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MPIDR WORKING PAPER WP 2010-033
NOVEMBER 2010 (REVISED JULY 2011)

**East Germany Overtakes West Germany:
Recent Trends in Order-Specific Fertility
Dynamics**

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East Germany Overtakes West Germany:

Recent Trends in Order-Specific Fertility Dynamics

Joshua R. Goldstein and Michaela Kreyenfeld

Abstract: Some 20 years after unification, the contrast between East and West Germany provides a unique natural experiment for studying the persistence of communist-era family patterns, the effects of economic change, and the complexities of the process of fertility postponement. After unification, fertility rates plummeted in the former East Germany to record low levels. The number of births per year fell 60 percent. The period total fertility rate (TFR) reached a low of 0.8. Since the middle of the 1990s, however, period fertility rates have been rising in East Germany, in contrast to the nearly constant rates seen in the West. By 2008, the TFR of East Germany had overtaken that of the West. In this paper, we explore why fertility in the East is higher than in West Germany, despite the severe economic situation in the East, whether the East German TFR will increase even further in the future, and whether the West German rate will remain at the constantly low level that has prevailed since the 1970s. This article seeks to shed some light on these questions by (a) giving an account of the persisting East-West differences in attitudes towards and constraints on childbearing, (b) conducting an order-specific fertility analysis of recent fertility trends, and (c) projecting completed fertility for the recent East and West German cohorts. In addition to using the Human Fertility Database, we draw upon Perinatal Statistics, which enable us to conduct an order-specific fertility analysis. This new data source allows us to calculate a tempo-corrected TFR for East and West Germany, which has not been available previously.

Keywords: Birth order, fertility, Germany, East and West Germany, cohort fertility

Introduction

The 20th century was a time of dramatic demographic changes. One of the most remarkable developments in the latter half of the century was the demographic 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 unprecedented low levels (Eberstadt 1994; Witte and Wagner 1995, Sobotka 2004; Frejka and Sobotka 2008; Billingsley 2010). However, nowhere was the fertility response so drastic and abrupt as in East Germany.¹ The fall of the Berlin Wall, which marks 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, the East German period fertility rates finally reached a record low level of 0.8 children per woman. This probably would have been the lowest TFR value that had ever been recorded for a country, if the GDR had still been in existence.

With the unification of Germany in October 1990, the GDR ceased to be a country, and a radical and swift transformation of the East German society was initiated. The central question for many researchers at that time was whether, and under what conditions, the East German fertility rate would start to recover (Eberstadt 1994; Witte and Wagner 1996; Conrad et al. 1996). The optimists in the research community predicted

¹ In this study, the term “West Germany” refers to the region that until 1990 belonged to the Federal Republic of Germany. “East Germany” refers to the region that until 1990 belonged to the German Democratic Republic. For the time after German unification, “western Germany” and “eastern Germany” would probably be more appropriate terms for distinguishing the two parts of the country. For the sake of readability, however, we use the terms “West Germany” and “East Germany” for the periods both before and after 1990.

a swift convergence of behavior, arguing that institutional constraints in the two parts of Germany would converge as well. The pessimistic view pointed to the severe economic conditions in the East, which were not projected to improve substantially in the foreseeable future. If it is assumed that fertility rates respond to economic conditions, it may be expected that East German fertility would remain permanently below West German levels.

In 2008 –exactly 18 years after unification– the period total fertility rates of East and West Germany had finally converged. In both parts of the country, the current TFR has reached 1.4. Arguably, the fertility rates of both societies have met at a very low level. However, the fact that East German period fertility has caught up with the West German rate still has important implications. It suggests that East Germany has overcome the “demographic shock” (Eberstadt 1994) that was diagnosed in the period after German unification. It also suggests that, in terms of fertility behavior, the “two Germanies” have finally reunited, signifying one step towards the social unification of the two formerly separated countries.

However, we can also approach this fertility development from another perspective: East German period fertility has been constantly rising in recent years, while the West German rate seems to have frozen at a level of 1.4 children since the 1970s. What might look like a convergence of behavior could actually be a cross-over; in the future, East Germany may leave West Germany behind. If we disregard Berlin –which population mainly belonged to West Germany before unification– we can even conclude that East Germany has already overtaken the West (Figure 1). Is it really plausible that women are having more children in the East than in the West despite the relatively poor economic conditions in the East? 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 in the future, while the West German rate will remain at a constantly low level, as it has since the 1970s?

Given the complexity of the period TFR, these seemingly simple questions are rather difficult to answer. Ideally, the TFR is a measure for the total number of children a woman bears over her lifetime. Being a period measure, it is, however, seriously distorted by changes in the ages at which women have their children (Ni Bhrolchain 1992; Bongaarts and Feeney 1998). Additionally, it is an indicator that summarizes fertility across all birth orders. Both aspects – namely, differences in the timing of birth and differences in the order-specific behavior – are important for understanding fertility dynamics in contemporary societies. Prior studies have revealed that East and West Germans differ considerably in the ages at which they have their first child. In addition, differences in transition rates to second- and third-order births have been reported (Kreyenfeld 2003; Huinink 2005; Mayer and Schulze 2010). What might look like a convergence of behavior, based on the development of the TFR, might in fact be pure coincidence. Instead, the similarity of the TFR value might conceal divergent patterns of behavior.

This article seeks to shed some light on recent fertility trends in East and West Germany. The East German case might be instructive for several reasons. First, it might help us to understand the fertility changes that have occurred across Eastern Europe in recent decades. The fertility response in East Germany was drastic and immediate, and reflects the speed at which the societal and economic transformation took place. As such, East Germany might provide an indication of what direction fertility in other Eastern European countries will take. For the purposes of our research, it is also a considerable advantage that East Germany can be directly compared to West Germany, which is subject to the same legal and political institutions. Therefore, it is much easier to make

sense of the fertility development in East Germany than in other former communist countries. The East German case also challenges our ideas about the relationship between economic conditions and fertility. It seems like a paradox 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 period in which the economic situation tended towards stagnation. The West German case is of interest because it is among the countries with the longest continuous history of low fertility in the world, and period fertility measures show no sign yet of increase, in contrast to recently rising fertility in the vast majority of low fertility populations (Goldstein et al. 2009).

In this paper, we try to shed light on these issues by (a) giving an account of the factors that might explain persisting East-West differences in fertility dynamics, (b) conducting an order-specific fertility analysis of fertility trends, and (c) projecting completed fertility for the recent cohorts. We draw on two new data sources for these purposes. First, we use fertility data which has just been made available in the Human Fertility Database (2011). We also draw upon the 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 biological order, the Perinatal Statistics provide a clear indication of the parity of the mother at each birth (Kreyenfeld et al. 2010b). This enables us to give 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 available for this country previously.

[Figure 1 about here]

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 birth intensities. 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 1996: 387). A dominant view at that time was that the decline in fertility was a sign of a societal “shock,” a “crisis,” or even an indication of societal “anomie” (Eberstadt 1994; Adler 1997; Philipov and Dorbritz 2003). Meanwhile, other researchers reflected upon the new personal opportunities that opened up after unification. Individualization, self-actualization, and career advancement were assumed to be strong forces that led young East German women and men to postpone their fertility plans (Beck-Gernsheim 1997). Disagreement arose, however, around the question of what the future would bring, particularly if East German fertility were to continue to remain below West German levels, and around the issue of whether East Germans would eventually “westernize” their behavior (Conrad et al. 1996: 332). Today, 20 years after unification, we can look back and must conclude that many of the assumptions and interpretations of the past have been proven wrong.

The first mistake was regarding the speed of the transformation process. The Unification Treaty, which was ratified on October 3, 1990, had nullified the legal and political system of the German Democratic Republic, replacing it with the West German system. While this legal transformation was amazingly profound and swift, the transformation of the East German economy followed another 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 2010). Up to today, East

Germany grapples 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 continuing gaps in earnings and wealth, it is unsurprising that distinct differences remain in how East and West Germans feel about their economic situation and the security of their jobs (Table 1).

Researchers also failed to predict accurately how slowly the two societies would converge in terms of value structures, attitudes, and beliefs. At the time of unification, it was argued that, because the two regions shared a common cultural heritage, East and West German attitudes and values would swiftly converge. However, this assumption failed to adequately take into account how profound the exposure to 40 years of communism had been. The oppressive policies of the communist government had effectively erased religion and religious practice from everyday life. A very distinct legacy of this communist past is the fact that East Germany is today one of the most secularized areas in the world (Pollack 2002). In 1992, a large majority of the population (66 percent) in the East stated that they had no religious affiliation, compared to only 12 percent in the West. Since then, the share of the population with a religious affiliation has declined even further in the East, partly due to the adoption of West German tax regulations, which include a “church tax.”²

Also in some other respects, the East German population remained distinct from

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

the West German one. This applies to the education stratification of the population which is still more homogenous in the East than in the West due to a relatively low share of university graduates, on the one hand, and a small share of East Germans with a very low level of education on the other hand (Huinink et al. 1995). Differences in the social strata of the two societies can also be noted for the ethnic composition of the two parts of Germany. Related to the contrasting migration policies of the former GDR and FRG, the share of foreign born is still substantially lower in the eastern than in the western part of the country. This aspect is also relevant for understanding fertility in East and West Germany as foreign migrants to Germany have elevated fertility levels compared to the native population (Milewski 2010).

Another striking difference between the two parts of the country is the divergence in opinions regarding maternal employment. West Germans are notoriously concerned about the adverse effects of maternal employment on the well-being of their children –the strong disapproval of so-called “Rabenmutter” (Raven Mother) who neglects her infant– while East Germans generally do not share this worry (Scott 1999; Treas and Widmer 2000). The difference in attitudes towards maternal employment corresponds to a much higher share of mothers working full-time. In 2008, only 19 percent of West German mothers were employed full-time, compared with 50 percent of East German mothers (Table 1). The employment patterns of East and West German women differ in such fundamental ways that it is possible to wonder how such a divergent pattern can exist in one country. However, the availability of public day care also plays an important role in this context. Several researchers have asserted that unification was accompanied by a “sharp decline in the availability of childcare in the East” (Rindfuss and Brewster 1996: 273), and by a 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 quite compatible in

this part of the country, due to the wide availability of public day care places, including places for children below age three.

Thus, the prior prediction that the societies would swiftly converge has not yet materialized. It is, however, important to note here that assumptions that East Germany needed to be “modernized” or “westernized” were oversimplified. While the East German economy has indeed lagged behind, the East German family model in many respects more “advanced” 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 take on housework and child care tasks than their more traditional counterparts in the West (Trappe and Sørensen 2006). Thus, East German society has reached a level of gender equality that West Germany is still striving to achieve.

The most significant error that researchers made, however, was related to the interpretation of demographic indicators. Some researchers had diagnosed a crisis-related East German fertility behavior from simply looking at the drop in the period total fertility rate. The convergence of East German TFR values towards West German levels at the end of the 1990s was consistently interpreted as a convergence of fertility behavior patterns in East and West Germany. Retrospectively, we must conclude that this perception was wrong. It arose out of an interpretation of basic demographic indicators that failed to take into account the differences in East and West German behavior prior to unification, which we now turn to in the next section.

[Table 1 about here]

A Journey Back in Time: Fertility in the FRG and in the GDR

Until the demise of the communist system, there were several marked differences in fertility behavior between the Federal Republic of Germany (FRG) and the German Democratic Republic. First, the lifetime fertility of the East German cohorts was slightly higher than that of their West German counterparts. Second, differences existed in the timing of first parenthood. In East Germany, the mean age at first birth fluctuated around age 22, and the levels of lifelong childlessness never grew to more than five to ten percent. In West Germany, however, behavior changed profoundly starting with the cohorts born in the 1950s. Women postponed first-time motherhood, and childlessness increased steadily to about 20 percent for the more recent cohorts (Table 2).

Despite the strong differences in first-birth patterns, the rates of progression to a second child were rather similar in the two parts of Germany. About 70 percent of the women who had a first child went on to have a second child (Table 2). A major characteristic of East German fertility was, however, a low progression rate to a third child. This pattern is surprising, given that the pro-natalistic policies of the GDR provided various incentives to have a larger 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 GDR. The normal weekly work schedule was more than 40 hours, and more flexible work arrangements (such as part-time work) that might have been more compatible with larger families were not available, and were not tolerated by the GDR 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).

[Table 2 about here]

Fertility in the Wake of Unification

In 1989, the year of the fall of the Berlin Wall, two different “fertility regimes” existed in the two parts of Germany. The most important difference between the two systems is in the 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). Given these differences, a convergence of East and West German behavior would have meant that the age at parenthood in the East would have to increase dramatically. As a result, the annual fertility rates would have been suppressed temporarily by tempo effects.³

Unfortunately, the opportunities for conducting the order-specific fertility analysis that would have helped us to tease out these tempo distortions have been limited. With German unification, the legal framework of the GDR was replaced by West German regulations. This also applied to regulations that governed the collection of demographic data. While the GDR statistics recorded births by biological order, the statistics in the West did not take note of biological birth order. With the ratification of the Unification

³ In addition, massive East-to-West migration flows have occurred in the aftermath of unification. In particular, young and highly educated women migrated, which has prompted researchers to speculate that the East “are losing births to the West” (Mai and Scharein 2009: 87). Any “loss of births”, however, would not have affected birth rates unless movers and stayers differed radically in their fertility. But even if movers and stayers differed (as it has been shown by Vatterrott (2011)), we would not find a large effect on fertility rates. For example, if 2 percent of the population migrated, and the fertility rate difference between migrants and non-migrants was 20 percent, then this would only change the regional rates by about 2 percent of 20 percent, or 0.4 percent.

Treaty, the 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 how the age at first-time childbearing had increased in East Germany.⁴

While there are no order-specific fertility indicators available from vital statistics, there are several survey datasets that can be used to investigate fertility behavior. By piecing together the various survey-based results, it is possible to get a more or less coherent picture of the changes in birth behavior in East Germany after unification. Most importantly, these survey data indicate that East German women who were childless at unification postponed parenthood to the higher ages typical of West Germany. Yet despite the large increase in the age at first birth, East Germans remained younger when they had their first child than their counterparts in the West (Kreyenfeld 2003). The relatively high first-birth intensities of East Germans are, however, in sharp contrast to their second-birth behavior. It is clear from the analysis of survey data that second-birth rates have declined below West German levels in the course of unification (Sackmann 1999; Huinink 2005; Huinink and Kreyenfeld 2004; Kreyenfeld 2008; Arránz Becker et al. 2010). Particularly women who just had their first child before the fall of the Wall were strongly affected in their fertility behavior. Unification cut into the fertility careers of these women. On the one hand, these women were still very young at first childbearing, and they could have postponed having a second child to a later age. However, we can now conclude that many of these women have forgone having a second child altogether (Kreyenfeld 2008).

Little is known about the behavior of subsequent cohorts. Qualitative studies tell

⁴ Since 2008, German vital statistics include order-specific birth information. The data quality of the 2008-data has, however, not been sufficient so that it has not been released. Order specific data have now become available for the year 2009.

us that childless East Germans are more certain than West Germans that they want to have children over the course of their lives (Buhr et al. 2010). However, there are no studies that deal with recent trends in East and West German behavior. Furthermore, the 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 missing consistently from cross-national studies that provide an overview of recent fertility trends (Sobotka 2004; Goldstein et al. 2009). The related question of how we should interpret the convergence of East and West German TFR values in 2008 remains unanswered.

Birth Order-Specific Developments between 2001 and 2008

In order to understand the recent convergence in East and West German fertility behavior, the following analysis draws on two types of data sources. First, we use Perinatal Statistics for the period 2001-2008 to provide us with insights into order-specific fertility behavior in East and West Germany. The Perinatal Statistics are part of the hospital statistics, and they include clinical records for all children who were delivered in German hospitals. They provide a clear indication of the parity of the mother at each birth. For the period 2001-2008, almost five million live births are available from these statistics. Based on these statistics, order-specific fertility rates have been made available (for details, see Kreyenfeld et al. 2010b). Second, we use cohort- and age-specific fertility rates for East and West Germany which have recently become available in the Human Fertility Database (2011).⁵

⁵ Age- and cohort-specific fertility rates had been available for Germany previously. However, the data in the Human Fertility Data Base (2010) take into account the changes in the definition of age

Figure 2 displays period TFR values by order based on the data from the Perinatal Statistics. If we recall the development of the period TFR (Figure 1), we can see that there is a convergence of East and West German values in 2008. Based on Figure 2, we can now conclude that the recent convergence is attributable in large part to a drastic increase in the TFR for second-order births in East Germany. While the second-order TFR in the 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 “second-birth crisis” that was diagnosed in the past. This is, however, not the case for third-birth rates. Despite some increases in recent years, there is still an East-West difference in third-birth behavior. If we also take into account that West German third-birth rates are quite low compared to other European countries, we must conclude that the low third-birth rates are still a major characteristic of the East German fertility regime.

[Figure 2 about here]

Table 3 provides the mean ages at childbirth by birth order for the period 2001-2008. This table illustrates two remarkable developments. First, the postponement of the first birth has not yet come to a halt. In both parts of Germany, the 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 parts of Germany. Another remarkable trend that can be discerned from this table is related to the East-West-differences in the age at first-time motherhood. At age 27.5 in 2008, East Germans are still more than one year younger

which have occurred in both parts of Germany over time. Furthermore, the HFD provides order-specific fertility rates for East Germany in a computerized format, which has not been widely available before (Kreyenfeld et al. 2010a).

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 Germans probably space their first and second children farther apart than West Germans. It is notable, too, that the age at second birth has increased at a similar pace as the age at first birth for the period considered here, which suggests that the TFR for second-order births 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 formulating tempo-adjusted fertility rates.

[Table 3 about here]

Table 3 shows the tempo-adjusted TFR for East and West Germany. Here we used the standard adjustment suggested by Bongaarts and Feneey (1998), which is commonly referred to as the “BF adjustment.” As the adjusted TFR is known to be quite volatile (Sobotka and Lutz 2009, see also Table A1 in the Appendix), we have generated the averages for the periods 2001-2004 and 2005-2008. The adjusted TFR suggests that the fertility level in the two parts of Germany is, at about 1.6 children, roughly the same. This seems plausible as it matches the cohort fertility of the cohorts who have just completed childbearing. The parity-specific estimates also seem plausible. They indicate that childlessness in West Germany is around 20 percent, while it is still lower in the eastern parts of the country.

However, some caution is warranted in the interpretation of the adjusted TFR. The BF adjustment relies on the assumption that the shape of the fertility schedule remains constant (Kohler and Philipov 2001; Goldstein et al. 2009). As can be seen from Figure

A1 in the appendix, this assumption does not hold. Particularly interesting is the shape of the second-birth rates in East Germany. It seems that there is not just a shift in the age schedule, but that the birth rate at higher ages has increased, while it has remained constant at younger ages. This could suggest that the increase in the second-birth rates are not just tempo effects that are related to the behavior of women who had postponed the first birth, and who are only now having a second child (Lesthaegue and Willems 1999). In the next section, we will look at the development of the cohort TFR, which relies on different assumptions than those underlie the BF formula.

[Table 4 about here]

The Future of Fertility in East and West Germany

The results from the tempo-adjusted TFR 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 about the cohort fertility rate of the West German 1963 cohort. The cohort fertility for the same East German cohort is, at 1.7, slightly higher. In addition, for the younger cohorts, who are still of childbearing age, we can see that East Germans have, up to today, more children on average than West Germans (Figure A2 in the appendix). However, the potential of the East German cohorts to “recuperate” at higher ages is probably lower than for the West German cohorts. If we take into account that East Germans have a lower rate of childbearing at higher ages, this could mean that East German cohort fertility will soon drop below the West German rate. We address this possibility in the following discussion.

Figure 3 provides projections on the cohort fertility for the two parts of Germany. Our approach is to project cohort fertility based on recent age-specific trends. In contrast

to the popular “frozen rate” method, our method incorporates our knowledge that fertility is being postponed, and uses linear extrapolation of age-specific rates.⁶ We believe that the projections of cohorts observed until at least age 38 are highly reliable because they involve the projection of only a small fraction of the fertility of these cohorts. But the projection for cohorts truncated at earlier ages is more uncertain. We have indicated this in the figure by using dots to show the cohorts that are observed until at least age 43, solid lines to indicate the cohorts observed until at least age 38, and dashed lines for those observed until at least age 33.

One conclusion that can be drawn from this figure is that there is a 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 the subsequent cohorts, cohort fertility again increases. This trend reversal in cohort 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 for children below age three. This may be mere coincidence but is nonetheless suggestive. Second, the figure shows East German cohort fertility will temporarily drop below West German levels. For the East German cohorts born between 1965 and 1970, we observe a continuous decline in fertility. This might be explained by the unfavorable economic situation that these cohorts have been exposed to. However, it is also necessary to take a life-course perspective when interpreting East German cohort fertility rates. Many of the women of the cohorts born between 1965 and 1970 had just had their first child before unification. This means that

⁶ In order to project age-specific fertility trends, we used the last five years in the observed age-specific fertility rates. For each age, we used linear interpolation 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 method is that

the rate of increase of the last five years will continue in the future.

unification basically “cut” into the fertility careers of these women. Unification occurred at a time when many of these women had just one child. Although they might have been quite young when they had their first children, they did not “pick up” their fertility careers at later ages, and often remained with one child only. This means that it is not only the economic situation that has kept these East German women from having any further children, but rather the combination of the economic situation and a reluctance to have unusually large birth intervals.

For the East German cohorts who started their reproductive lives after unification (cohorts born 1971 and later), the situation is different. They had postponed first-time childbearing to later stages in their lives, and thus to the end of the 1990s or the beginning of this century, when the economic situation in the East had eased to a great extent. Compared to previous cohorts whose fertility careers had been “disrupted” by the economic and social upheavals that followed unification, these cohorts could opt for a second child without having to choose unusually high birth intervals. The increase in the second-order TFR fits this interpretation (Figure 2). The final increase in the East German cohort fertility would be in line with this assumption, too.

[Figure 3 about here]

Summary and Conclusions

We began this paper 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 unification. However, we have argued that the similarity in current period fertility rates in the two parts of Germany hides fundamental differences in demographic behavioral

patterns. What seems like a belated demographic unification of the two parts of Germany covers up major contrasts.

The analyses presented in this paper have revealed the presence of marked differences in order-specific fertility patterns. Motherhood in East Germany still occurs at younger ages than motherhood in the West. On average, an East German woman is one year younger when she has her first child than a West German woman. Furthermore, having children is still a more universal experience in East Germany, as the shares of childlessness are lower in the East than in the West. Although the one-child family is still slightly more prevalent in the East than in the West, the big 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 18 years after unification is, we interpret, the reemergence of higher period fertility in the East due to less childlessness and a “catch-up” in the progression to second births.

The analysis of period fertility, even when it is broken down by parity, can lead to some confusion between the level of fertility and changes in timing (Bongaarts and Feeney 1998; Sobotka and Lutz 2009). Using newly available data from the Human Fertility Database (2011), we were able to construct 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, there has been a long history of higher cohort fertility in the East than in the West that began before unification. Second, there has been an important *reversal* in the decade-long trend toward lower cohort fertility in the West. Third, although much of the decline in period fertility in the 1990s was due to postponement, the decline in cohort fertility in the East shows us that there was also a real reduction in lifetime childbearing. Fourth, cohort fertility in the East will most likely drop below West German levels for the cohorts born around 1970. These

cohorts 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 –a big “if”– then East German cohorts born at the end of the 1970s would catch up with their West German counterparts.⁷

It is also important to note that in East Germany –as in other Eastern European countries– postponement of births was an easy option for women because of the early and universal childbearing that existed before the Wall came down. Women who were childless at unification were rather young, and they could postpone parenthood until the economic and societal situation had stabilized, without fearing that they would reach the biological limits of fertility. Direct exposure to their West German counterparts appears to have shifted 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, 20008; Frejka and Sobotka 2008), East German women had the “normative freedom” to postpone their first birth towards higher West German ages.

What East Germany has in common with other Eastern European countries is, however, the low second-birth rate during the period after unification (Frejka and Sobotka 2008). We have argued that low second-birth intensities, particularly for the cohorts born between 1965 and 1970, could be attributable to the fact that some of these women had their first child before unification. The upheavals that followed unification cut into the fertility careers of these women. Although they were very young when they had their first child, they did not have a second child at later ages, as this would have meant unusually

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

long birth intervals. Recent increases indicate that the decline in second-birth rates was a transitory effect of unification.

The East German fertility development is also an example of how economic conditions need not be the determining factor in fertility levels. Despite worse, and fairly stagnant, economic opportunities, East Germans are still younger at first birth than women in the West, motherhood is more universal and period fertility is slightly higher. Although economic improvements may increase fertility even further in the East, the enormous economic differences between East and West do not produce –as, for example, Myrskylä et al. (2010) would suggest– higher period fertility in the West.

The direct comparison of East with West Germany also points to the aspects of the former communist regimes that might have been conducive to high fertility. A high degree of family orientation fosters universal motherhood in the East. While the economic conditions might have adverse effects on East German fertility, women's labor market behavior –buttressed by the wide availability of public day care– make the East German society more gender-equal than the 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 incompatibility of childrearing and employment in West Germany have pressured many women to choose between having children or pursuing a career –which has resulted in world-record levels of childlessness. Gradually, the West German society is changing as child care for children under age three is becoming more widely available, and as maternal employment is slowly becoming more acceptable. As these changes take hold, West Germany's fertility rates may be expected to gradually move upwards. If economic conditions improve in the East, we expect continued increase in the East as well. In both parts of Germany, increases in period birth rates are likely at some point in the near

future, if and when the depressing effect of fertility postponement weakens.

Acknowledgements

The paper was presented at the Annual Conference of the German Society for Demography 2010. We wish to thank the participants of this conference for their valuable comments. We also want to thank Tomas Frejka, Heike Trappe, Felix Rößger and our colleagues at the Max Planck Institute for Demographic Research for their critical comments on an earlier version of this paper. For editing, we thank Miriam Hils.

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Appendix

[Table A1 about here]

[Figures A1 & A2 about here]

Tables

Table 1: Socioeconomic Indicators in East and West Germany

	West Germany			East Germany		
	~1990	~2000	~2008	~1990	~2000	~2008
Economic Indicators						
Unemployment rate ¹⁾	6.2	8.4	7.8	10.2	18.5	14.5
Annual earnings of employees (in euros) ²⁾	26,698	32,438	35,229	15,185	26,387	29,257
% households with housing property ³⁾	40%	44%	44%	26%	32%	32%
Economic Worries						
% worried about finances ⁴⁾	12%	13%	17%	30%	22%	26%
% worried about job security ⁵⁾	12%	9%	10%	39%	20%	19%
Religion in Society						
% without religious affiliation ⁶⁾	12%	13%	16%	66%	71%	74%
Child Care and Maternal Employment						
% full-time employed mothers ⁷⁾	23%	20%	19%	74%	58%	50%
% of children ages 0-3 in day care ⁸⁾	2%	3%	12%	56%	37%	41%

Notes: 1) The unemployment rate refers to the years 1991, 2000, and 2009. It was calculated based on dependent civilian workforce. Source: Bundesagentur für Arbeit (2010)

2) Values refer to the annual earnings of the employees (“Arbeitnehmerentgelte je Arbeitnehmer, Inland”) for the years 1991, 2000, and 2009. Source: Statistisches Bundesamt (2010a)

3) Values refer to the years 1991, 2000, and 2008. Source: Frick and Grimm (2010: 657)

4) Values refer to the years 1990, 2000, and 2008. The figure represents the share of respondents who are very worried about their financial situation. Source: German Socio-Economic Panel, own estimations based on sample A and C.

5) Values refer to the years 1990, 2000, and 2008. The figure represents the share of employed respondents who are very worried about the security of their jobs. Source: German Socio-Economic Panel, own estimations based on sample A and C.

6) Values refer to the years 1992, 2000, and 2008. Source: ALLBUS, own estimates

7) Values refer to the years 1991, 2000, and 2008. Estimations based on the German micro-census provided by Esther Geisler. The sample includes mothers ages 18-45 who have at least one child who is age 18 or younger and lives in the same household as the respondent. West Berlin was grouped to West Germany.

8) Values refer to the years 1990, 2002, and 2009. Values for the years 1990 and 2002 are “provision rates” (share of available day care places per 100 children). The values for the year 2009 are “usage rates” (share of children in day care per 100 children). Source: Statistisches Bundesamt (1992, 2004, 2010b).

Table 2: Number of Children of West and East German Women, by Birth Cohort

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

Note: Berlin is included in East Germany.

Source: Estimates based on data from the 2008 micro-census provided by the German Federal Statistical Office (Statistisches Bundesamt)

Table 3: Mean Age at Childbirth by Birth Order

East Germany	2001	2002	2003	2004	2005	2006	2007	2008
1 st child	26.12	26.35	26.60	26.85	26.97	27.07	27.29	27.47
2 nd child	29.32	29.54	29.66	29.86	29.94	30.10	30.45	30.67
3 rd child	31.42	31.64	31.62	31.62	31.63	31.83	32.07	32.21
4 ^{th+} child	33.15	33.23	33.09	33.00	33.10	33.21	33.08	33.34
All births	27.94	28.14	28.34	28.55	28.68	28.85	29.10	29.30
West Germany	2001	2002	2003	2004	2005	2006	2007	2008
1 st child	27.43	27.57	27.74	27.95	28.10	28.26	28.49	28.69
2 nd child	29.88	30.04	30.15	30.30	30.43	30.57	30.78	30.98
3 rd child	31.46	31.57	31.65	31.79	31.87	31.96	32.19	32.35
4 ^{th+} child	33.06	33.09	33.19	33.26	33.32	33.41	33.49	33.56
All births	28.99	29.14	29.28	29.46	29.60	29.76	29.97	30.15

Note: Only ages 15-44 are considered. Berlin is included in East Germany

Source: BQS Perinatal Statistics (own estimates), for details see Kreyenfeld et al. (2010b)

Table 4: Tempo-Adjusted TFR (Ages 15-44)

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

Note: Only ages 15-44 are considered. Berlin is included in East Germany. The adjusted TFR for each period was calculated by using the average TFR for a given period and changes in the age at birth during this time 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 Table A1 in the appendix). Source: Own estimates based on BQS Perinatal Statistics

Table A1: Tempo-Adjusted TFR

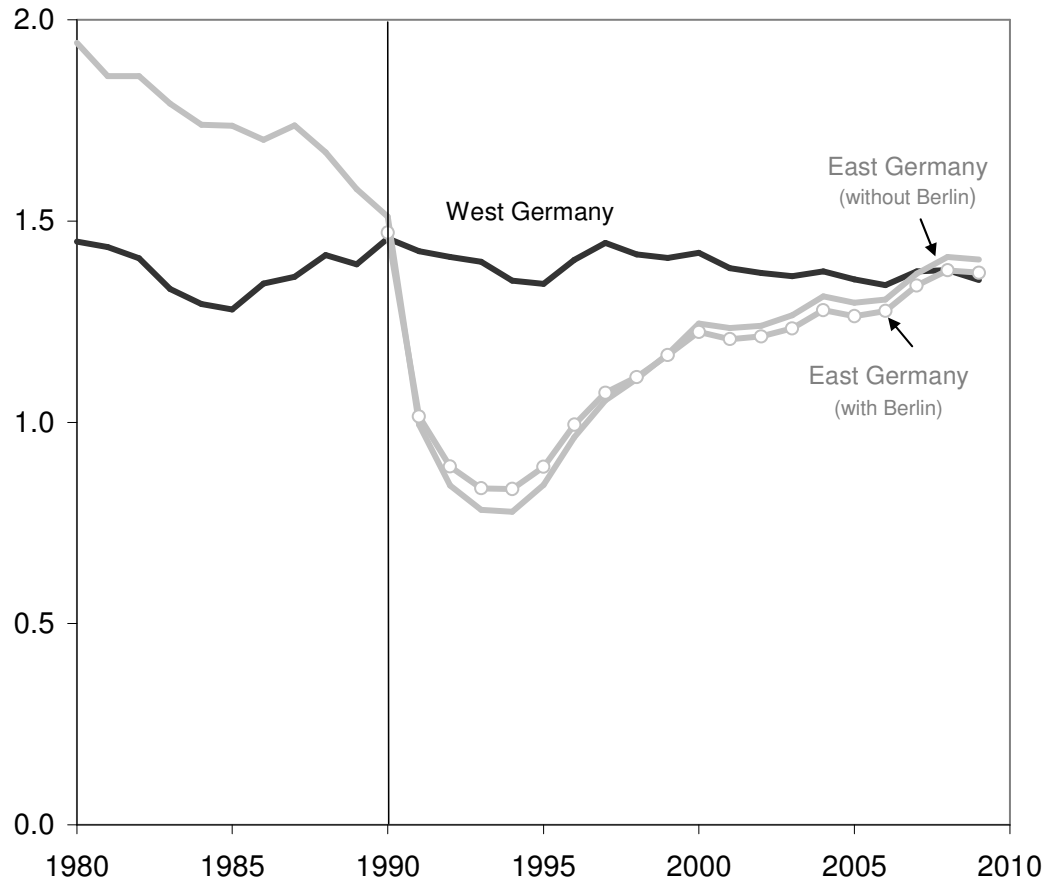
East Germany	2002	2003	2004	2005	2006	2007
1 st child	0.87	0.89	0.84	0.75	0.79	0.87
2 nd child	0.47	0.47	0.48	0.47	0.56	0.62
3 rd child	0.12	0.11	0.12	0.13	0.16	0.16
4 ^{th+} child	0.05	0.05	0.06	0.07	0.06	0.07
Total	1.51	1.52	1.50	1.42	1.58	1.72
West Germany	2002	2003	2004	2005	2006	2007
1 st child	0.80	0.82	0.82	0.78	0.80	0.85
2 nd child	0.55	0.55	0.56	0.55	0.57	0.59
3 rd child	0.17	0.17	0.17	0.17	0.19	0.20
4 ^{th+} 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: Only ages 15-44 are considered. Bongaarts-Feeney Adjustment was applied (see Bongaarts and Feeney 1998).

Source: Own estimates based on BQS Perinatal Statistics

Figures

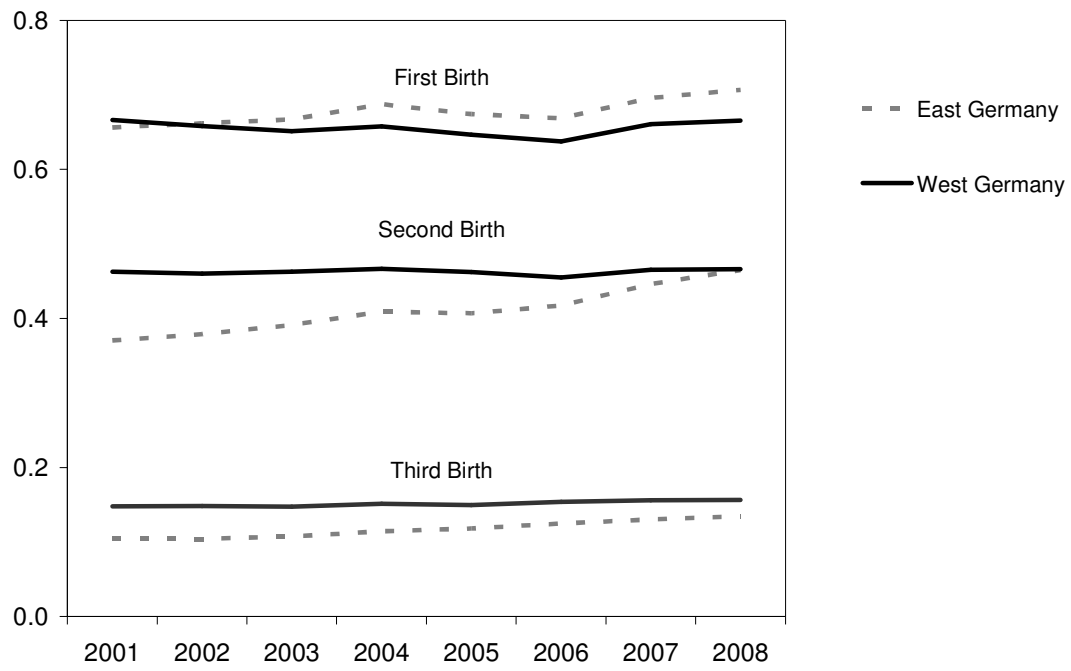
Figure 1: Total Fertility Rate in East and West Germany, 1980-2009



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, we display separate graphs with and without Berlin. Due to a regional reform (which came into force in the beginning of 2001), it is not possible to differentiate Berlin along the old territorial borders of East and West Germany any longer.

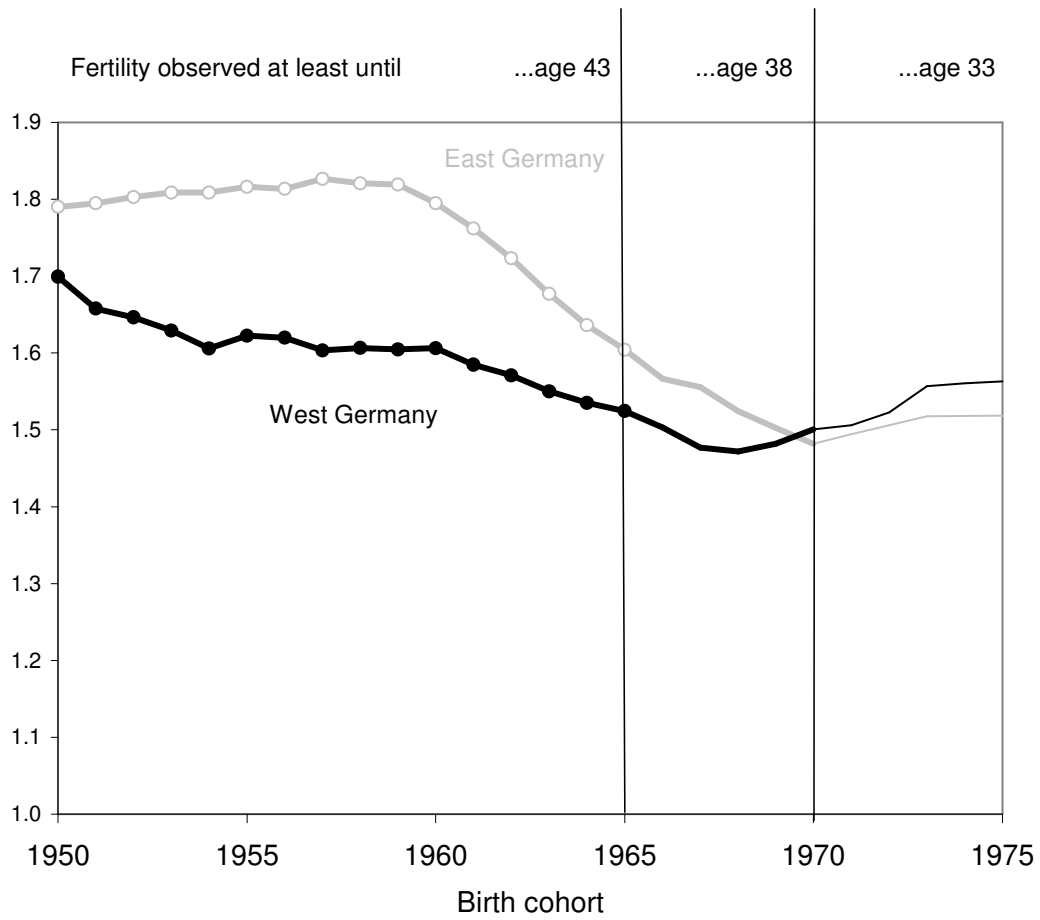
Source: HFD (2011)

Figure 2: Order-Specific TFR (ages 15-44)



Source: BQS Perinatal Statistics (own estimates), for details see Kreyenfeld et al. (2010b)

Figure 3: Cohort Fertility Forecasts for East and West Germany

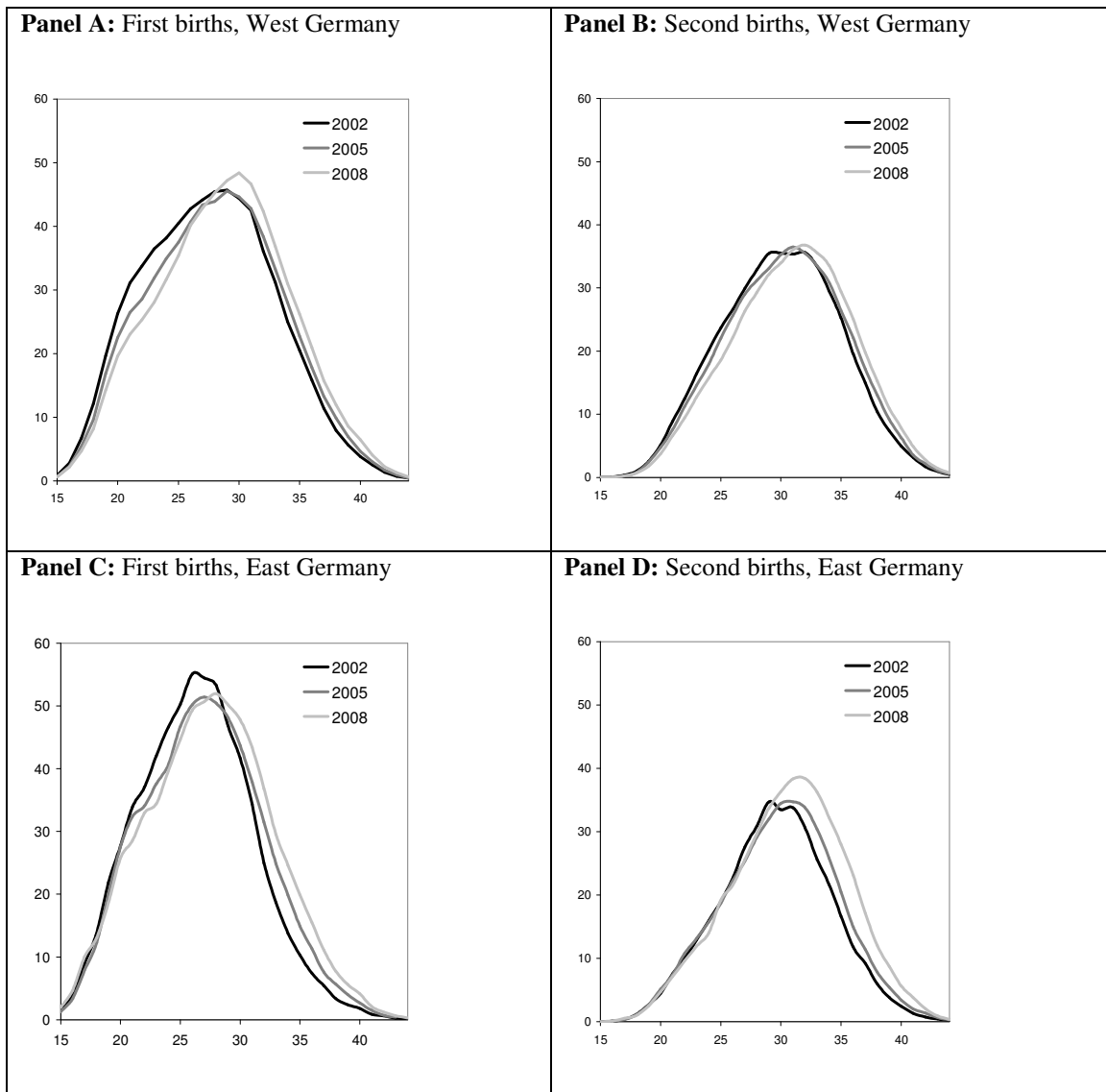


Note: Cohort TFR estimated by linearly extrapolating the age-specific rate from the last five cohorts.

Observed fertility available until 2009 from HFD. Age is defined as age reached at the beginning of the year.

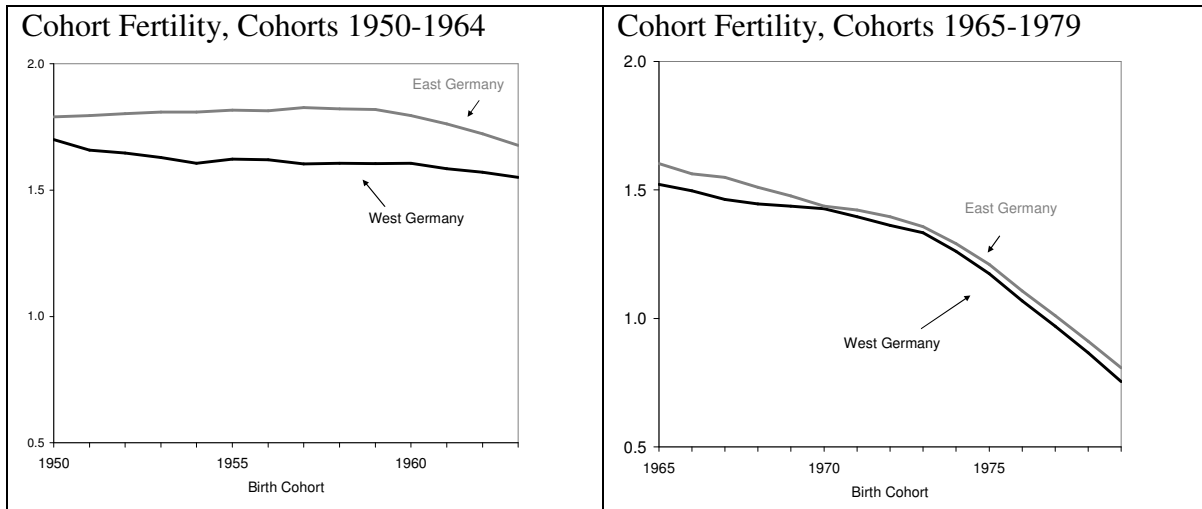
Data source: Human Fertility Database – Germany (2011)

Figure A1: Age-Specific Fertility Rates by Birth Order for East and West Germany



Source: BQS-Perinatal Statistics (own estimations)

Figure A2: Cohort Fertility Rates in East and West Germany in 2009



Source: HFD (2011)