West (Kreyenfeld 2003). The relatively high first-birth intensities of East Germans were in sharp contrast to their second-birth behavior. It is clear from the analysis of survey data that second-birth rates have fallen below West German levels in the course of reunification (Sackmann 1999; Huinink 2005; Huinink and Kreyenfeld 2004; Kreyenfeld 2008; Arránz Becker, Lois, and Nauck 2010). In particular, the fertility behavior of women who had their first child shortly before the collapse of the Wall was strongly affected. Reunification clearly interrupted the fertility careers of these women. These women were generally still very young at first childbearing, and they could have postponed having a second child to a later age. But we can now conclude that many of these women have forgone having a second child (Kreyenfeld 2008).

Little is known about the fertility behavior of subsequent cohorts. Qualitative studies tell us that childless East Germans tend to be more certain than West Germans that they eventually will have children (Buhr et al. 2011). However, there are no studies that deal with recent trends in East and West German behavior. Furthermore, sample sizes in the survey data are mostly small, and it is therefore not possible to estimate birth rates by single years. A tempo-corrected TFR, which has been generated for other Eastern European countries, is consequently not available for Germany. This also means that Germany has been consistently absent from cross-national studies of recent fertility trends (Sobotka 2004; Goldstein, Sobotka, and Jasilioniene 2009).

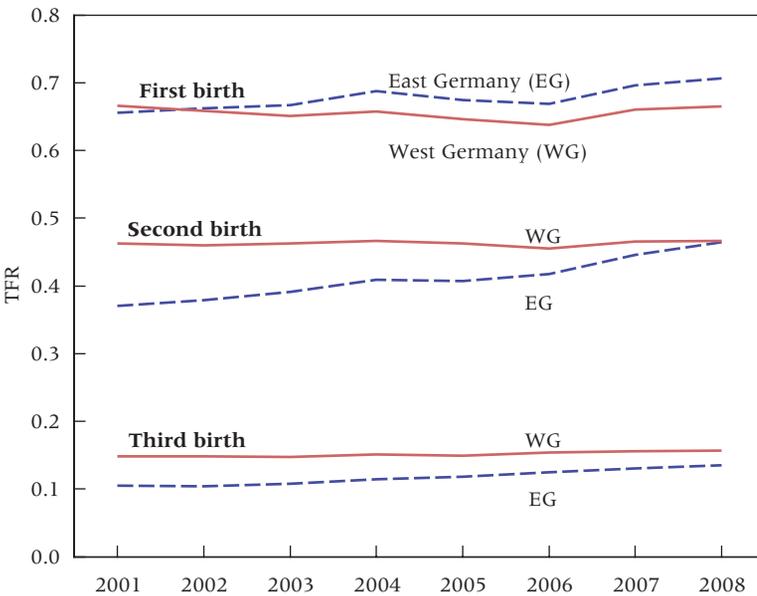
The question of how we should interpret the convergence of East and West German TFRs in 2008 remains unanswered.

Birth-order-specific changes between 2001 and 2008

The following analysis of recent fertility behavior draws on two newly available data sources. First, perinatal statistics for the period 2001–2008 describe order-specific fertility behavior in East and West Germany. Perinatal statistics are part of hospital-based statistics, and they include clinical records for all children who were delivered in German hospitals. They provide an indication of the parity of the mother at each birth. For the period 2001–2008, almost 5 million live births are covered in these statistics. Based on these statistics, order-specific fertility rates have been made available (for details, see Kreyenfeld et al. 2010). Second, we use cohort- and age-specific fertility rates for East and West Germany from the Human Fertility Database (2011).⁵

Figure 2 displays period TFRs by birth order component. On the basis of this figure, we conclude that the recent convergence is attributable in large part to a sharp increase in the contribution to TFR of second-order births in East Germany. While the second-order component of TFR in the

FIGURE 2 Order-specific total fertility rate, East German and West German women ages 15–44, 2001–2008



SOURCE: Bundesgeschäftsstelle Qualitätssicherung (2009) (authors' estimates); for details see Kreyenfeld et al. (2010).

East was only around 0.38 in 2001, it had increased to 0.45 by 2008, almost reaching West German levels. This suggests that East Germany has overcome the very low second-birth rates of the 1990s. This is not the case, however, for third-birth rates. Despite some increases in recent years, an East/West gap in third-birth rates remains. If we also take into account that West German third-birth rates are quite low compared to rates in other European countries, we must conclude that low third-birth rates are still a major characteristic of the East German fertility regime.

Table 3 provides the mean ages at childbirth by birth order for the period 2001–2008. This table illustrates two notable developments. First, the postponement of first births has not yet ceased. In both parts of Germany, age at first birth has increased steadily by about one year in the period 2001–2008. This means that the period TFR is still distorted by tempo effects in both East and West Germany. Another notable trend is related to East/West differences in the age at first-time motherhood. At age 27.5 in 2008, East German women are still more than one year younger when they have their first child than their West German counterparts. Regarding second-order births, East/West differences are smaller than for first births, which suggests that East German women probably space their first and second children farther apart than their West German counterparts. It is notable, too, that the age at second birth has increased at a pace similar to that for age at first birth, which suggests that the second-order births component of TFR is also distorted by tempo changes. This does not, however, apply to the same extent to third- and higher-order births. The pace of postponement is broadly similar in the two parts of Germany, particularly for higher-order births, a phenomenon that is important to note when estimating tempo-adjusted fertility rates.

TABLE 3 Mean age at childbirth by birth order, East German and West German women ages 15–44, 2001–2008

	2001	2002	2003	2004	2005	2006	2007	2008
East Germany								
1st child	26.1	26.4	26.6	26.9	27.0	27.1	27.3	27.5
2nd child	29.3	29.5	29.7	29.9	29.9	30.1	30.5	30.7
3rd child	31.4	31.6	31.6	31.6	31.6	31.8	32.1	32.2
4th+ child	33.2	33.2	33.1	33.0	33.1	33.2	33.1	33.3
All births	27.9	28.1	28.3	28.6	28.7	28.9	29.1	29.3
West Germany								
1st child	27.4	27.6	27.7	28.0	28.1	28.3	28.5	28.7
2nd child	29.9	30.0	30.2	30.3	30.4	30.6	30.8	31.0
3rd child	31.5	31.6	31.7	31.8	31.9	32.0	32.2	32.4
4th+ child	33.1	33.1	33.2	33.3	33.3	33.4	33.5	33.6
All births	29.0	29.1	29.3	29.5	29.6	29.8	30.0	30.2

NOTE: Berlin is included in East Germany.

SOURCE: Bundesgeschäftsstelle Qualitätssicherung (2009) (authors' estimates); for details see Kreyenfeld et al. (2010).

TABLE 4 Tempo-adjusted TFRs, East German and West German women ages 15–44, 2001–2008

	2001–2004	2005–2008	2001–2008
East Germany			
1st child	0.88	0.82	0.84
2nd child	0.48	0.57	0.52
3rd child	0.12	0.16	0.13
4th+ child	0.05	0.07	0.06
Total	1.54	1.66	1.55
West Germany			
1st child	0.82	0.82	0.81
2nd child	0.55	0.58	0.56
3rd child	0.17	0.19	0.18
4th+ child	0.07	0.08	0.07
Total	1.62	1.66	1.63

NOTE: Berlin is included in East Germany. The adjusted TFR for each period was calculated using the average TFR for a given period and changes in the age at birth during this period. The change in the age at childbirth was calculated by taking into account the age at the beginning and at the end of the period (see Appendix Table 1). SOURCE: Bundesgeschäftsstelle Qualitätssicherung (2009) (authors' estimates); for details see Kreyenfeld et al. (2010).

Table 4 shows tempo-adjusted TFRs for East and West Germany. Here we used the standard adjustment suggested by Bongaarts and Feeney (1998). Because the adjusted TFR is known to be volatile (Sobotka and Lutz 2009; see also Appendix Table 1), we have generated the average for the periods 2001–2004, 2005–2008, and 2001–2008. The adjusted TFRs for the period 2001–2008 suggest that the fertility level in the two parts of Germany, at about 1.6 children, is roughly the same. This seems plausible as it matches the fertility of the cohorts who have just completed childbearing. The parity-specific estimates also seem plausible. They indicate that ultimate childlessness in West Germany is around 20 percent, while it is still lower in the eastern parts of the country.

Some caution is warranted in the interpretation of the adjusted TFRs. The Bongaarts–Feeney adjustment assumes that the shape of the fertility schedule remains constant (Kohler and Philipov 2001; Goldstein, Sobotka, and Jasilioniene 2009). As can be seen from Appendix Figure 1, this assumption does not hold in the case of either East or West Germany. In the next section, we look at trends in the cohort TFR, which relies on different assumptions from those that underlie the Bongaarts–Feeney formula.

The future of fertility in East and West Germany

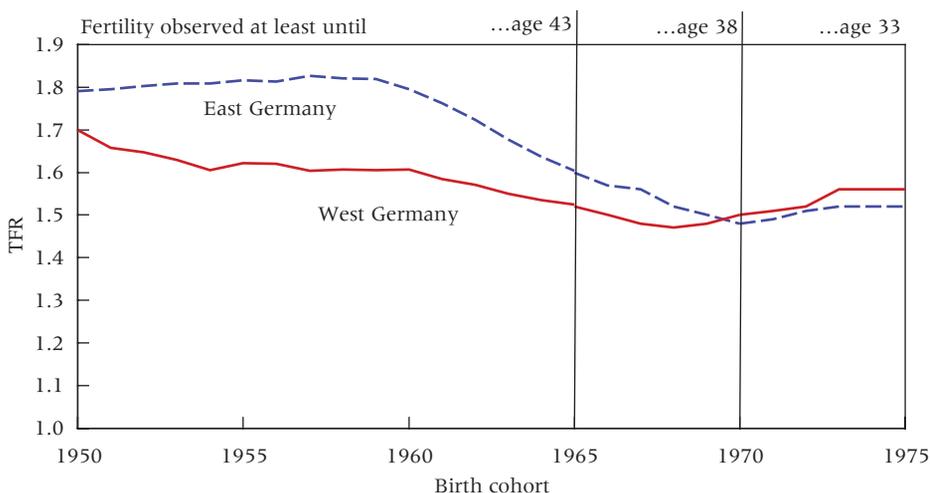
The results from the tempo-adjusted TFRs for the period 2001–2008 suggest that East and West German fertility has converged at a level of 1.6 children per woman. This is roughly the completed cohort fertility rate of the 1963

West German cohort. The cohort fertility for the same East German cohort is, at 1.7, slightly higher. For the younger cohorts, who are still of childbearing age, East German women have, up to the present, more children on average than West Germans (see Appendix Figure 2). However, the potential for East German cohorts to “recuperate” births at higher ages is probably lower than for West German cohorts. If we take into account that East Germans have a lower rate of childbearing at higher ages, this could mean that completed East German cohort fertility will soon drop below the West German rate. We address this possibility in the following discussion.

Figure 3 shows projections of completed cohort fertility for the two parts of Germany. We project cohort fertility based on recent age-specific trends. In contrast to the popular “frozen rate” method (Frejka and Calot 2001), our method incorporates the knowledge that fertility is being postponed, and uses linear extrapolation of age-specific rates.⁶ We believe that the projections of the fertility of women observed until at least age 38 are highly reliable because they involve the projection of only a small fraction of the likely remaining fertility of these cohorts. But the projection for cohorts truncated at earlier ages is more uncertain. We have indicated this in the figure by showing the cohorts that are observed at least until age 43, at least until age 38, and at least until age 33.

One observation that can be made from Figure 3 is the estimated reversal in the long-term downward trend in cohort fertility in West Germany. The cohorts born around 1970 seem to mark the turning point. For subsequent cohorts, forecasts suggest that fertility will increase. This reversal in cohort

FIGURE 3 Completed cohort fertility forecasts for East German and West German women born between 1950 and 1975



NOTE: Cohort TFR estimated by linearly extrapolating the age-specific rate from the last five cohorts. Observed fertility available until 2009 from Human Fertility Database.
DATA SOURCE: Human Fertility Database (2011).

fertility corresponds to the first generations of young women who were able to take advantage of more generous family policies in West Germany, such as the expansion of public day care facilities for children below age three. This may be mere coincidence but is nonetheless suggestive. Second, the figure suggests that East German cohort fertility will temporarily drop below West German levels. For East German cohorts born between 1965 and 1970, we observe a continuous decline in fertility. This might be explained by the unfavorable economic situation to which these cohorts have been exposed. However, it is also necessary to take a life-course perspective when interpreting East German cohort fertility rates. Many women born between 1965 and 1970 had given birth to their first child just before reunification, an event that interrupted the fertility careers of these women. Although they might have been quite young when they had their first child, many East German women did not resume childbearing at later ages. In short, the combination of economic circumstances and a reluctance to have another child following unusually large birth intervals may have led many of these East German women to have only one child.

East German women who started their reproductive lives after reunification (cohorts born 1971 and later) postponed first-time childbearing to later stages in their lives, to the end of the 1990s or the beginning of this century, by which time the economic situation in the East had greatly improved. Compared to previous cohorts whose fertility careers had been disrupted by the economic and social upheavals that followed reunification, these women could opt for a second child without having to experience unusually large birth intervals. The increase in the second-order component of TFR fits this interpretation (Figure 2). The forecast increase in East German fertility for cohorts born after 1970 would also be in line with this assumption.

Summary and conclusions

We began with the observation that period fertility in East Germany has overtaken that of the West. Superficially, this might appear to be evidence of a convergence of fertility behavior of East and West Germans nearly two decades after reunification. However, we have argued that the similarity in current period fertility rates hides fundamental differences in demographic behavior. What seems like a belated demographic reunification of the two parts of Germany masks important contrasts.

Our analyses have revealed marked differences in order-specific fertility patterns. Motherhood in East Germany still occurs at younger ages than in the West. On average, an East German woman is one year younger when she has her first child. Further, having children is still a more nearly universal occurrence in East Germany, where shares of childlessness are lower than in the West. Although one-child families are still slightly more prevalent in the East than in the West, the substantial increases in recent period fertility are

due to the convergence of second-birth rates. Third-birth rates in the East have remained below West German levels. What we are seeing two decades after reunification is, we believe, the reemergence of higher period fertility in the East resulting from lower levels of childlessness and a recuperation in the progression to second births.

The analysis of period fertility, even when it is broken down by parity, can lead to confusion between the level of fertility and changes in its timing (Bongaarts and Feeney 1998; Sobotka and Lutz 2009). Using data from the Human Fertility Database (2011), we constructed a new time series of cohort fertility. Our method of cohort projection, which is well suited for conditions of fertility postponement, shows the following. First, as was already known, a long history of higher cohort fertility in the East began before reunification. Second, a reversal has occurred in the long-term downward trend in cohort fertility in West Germany. Third, although much of the decline in period fertility in the 1990s was the result of postponement of births, the decline in cohort fertility in the East shows that there was also a real reduction in lifetime childbearing. Fourth, cohort fertility in the East will most likely drop below West German levels beginning with women born around 1970. These women are expected to have lower cohort fertility than their East German predecessors, and also slightly lower fertility than their contemporaries born in the West. However, we expect that the decline in East German cohort fertility will be temporary. Indeed, if age-specific trends continue unchanged, then East German women born at the end of the 1970s would catch up with their West German counterparts.⁷

We also note that in East Germany—as in other Eastern European countries—postponement of births was an easily available option for women because of the early and universal childbearing that existed before the collapse of the Berlin Wall. Young women who were childless at reunification could postpone parenthood until economic and social conditions had stabilized, without fear that they would reach the biological limits of fertility. Exposure to their West German counterparts may have raised the normative age limits of fertility in East Germany. While the age at first birth increased only gradually in many Eastern European countries (Sobotka 2004; Perelli-Harris 2006, 2008; Frejka and Sobotka 2008), East German women had the “normative freedom” to postpone their first births until the higher ages characteristic of West German women.

What East Germany has in common with other Eastern European countries, however, is its low second-birth rate during the period after reunification (Frejka and Sobotka 2008). We have argued that low second-birth intensities, particularly for women born between 1965 and 1970, could be attributable to the fact that some of these women had their first child before reunification. The upheavals that followed disrupted the fertility careers of these women. Recent increases in second births indicate that the decline in second-birth rates was a transitory effect of reunification.

The East German fertility recovery also illustrates that economic conditions need not be the determining factor in fertility levels. Despite less favorable and stagnant economic circumstances, East Germans are still younger at first birth than women in the West, motherhood is more nearly universal, and period fertility is slightly higher. Although economic improvements may increase fertility even further in the East, the substantial economic differences between East and West do not produce—contrary to the hypothesis of Myrskylä, Kohler, and Billari (2009)—higher period fertility in the West.

The direct comparison of East Germany with West Germany also points to the aspects of former Communist regimes that might have been conducive to high fertility. A high degree of family orientation continues to foster universal motherhood in the East. While economic conditions might have adverse effects on East German fertility, women's labor market behavior—buttressed by the wide availability of public day care—makes East German society more gender-equitable than West German society (McDonald 2000; Adserà 2004). The male breadwinner model, which remains prevalent in West Germany, is a precarious family arrangement when economic conditions deteriorate. Furthermore, the low degree of compatibility of childrearing with employment in West Germany has compelled many women to choose between having children and pursuing a career—which has resulted in very high levels of ultimate childlessness. West German society is gradually changing as child care for children under age three becomes more widely available and employment of mothers with children slowly becomes more acceptable. As these changes take hold, West Germany's fertility rates may be expected to rise slowly. If economic conditions improve in the East, we expect continued fertility increase there as well. In both parts of Germany, increases in period birth rates are likely to occur at some point in the near future, if and when the depressing effect of fertility postponement weakens.

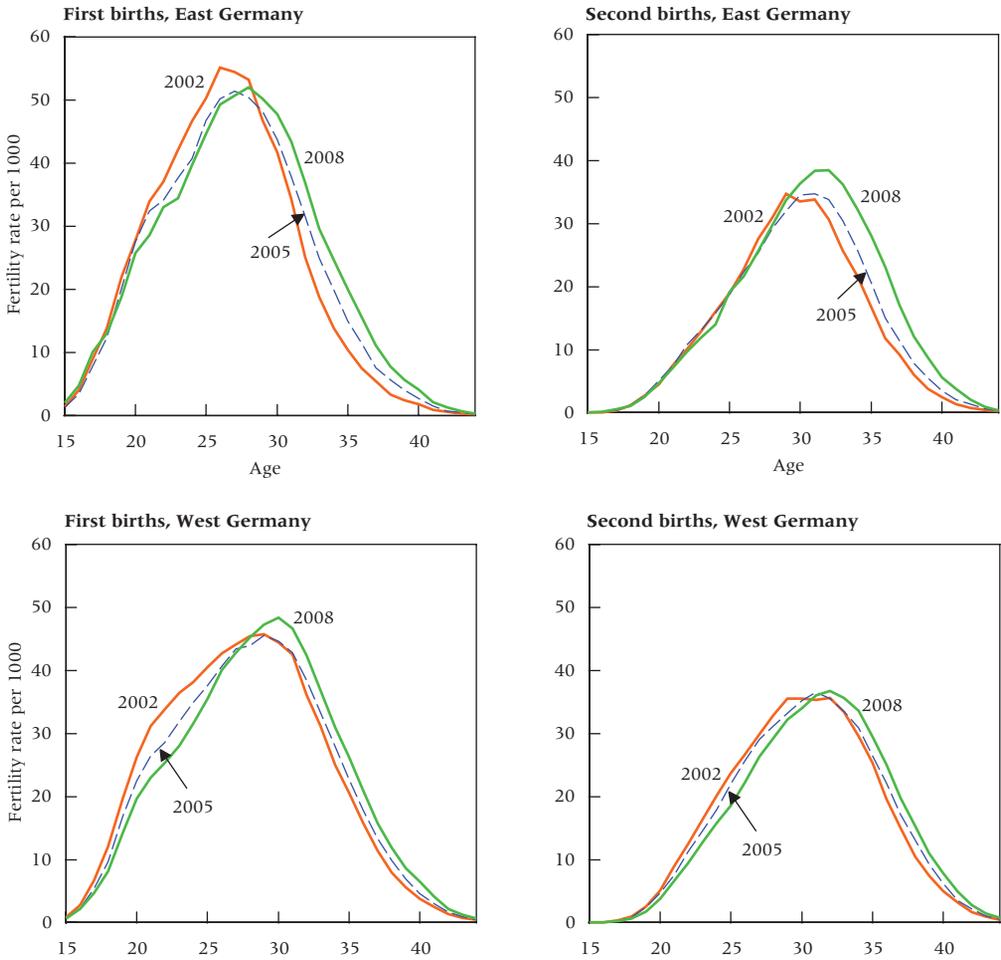
APPENDIX TABLE 1 Tempo-adjusted TFR, East German and West German women ages 15–44, 2002–2007

	2002	2003	2004	2005	2006	2007
East Germany						
1st child	0.87	0.89	0.84	0.75	0.79	0.87
2nd child	0.47	0.47	0.48	0.47	0.56	0.62
3rd child	0.12	0.11	0.12	0.13	0.16	0.16
4th+ child	0.05	0.05	0.06	0.07	0.06	0.07
Total	1.51	1.52	1.50	1.42	1.58	1.72
West Germany						
1st child	0.80	0.82	0.82	0.78	0.80	0.85
2nd child	0.55	0.55	0.56	0.55	0.57	0.59
3rd child	0.17	0.17	0.17	0.17	0.19	0.20
4th+ child	0.07	0.07	0.07	0.07	0.08	0.08
Total	1.59	1.62	1.63	1.57	1.63	1.72

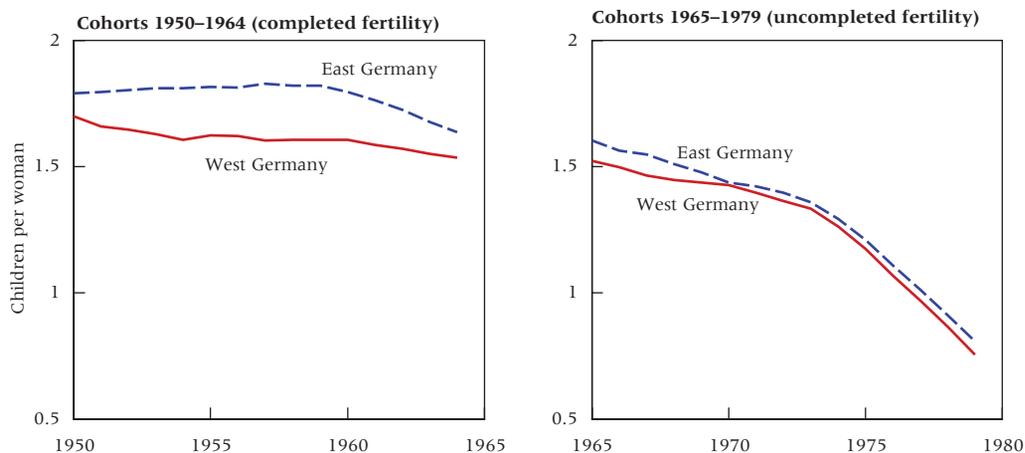
NOTE: Bongaarts–Feeney adjustment was applied (see Bongaarts and Feeney 1998).

SOURCE: Bundesgeschäftsstelle Qualitätssicherung (2009) (authors' estimates); for details see Kreyenfeld et al. (2010).

APPENDIX FIGURE 1 Age-specific fertility rates for first and second births, East German and West German women aged 15–44, 2002, 2005, and 2008



SOURCE: Bundesgeschäftsstelle Qualitätssicherung (2009) (authors' estimates); for details see Kreyenfeld et al. (2010).

APPENDIX FIGURE 2 Cohort total fertility rates in 2009 for East German and West German women born 1950–64 and 1965–79

SOURCE: Human Fertility Database (2011).

Notes

Figures in this article are available in color in the electronic edition of the journal.

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1 In this study, up to 1990, the term “West Germany” refers to the territory of the Federal Republic of Germany within its pre-1990 borders, including the former West Berlin. “East Germany” refers to the territory of the former German Democratic Republic. After German reunification, “West Germany” excludes the former West Berlin, which is now part of “East Germany.” Since reunification, “western Germany” and “eastern Germany” might be more appropriate terms in referring to these two parts of the country. For the sake of readability, however, we use “West Germany” and “East Germany” for the periods both before and after 1990.

2 While a church tax also existed in the former East Germany, its collection was not enforced. This changed after reunification, when the West German tax system was introduced in the East and tax offices were authorized to collect the church tax together with other taxes. As a result, the economic costs of having a religious affiliation increased after 1990. This is believed to be one of the reasons why the share of people with a religious affiliation declined further after reunification, despite the greater freedom of worship.

3 It has also been proposed that East–West migration has affected the absolute number of births in East Germany (Mai and Scharein 2009; Vatterrott 2011). We do not address this issue because the influence on fertility rates is probably minor. For example, if 2 percent of the population migrated, and the fertility rate difference between migrants and non-migrants was 20 percent, this would only change regional rates by about 2 percent of 20 percent, or 0.4 percent.

4 Since 2008, German vital statistics include order-specific birth information. The

quality of the 2008 data has, however, not been sufficient to permit their release. Order-specific data are now available for 2009.

5 Age- and cohort-specific fertility rates had been available for Germany previously. However, the Human Fertility Database provides order-specific fertility rates for East Germany in a comparable and computerized format, which has not been widely available before (Kreyenfeld, Pötzsch, and Kubisch 2010).

6 To project age-specific fertility trends, we used the last five years of the observed age-specific fertility rates. For each age, we

used linear extrapolation to predict the birth rate at a given age by:

$$\hat{f}_x(t+n) = f_x(t) + n \left(\frac{f_x(t) - f_x(t-5)}{5} \right).$$

The assumption behind this approach is that the rate of increase of the last five years will continue in the future.

7 In Figure 3, we purposely truncate the projections with the 1975 cohort because we believe that future forecasts are uncertain. However, if trends continue unchanged into the future, the cohort fertility of the East would overtake that of the West.

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