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Wind of change? Cultural determinants of maternal labor supply

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Wind of Change? Cultural Determinants of Maternal Labor Supply

Barbara Boelmann, Anna Raute & Uta Schönberg

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Abstract

We investigate the role of cultural norms in shaping women's labor supply decisions after childbirth. Specifically, we are interested in the interplay between childhood socialization and adulthood environment. To that end, we leverage the setting of the German reunification when East Germany's gender egalitarian culture induced by socialism and West Germany's more traditional culture were brought together. We find that East German gender norms are persistent whereas West German ones are not. West German mothers adjust their behavior to that of their East German peers not only when immersed in East German environment but even after returning to the West.

Keywords: gender gaps, cultural persistence, cultural adoption, maternal labor force participation, German reunification; JEL: J1, J2, Z1

1. Introduction

The arrival of children has been shown to be one of the primary reasons for persistent gender inequalities in the labor market (Angelov, Johansson, and Lindahl, 2016; Kleven, Landais, and Søgaaard, 2019), which Bertrand (2020) describes as one of the key “pain points” preventing gender equality. There appears to be little hope for

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gender convergence in the near future: While the labor supply of mothers greatly increased throughout the 1970s and 1980s, it has plateaued—and even slightly decreased in some countries—for the past 10 to 30 years (see Kuziemko, Pan, Shen, and Washington, 2020; Kleven, 2023).¹

In this paper, we investigate the role of cultural norms in shaping women’s labor supply decisions after childbirth. Specifically, we are interested in the interplay between childhood socialization and adulthood environment. Does the culture a woman was raised in have a persistent effect even when she encounters a different environment in adulthood? Or do women adjust to a new cultural environment, possibly increasingly so as they spend more time in this new environment? If so, do women permanently adopt its culture even when returning to their childhood environment?

As such, our paper adds a new perspective to the literature on gender and culture which has, on the one hand, emphasized that cultural traits regarding women’s role in society are deeply rooted (Alesina, Giuliano, and Nunn, 2013) while, on the other hand, documented episodes of drastic changes in gender norms and female labor supply, for instance in response to a large regime change (e.g., Campa and Serafinelli, 2019) or to changes in economic conditions (e.g., Cardoso and Morin, 2018; Xue, 2023).² Our paper sheds novel light on when culture persists and when migrants adjust to their new environment, documenting for the first time a strong asymmetry between more and less gender traditional cultures. Our paper further provides the first direct evidence on cultural adoption of adult migrants, showing that exposure to a different culture can lead to a permanent change in values and beliefs even after migrants return to their childhood environment.

We follow the empirical literature and define culture as systematic differences in both values (or preferences) and beliefs that vary across social or geographic groups (see, for instance, Fernández, 2011; Alesina and Giuliano, 2015). We refer to gender norms as the part of culture associated with the role of men and women in society, in particular what women are “supposed to do” when becoming a parent and what it means to be a “good mother” (see Fortin, 2005). According to the seminal work by Bisin and

¹ While in the US female labor force participation has plateaued since the early 1990s (Goldin 2006), it has continued to increase after 1990 in many European countries (Blau and Kahn, 2013). This increase was, however, driven by part-time work which many women switch to when their first child is born.

² See Giuliano, 2020; 2018; 2016 for an overview on the literature on gender and culture.

Verdier (2001; 2011), culture can be transmitted vertically, from one generation to the next; obliquely, from non-parental members of the parent's generation such as teachers; or horizontally, through social interactions with peers such as colleagues. By means of these transmission channels, children are socialized with a set of gender norms when they grow up, which we call "childhood culture". However, childhood culture may lose its influence during adulthood when exposed to a new environment.

In order to investigate this process, we center our analysis around three concepts: First, gender norms of a woman's childhood culture can have a persistent effect on a woman's labor supply even if she is immersed in a different current environment. We refer to this effect as "cultural persistence". Second, women may change their behaviour because of a new current environment which we refer to here as "adjustment to a new environment". Adjustment to a new environment can stem from two sources: First, women may react to the institutional constraints or opportunities of the current environment which likely happens upon arrival. Second, they may update their values and beliefs about the role of mothers with increased exposure to the new current environment. We refer to the latter effect as "cultural adoption"—the third concept that we define. Whereas the institutional constraints only play a role whilst being immersed in the new environment, cultural adoption is likely more permanent and thus continues to shape behavior even after women have returned to their childhood environment.

Gender norms regarding working mothers are arguably the strongest when children are very young, and women do not appear to anticipate the associated costs of motherhood (Kuziemko et al., 2020). We thus expect culture to affect female labor force participation decisions primarily after the arrival of the first child, during the first years of a child's life, which motivates us to focus on women's labor market decisions around childbirth. Studying *changes* in a woman's labor supply before and after the "event" of childbirth, as well as conditioning on a woman's pre-birth characteristics and work history (including her pre-birth employer) also enables us to estimate the impact of culture on female labor supply in a credible way.

Germany's separation and reunification provide a unique setting to answer questions on cultural persistence, adjustment to a new environment and cultural adoption. From 1945 to 1990, the country was divided into two parts. Socialist East

Germany (formally, the German Democratic Republic) strongly encouraged mothers to participate in the labor market, propagating a “dual-earner/state-career model” where mothers were typically employed full-time facilitated by extensive public policy support, whereas capitalist West Germany (Federal Republic of Germany) supported a more traditional male-breadwinner model (Rosenfeld, Trappe, and Gornick, 2004). Gender norms and female labor supply, particularly at early motherhood, diverged strongly between East and West during the four decades of separation (see Campa and Serafinelli, 2019). With the fall of the Iron Curtain and German reunification, these two cultures were suddenly brought together, with East Germany adopting West Germany’s political, economic, and legal institutions—with one of the few exceptions being childcare for the very young.³ Many East and West Germans migrated or commuted across the former inner German border—Fuchs-Schündeln and Schündeln (2009) document 2.45 million East-West and 1.45 million West-East migrants between 1991 and 2006—, leading to increased contact between East and West Germans, particularly in the workplace. Return migration is also relatively common, with an estimated 20 percent of East-West migrants returning to the East later (Fuchs-Schündeln and Schündeln, 2009). Despite these increased interactions, even 20 years after reunification, child penalties and return behavior still differ substantially between East and West Germany: East-German first-time mothers recover 70% of pre-birth earnings seven years after birth compared to only 45% for West German first-time mothers.

Our empirical analysis draws on high quality social security data permitting observation of the complete work histories of a 50 percent random sample of women born between 1946 and 1994. The large sample size allows us to focus on mothers who migrated from one part of reunified Germany to the other, as well as those who returned back to their origin.

In a first step of our empirical analysis, we zoom in on East and West German women who migrated to the other part of Germany and investigate whether they still behave according to their childhood culture. Building on the epidemiological approach

³ The empirical literature (see Alesina and Giuliano, 2015) defines institutions as formal institutions (i.e., formal legal system, formal regulation). In our specific case of German reunification, political and legal institutions have been equalised. Thus, when we refer to remaining institutional differences between East and West Germany, we allude to continuing differences in the availability of childcare for young children that are potentially important for facilitating return to work of mothers.

(see e.g., Fernández (2011) for an overview), we contrast the post-birth labor supply behavior of East German cross-border migrants and West German “natives”—or West German cross-border migrants and East German “natives”, respectively—who were on the same career trajectory prior to childbirth within the same local labor market and even within the same workplace.⁴ This approach isolates the persistent impact of childhood culture for women now immersed in a new environment, while holding their current institutional and economic environment constant.

We document a large asymmetry in the persistence of childhood culture. Whereas East German migrants who give birth in West Germany return earlier and work longer hours than their West German counterparts—a gap in regular (full-time) employment of 7.9 (5.09) percentage points, West German migrants adjust their post-birth labor supply behavior nearly entirely to that of their East German peers and colleagues. Adopting the bounding approach proposed by Oster (2019), the asymmetric pattern of cultural persistence continues to be present under extremely conservative and implausibly restrictive assumptions on the selection of migrants based on unobserved (by us) characteristics.

In a next step, we analyze the adjustment process to a new environment. Specifically, we assess whether migrants behave more similarly to natives the more time they spent in the new environment before birth. While employment gaps between East German migrants and West German stayers are smaller than the overall East-West gaps, they barely change with the time East Germans have spent in the new West German environment before birth. West German migrants, on the other hand, behave increasingly more similar to their East German peers the longer their exposure to the East German environment before birth. These patterns of adjustment are in line with the interpretation that East German migrants immediately respond to the institutional constraints of the more traditional West German environment such as the limited access to childcare for very young children. In contrast, West German migrants seem to internalize the new more gender-egalitarian East German culture (cultural adoption), a process that takes time to unfold.

⁴ In a similar vein, Grunow and Müller (2012) descriptively compare the post-birth labor supply behavior of East and West Germans and women who migrated from East to West Germany. They document that East German migrants return to work faster than West German mothers, but not as fast as East Germans who stayed in East Germany.

In a last step of the empirical analysis, we aim to isolate the role of cultural adoption more directly, by comparing return migrants—that is, West (East) Germans who spent at least 1.5 years in East (West) Germany before returning to and giving birth in West (East) Germany—and West (East) German “stayers” who never left their native part. West German return migrants continue to be influenced by the East German culture, suggesting a permanent influence of the more gender egalitarian culture experienced: Four years after childbirth, West German return migrants are around 5 percentage points more likely to be in regular employment than observationally equivalent West German mothers in the same local labor market who always remained in West Germany, with a similarly large gap in full-time employment. The persistent impact of *past* exposure to the East German culture points towards cultural adoption, for example through learning from East German peers at the workplace or the East German environment more generally, rather than a temporary adjustment to the East German environment because of institutions or peer and workplace pressure to conform with East German gender norms. In contrast, four years after childbirth, East German return migrants do not show any statistically significantly different post-birth labor market behavior compared to East German stayers, suggesting little cultural adoption of the West German traditional culture.

Taken together, the results on cultural persistence, adjustment to a new environment, and cultural adoption highlight that the importance of childhood culture for maternal labor supply is multi-faceted. More egalitarian gender norms seem to be more persistent, even in an environment less conducive to working mothers. In contrast, women socialized with more traditional gender norms react strongly to an environment which facilitates mothers of young children working and, over time, even internalize parts of the values and/or beliefs of the more gender egalitarian culture.

Our paper relates to and connects several strands of the literature. We add to the literature on child penalties by studying the cultural determinants of early maternal labor supply, the key driver of the child penalty. According to our knowledge, existing evidence is so far limited to two studies. Kleven, Landais, Posch, Steinhauer, and Zweimüller (2019) document a strong correlation between the size of child penalties

and gender norms across six countries.⁵ However, this correlation may at least partially reflect differences in institutions and policies across the six countries.⁶ Steinhauer (2018) in turn provides evidence for sizable differences in the employment behavior of mothers in German- and French-majority speaking municipalities along the Franco-German language border within Switzerland, pointing towards the importance of culture for maternal labor supply. We add to this work by providing novel evidence on whether maternal labor supply behavior is persistently shaped by a woman's childhood culture, or whether it is malleable after exposure to a different culture in adulthood.

In order to isolate cultural persistence, adjustment to a new environment and cultural adoption, we borrow from and extend the epidemiological literature on the role of culture for economic decision-making. Regarding female labor supply, the literature typically compares native and migrant women's labor supply to study the persistence of cultural traits in determining female labor supply. The literature has looked at comparisons of native and first generation, internal migrants (e.g., Charles, Guryan, and Pan, 2022; Gay, 2023; Kleven, 2023)—where women face low migration barriers and hence selection issues are less severe—and of native and second generation, international migrant women (e.g., Fernández, 2007; Giuliano, 2007; Fernández and Fogli, 2009; Blau et al., 2013, Friedman-Sokuler and Senik, 2020)—where cultural differences are particularly strong. While the literature has largely focused on a strong persistent impact of culture for immigrant women's behavior, there is also some evidence of assimilation of immigrant women to native levels of female labor supply (e.g., Blau, Kahn, and Papps, 2011; Blau, 2015) as well as some convergence of attitudes towards gender roles across immigrant generations to the US norms (Giavazzi, Petkov, and Schiantarelli, 2019). Our paper is the first, to our knowledge, that explicitly assesses a potential asymmetry in the persistence of childhood culture (and thus the adjustment process), by distinguishing between migration from a more gender egalitarian childhood culture to a more traditional current culture and vice versa. In

⁵ Other studies document a strong correlation between gender norms and labor supply of women (but not specifically mothers) across OECD countries (Fortin, 2005) or within a country as well as across regions over time (Fortin, 2015; Giavazzi, Schiantarelli, and Serafinelli, 2013; Kleven, 2023).

⁶ For example, Bick and Fuchs-Schündeln (2018) show how differences in taxation can partly explain the variation in married women's hours worked across European countries.

addition, we are the first to disentangle the mechanisms behind the adjustment process if it occurs: By looking at return migrants, we show that part of it is driven by permanent cultural adoption, while part of it is environment-specific.

Lastly, we add to the literature that has used the German separation and reunification to identify the legacy of socialism.⁷ While Alesina and Fuchs-Schündeln (2007) focus on preferences for redistribution, Campa and Serafinelli (2019) convincingly show that the imposition of state-socialism led to differences in gender role attitudes in East and West Germany (see also Bauernschuster and Rainer, 2011; Beblo and Gorges, 2018; Lippmann, Georgieff, and Senik, 2020). Our study is novel in that we do not only study the persistence of the East German culture after reunification, but also how exposure to the East German culture—either through current or past exposure—has impacted the labor supply behavior of West German mothers.

2. The Division and Reunification of Germany

At the end of World War II in 1945, Germany was separated, with negotiations between the Soviet Union and Western Allies determining its new borders. In 1949, the German Democratic Republic (GDR, East) and the Federal Republic of Germany (FRG, West) were officially established in the Soviet occupation zone and Allied occupation zone respectively. With the construction of the Berlin Wall in August 1961, migration between the two states nearly stopped and social interactions between East and West German citizens were severely restricted until the GDR's collapse in November 1989.

Gender Egalitarian Culture in the GDR. As the equality of women was a proclaimed goal of state-socialist governments, such as the GDR, the East German government granted women the constitutional right to work and to receive equal pay already in 1949. While the GDR developed into “one of the most rigid” state-socialist regimes (Alesina and Fuchs-Schündeln, 2007, 1510), scholars also argue that it “went furthest in balancing its policies towards women as producers and reproducers” (Einhorn 1993 cited in Trappe 1996, 355).

⁷ Fuchs-Schündeln and Hassan (2016) provide a review of the literature in macroeconomics that has leveraged the German separation and reunification.

As early as the 1950s, the GDR introduced policies to promote women's educational attainment and to increase female labor force participation in view of a need for labor against the background of increasingly tight labor markets in the post-war recovery period. By the end of this decade, the regime was propagating the obligation to work (Trappe, 1996). Ideologically, housewives were devalued, with non-working mothers described as "*Schmarotzer*" (*parasites*) (Kaminsky, 2016, 93).⁸ Female labor force participation increased from 52.4 percent in 1950 to 81.8 percent in 1970 (Beblo and Görge, 2018), considerably higher than in Scandinavian countries, such as Sweden, at the time (Gustafsson and Jacobsson, 1985).

The country was one of the first to introduce contraception and legalize abortion, aimed at allowing women to time their fertility and invest in their careers. As fertility levels started to decline in the 1960s, the GDR began to focus on policies that would help women reconcile work and family. Throughout the 1970s and 1980s, it expanded public provision of childcare, offered one year of paid parental leave with full wage compensation and job protection (the "baby year"), and reduced working hours for mothers with small children (Trappe, 1996). While family policies in East Germany were implemented under state-socialism, they appear in fact remarkably similar to those implemented by democratically elected social-democratic governments in many Nordic countries such as Sweden from the 1960s onwards.⁹ According to Rosenfeld, Trappe, and Gornick (2004), East Germany followed a "dual earner-state carer model" where mothers were typically employed full-time, facilitated by extensive public policy support. Qualified employment was a central component of women's (and mothers') self-perception in the GDR (Rosenfeld, Trappe, and Gornick, 2004), also evidenced by the higher share of East German women deeming career success as important in 1990 (Campa and Serafinelli, 2019).

Despite near equal participation of men and women in the labor market, some gender inequalities in terms of earnings and occupational integration remained in the labor market (Rosenfeld, Trappe, and Gornick, 2004; Trappe and Rosenfeld, 2000;

⁸ The GDR Criminal Code even classified the avoidance of work as anti-social behaviour, making it a criminal act punishable by prison for up to 5 years (Beblo and Görge, 2018, 22).

⁹ Sweden introduced earnings-dependent maternity leave benefits for 6 months in 1963 (extended to a full year in 1980), largely expanded public childcare in the 70s and 80s (and throughout the 90s) and abolished joint taxation in 1971.

Rosenfeld and Trappe, 2002). Women were also the primary caregivers at home and the primary contributors to home production. To partly alleviate this “double burden” for women, the GDR granted a monthly “*Haushaltstag*” (literally, household day) to full-time employed women. The fact that men were only eligible in exceptional circumstances demonstrates the gendered division of household chores. Against this background, we use the term “gender egalitarian” to refer to the fact that women’s labor market prospects were similar to men’s, especially when compared to the gender gaps in other countries at the time, without wanting to claim that full gender parity had been reached in the GDR.

Gender Traditional Culture in the FRG. While East Germany encouraged mothers of small children to return to work through family policies and state propaganda, West Germany discouraged them by promoting a more traditional male-breadwinner model with a socially conservative welfare state (Trappe, 1996; Rosenfeld, Trappe, and Gornick, 2004).¹⁰ While the GDR tried to increase labor market participation of married women and in particular mothers against the background of tight labor markets, West Germany (and other Western European countries such as the Netherlands) attracted foreign labor from the late 50s (*Gastarbeiter*). In the FRG, school schedules were short (typically ending around lunch time) and childcare centers were scarce, particularly for children younger than four, and mostly part-time. Paid parental leave was subsequently expanded throughout the late 1970s and 1980s from two months of benefits and job protection in 1979 to 18 months in 1989 (for further details, see Schönberg and Ludsteck (2014)). However, income-replacement was considerably less generous than in the GDR, amounting, on average, to about one third of the mother’s pre-birth wage. A tax and benefit system marked by joint taxation and free insurance of non-employed spouses and children further discouraged dual-earner families. More traditional gender role attitudes were also apparent in jargon used in West Germany such as “*Rabenmutter*” (literally, raven mother), a derogatory term used for working mothers, or in referring to daycare centers as “*Fremdbetreuung*,” which

¹⁰ Up until 1958, the husband had full decisional power over his wife and children, and up until 1977, German civil law stated that a wife only had the right to be employed as far it was compatible with her marriage and family duties.

translates into “care by strangers.” Figure 1 illustrates how the different gender norms in East and West Germany were respectively depicted in advertisements for household products in the 1950s.

After more than four decades of diverging institutions and family policies, women’s labor force participation rates in these two countries greatly differed: In 1989, shortly before reunification, around 89 percent of women worked in the GDR, one of the highest rates in the world, against 56 percent in West Germany (Rosenfeld, Trappe, and Gornick, 2004). While nearly 75 percent of East German women worked a standard full-time week, only 30 percent of working-age women in the West were employed full-time (Trappe and Rosenfeld, 2000). Differences in labor supply were particularly pronounced for mothers. In contrast to East Germany’s “dual earner-state carer model”, about half of married couples with children in West Germany adhered to a traditional “male breadwinner-female carer” model, while the other half followed the “dual earner-female part-time carer” model (the dominant model in, for example, the UK and the Netherlands), with wives predominantly working part-time (Rosenfeld, Trappe, and Gornick, 2004).

We note that in a recent paper, Becker, Mergele, and Woessmann (2020) argue that due to differences before the division, East-West differences cannot be solely attributed to differences in political regimes between East and West Germany. Yet, even these authors emphasize that the “impact of the socialist regime on gender roles seems beyond doubt [...]” (p. 167).¹¹ Since our goal is not to quantify the long-lasting effects of socialism, but to study the consequences of increased social interaction between East and West Germans after reunification, possible East-West differences before the division do not pose a threat for our study.

German Reunification. With the collapse of the Soviet Union and large-scale demonstrations against the East German regime, the Berlin Wall fell on November 9, 1989 and reunification occurred on October 3, 1990. Subsequent migration flows between East and West Germany were large: During the years 1991 to 2006, 2.45

¹¹ In line with the notion that state socialism had a lasting impact on gender roles, Fuchs-Schündeln and Schündeln (2020, 189) show that support for working women has remained roughly stable across cohorts in Eastern Europe in general as well as East Germany (see Figure A.3 in their online appendix on the latter), but has increased in Western Europe as well as West Germany.

million people migrated from the former GDR to the former FRG, while 1.45 million individuals moved in the opposite direction (Fuchs-Schündeln and Schündeln, 2009). With reunification, the GDR became part of the FRG and adopted West Germany's political, economic, and legal institutions, including its tax and parental leave systems. In 1992, reunified Germany expanded its parental leave policy, with mothers now being entitled to 36 months of job protection and up to 24 months of means-tested paid parental leave benefits of up to 300 Euros per month (from 1993 onwards).¹² The long and extended leave period thus clearly reflects the more traditional gender norms of West Germany, rather than the more egalitarian gender norms of East Germany.¹³

Even though nearly all formal institutions were equalized post reunification, differences in childcare availability—which was historically very high in East Germany—remained. By the early 2000s, a policy introduced in reunified Germany in 1996 had removed most constraints in childcare availability for 3-to-6-year-olds that previously existed in West Germany (Cornelissen, Dustmann, Raute, and Schönberg, 2018). However, in 2007, the time around which women in our sample give birth, childcare availability for young children continued to be considerably more constrained in West than in East Germany, with 37.4 percent of East German children below the age of 3 attending daycare compared to only 8.1 percent in the West (Statistische Ämter des Bundes und der Länder, 2008).

Today, reunified Germany continues to be characterized by strong differences in gender attitudes between the two parts of the country. According to the 2008 European Value Study (EVS, 2011), 57 percent of respondents in West Germany agree with the statement that “A pre-school child suffers if his or her mother works” (Figure 2). Yet, only 31 percent of those in East Germany agree with the statement, a share comparable to Western European countries such as Great Britain and France, but still higher than

¹² Mothers could choose between maternity benefits of 300 Euros paid over a duration of 24 months or maternity benefits of 450 Euros paid over a duration of 12 months. Of the mothers eligible for leave payments, around 15% of mothers (predominantly East German) chose the shorter option in 2006. Since 1986, fathers have in principle been eligible for parental leave, though as very few take any leave (3.5% in 2006), the program was effectively a maternity leave program.

¹³ A parental leave reform in 2007 entitled mothers to up to 12 months of much more generous parental leave benefits tied to their pre-birth wages, moving Germany's parental leave system closer to that of the former GDR (see for instance, Raute (2019)). To incentivize fathers' leave taking, the reform also introduced two “daddy months”; the duration of benefit eligibility can be extended by two months, if both parents take the leave for at least two months. In the empirical analysis, we focus on mothers who gave birth before the reform came into effect.

in Scandinavian countries such as Sweden (15%) and Denmark (6%). Hence, nearly two decades after reunification, East and West Germans still have very different attitudes regarding the roles of mothers.¹⁴

3. Data and Descriptive Evidence

3.1 Data Description and Sample Selection

Our data consist of a project-specific draw from social security records provided by the Institute for Employment Research (IAB) in Nuremberg (specifically from the Integrated Employment Biographies (IEB) in the version V10.00)¹⁵ and are available from 1975 onward for West Germany and from 1992 onward for East Germany (IEB, 2012). We have access to the data until 2010.¹⁶ The data source comprises the complete work histories, including length of leave due to childbirth, for every woman and man covered by the social security system, with the exception of civil servants, the self-employed, and military personnel.

From this data source, we have access to a random sample of 50 percent of all women with German citizenship who were born between 1946 and 1994 in order to construct the career histories of first-time mothers who were between the ages 18 and 40 at the birth of their first child and who took maternity leave between 1997 and 2006, excluding mothers from and in Berlin as we cannot differentiate between former East and West Berlin.

Our data offer a number of key advantages. First, the large sample size allows to both investigate changes in mothers' labor market outcomes around the birth of a first child while simultaneously focusing on East and West German mothers within the same

¹⁴ In line with the evidence presented here, Grewenig, Lergetporer, and Werner (2020) document that even in 2020, East German adolescent girls (aged between 14 and 17 years) have different attitudes regarding working after childbirth than their West German counterparts.

¹⁵ The data are social security data with administrative origin which are processed and kept by IAB, Regensburger Str. 104, D-90478 Nuremberg, iab@iab.de, phone: + 49 911 1790, according to the German Social Code III. There are certain legal restrictions due to the protection of data privacy. The data contain sensitive information and therefore are subject to the confidentiality regulations of the German Social Code (Book I, Sect. 35, Paragraph 1).

¹⁶ A change in the reporting system in 2011 led to a structural break and consequent missing data for a number of key variables (e.g., full-time work) in the data which are crucial for studying maternal labor supply. Extending the analysis beyond 2010 is therefore difficult.

local labor market¹⁷ and workplace. Such a detailed analysis would simply not be possible using the much smaller German Socio-Economic Panel (SOEP) or the cross-sectional German Microcensus. A second advantage is the precise measurement of the mother's labor force status, part-time work, occupation, education¹⁸, and (daily) wages (measured in 2010 EUR prices) before and after childbirth, allowing us to pinpoint the exact month the mother returns to work after childbirth. Such detailed information further allows us to compare post-birth labor supply decisions of women who were on the same career trajectory prior to childbirth in all our specifications. Identifiers for workplaces additionally allow us to compare the pre- and post-birth outcomes of mothers from East and West Germany employed in the same workplace.

Our data, however, also have some shortcomings. First, as the data do not contain direct information on children, we focus on first-time mothers who go on maternity leave. Mothers in Germany are prohibited from working in the first eight weeks after childbirth (*Mutterschutz*) and must therefore take maternity leave. Moreover, pregnant women enjoy employment protection, making it difficult for employers to fire them. While women could drop out of the labor force voluntarily without going on leave, they would forego job protection and maternity benefit entitlements when doing so. In consequence, nearly all women who are employed prior to giving birth indeed take maternity leave. At the same time, most first-time mothers are employed in the year prior to giving birth, with small differences between East and West Germany.¹⁹ The focus on first-time leave-taking rather than first-time births is therefore unlikely to have a large effect on our findings.

A second shortcoming of our data is that place of birth is not recorded. We therefore primarily classify mothers as of West or East German origin based on the place where

¹⁷ Local labor markets are defined based on commuter flows. Within a local labor market, commuting from one point to another within the zone takes a maximum of 45 to 60 minutes, depending on the local labor market (Kosfeld and Werner 2012, 51).

¹⁸ We impute missing education information following Fitzenberger, Osikominu and Völter (2005, 2006).

¹⁹ Own calculations based on data from the German Socio-Economic Panel suggest that more than 80 percent of all first-time mothers between 1990 and 2010 were working in the year prior to giving birth in both East and West Germany. Unfortunately, the social security records do not explicitly distinguish between maternity leave and other leaves of absence, such as sickness. Schönberg (2009) shows, however, that after imposing appropriate restrictions, at least 90 percent of authorized absences in the data are for maternity reasons (see also Müller and Strauch (2017)). We follow suit and impose these same sample restrictions (Schönberg, 2009).

they undergo firm-based apprenticeship training or, if they never enrolled in apprenticeship training or held a job before enrolling, their first place of work.²⁰ This is a very good proxy for the German context, where the large majority of women began their working life with firm-based apprenticeship training (73 percent of West and 80 percent of East German mothers), typically close to their hometown. Moreover, students often attend a university and seek their first job close to their hometown (e.g., Weisser, 2020). Our own calculations based on the German Socio-Economic Panel show that, in line with the numbers reported in Heise and Porzio (2023), the classification error is minimal for women raised in West Germany: only about 1 percent of West Germans enroll in vocational training or hold their first job in East Germany (see Online Appendix B for details). The classification error is larger for women raised in East Germany, of whom about 4 percent enroll in vocational training or hold their first job in West Germany.

The approximation may nevertheless erroneously classify some East Germans as West Germans if they migrated to West Germany prior to 1992 (the year social security records become available for East Germany). In order to avoid such misclassification, we develop an imputation method based on their age and educational attainment when they are first observed in the West German social security data (between 1989 and 1992); see Online Appendix C for details.

Our empirical analysis focuses primarily on mothers' labor market attachment after childbirth. We distinguish between three different employment statuses: overall employment which also includes so-called "marginal employment" (i.e., below an income level of 400 EUR per month in our main sample period and typically without social security contributions); regular employment, defined as full- or part-time work excluding marginal employment; and full-time work characterized as working at least 35 hours per week.²¹ We do not consider outcomes that condition on post-birth employment as such conditional East-West gaps would be difficult to interpret due to the sizable East-West differences in the propensity to work after childbirth.

²⁰ In case women start their working career with a spell in unemployment, we classify them as East and West depending on where they claim unemployment benefits (i.e., their residence).

²¹ Marginal employment only gained popularity after substantial reforms in 1999, and then particularly in 2003. This status is recorded in our data from 1999 onwards.

We focus on first-time mothers who gave birth between 2003 and 2006, 13 to 16 years after German reunification. These women were born on average in 1975 (with a standard deviation of 5.6 years) and thus spent their childhoods under two very different regimes. However, they then made important education, training and labor market decisions after reunification under a common politico-economic system.

3.2 Descriptive Evidence

Return-to-Work Behavior and Child Penalties. To provide a descriptive overview of our data, Part A of Figure 3 contrasts the return-to-work behavior (defined as the first time that a mother works at least 8 hours per week for a consecutive period of two months) of East and West German mothers who gave birth in 2003, 13 years after German reunification. The share of West German mothers who return to work increases fairly smoothly after childbirth up until a larger spike around 36 months after childbirth, when the job protection period ends. The return behavior for East German women mirrors that of West Germans up until 12 months after birth, but then diverges. Most strikingly, a sizable share of East German mothers returns to work exactly 12 months after birth, or the end of the job protection and benefit period granted *in the former GDR*. Thus, 13 years after reunification, a substantial share of East German mothers still behave in accordance with the social and institutional norms of the former GDR, even though the current parental leave system provides them with limited financial incentives to do so, hinting at the importance of social norms for the decision to return to work after childbirth.²² By the time the child is seven years old and has entered primary school, East German mothers are nearly 20 percentage points more likely to have returned to work than West German mothers.

These differences in return decisions also translate into meaningful earning differences between East and West German mothers. Part B of Figure 3 shows the evolution of earnings of West and East German mothers around childbirth relative to those one month prior to parental leave. We compute the “child penalty” as the difference between the mother’s earnings in a given month after childbirth (where

²² Furthermore, about 10 percent of East German mothers return to work precisely 24 months after giving birth when the parental benefit period ends. West German mothers, in contrast, do not respond to financial incentives. Rather, they return to work 36 months after giving birth when the job protection period ends, pointing to the importance of (different) social norms in West Germany.

earnings are set to 0 if the mother is not working) and those right before childbirth and divide by her pre-birth earnings. Earnings evolve very similarly between East and West German women prior to giving birth. While child penalties after childbirth are sizable for both West and East German mothers in the medium-run, they are considerably larger for West German mothers. East German mothers recover around 70 percent of their pre-birth earnings by the time the child is seven—similar in magnitude to mothers in the US and Sweden (Kleven et al., 2019). West German mothers, in contrast, recover only around 45 percent of their pre-birth earnings seven years after childbirth. Our own calculations suggest that in both East and West Germany, child penalties are primarily driven by mothers reducing their labor supply, both at the extensive margin—a reduction in the propensity to work—and at the intensive margin—a shift from full-time to part-time work—rather than a reduction in wages. Indeed, for this reason we focus on mothers’ post-birth labor market attachment as a key outcome variable.

Benchmark East-West Gaps in Employment. Part C of Figure 3 first displays East-West gaps in overall employment (including marginal employment relationships with very short hours), regular employment (excluding marginal employment but including part-time work) and full-time employment four years after childbirth, thus taking a medium-run perspective. Gaps are nearly as large for full-time employment as for regular employment (12.1 versus 14.7 percentage points), but slightly smaller for overall employment (9.64 percentage points). These findings indicate that East German mothers favor full-time employment relationships, while West German mothers prefer marginal employment relationships with very short hours.

Part C of Figure 3 also displays East-West employment gaps four years after childbirth when conditioning on pre-birth characteristics that have been found to be strong predictors of maternal labor supply such as education, wages and occupation.²³ Conditioning on these characteristics, however, has only a small impact on estimated East-West gaps, suggesting that differences in pre-birth characteristics between East

²³ Education is a strong predictor for maternal labor supply (see e.g. Kuziemko et al., 2020 for mothers and Blau and Kahn, 2007, for labor supply of married women more generally), as are pre-birth wages (e.g., Kluve and Schmitz, 2018 for mothers and Blau and Kahn, 2007 for married women more generally) and pre-birth occupations (e.g., Angelov, Johansson, and Lindahl, 2016; Bütikofer, Jensen, and Salvanes, 2018).

and West German mothers tend to be small.²⁴ These small differences in pre-birth characteristics are in line with recent evidence that women underestimate the large future employment effects of children when making human capital decisions (Kuziemko et al., 2020), and that children primarily affect women’s careers after birth (Adda, Dustmann, and Stevens, 2017; Angelov, Johansson, and Lindahl, 2016; Kleven, Landais, and Søgaaard, 2019).²⁵

For the remainder of this paper, we condition on pre-birth characteristics when estimating East-West gaps in maternal employment. We consider two sets of pre-birth control variables. “Control set I” includes the mother’s age, education, occupation, wage, and full-time status at birth; “control set II” additionally includes mothers’ work history variables three years prior to childbirth, where we distinguish between full-time work and regular employment. However, we intentionally do not control for post-birth decisions that may themselves be a consequence of mothers’ gender norms, such as subsequent fertility. We view our estimates as capturing the full impact of gender norms associated with motherhood on maternal labor supply, which may in part operate through subsequent fertility decisions.

East-West Employment Gaps over Time. Figure 4 highlights that East-West gaps in full-time employment (conditional on control set I)—the margin at which East-West gaps are particularly pronounced—have remained stable over time, fluctuating around 15 percentage points for women who give birth between 1994, shortly after reunification, and 2006, 16 years after reunification. Thus, there seems to be no general convergence between East and West German mothers’ behavior. Instead, women seem to adhere closely to the environment that aligns with their childhood culture.

But what happens when we break the link between childhood culture and current environment? Does the childhood culture have a lasting effect on maternal labor supply

²⁴ We confirm this (with the exception of the pre-birth wage which is considerably lower for East than West German mothers reflecting the lower wage level in East Germany more generally) in Online Appendix Table A1 where we compare East and West Germans in terms of pre-birth characteristics (columns (1) and (3)).

²⁵ Adda, Dustmann, and Stevens (2017) estimate that while anticipated fertility does affect choice of occupation at a young age—women would be 5 percent more likely to work in abstract task occupations—the contribution of occupational choice to the overall career costs of children appears relatively small (around 4.5 percent).

even when immersed in a new culture as adults? And does it matter whether a woman grew up in a more gender egalitarian or a more gender traditional childhood culture?

4. The Persistence of Childhood Culture — Evidence from Migrants

4.1 Empirical Specification

To address the question of persistence of a mother’s childhood culture, we build on the epidemiological approach (e.g., Fernández, 2007; Giuliano, 2007; Fernández and Fogli, 2009) and compare the post-birth career choices of East and West German “migrant” and “native” mothers who give birth in the same West (or East) German local labor market or who are even employed in the same workplace at birth.²⁶ We estimate regressions of the following type separately for different points in time after childbirth (indexed by the superscript k), for first-time mothers who gave birth between 2003 and 2006:

$$Y_{ilft}^k = \beta^k \text{Migrant}_i + \theta_{lt}^k + \delta_f^k + x'_{it}\gamma^k + v_{ilft}^k \quad (1)$$

where the subscript i indexes the mother and the subscripts l , f , and t index the local labor market (141 local labor markets in total) and workplace where, and the year when, she gave birth. Migrant_i is an indicator equal to 1 if the mother originates from either East (West) Germany and now moved to West (East) Germany, θ_{lt}^k are year of childbirth-local labor market fixed effects, δ_f^k are fixed effects that refer to the mother’s pre-birth employer, and x'_{it} denote a mother’s pre-birth characteristics (as in control sets I and II). To capture potentially asymmetric persistence of a more gender traditional versus a more gender egalitarian culture, we estimate equation (1) on two samples: East German migrants and West German natives in the West German labor market, and West German migrants and East German natives in the East German labor market. We cluster standard errors at the level of the local labor market of the last place of work before childbirth.

²⁶ In order to focus on women who were fully exposed to the other culture through migration, we exclude the comparably small number of cross-border commuters from the estimation sample.

The parameter of interest, β^k , captures the persistent impact of childhood culture on mothers' post-birth career choices. Conditioning on local labor market effects at time of birth eliminates differences in labor market opportunities and access to childcare between migrants and natives. By comparing migrant and native mothers who gave birth in the same workplace, we also hold constant their work environment which has been shown to be an important predictor of maternal labor supply even in countries with generous state-provided maternity leave policies (Kleven, Landa, and Sogaard, 2019 and Hotz, Johansson, and Karimi, 2017). Finally, conditioning on an extensive set of characteristics at the time of childbirth (control set I) and in the three years prior (control set II) ensures that we compare East and West German mothers on the same career trajectories prior to birth.

A potential concern is that migrant and “native” mothers not only differ with respect to the culture they grew up in, but also in ways not captured by our extensive set of control variables. Our additional robustness checks discussed below (and in more detail in online Appendix D) highlight that it is extremely unlikely that our estimated East-West gaps solely reflect selection of migrants rather than differences in childhood culture.

4.2 East German Migrants in West Germany

Baseline Estimates. We first consider East German migrants in the West German labor market. In this sample, the coefficient β^k captures the persistent effects of having grown up in a more gender egalitarian culture as a child and teenager on behavior as a first-time mother when immersed in a more gender traditional current culture. The findings in Table 1 point toward substantial gaps in employment outcomes both four (Panel A) and one (Panel B) year after childbirth between East German migrants and West Germans (East-West gap). For example, in our preferred specification in column (4)—which conditions on local labor market by year of birth fixed effects, fixed workplace effects that refer to the pre-birth employer, pre-birth characteristics, and work trajectories (control set II)—, the East-West gaps four years after birth in regular, overall and full-time employment are 7.9, 6.2, and 5.1 percentage points, respectively (or a gap of 19.7%, 11.6%, and 25.6% with respect to the West German mean). The

East-West gap in regular employment four years after childbirth of 7.9 percentage points is comparable to findings for the US on the effect of having had a working mother during high school (Olivetti, Patacchini, and Zenou, 2020) or the difference in employment between college-educated and non-college-educated young mothers (Kuziemko et al., 2020).²⁷

It should be noted that controlling for women’s pre-birth characteristics (control set I) and labor market trajectories (control set II) only slightly reduces the raw East-West gaps (e.g., by 14% for regular employment), highlighting that differential labor market investments prior to childbirth cannot account for these observed gaps (compare columns (1), (2), and (3); see Appendix Table A1 for differences in pre-birth characteristics between East German migrants and West German stayers). Conditioning on pre-birth employer fixed effects in column (4), thus contrasting East and West German women who give birth within the same workplace, likewise has only a small impact on the estimated East-West gaps even though adding workplace fixed effects substantially improves the explanatory power of the regression models (the R-squared increases from about 0.04 to 0.29). Hence, East Germans do not systematically sort into West German family-friendly workplaces where women are generally more likely to return early after childbirth. In line with the descriptive evidence in Figure 3, the East-West gap is already evident one year after birth, when the job protection and maternity benefit period would have ended in the former GDR (Panel B).

Selection of East German migrants. A remaining concern is that, despite our extensive set of pre-birth control variables, the East-West gaps presented in Table 1 do not only reflect differences in childhood culture, but also differences in unobserved characteristics between East German migrants and West German stayers, or the selection of East German migrants relative to East German stayers.

First, partners of East German migrant mothers may earn less than partners of West German mothers, which could push East German migrants to work more after childbirth. We investigate this possibility using data from the German Socio-Economic

²⁷ Papers using the epidemiological approach typically examine the effects on working hours (e.g. Fernández, 2007; Fernández and Fogli, 2009). These papers therefore capture both the extensive and intensive margin of labor supply and are difficult to compare with our estimates.

Panel (SOEP, 2018) ²⁸, focusing on women with a child below the age of six interviewed between 1990 and 2010. While net earnings of partners of East German migrant mothers are indeed slightly lower than those of partners of West German mothers (10 percent or about 200 Euros per month, see Panel A of Appendix Table D1), this difference is unlikely to affect the estimated East-West gaps as the correlation between spousal income and maternal labor supply is weak.²⁹ Monthly household savings, measured four years before up until the child's first birthday, and household saving rates (defined as the ratio between monthly household savings and net labor household income) tend to be similar for East German migrant and West German mothers, and hence cannot explain East-West differences in maternal labor supply.

Second, East German migrants are less likely to have grandparents and family nearby to help out with childcare—which should reduce their maternal labor supply of East German migrants relative to West German stayers. Thus, this confounder would lead us to underestimate the role of childhood culture when comparing maternal labor supply of East German migrants and West German stayers.

Third, East German migrants may move to West Germany because of improved career opportunities and may thus be more career oriented than the typical East German mother and thus would have a high propensity to work after childbirth even if they had stayed in East Germany. Evidence based on the SOEP, however, suggests that East German migrants do not seem to be strongly selected relative to East German stayers in terms of their career-related attitudes (see Panel B in Appendix Table D1).

Further, we compare East German migrants to internal West German migrants (and hence account for the possibility that migrants per se are selected) or, alternatively, compare women of East and West German origin in the Western parts of integrated cross-border labor markets (these women typically did not migrate but instead commute to the new environment and may thus be less selected); see Online Appendix D.2 and

²⁸ See Goebel et al. (2019) for a detailed description of the SOEP data.

²⁹ Our own calculations based on the SOEP for the years 1990 to 2010 show that an increase in spousal gross income of 1000 EUR is associated with a decrease in maternal employment of first-time mothers in the first four years of childbirth of only about 1 percentage point. This fairly low responsiveness of maternal employment to spousal income is in line with findings for the US by Blau and Kahn (2007), who document that cross wage elasticities of married women declined substantially between 1980-2000 to levels of around -.11 to -.13 in 2000.

Online Appendix Table D2 for details. Our results on the persistence of the East German culture are robust to these changes in the sample.

Bounding East-West gaps. Next, we follow the approach by Oster (2019) (who builds on the ideas discussed in Altonji, Elder, and Taber (2005)) and provide bounds for the East-West gap under extremely conservative assumptions about differences in unobserved characteristics between East German migrants and West German stayers; see Online Appendix D.3 for details on the definition of the bounds.

We report in Panel A of Table 2 the unconditional East-West gap—the “short regression”—and the East-West gap conditional on observed characteristics—the “intermediate regression”—10.1 and 7.92 percentage points for regular employment four years after childbirth (from columns (1) and (4) in Table 1). We further display the associated R^2 in brackets below (0.009 vs 0.289 for regular employment four years after childbirth, reported in Panel A of Table 1). Under the very conservative assumption that selection on unobservables is as strong as selection on observables and either moves in the same (column (3)) or the opposite direction (column (4)), we obtain lower and upper bounds of 7.2 and 8.6 percentage points, respectively. Hence, even under extreme scenarios, having grown up in the more gender egalitarian East German culture increases the post-birth employment probability by 7.2 percentage points.

Overall, our findings suggest that growing up in a more gender egalitarian culture has a lasting effect on women’s post-birth career choices even when they give birth in in a more gender traditional current environment.

4.3 West German Migrants in East Germany

Baseline Estimates. We now turn to West Germans who moved to East Germany and assess whether they continued to behave according to the more traditional culture they experienced as children and teenagers, despite now being fully immersed in the more gender egalitarian East German culture. We report our results in Table 3, which has the same structure as the corresponding Table 1 for East Germans in West Germany.

Compared to the sizable migrant gaps in maternal labor supply within West German workplaces, the gaps between West German migrants and East Germans in East German workplaces are considerably smaller in magnitude, with no discernible difference at the full-time margin. Thus, in contrast to East German mothers in the West German labor market, the labor supply behavior of West German mothers does not appear to be strongly influenced by their childhood culture when fully immersed in the more gender egalitarian East German environment in adulthood.

Selection of West German migrants and Robustness Checks. Descriptive evidence based on the SOEP suggests that the much smaller migrant gaps in the East compared to the West German labor market cannot be explained by differences in spousal income or family proximity between West German migrants and East German stayers; it is also unlikely that the smaller gaps are driven by differences in career-related attitudes of West German migrants relative to West German stayers (see Online Appendix Table D1 and Online Appendix D1 for more details).

Additional placebo checks on West German mothers who migrate to the East after childbirth (see Online Appendix D2 and column (4) of Table D3) as well as the Oster bounds in Panel B of Table 2 support the notion that migrant selection is not driving our results. Lastly, robustness checks that compare West German migrants to internal (within-East) migrants or, alternatively, women of East and West German origin in the Eastern parts of integrated cross-border labor markets further corroborate our conclusions that, in contrast to East German migrants, West German migrants nearly fully adjust their behavior to the East German environment (see Online Appendix D2 and columns (1) to (3) of Table D3).

Taking stock, our findings in Tables 1 to 3 consistently and robustly reveal a pattern of asymmetric persistence: A more gender egalitarian childhood culture appears to be more persistent and less malleable than a more gender traditional childhood culture.

5. The Adjustment Process in a New Environment

Even if an individual's childhood culture persistently influences her behavior when exposed to a new environment as an adult, individuals may nevertheless adjust their

behavior to the new environment—either because they respond to the institutional constraints or opportunities of the new environment or because they internalize the values and beliefs of the new culture over time. In this section, we explicitly study this adjustment process and aim to shed novel light on whether adjustment is confined to the current new environment or, at least in part, driven by cultural adoption that may affect behavior more permanently.

5.1 Depicting the Process: Length of Exposure and Migrants' Outcomes

East German migrants in West Germany. On average, East German migrants have worked for 4.9 years in the West German labor market before giving birth and are about 8 percentage points more likely to be regularly employed four years after childbirth than West German colleagues with a similar pre-birth career trajectory—our estimate of cultural persistence (Table 1). This gap is however smaller than the overall East-West gap of close to 15 percentage points, indicating that East Germans partly adjust their behavior to the new West German environment.

To understand the adjustment process better, we first investigate whether East-West gaps decline with the length of exposure to the more gender traditional West German environment. To this end, we estimate an amended version of regression equation (1) where we allow for an additional interaction between the migrant indicator and continuous work experience in the new current environment (Panel A of Table 4), or interactions between the migrant indicator and indicator variables of varying years of work experience in the current environment (Panel B of Table 4). According to both specifications, maternal employment gaps between East Germans and West German “natives” appear to be remarkably stable despite increased time in West Germany (columns (1) and (2)). For example, East German migrants who have worked in West Germany between 2 and 4 years before giving birth are 9.4 percentage points more likely to be regularly employed four years after childbirth than their West German peers, compared to 8.5 percentage points for East German migrants with more than 8 years of prior work experience in West Germany.

According to results from Panel A of Table 4, the gap in regular employment for East German migrants without any work experience in the new West German

environment is 7.8 percentage points. This is smaller, however, than the overall East-West gap of 15 percentage points, suggesting that East Germans react immediately to the constraints posed by the West German environment and do not internalize its culture over time. The limited access to child care in West Germany—and possibly the more gender traditional cultural and work environment—likely restrict their labor supply in the first years after birth.

West German migrants in East Germany. We repeat the analysis for West German migrants in East Germany in columns (3) and (4) of Table 4. West German migrants have worked in East Germany on average for 4.2 years before giving birth and on average do not exhibit statistically significantly different behavior from their East German peers with a similar pre-birth career trajectory (Table 3).

The positive and statistically significant estimate on the interaction between work experience in the East German environment (Panel A of Table 4) suggests a narrowing of the migrant gap with time in East Germany. This is confirmed by results from the more flexible specification in Panel B: Whereas West German migrants with very short exposure to the East German environment of less than 2 years still behave more similarly to their childhood culture (a gap of 4.9 percentage points for regular employment), gaps nearly fully disappear once we focus on West German migrants who had lived in East Germany for 4 years or more, indicating full adjustment to the new environment.

We note that the immediate gap between West German migrants and East German stayers after a short exposure to the new environment of 4.52 percentage points for regular employment (column (3) in Panel A) is considerably smaller than the overall East-West employment gap, suggesting that access to child care—and possibly the more gender egalitarian cultural and working environment—facilitates maternal employment. The narrowing of the gaps with length of exposure further points to cultural adoption whereby West German migrants update their values and beliefs—a process which likely takes time to unfold.

5.2 Disentangling the Mechanism: Cultural Adoption and Return Migrants' Outcomes

In order to disentangle the mechanisms behind the adjustment processes more rigorously, we next directly estimate the extent of cultural adoption; that is, the updating of values and beliefs which is likely to be permanent and extends to when migrants are back in their own childhood culture. To that end, we compare post-birth labor market outcomes of return migrants (thus with exposure to a different environment in the past) to “stayers”, i.e., to their colleagues who always remained in their childhood culture. We estimate the following specification separately for different points in time since childbirth (indexed by the superscript k), pooled for mothers who gave birth in either East or West Germany between 2003 and 2006:

$$Y_{ilft}^k = \beta^k \text{Return}_i + \theta_{lt}^k + \delta_f^k + x'_{it}\gamma^k + v_{ilft}^k \quad (2)$$

where Return_i is an indicator variable that takes the value 1 if a West (East) German woman worked in East (West) Germany for at least 1.5 years and then returned to West (East) Germany. θ_{lt}^k are year of childbirth-local labor market fixed effects, δ_f^k are fixed effects that refer to the mother's pre-birth employer, and x'_{it} denote a mother's pre-birth characteristics (control sets I and II). The parameter of interest β^k captures the effects of past full immersion to a different environment in adulthood, when giving birth back in one's own childhood environment.

West German return migrants. The findings in Panel A of Table 5 for West German return migrants suggest that not only current, but also past exposure to a more gender egalitarian culture induces mothers to work more after childbirth. Gaps between West German return migrants and West German stayers in regular employment four years after childbirth are between 4.9 and 5.8 percentage points (a gap of around 10 percent relative to the average return probability of West Germans in West Germany stayers from Table A1), depending on the specification. The return migrant gaps in full-time employment are of similar magnitude—6 percentage points (column (3)), an effect of 30 percent relative to the mean of stayers —, while gaps in total (including marginal)

employment are smaller, suggesting that past exposure to the East German culture induces mothers to return to longer-hour, regular employment (the East German “norm”) rather than opting for low-earning, marginal employment post childbirth (the West German “norm”). Conditioning on mothers’ pre-birth characteristics or pre-birth labor market histories (columns (2) and (3)) or pre-birth employer fixed effects in column (4) has only a small impact on the point estimates although we lose some precision when the latter are included as control variables. Strikingly, these differences at the regular and full-time margin already appear one year after childbirth (Panel B), where mothers in West Germany face even more pronounced constraints in terms of access to (long-hour) childcare.

Oster bounds (Panel C in Table 2) as well as additional robustness checks that compare West German return migrants who were exposed to a more gender egalitarian culture in the past with West German return migrants who migrated internally within West Germany and hence had limited social interactions with East Germans (column (5) in Table 5) further corroborate our findings.

These results suggest that West Germans permanently adjust their behavior to the East German culture after past immersion, pointing toward a lasting horizontal transmission of the more egalitarian culture. The results further highlight that the small employment gaps between West German migrants and East German stayers documented in Table 3 cannot solely be explained by easier access to childcare in the East (although this factor likely plays an important role); nor are they entirely driven by peer pressure to conform with East German norms. It should also be noted that the employment gaps between East German migrants and West German stayers in Table 1 are larger than the employment gaps between West German return migrants and West German stayers—the effect of exposure to a more gender egalitarian culture as a young adult thus is smaller than compared to being raised in it.

East German return migrants. We conduct the same analysis for East German return migrants, displayed in Table 6. With few exceptions, these gaps are not significantly different from and fluctuate around zero.³⁰ While the estimates are more

³⁰ Gaps in return behavior between East German return migrants and stayers are statistically different from zero one year after childbirth at the regular employment margin, suggesting that past exposure to

sensitive to the inclusion of individual controls than the results for West German return migrants and thus the resulting Oster bounds are somewhat larger (see Panel D of Table 2), all estimates and bounds are still smaller in magnitude than the gaps between West German return migrants and West German stayers. Hence, in contrast to West Germans, cultural adoption appears to play only a limited role for East Germans, in line with our findings from Table 4 that employment gaps between East German migrants and West German stayers do not narrow with length of exposure.

What could explain the asymmetric pattern in cultural adoption? Cultural adoption may be due to learning from nearby employed women (Fogli and Veldkamp, 2011) as well as from the older generation (Fernández, 2013) about how best to juggle family and a career and what the effects of maternal employment on their children and their own well-being are. Having been brought up in a culture where working mothers with young children were rare, West German mothers may be uncertain about the impacts of their labor supply choices on their own and their child's well-being. Exposure to East Germans—either through directly observing working mothers or through experiencing the East German context more generally—may mean West German women gain valuable information that leads them to lastingly update their beliefs about the effects of early maternal employment. East German women, on the other hand, grew up around working mothers—their own or those of their classmates and friends—and likely attended daycare from a young age. They may therefore be considerably less uncertain about the consequences of working when the child is young and thus have less to learn from their West German colleagues.³¹

Taking stock, while both East and West Germans adjust their behavior to a different environment, East Germans, socialized with a more gender egalitarian culture, do so to a lesser extent. While East Germans in West Germany do not even close half of the total East-West gap, it disappears completely for West Germans in the East. In addition, East German migrants only seem to react to the constraints posed by their

the West German culture induces some East German return migrants return to marginal employment as opposed to regular employment. One-year gaps for full-time work and overall employment, as well as four-year gaps for all employment outcomes, are not statistically different from zero.

³¹ In a related explanation, immersion in a more gender egalitarian culture as young adults may, in contrast to immersion in a more traditional culture, induce a permanent change in women's work preferences or identity. Prummer and Siedlarek (2017) propose a model where current identity is a weighted average of the host society's culture, past own identity, and peers' past identity and can, in contrast to Akerlof and Kranton (2000), evolve dynamically.

immediate West German environment, whereas West German migrants both react to the incentives of the new environment, such as greater access to child care, and also lastingly update their gender norms. Estimates from West German return migrants suggest that about one third (4.9 percentage points of the overall East-West gap of 15 percentage points; see column (4) of Panel A in Table 5) of the convergence is due to cultural adoption, while two thirds can be attributed to an institutional environment that is more conducive to working mothers.³²

6. Conclusions

In this paper, we investigate the role of gender norms for shaping women's labor supply decisions after childbirth. Specifically, we analyze the interplay between childhood socialization and adulthood exposure to different gender norms, induced by migration to a new cultural environment as a young adult. To this end, we use the setting of the German reunification, which brought together two distinctly different cultures: the more gender egalitarian culture of East Germany and the more traditional one of West Germany.

We document three main findings. First, a gender egalitarian childhood culture is more persistent than a gender traditional one. Looking at inner German migrants, we show that East German migrants are considerably more likely to be employed post birth than their West German colleagues with a similar pre-birth career trajectory. In contrast, West German migrants nearly fully adjust their post-birth labor supply behavior to that of their East German colleagues.

Second, even though the East German childhood culture is strongly persistent, East German migrants also adjust their behavior to the new environment—but less so than West German migrants. Moreover, while this adjustment is immediate for East German migrants and largely independent of length of exposure to the new West German environment, gaps between West German migrants and East German stayers narrow with length of exposure to the new environment. These patterns point toward a

³² Under the assumption that West German migrants immediately respond to the institutional opportunities of the new environment, and that the narrowing of employment gaps by length of exposure can be entirely attributed to cultural adoption, estimates by length of exposure yield a similar picture (see estimates in column (3) in Panel B of Table 4).

mechanism of cultural adoption for West German but not East German migrants, a process that takes time to unfold.

Third, we provide direct evidence on such asymmetry of cultural adoption during adulthood, whereby individuals adopt more gender egalitarian norms as adults, but not more gender traditional ones. In line with our findings on the evolution of gaps with length of exposure to a new environment, we show that West German return migrants—who were exposed to the more gender egalitarian culture in the past but give birth in a more gender traditional West Germany—continue to adhere to the more gender egalitarian East German norm. In contrast, East German return migrants behave similarly to their East German colleagues with no direct exposure to West Germany. In consequence, West German migrants’ change in behavior to mirror their East German peers is not confined to giving birth in an environment that is generally more conducive to working mothers; rather, West German migrants appear to permanently adjust their behavior to the East German culture after past cultural immersion. We hypothesize that such permanent adjustment is the result of learning about how to combine family and career and belief updating on what it constitutes to be a good mother. In contrast, East German migrants respond to the institutional constraints of the more gender-traditional West German environment when immersed in it and decrease their labor supply, but do not internalize the more gender traditional West German culture.

Taken together, our results on cultural persistence, adjustment to a new environment and cultural adoption show that women do not let go of more egalitarian norms once acquired, whereas they are open to adopting them as adults. They also highlight that exposure to a more gender egalitarian environment—as a child or even as a young adult—helps to partly overcome the limiting effects of institutional constraints, such as the lack of early childcare, on maternal labor supply.

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Part A: West Germany in 1950



Part B: East Germany in 1955

FIGURE 1. Mama vs Mutti – Advertising in the 1950s

Notes: The figure depicts an example from advertisements for household products in West (Part A) and East (Part B) Germany in the 1950s. The text in Part A from 1950 translates as “Baking is fun using BACKIN”. The text in Part B from 1955 translates as “Mom is coming home in 10 minutes... Using ready-made dishes by KONSUM allows one to prepare a good meal in the shortest period of time”. Note that “Mutti” was widely used in East Germany, while “Mama” is more common in West Germany.

Source: Part A: Oetker-Firmenarchiv S2/86. Part B: Stadtgeschichtliches Museum Leipzig PL 55/11.

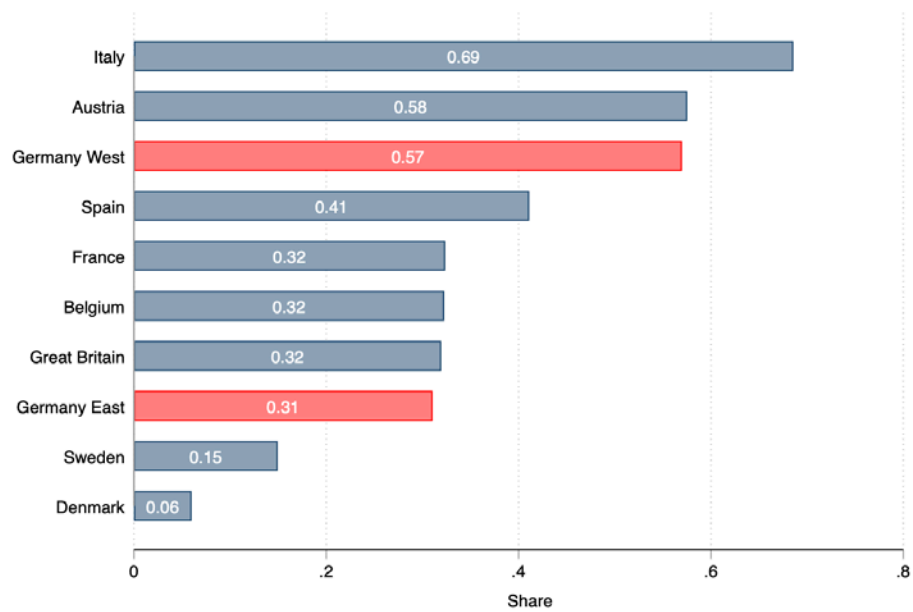
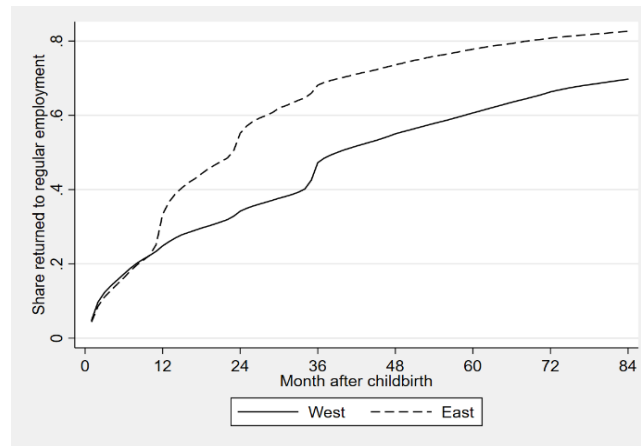


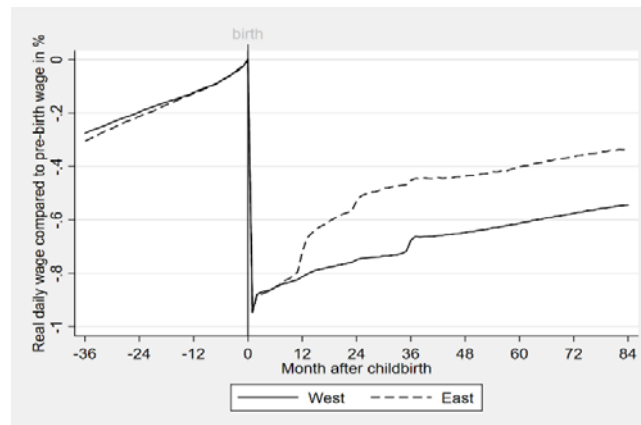
FIGURE 2. Cross-Country Differences in Gender Norms (European Values Study)

Notes: The figure shows the share of respondents agreeing to the EVS survey question d061 “A pre-school child suffers when his or her mother works” for survey years 2008 (Austria, Denmark, France, Spain, Germany) and 2009 (Belgium, Italy, Sweden, Great Britain) for selected countries. We recoded both original answers “agree” and “strongly agree” as “agree”.

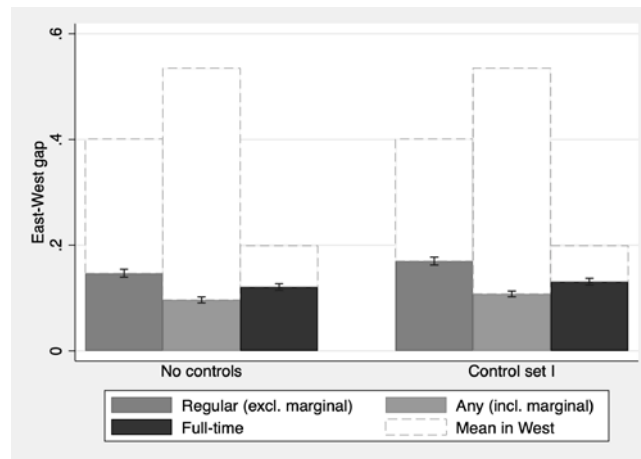
Source: European Values Study Longitudinal Data File 1981-2008 (EVS, 2011), working age population aged 20-65 years.



Part A: Share of mothers who have returned to work after childbirth



Part B: Child penalties pre and post childbirth



Part C: East-West gaps in employment 4 years after childbirth

FIGURE 3. Return-to-Work Behavior and Child Penalties: East versus West German Mothers

Notes: The figures show return-to-work behavior (Part A) and child penalties (Part B) after childbirth for East and West German first-time mothers who took maternity leave in 2003. Part A depicts the share of women who have returned to regular employment (excluding marginal employment) by month t up until 7 years after childbirth. Part B displays the child penalty, defined as daily earnings (set to zero if the mother is not employed) in a given month relative to her daily earnings one month before childbirth, 3 years before up until 7 years after childbirth. Part C shows estimates of the East-West gap in our three employment outcomes – i.e., regular employment (excl. marginal employment), overall employment (incl. marginal) and full-time employment – 4 years after childbirth, estimated for Germany as a whole (excluding the five cross-border local labor markets) and for mothers who take maternity leave 2003-2006. The dashed bars depict mean outcomes for West German mothers. The left-hand side figure shows the raw East-West gap, while the right-hand side figure depicts estimates of the conditional East-West gap, where we additionally control for mothers' characteristics at the time of birth (control set I [mother's age, education, occupation (3-digit), wage and full-time status at birth]). Standard errors clustered on the municipality level of the pre-birth place of work are depicted as black lines.

Source: Social Security Records (IEB, 2012), first-time mothers who signed up for maternity leave in 2003 (Parts A and B) and in 2003-2006 (Part C).

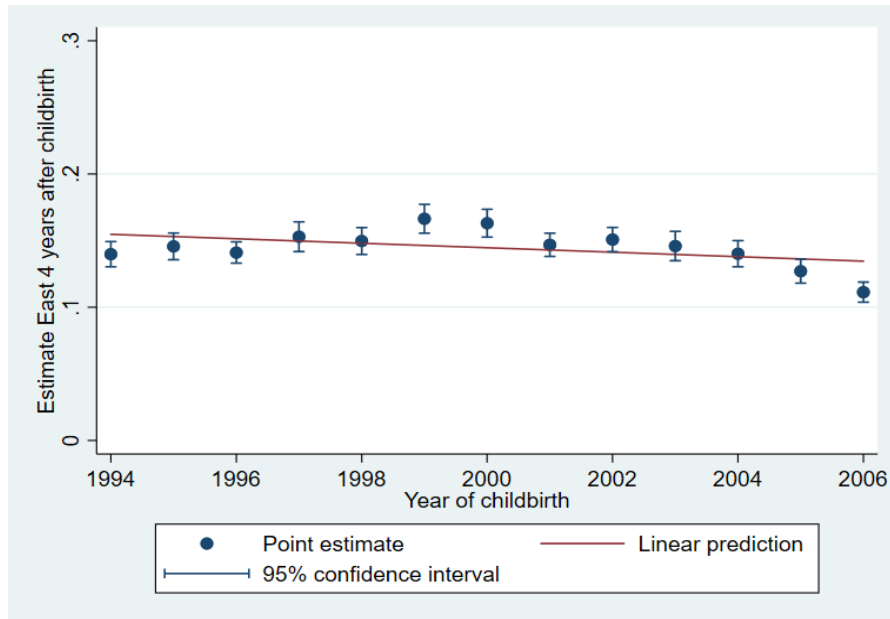


FIGURE 4. East-West Gaps in Full-Time Employment 4 Years after Childbirth over Time

Notes: The figures show the East-West gaps in full-time employment four years after childbirth over time for first-time mothers who take maternity leave in Germany as a whole (excluding the five integrated cross-border local labor markets to avoid capturing adjustments due to local interactions). The underlying yearly regressions control for mothers' pre-birth characteristics at the time of birth (control set I [mother's age, education, occupation (3-digit), wage and full-time status at birth] as in Part C of Figure 3). Standard errors clustered on the municipality level of the pre-birth place of work are depicted as lines.

Source: Social Security Records (IEB, 2012), first-time mothers who signed up for maternity leave in 1994-2006 in Germany, excluding the five integrated cross-border local labor markets (Göttingen, Goslar, Lüchow-Dannenberg, Coburg, and Hof).

TABLE 1. Differences in Post-Birth Employment Outcomes between East and West German Mothers in West Germany

	Same local labor market	Same local labor market, control set I	Same local labor market, control set II	Same workplace, control set II
	(1)	(2)	(3)	(4)
Panel A: 4 years after childbirth				
Regularly employed (excluding marginal employment)	0.101 (0.00671)	0.0857 (0.00717)	0.0849 (0.00700)	0.0792 (0.00821)
Employed (including marginal employment)	0.0795 (0.00679)	0.06 (0.00692)	0.0587 (0.00650)	0.0622 (0.00656)
Full-time employed	0.0589 (0.00442)	0.057 (0.00430)	0.0568 (0.00435)	0.0509 (0.00645)
R-squared (regular employment)	0.009	0.042	0.043	0.289
Panel B: 1 year after childbirth				
Regularly employed (excluding marginal employment)	0.0482 (0.00503)	0.0376 (0.00576)	0.0384 (0.00594)	0.0366 (0.00706)
Employed (including marginal employment)	0.035 (0.00599)	0.0226 (0.00614)	0.0229 (0.00615)	0.0241 (0.00843)
Full-time employed	0.0389 (0.00496)	0.0303 (0.00521)	0.0306 (0.00531)	0.0264 (0.00721)
R-squared (regular employment)	0.008	0.039	0.041	0.277
Local labor market*year of birth FE	yes	yes	yes	yes
Firm FE	no	no	no	yes
Mothers' characteristics at birth	no	yes	yes	yes
Pre-birth employment history	no	no	yes	yes
N East German migrants	15,337	15,161	15,161	9,565
N West German natives	327,780	316,551	316,551	197,012

Notes: The table reports coefficient estimates of the migrant dummy in regression equation (1), estimated on a sample of East German first-time mothers who migrated from East to West Germany prior to giving birth and West German “stayers”. In column (1), we control only for local labor market by year of birth fixed effects. In column (2), we add mothers' characteristics at the time of birth (control set I [mother's age, education, occupation (3-digit), wage and full-time status at birth]). In column (3), we additionally include mothers' employment history variables in the three years prior to birth as control variables (control set II [control set I plus three indicator variables each for full-time employment and regular employment in three years prior to childbirth]). In column (4), we add workplace (at the time of birth) fixed effects. The R-squared refers to regular employment (excluding marginal employment) four years after childbirth. Standard errors clustered on the local labor market level of the pre-birth place of work are reported in parentheses.

Source: Social Security Records (IEB, 2012), first-time mothers who signed up for maternity leave in 2003-2006 in West Germany, excluding cross-border commuters.

TABLE 2. Coefficient Bounds under Unobservable Selection of Migrants

		Outcome: Regularly employed 4 years after childbirth			
		Restricted model "short regression" (1)	Controlled model "intermediate regression" (2)	Bound for $d=1$ same direction (3)	Bound for $d=-1$ opposite direction (4)
Panel A: East in West					
	Estimate	0.101	0.0792	0.072	0.086
	95% CI	(0.088 , 0.114)	(0.063 , 0.095)		
	R-squared	[0.009]	[0.289]		
Panel B: West in East					
	Estimate	0.00446	-0.0122	-0.017	-0.007
	95% CI	(-0.011 , 0.020)	(-0.035 , 0.011)		
	R-squared	[0.011]	[0.379]		
Panel C: West German return migrants					
	Estimate	0.0524	0.0493	0.048	0.050
	95% CI	(0.026 , 0.078)	(0.002 , 0.096)		
	R-squared	[0.009]	[0.296]		
Panel D: East German return migrants					
	Estimate	0.0160	-0.0197	-0.031	-0.009
	95% CI	(-0.012 , 0.044)	(-0.065 , 0.026)		
	R-squared	[0.014]	[0.396]		

Notes: Columns (1) and (2) show the coefficient estimates and 95% confidence intervals of the migrant dummy in regression equation (1) (Panels A and B) and the return dummy in regression equation (2) (Panel C and D), in addition to the associated R-squared of the respective regressions. The dependent variable is regular employment four years after childbirth. Estimates in column (1) only control for local labor market by year of birth fixed effects, as in columns (1) in Table 1, 3, 5 and 6, respectively. Estimates in column (2) control for workplace (at the time of birth) fixed effects, mothers' characteristics at the time of birth and employment history variables in the three years prior to birth (control set II [mother's age, education, occupation (3-digit), wage and full-time status at birth; three indicator variables each for full-time employment and regular employment in three years prior to childbirth]), as in columns (4) in Table 1, 3, 5 and 6, respectively. Columns (3) and (4) report the lower and upper bounds of the East-West (return migrant-stayer) gaps when the maximum R-squared that could be obtained by including unobserved characteristics is $R^{max} = 1.3\bar{R}$ as proposed by Oster (2019), for selection of migrants in the same (column (3)) and opposite (column (4)) direction. 95% confidence intervals are computed based on standard errors clustered on the local labor market level of the pre-birth place of work.

TABLE 3. Differences in Post-Birth Employment Outcomes between West and East German Mothers in East Germany

	Same local labor market (1)	Same local labor market, control set I (2)	Same local labor market, control set II (3)	Same workplace, control set II (4)
Panel A: 4 years after childbirth				
Regularly employed (excluding marginal employment)	0.00446 (0.00802)	-0.0146 (0.00652)	-0.0172 (0.00607)	-0.0122 (0.0116)
Employed (including marginal employment)	-0.00615 (0.00910)	-0.0210 (0.00761)	-0.0232 (0.00723)	-0.0249 (0.0123)
Full-time employed	0.0228 (0.00607)	0.00401 (0.00472)	0.0000473 (0.00469)	-0.00113 (0.0115)
R-squared (regular employment)	0.011	0.084	0.114	0.379
Panel B: 1 year after childbirth				
Regularly employed (excluding marginal employment)	-0.000922 (0.00771)	-0.0167 (0.00727)	-0.0185 (0.00730)	-0.0332 (0.0142)
Employed (including marginal employment)	0.0106 (0.00742)	-0.00785 (0.00687)	-0.00961 (0.00666)	-0.0278 (0.0137)
Full-time employed	0.0171 (0.00742)	0.000545 (0.00713)	-0.00254 (0.00723)	-0.00809 (0.0136)
R-squared (regular employment)	0.027	0.097	0.107	0.370
Local labor market*year of birth FE	yes	yes	yes	yes
Firm FE	no	no	no	yes
Mothers' characteristics at birth	no	yes	yes	yes
Pre-birth employment history	no	no	yes	yes
N East German natives	69,493	67,111	67,111	40,578
N West German migrants	4,597	4,538	4,538	2,507

Notes: The table reports coefficient estimates of the migrant dummy in regression equation (1), estimated on a sample of first-time West German mothers who migrated to East Germany prior to giving birth and East German “stayers”. In column (1), we control only for local labor market by year of birth fixed effects. In column (2), we add mothers’ characteristics at the time of birth (control set I [mother’s age, education, occupation (3-digit), wage and full-time status at birth]). In column (3), we additionally include mothers’ employment history variables in the three years prior to birth as control variables (control set II [control set I plus three indicator variables each for full-time employment and regular employment in three years prior to childbirth]). In column (4), we add workplace (at the time of birth) fixed effects. The R-squared refers to regular employment (excluding marginal employment) four years after childbirth. Standard errors clustered on the local labor market level of the pre-birth place of work are reported in parentheses.

Source: Social Security Records (IEB, 2012), first-time mothers who signed up for maternity leave in 2003-2006 in East Germany, excluding cross-border commuters.

TABLE 4. East-West Gaps in Post-Birth Employment Outcomes between Cross-Border Migrants and Locals by Migrants' Time Worked in the New Environment

	East German migrants in West Germany		West German migrants in East Germany	
	Outcome 4 years after childbirth			
	Regularly employed (1)	Employed (incl. marginally) (2)	Regularly employed (3)	Employed (incl. marginally) (4)
Panel A: Continuous work experience in new environment				
Migrant	0.0778 (0.0104)	0.0577 (0.00918)	-0.0455 (0.0131)	-0.0536 (0.0125)
Work experience in new environment (West in columns (1)-(2) and East in columns (3)-(4))	0.00170 (0.00114)	0.000892 (0.00107)	0.00522 (0.00224)	0.00575 (0.00190)
R-squared	0.043	0.039	0.120	0.091
Panel B: Work experience in new environment as categorical variable				
0 to less than 2 years	0.0558 (0.00879)	0.0418 (0.00929)	-0.0492 (0.0125)	-0.0609 (0.0116)
2 to less than 4 years	0.0938 (0.0136)	0.0635 (0.0113)	-0.0285 (0.0176)	-0.0286 (0.0181)
4 to less than 6 years	0.0994 (0.00923)	0.0735 (0.00866)	-0.00562 (0.0173)	-0.0191 (0.0150)
6 to less than 8 years	0.103 (0.0131)	0.0805 (0.0136)	-0.0168 (0.0156)	-0.0112 (0.0157)
8 years and more	0.0849 (0.00877)	0.0583 (0.00911)	0.00860 (0.0175)	0.00386 (0.0164)
R-squared	0.043	0.039	0.120	0.091
Local labor market*year of birth FE	yes	yes	yes	yes
Mothers' characteristics at birth	yes	yes	yes	yes
Pre-birth employment history	yes	yes	yes	yes
N West Germans	316,551		2,507	
N East Germans	15,161		40,578	

Notes: The table reports coefficient estimates of the migrants dummy in regression equation (1) interacted with the years worked in the new environment (Panel A) or categorical bins of the work experience (Panel B). Columns (1) and (2) show the results for East Germans in West Germany and columns (3) and (4) for West Germans in East Germany. Thereby, we first report outcomes for regular employment (columns (1) and (3)) and any employment (columns (2) and (4)), all measured four years after childbirth. The regressions control for local labor market by year of birth fixed effects, mothers' characteristics at the time of birth and mothers' employment history variables in the three years prior to birth as control variables (control set II). Standard errors clustered on the local labor market level of the pre-birth place of work are reported in parentheses.

Source: Social Security Records (IEB, 2012), first-time mothers who signed up for maternity leave in 2003-2006 in West (columns (1) and (2)) or East (columns (3) and (4)) Germany, excluding cross-border commuters.

TABLE 5. The Role of Past Exposure to a More Gender Egalitarian Culture – Differences in Post-Birth Employment Outcomes between West German Return Migrants and West German Stayers

	Same local labor market	Same local labor market, control set I	Same local labor market, control set II	Same workplace, control set II	Relative to return migrants within West Germany
	(1)	(2)	(3)	(4)	(5)
Panel A: 4 years after childbirth					
Regularly employed	0.0524	0.0578	0.0583	0.0493	0.0593
(excluding marginal employment)	(0.0133)	(0.0136)	(0.0137)	(0.0239)	(0.0200)
Employed	0.0270	0.0307	0.0316	0.0398	0.0147
(including marginal employment)	(0.0152)	(0.0150)	(0.0150)	(0.0239)	(0.0235)
Full-time employed	0.0676	0.0605	0.0599	0.0377	0.0773
	(0.0144)	(0.0148)	(0.0148)	(0.0229)	(0.0191)
R-squared (regular employment)	0.009	0.039	0.040	0.296	0.206
Panel B: 1 year after childbirth					
Regularly employed	0.0345	0.0292	0.0277	0.0180	0.0296
(excluding marginal employment)	(0.0171)	(0.0161)	(0.0159)	(0.0314)	(0.0248)
Employed	0.00830	0.00190	0.000726	0.00879	0.0108
(including marginal employment)	(0.0172)	(0.0167)	(0.0166)	(0.0295)	(0.0253)
Full-time employed	0.0455	0.0357	0.0344	0.00972	0.0416
	(0.0132)	(0.0126)	(0.0125)	(0.0236)	(0.0204)
R-squared (regular employment)	0.008	0.043	0.045	0.290	0.220
Local labor market*by year of birth FE	yes	yes	yes	yes	yes
Firm FE	no	no	no	yes	no
Mothers' characteristics at birth	no	yes	yes	yes	yes
Pre-birth employment history	no	no	yes	yes	yes
N West German return migrants	1,044	1,032	1,032	604	979
N West German "natives"	285,232	281,233	281,233	164,670	1,176

Notes: The table reports coefficient estimates of the return dummy in regression equation (2) that compares post-birth employment outcomes between first-time West German mothers who give birth in West Germany but had worked in East Germany for at least 1.5 years in the past (return migrants) and West German “stayers”. In column (1), we control only for local labor market by year of birth fixed effects. In column (2), we additionally include mothers’ characteristics at the time of birth (control set I). In column (3), we additionally include mothers’ employment history variables in the three years prior to birth as control variables (control set II). In column (4), we add workplace (at the time of birth) fixed effects. In column (5), we compare cross-border return migrants to internal return migrants who have worked far away (≥ 300 km) from their first place of work within West Germany for at least 1.5 years and work close to their first place of work when taking maternity leave (< 50 km). Standard errors clustered on the local labor market level of the pre-birth place of work are reported in parentheses.

Source: Social Security Records (IEB, 2012), West German first-time mothers who signed up for maternity leave in West Germany in 2003-2006.

TABLE 6. The Role of Past Exposure to a More Gender Traditional Culture – Differences in Post-Birth Employment Outcomes between East German Return Migrants and East German Stayers

	Same local labor market	Same local labor market, control set I	Same local labor market, control set II	Same workplace, control set II
	(1)	(2)	(3)	(4)
Panel A: 4 years after childbirth				
Regularly employed (excluding marginal employment)	0.0160 (0.0145)	-0.0116 (0.0154)	-0.00836 (0.0155)	-0.0197 (0.0233)
Employed (including marginal employment)	0.0203 (0.0118)	-0.00444 (0.0119)	-0.00174 (0.0119)	-0.0214 (0.0233)
Full-time employed	0.0322 (0.0149)	0.0101 (0.0147)	0.0110 (0.0146)	0.00711 (0.0274)
R-squared (regular employment)	0.014	0.075	0.103	0.396
Panel B: 1 year after childbirth				
Regularly employed (excluding marginal employment)	-0.00693 (0.00965)	-0.0334 (0.00906)	-0.0322 (0.00924)	-0.0285 (0.0255)
Employed (including marginal employment)	0.00996 (0.00871)	-0.0116 (0.00834)	-0.0111 (0.00838)	0.00100 (0.0202)
Full-time employed	0.0141 (0.0107)	-0.0110 (0.00915)	-0.0110 (0.00909)	0.00824 (0.0207)
R-squared (regular employment)	0.034	0.095	0.106	0.388
Local labor market*by year of birth FE	yes	yes	yes	yes
Firm FE	no	no	no	yes
Mothers' characteristics at birth	no	yes	yes	yes
Pre-birth employment history	no	no	yes	yes
N East German return migrants	1,719	1,704	1,704	862
N East German "natives"	55,537	54,575	54,575	30,112

Notes: The table reports coefficient estimates of the return dummy in regression equation (2) that compares post-birth employment outcomes between first-time East German mothers who give birth in East Germany but had worked in West Germany for at least 1.5 years in the past (return migrants) and East German “stayers”. In column (1), we control only for local labor market by year of birth fixed effects. In column (2), we additionally include mothers’ characteristics at the time of birth (control set I). In column (3), we additionally include mothers’ employment history variables in the three years prior to birth as control variables (control set II). In column (4), we add workplace (at the time of birth) fixed effects. Standard errors clustered on the local labor market level of the pre-birth place of work are reported in parentheses.

Source: Social Security Records (IEB, 2012), East German first-time mothers who signed up for maternity leave in East Germany in 2003-2006.

Online Appendix

Wind of Change? Cultural Determinants of Maternal Labor Supply

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Appendix A: Supplementary Figures and Tables

APPENDIX TABLE A1. East and West German Migrants and Stayers: Descriptive Statistics

	West in West	West in East	East in East	East in West
Panel A: Mothers' Characteristics at Childbirth				
Age at birth	28.617	28.063	28.604	29.994
Low education	0.157	0.082	0.108	0.084
Medium education	0.730	0.794	0.802	0.811
High education	0.113	0.124	0.090	0.105
Pre-birth real daily earnings	68.151	51.315	48.599	69.685
Full-time employed	0.802	0.793	0.753	0.812
Panel B: Mothers' Employment Outcomes 4 Years After Childbirth				
Employed (including marginal employment)	0.535	0.635	0.640	0.616
Regularly employed	0.401	0.568	0.562	0.509
Employed full-time	0.199	0.361	0.336	0.261

Notes: Panels A and B report sample means of characteristics at birth (Panel A) and employment outcomes four years after birth (Panel B) of first-time mothers who signed up for maternity leave in 2003-2006, by their origin and migration status. We distinguish between women who work in their origin part of Germany when signing up for maternity leave (West in West and East in East) and women who work in the other part of Germany (West in East and East in West).

Source: Social Security Records (IEB, 2012), first-time mothers who signed up for maternity leave in 2003-2006.

Appendix B: Assessing the Classification Error among East and West Germans Based on the German Socio-Economic Panel

We use survey data from the German Socio-Economics Panel (SOEP) to examine how accurately our imputed East German origin measure in the social security data reflects an individual's true East or West German origin. The annual household panel survey was started in West Germany in 1984 and covered former East German territories from 1990 onwards. A unique feature of the SOEP is that it includes a question on where respondents lived in 1989, thus allowing to identify where households lived before the fall of the Iron Curtain. We define an individual to be of East German origin if the respondent has lived in East Germany in 1989 before the fall of the Berlin Wall (see also Alesina and Fuchs-Schündeln (2007) and Campa and Serafinelli (2019)). To measure the classification error for our sample of women who give birth in 2003-2006 and are on average born in 1975, we restrict the sample to women born in 1973 to 1977 (i.e., a two-year window around 1975) who are 16 and younger at the time of the fall of the Berlin Wall. Given the small sample size of the GSOEP, restricting the sample further to those who give birth in 2003-2006 is not feasible. For these women, we use survey years from 1990 onwards to identify their labor market entry, defined as the first spell in apprenticeship training, employment, or unemployment after a spell in secondary schools, vocational/technical schools or university. Among women of East German origin (N=114), 95.61% entered the labor market in East Germany, while 4.39% entered the labor market in West Germany. Among women of West German origin (N=225), 98.67% entered the labor market in West Germany, while 1.33% entered the labor market in East Germany.

Appendix C: Imputation of East and West Germans

We develop an imputation technique for classifying a person as East or West German. We proceed in three steps. In the first step, we use the first place of work to indicate whether a person is East or West German. If the first spell of a person is an unemployment spell, we use the regional information of the job center (*Agenturbezirke*) in which the person is registered as the basis for the imputation (Bundesagentur für Arbeit, 2019). From these regional variables, we compute a binary variable classifying a person as East or West German.

When East German workplaces entered the pool of social security records after the fall of the Iron Curtain, we initially observe an unusually large share of missing places of work as East German workplaces were not yet fully integrated into the reporting system. Therefore, in a second step, we classify as East German all women who we observe as working for the first time during the transition period (1989-1991) and whose place of work is reported as missing.

From 1992 onwards, data for East Germany can be collected reliably (vom Berge, Burghardt, and Trenkle, 2013). By that time, many East Germans had migrated to West Germany for work (Hunt, 2006), such that their first place of work may be recorded as in West Germany. In order not to accidentally misclassify these early migrants as West German, we consider in a third step a worker as East German when she enters the social security data for the first time between 1989 and 1991 and is above a certain age, even if her first place of work is in West Germany. The age thresholds that we apply vary by education at labor market entry: 29 for individuals with a university-level education (*Universität* or *Fachhochschule*), 26 for those with an upper-track high school degree (*Abitur*) and vocational degree, 23 for all other individuals. Prior to 1989, before East Germans had the opportunity to migrate to West Germany, only very few West Germans entered the social security records at older ages, such that the probability of erroneously misclassifying a West German as an East German should be small. It should be noted that the third imputation step has a minimal impact on our estimates in Sections 4 and 5 where we focus on mothers who gave birth between 2003 and 2006, as the majority of these mothers entered the social security records in 1992 or later.

Appendix D: Additional Robustness Checks

D1. Selection of Migrants

East Germans in West Germany. See main text, p. 21ff.

West Germans in East Germany. A potential concern is that the much smaller East-West gaps in the East compared to the West German labor market are driven by the selection of West German migrants relative to East and West stayers, rather than asymmetric adjustment to a new current environment. West German migrants appear to be slightly positively selected compared to East German stayers in terms of education, wages¹ and full-time status (see Panel A of Appendix Table A1), but conditioning on an extensive set of control variables at birth (control set I) and in the three years prior to birth (control set II) barely changes the migrant-native gap (compare columns (1) to (4) in Table 3).

With respect to maternal labor supply, access to family might help women return to work—a potential confounder which we cannot measure directly. However, West German migrants are less likely to have family nearby who may take on childcare responsibilities. Yet, this would predict a lower propensity to work after childbirth for West German migrants compared to their East German colleagues who can access family networks, and hence this cannot explain the adjustment pattern that we find.

Another concern is that West German women who value their career and hence have a high propensity to work after childbirth may strategically migrate to East Germany, expecting that it is easier to combine family and work in a more gender egalitarian environment. While the sample size of West and East German migrants observed prior to moving is small in the German Socio-Economic Panel, the suggestive evidence in Appendix Table D1 casts doubt that this type of selection is of importance: West German migrants do not report, before they moved to East Germany, job success and fulfilling ones' potential (and family) to be more important than West German stayers.

¹ We compute real wages using the consumer price index provided by the German Federal Statistical Office (Statistisches Bundesamt, 2015).

Evidence based on the SOEP further highlights that spousal income of West German migrant mothers is considerably higher than spousal income of East German mothers in East Germany, also reflected in higher monthly household savings (Panel A of Appendix Table D1). These greater financial resources on the family level would predict a slower return to work of West German migrants and hence cannot explain the pattern of asymmetric cultural persistence.

APPENDIX TABLE D1. East and West German Migrants and Stayers: Descriptive Statistics using German Socio-Economic Panel (SOEP)

	West in West	West in East	East in East	East in West
Panel A: Characteristics of spouses (SOEP)				
Has partner	0.913	0.870	0.872	0.838
partner is of same origin (East or West)	0.980	0.834	0.989	0.548
Partner is of East German origin	0.020	0.166	0.989	0.548
Spousal gross labor income	3061.55	4262.79	1900.64	2657.63
Spousal net labor income	2023.77	2691.77	1302.77	1822.38
Monthly household savings	438.37	564.84	351.44	391.53
Household saving rate	0.182	0.199	0.201	0.172
N	8761	208	2959	980
Panel B: Regression coefficients testing for between group differences for work- and family-related attitudes prior to move (SOEP)				
Importance of job success	<i>West German stayers are omitted category</i>	0.033 (0.060)	0.140 (0.006)	0.178 (0.029)
Important to have children		-0.015 (0.061)	0.028 (0.004)	0.015 (0.035)
Important to fulfill one's potential		-0.029 (0.062)	0.067 (0.006)	0.106 (0.033)
N	16037	43	5447	91

Notes: In Panel A, we use data from the German Socio-Economic Panel on women with a child aged 0 to 5 to compute sample means of the share of women with a partner (both married and unmarried), the share of partners who originate from East Germany, as well as spousal gross and net monthly labor income. Monthly financial household savings and the household saving rate are measured from four years before childbirth up until age 1 of the child. Household saving rates are calculated as the ratio between monthly household savings and net labor household income (calculated as the sum of net labor income of the woman and her partner). In Panel B, we show estimates from regressing binary attitudes on indicator variables for whether a woman always remained in East Germany and whether a West (East) German woman moved to East (West) Germany within the 5 following years (i.e., before they moved to the other part of Germany). Women who always remained in West Germany form the omitted base category. The sample includes all women between 20 and 45. We further control for women's socio-demographic characteristics (woman's age, education and whether she has children).

Source: Panel A: German Socio Economic Panel (SOEP, 2018), women whose first child is age 0-5 in 1990-2010 (N=12,908 overall) for rows 1-4. German Socio Economic Panel (SOEP, 2018), women four years before and up until age 1 of first child in 1992-2010 (N=4,422 overall) for household savings. Panel B: German Socio Economic Panel (SOEP, 2018), women aged 20-45 in 1990-2016 (N= 21,618 overall). Attitude variables are available in 1990, 1992, 1995, 2004, 2008, 2010, 2012, 2016.

D2. Additional Robustness Checks on the Persistence of Childhood culture

East Germans in West Germany. To further probe the robustness of our results to potential selectivity of (East) German migrants in our data, we report additional robustness checks in Appendix Table D2. In columns (2) and (3), we first contrast East German migrants with West Germans who migrated at least the average distance as the

aforementioned East German migrants (about 280 km)², but did so internally within West Germany, to account for the possibility that migrant mothers generally work more after childbirth. East-West gaps in Table D2 even increase in magnitude relative to our baseline estimates in column (4) of Table 1 in the main text (presented for convenience also in column (1) of Table D2)—possibly because internal West German migrants do not have, like East Germans, family nearby. Next, we restrict the sample to West German workplaces operating in the five integrated cross-border local labor markets. East Germans in these workplaces are primarily commuters and thus face substantially lower moving costs than cross-border migrants, thus limiting the potential concern of differential selection.³ Yet, estimates in column (4) of Table D2 are, if anything, slightly larger in size to our baseline estimates reported in column (1).

West Germans in East Germany. We also conduct the same checks for West Germans in the East German labor market. The gaps between West German migrants and “natives” are small in magnitude and insignificant when we compare West German migrants to internal East German migrants who moved a similar distance within East Germany and gave birth in the same local labor market in the same year (column (2) of Table D3).⁴ Migrant-native gaps are likewise small and statistically insignificant when we compare East and West Germans within the same workplace located in the Eastern part of the integrated cross-border local labor markets (column (3) of Table D3). We conduct a final placebo check in column (4) of Table D3, focusing on “future” migrants who were socialized and give birth in West Germany, stay in West Germany for at least two years after giving birth but move to East Germany at some later point. If West German women who migrate to East Germany are generally more career-oriented than West German women who migrate internally, we would expect “future” West-East migrants to return to work faster after birth than “future” internal migrants who give birth in the same year and same local labor market (the comparison group equivalent to

² Distances were computed as direct distances between district (*Kreis*) centroids based on Shapefiles provided by the Federal Agency for Cartography and Geodesy (GeoBasis-DE/BKG, 2016).

³ To obtain a sufficiently large sample size, we include East and West Germans who gave birth between 1997 and 2006 (as opposed to between 2003 and 2006, in our baseline specification).

⁴ There are only 319 internal East German migrants, making it infeasible to compare West German migrants and East German internal migrants within the same workplace. A within workplace comparison is also infeasible between future cross-border and internal West German migrants due to the small sample size.

that in column (2)). Employment gaps two years after childbirth (when future migrants to East Germany are still in West Germany) between the two groups are, however, close to zero, confirming that West German women who migrate to East Germany are not generally strongly selected, in line with our previous evidence.

APPENDIX TABLE D2. Differences in Post-Birth Employment Outcomes between East and West German Mothers in West Germany: Robustness Checks

	Baseline (column (4) from Table 1 in main text) (1)	Relative to West German migrants, same local labor market (2)	Relative to West German migrants, same workplace (3)	Only cross border local labor market (4)
Panel A: 4 years after childbirth				
Regularly employed (excluding marginal employment)	0.0792 (0.00821)	0.121 (0.0104)	0.152 (0.0196)	0.104 (0.0186)
Employed (including marginal employment)	0.0622 (0.00656)	0.112 (0.00841)	0.146 (0.0181)	0.0679 (0.0189)
Full-time employed	0.0509 (0.00645)	0.0546 (0.00812)	0.0558 (0.0168)	0.0949 (0.0456)
Panel B: 1 year after childbirth				
Regularly employed (excluding marginal employment)	0.0366 (0.00706)	0.0544 (0.00876)	0.0877 (0.0286)	0.0469 (0.0295)
Employed (including marginal employment)	0.0241 (0.00843)	0.0609 (0.0106)	0.0769 (0.0332)	0.0371 (0.0306)
Full-time employed	0.0264 (0.00721)	0.0310 (0.00796)	0.0436 (0.0243)	0.0515 (0.0236)
Restriction to cross-border local labor markets	no	no	no	yes
Local labor market*year of birth FE	yes	yes	yes	yes
Firm FE	yes	no	yes	yes
Mothers' characteristics at birth	yes	yes	yes	yes
Pre-birth employment history	yes	yes	yes	yes
N East German	9,565	8,674	2,928	1,806
N West Germans	197,012	10,910	2,986	12,463

Notes: The table reports coefficient estimates of the migrant dummy in regression equation (1), estimated on various samples of first-time mothers who give birth in West Germany. Column (1) reports baseline estimates that compare East Germans who migrated to West Germany prior to giving birth with West German “stayers” and control for local labor market by year of birth fixed effects, workplace fixed effects, mothers’ control variables at the time of birth and mothers’ employment history variables in the three years prior to birth (control set II) as in column (4) of Table 1. In columns (2) and (3), we compare East Germans in West Germany to internal West German migrants who have moved at least the mean distance of the East Germans in the sample (ca. 320 km), and control for local labor market by year of birth fixed effects, mothers’ characteristics at the time of birth and employment histories in the three years prior to birth (control set II) in column (2) and additionally workplace fixed effects in column (3). In column (4), we compare East and West Germans in workplaces in the West German part of the integrated cross-border local labor markets, and control for the same variables as in column (3). Standard errors clustered on the local labor market level of the pre-birth place of work are reported in parentheses.

Source: Social Security Records (IEB, 2012), first-time mothers who signed up for maternity leave in West Germany in 2003-2006 (columns (1)-(3)), and in the West German parts of cross-border local labor markets in 1997-2006 (column (4)).

APPENDIX TABLE D3. Differences in Post-Birth Employment Outcomes between West and East German Mothers in East Germany: Robustness Checks

	Baseline (column (4) from Table 3 in main text)	Relative to East German migrants, same local labor market	Only cross- border local labor market	Placebo: West Germans moving to East after birth vs. West German internal migrants
	(1)	(2)	(3)	(4)
Panel A: 4 years after childbirth (2 years in column (4))				
Regularly employed	-0.0122	0.0161	-0.0229	0.0169
(excluding marginal employment)	(0.0116)	(0.0170)	(0.0198)	(0.0253)
Employed	-0.0249	-0.0222	-0.0130	0.0159
(including marginal employment)	(0.0123)	(0.0256)	(0.0181)	(0.0253)
Full-time employed	-0.00113	0.0551	-0.0182	-0.000547
	(0.0115)	(0.0284)	(0.0213)	(0.0170)
Panel B: 1 year after childbirth				
Regularly employed	-0.0332	0.0277	0.00350	-0.000446
(excluding marginal employment)	(0.0142)	(0.0281)	(0.0364)	(0.0148)
Employed	-0.0278	0.0201	0.00683	-0.0166
(including marginal employment)	(0.0137)	(0.0276)	(0.0245)	(0.0222)
Full-time employed	-0.00809	0.0572	0.00572	-0.00594
	(0.0136)	(0.0238)	(0.0155)	(0.0120)
Restriction to cross-border local labor markets	no	no	yes	no
Local labor market*year of birth FE	yes	yes	yes	yes
Firm FE	yes	no	yes	no
Mothers' characteristics at birth	yes	yes	yes	yes
Pre-birth employment history	yes	yes	yes	yes
N East Germans (future migrants in (4))	40,578	302	6,644	796
N West Germans (stayers in (4))	2,507	4,482	604	1,809

Notes: The table reports coefficient estimates of the migrant dummy in regression equation (1), estimated on various samples of first-time mothers who give birth in East Germany (except column (4)). Column (1) reports baseline estimates that compare West Germans who migrated to East Germany prior to giving birth with East German “stayers” and control for local labor market by year of birth fixed effects, workplace fixed effects, mothers’ characteristics at the time of birth and mothers’ employment history variables in the three years prior to birth (control sets I and II) as in column (4) of Table 4. In column (2), we compare West Germans in East Germany to internal East German migrants who have moved at least the mean distance of the West Germans in the sample (ca. 265 km), controlling for local labor market by year of birth fixed effects, mothers’ characteristics at the time of birth and employment histories in the three years prior to birth (control set II). In column (3), we compare East and West Germans in the East German parts of the integrated cross-border local labor markets, controlling for the same variables as in column (2) as well as workplace fixed effects. In column (4), we conduct a placebo test where we compare employment outcomes 1 and 2 years after birth of West Germans who move to East Germany 2 to 10 years after birth and have never worked in East Germany before giving birth (N=796) and West Germans who migrate internally (at least 300 km within West Germany 2 to 10 years after birth (N=1809)). We control for local labor market by year of birth fixed effects, mothers’ characteristics at birth and mothers’ mothers’ employment history variables in the three years prior to birth (control sets I and II). Standard errors clustered on the local labor market level of the pre-birth place of work are reported in parentheses.

Source: Social Security Records (IEB, 2012), first-time mothers who signed up for maternity leave in East Germany in 2003-2006 (columns (1)-(2)) and in East German parts of the cross-border local labor markets in 1997-2006 (column (3)). In column (4), we restrict the analysis to first-time mothers who sign up for maternity leave in 2000 in West Germany and migrate across the border to East Germany or internally within West Germany 2-10 years after birth.

D3. Bounding Analysis

We follow the bounding approach by Oster (2019) (who builds on the ideas discussed in Altonji, Elder, and Taber (2005)) to gauge to what extent unobserved confounding factors could reduce or increase the estimated gaps between (return) migrants and “natives”, assuming extreme differences between (return) migrants and stayers in unobserved characteristics that we cannot account for. The approach is first based on a comparison of those gaps unconditional ($\hat{\beta}$)—“short regression”—and conditional ($\tilde{\beta}$) on observed characteristics—“intermediate regression”—e.g., 10.1 and

7.92 percentage points for regular employment four years after childbirth when comparing migrants and stayers in West Germany (columns (1) and (4) in Table 1 in the main text, displayed again for convenience in columns (1) and (2) in Panel A of Table 2).

Oster (2019) suggests a simplified formula to compute approximate bounds β^* around the conditional East-West gap $\tilde{\beta}$ as follows:

$$\beta^* \approx \tilde{\beta} - d(\hat{\beta} - \tilde{\beta}) \frac{R^{max} - \tilde{R}}{\tilde{R} - \hat{R}},$$

where \hat{R} and \tilde{R} denote the R^2 from the unconditional and conditional regression (e.g, 0.009 vs 0.289 for the above example, reported in Panel A of Table 1 in the main text), and R^{max} is set by the researcher and determines to what extent observed and unobserved factors combined can explain the overall variation in post-birth employment choices of mothers. Oster (2019) recommends setting a value of $R^{max} = 1.3\tilde{R}$, arguing that with a higher R^{max} , bounds would lie outside the 99.5% confidence interval in more than 10% of cases in a set of well-published Randomized Control Studies.

The parameter d governs the degree of proportionality of selection on observables to selection on unobservables and are typically set to 1 and -1, implying that selection on unobservables is as strong as selection on observables and operates in the same or opposite direction as selection on observables, leading to an over- and underestimation, respectively, of the true effect in this specific context. Note that a choice of $d = 1$ is a very conservative assumption given our extensive set of control variables and given that some unobserved confounders such as access to nearby family work in the opposite direction as selection on observables.

Table 2 in the main text shows the bounds for the migrant-gaps (Panel A and B) and return migrant-gaps (Panel C and D). Comparing estimates in columns (1) and (2) again demonstrates that the employment gaps are remarkably robust to conditioning on the extensive set of observable characteristics. Columns (3) and (4) show the associated Oster bounds.

We note two key findings: First, comparing Panels A and B, it becomes clear that the asymmetry in the persistence of gender norms is extremely unlikely to be driven by

the exclusion of unobservable characteristics. Even under the very conservative assumption that they are as important as our rich set of control variables, we obtain bounds of 7.2 percentage points for East German migrants in the West, whereas those for West Germans in the East are at most -1.7 percentage points. Second, a comparison of the results on return migrants in Panels C and D confirms that cultural adoption is predominantly a phenomenon of West Germans. The estimated return migrant-stayer gap in West Germany is estimated with remarkable accuracy such that the unbiased gap likely is around 5 percentage points. Under the implausibly strict assumption that East German return migrants are selected on unobservables to the same extent as on our large set of control variables, the gap between East German return migrants and stayers is still bounded between 0.9 and 3.1 percentage, while the original estimates (with and without controls) were not statistically different from 0.

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