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ABSTRACT

Immigration, Female Labour Supply and Local Cultural Norms*

We study the local evolution of female labour supply and cultural norms in West Germany in reaction to the sudden presence of East Germans who migrated to the West after reunication. These migrants grew up with high rates of maternal employment, whereas West German families mostly followed the traditional breadwinner-housewife model. We find that West German women increase their labour supply and that this holds within households. We provide additional evidence on stated gender norms, West-East friendships, intermarriage, and child care infrastructure. The dynamic evolution of the effects on labour supply is best explained by local cultural learning.

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1 Introduction

Cultural norms influence individual behaviour and aggregate outcomes and this is particularly pronounced when it comes to the labour supply decisions of women (e.g. Giuliano, 2020; Giavazzi et al., 2013). However, important questions on the origins and the evolution of cultural norms remain unanswered. A series of seminal papers established the importance of technology (Alesina et al., 2013), social movements (Goldin, 1990), and of the family (e.g. Fernández et al., 2004) as long-term drivers of change. Focusing on the dynamic evolution of norms, Fernández (2013) and Fogli and Veldkamp (2011) study cultural norms in the presence of learning. Fernández (2013) proposes a model of inter-generational learning where norms and women's labour supply decisions depend on a noisy public signal generated by women's decisions in the preceding generation. Fogli and Veldkamp (2011) model local information transmission that generates changes in participation that are geographically heterogeneous, locally correlated, and smooth in the aggregate, and use county-level data to compare the calibrated model to observed participation decisions.

This paper presents causal evidence on the question if large inflows of immigrants speaking the same language, but with different gender identities and cultural norms, can trigger the local evolution of female labour supply and norms of natives. Our main finding is that native women increase their working hours in the presence of immigrants with more gender-egalitarian views and behaviour. These effects on female labour supply hold within households as well. We carefully trace the evolution of these effects over time and examine heterogeneity. Using a combination of administrative, census, and survey data sets, we consider different potential channels which could explain the effects. We provide direct evidence on stated gender norms and beliefs of natives, local friendship-ties and intermarriages, as well as on the evolution of endogenous local supply of publicly funded child care infrastructure.

We exploit the setting of German reunification to study the effects of immigration on the local evolution of female labour supply and gender norms. This setting is uniquely suited for two reasons. First, East and West Germans held very different norms related to the role of women resulting in much higher female labour force participation in the East. As argued in the literature, this is the case because the different political-economic systems imposed on East and West Germany led to different gender norms, identities of women, and beliefs about how maternal employment affects children and the family: individuals who grew up under the GDR regime are less traditional than individuals in West Germany (e.g. Bauernschuster and Rainer, 2012;

Beblo and Görges, 2018; Boelmann et al., 2022; Campa and Serafinelli, 2019; Jessen, 2022; Lippmann et al., 2020). We describe these differences in detail in section 2.1.

Second, the collapse of the wall separating East and West Germany in 1989 resulted in a sudden and unexpected large inflow of several million people who were socialised under the regime of the German Democratic Republic (GDR) into the territory of the former West Germany.[1] These first-wave migrants were largely sealed off from Western influence and had limited information about local differences in economic conditions and cultural norms within the West. We show that a range of receiving region characteristics measured just before reunification fail to predict inflows from the East, while being highly predictive of internal West-West migration patterns.[2] We argue in section 2.2 below, that this gives rise to meaningful and quasi-random variation in the presence of East Germans in the West.[3]

The combination of large inflows of East Germans with different cultural norms present a unique opportunity to improve the understanding of the evolution of local behaviour and cultural norms in the West. East Germans were not perceived as foreigners in West Germany and were very similar in many regards such as language, education or ethnicity - but quite different in their view regarding the role of women in the labour market. As a result, we think that this historical setting gets us as close as is reasonably possible to the idea of an ideal experiment for identifying the evolution of local cultural norms: Exogenously switching cultural norms through immigration of otherwise observationally similar individuals and then studying changes in norms and behaviour of the local population.

We use cross-regional variation in the inflow intensity with different empirical models to estimate effects of immigration of East Germans. Our main empirical model is a difference-in-differences (DD) design that compares changes in female labour supply at the extensive and intensive margin in high- vs. low-inflow regions in the years before and after German reunification. The assumption underlying this specifica-

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[1]We refer to "West Germany" and "East Germany" using capitalised letters to describe the regions of the former two states within Germany, although strictly speaking this is incorrect post-reunification.

[2]Note that in our difference-in-differences estimation we do not rely on balanced region characteristics, but only the weaker assumption of parallel trends of outcomes in absence of the differential inflow of immigrants.

[3]The historical literature has identified two waves of emigration out of East Germany; the first wave occurred immediately following re-unification and the second wave roughly from 1998-2003. We study effects of the first wave of migrants, which was largely untargeted. Hunt (2006) and Fuchs-Schündeln and Schündeln (2009) examine migration patterns after reunification. A similar share of men and women migrated in both waves, in the first wave migrants had average levels of education and were more likely to be young (Fuchs-Schündeln and Schündeln, 2009). In the second wave (1998-2003) migrants were even more selected by age and had higher educational attainment.

tion is that first-wave East German migrants did not select their destination in West Germany based on existing *trends* in female labour supply or norms. We also show event study estimates which carefully trace out treatment effects over time. Before reunification we identify flat trends supportive of the common-trend assumption.

Our main finding is that the presence of more East Germans with less traditional gender norms changes the behaviour of local women: While we find no effect on the extensive margin, we identify significant increases in the hours worked of employed women, and in the Western women's share of within household working hours. I.e., we find no similarly sized effects for men, speaking against unobserved local economic conditions driving the results.

Through the event study estimates we examine in detail the time-patterns of the dynamic adjustments of the local changes in female behaviour. We find no reaction in the short-run but persistent reactions at the intensive margin in the medium- and long run. These time-patterns are consistent with slow-moving mechanisms of local cultural learning but not with classical labour market channels, which should show up immediately and fade away over time and space.

We present a battery of robustness checks to support the validity of our findings. To corroborate that our results are not driven by fundamental economic changes in response to reunification, we exclude regions in proximity to the former inner German border and implement a demanding specification controlling flexibly for distance to the border. Both yield virtually unchanged results. We also present estimates with endogenous individual controls to account for potential compositional changes, region-specific trends and time-varying regional economic controls. Additionally, we show that our results are robust to other treatment definitions.

Using supplementary data sources, we move on to document that the presence of immigrants affects an index of agreement to stated cultural norms and beliefs. Information on stated beliefs is not available at the local level before reunification, so these effects are not identified based on the DD design. However, we can control for a rich set of individual characteristics which are highly predictive of cultural norms. We measure effects on beliefs about how maternal employment affects children and the marriage. We find that Western women exposed to a large influx of East Germans adjust their cultural norms and become less gender-traditional. Overall, this evidence is in line with our interpretation of the labour supply effects.

Are these effects on labour supply and local cultural norms driven by personal interactions or other channels? Using individual-level information on friendship networks, we use additional survey data to show that West Germany in high-inflow

regions have a higher share of East German friends increasing the likelihood of personal interactions and the local transmission of norms (Fogli and Veldkamp, 2011). Moreover, we find that the rate of intermarriage of West Germans with East Germans remains low throughout. This speaks in favour of theories of local cultural learning and against household bargaining.

Finally, we analyse whether the inflow of East Germans triggered an expansion of publicly funded child care. Through this channel increased female labour force participation can be facilitated and even without direct interactions immigrants may impact conditions for locals through changes in public good provision. To this end, we find that the presence of immigrants with gender-egalitarian local norms has led to local-level increases in the public provision of child care. In Germany, the public provision of child care is governed at the county-level and shortages of public provision are shown to affect female labour supply (e.g. Bauernschuster and Schlotter, 2015; Müller and Wrohlich, 2020). Using the same DD event study strategy from our main analysis on labour supply, we find that counties with a larger influx of gender-egalitarian East Germans started expanding child-care provision faster starting several years *after* reunification. Importantly, only once a federal policy triggered a nationwide expansion of slots did the regions with more East German immigrants experience a larger increase of slots.[4] As this immigration-induced change in public infrastructure occurred only several years after the documented changes in female labour supply at the intensive margin, we conclude that the effects of immigrants on the local infrastructure may have amplified some of the labour supply responses we find in the medium- and long-run, but cannot explain the earlier changes in labour supply due to the influx of East Germans with different cultural norms. These are best explained through slow-moving changes in local cultural norms.

This project combines two strands of the existing literature. First, the existing literature that focuses on the impact of immigration on receiving regions such as political outcomes (e.g. Dustmann et al., 2019; Harmon, 2018), the level of public good provision (e.g. Alesina et al., 1999), or preferences for redistribution (e.g. Dahlberg et al., 2012; Nekby and Pettersson-Lidbom, 2017). We add to this literature by exploiting the unique setting of German reunification to study effects of immigration

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[4]This finding highlights how national policies and gender norms can interact in a powerful way; immigrants with different gender norms may not in their own right be able to change public infrastructure, but once policies facilitate a degree of change, they can amplify it. Relatedly, Bau (2021) show how national pension policies in Ghana and Indonesia impact on kinship traditions. Aksoy et al. (2020) similarly find that same-sex relationship recognition policies led more accommodating attitudes towards sexual minorities in Europe.

on a different outcomes of interest: female labour supply and cultural norms.

Second, we provide quasi-experimental evidence on theories of identity formation and cultural change (e.g. Akerlof and Kranton, 2000; Fernández, 2013; Fogli and Veldkamp, 2011). These theoretical models highlight the importance of local information transmission and behavioural mitigation in the process of identity formation and of cultural learning. This paper contributes to the growing body of empirical evidence showing that changes in the labour supply decisions of women can have large social multiplier effects on current and future generations of women. While there are various studies establishing strong intergenerational correlations between the labour supply decision of one generation and the next (e.g. Fernández et al., 2004; Olivetti et al., 2020), the previous literature assessing the question of identity formation and cultural learning in a causal manner is sparse.[5]

An emerging and directly related literature studies the horizontal transmission of norms. Boelmann et al. (2022) show that West German mothers take substantially shorter parental leave like their East German peers when their firms experience a large inflow of East Germans (direct evidence for the the workplace as a channel for the transmission of norms). Miho et al. (2023) study ethnicity-based deportations during the Soviet Union and document the transmission of norms to the local populations attitudes and behaviour. Last but not least, Friedman-Sokuler and Senik (2020) show how migrants from the former Soviet Union to Israel affect STEM-education choices of native women. We add to this emerging literature by studying female labour supply decisions in the presence of migrants with different norms and behaviour, and present evidence on channels by studying cultural norms, friendship ties and effects on the local child care infrastructure. We also add specifically to Boelmann et al. (2022), arguably the most closely related paper to ours, by studying labour supply effects of all West German women, not only regarding parental leave taking, and in response to regional inflows rather than focusing on the firm-level.[6] We also provide evidence on mechanisms outside of workplace interactions (which is likely to also play a role

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[5]Alesina et al. (2013) find that descendants of societies where the plow was used as predominant agricultural tool have lower female labour market participation today, as well as less egalitarian gender norms. Fernández et al. (2004) use variation in the mobilisation rates of men in World War II to provide evidence that female labour supply shocks in one generations have long-run consequences on the following generations due to changes in cultural norms. On the individual level, Maurin and Moschion (2009) and Mota et al. (2016) study short-run cultural learning effects and find positive effects of the labour supply decision of female neighbours on women's labour supply at the extensive margin. Nicoletti et al. (2018) reveal that there are substantial long-run family peer effects (of sisters) on a mother's labour supply decision at the intensive margin.

[6]Sorting into firms by East Germans could be endogenous to perceived family friendliness, which in turn affects the outcome studied.

in our setting).

Methodologically, this paper is related to the literature examining labour supply effects on natives of unexpected geographically localised inflows of migrants, starting with Card (1990). Dustmann et al. (2016) provide a framework to reconcile findings in this literature. They summarise that studies that examine sudden changes in the local composition of workers (the spatial approach) only find evidence for displacement or wage effects when focusing on specific skill-, occupation-, or age-groups, or interactions thereof. This also applies to the German context:[7] Most closely related to our setting, Prantl and Spitz-Oener (2020) study wage-effects of the same within-German first-wave migration post-reunification that we focus on in this study. They find no evidence for effects on West German native' wages even when exploiting variation within age- and occupation-specific cells, unless interacting the labour supply shock with product market regulation. In contrast to this literature, we study female and household-level labour supply decisions without focusing on particular subsets of skill-, occupation- or age-groups in the local labour markets, or product market interactions. We therefore believe our results cannot be rationalised through existing empirical findings on labour supply effects. In line with the existing literature, we document zero effects for males using this (only spatial) approach. Moreover, we document effects for females and at the household level for the medium- and long-run. Borjas (2006) points out that local labour supply effects disperse over time and space. Last but not least, we provide direct evidence that shows adjustment in stated local cultural norms.[8]

In sum, we believe this paper makes two key contributions to the literature. First, we document that immigrants with different cultural norms and beliefs can affect female labour supply and cultural norms in receiving regions. We discuss the dynamics that we find with respect to theories of identity formation and cultural learning. Sec-

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[7]Glitz (2012) finds skill-specific displacement effects of Eastern and Central European "ethnic German" immigrants on West Germans working full-time in 1996-2001 by exploiting random geographical variation due to placement policies. Dustmann et al. (2017) study short-run age- and skill-specific local labour market responses to the sudden inflow of Czech workers along the German-Czech border after reunification. They find evidence for displacement and that these effects are driven by changes in "inflows" to jobs rather than "outflows" of existing workers. Earlier papers do not find these negative effects on labour force participation for Germany (Bonin, 2005; D'Amuri et al., 2010).

[8]This paper is also related to a wider literature that uses German reunification to test economic theory: Redding and Sturm (2008) and Ahlfeldt et al. (2015) estimate the importance of market access for economic development at the region- and density at the within-city level. Burchardi and Hassan (2013) show that West Germans with social ties to the East experienced higher wage growth post-reunification. Bursztyn and Cantoni (2016) study consumption behaviour in reunified East Germany and Lichter et al. (2021) trust and economic outcomes.

ond, we document that immigrants might affect natives even with limited interaction by changing the local infrastructure.

2 Female labour supply, German reunification and the first wave of migration

This section places the empirical analysis of this paper in context by providing information on patterns of women's labour supply and family policies in East and West Germany before and after reunification. In addition, we introduce the first wave of East-West migration after the fall of the wall, which we use to examine behavioural changes of women in West Germany.

2.1 Female labour supply in East and West Germany

Throughout the Cold War following World War II,[9] policies for women and families as well as economic work incentives for women differed greatly between East and West Germany (e.g. Rosenfeld et al., 2004; Trappe, 1996), resulting in very different patterns of female labour supply and formal child care infrastructure. Figure 1 shows strong differences in female labour supply between East and West Germany at both the extensive and intensive margin, panels (a) and (b), respectively.

Panel (a) illustrates that women's labour force participation in the former GDR increased sharply in the 1970s and 1980s. By 1989 about 78% of women in the working age population participated in the labour forces (91% including women still in education), 27% of them in part-time, usually working between 30 and 35 hours. To facilitate these high participation rates, the provision of public child care was massively expanded, reaching almost universal coverage in 1989 (Appendix Figure A1).

In West Germany, on the other hand, policies and cultural norms set strong incentives to live within traditional role patterns with men being the (main) breadwinner (e.g. Wippermann, 2015). Women usually either stayed at home after they had chil-

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[9]Following WWII, Germany was divided into four occupation zones. The zones occupied by Great Britain, France and the United States, generally located in the Western, Northwestern and Southern parts, became West Germany (Federal Republic of Germany) in May 1949. The zone occupied by the Soviet Union eventually became East Germany (German Democratic Republic, GDR) in October 1949. Berlin, located within Soviet territory, was also divided into East and West zones. Starting in 1961, the border separating West and East Germany became sealed, to prevent further East-to-West migration and formed part of the iron curtain separating Europe into two political spheres. Prior to the construction of the Berlin Wall in 1961 it was possible for civilians to cross the border. After 1961, migration across the inner German border was effectively brought to a halt.

dren or entered part-time employment after an extended break. As shown in Figure 1, panel (a), in 1989 about 55% of women participated in the labour force working for on average 35 hours per week (average hours of all women amount to about 18 hours per week). The share of mothers participating in the labour force (47%) and the hours worked (31 hours for employed mothers and 13 hours overall) was even lower and full-time employment was rare (23%). There was hardly any formal child care provision for children under the age of three and school-aged children before reunification, with the exception of West Berlin. The consequences of maternal employment and formal child care for children and marriage were subject to a heated public, political and academic debate (e.g. Fthenakis, 1989; Schütze, 1986).

Panel (b) of Figure 1 shows that East German women were also working substantially longer hours than West Germans ones. Those differences are particularly large for mothers of young children (see Barth et al., 2020).

As shown in Figure 2 in 1991 shortly after reunification, about three-quarters of the West German population agreed with the statement that a small child will certainly suffer if his or her mother is employed. Half of West Germans also indicate support for a traditional specialisation, where the husband works and the wife takes care of the household and children. East Germans are shown to have more egalitarian attitudes for five of the six outcomes concerning the role of women, child rearing and employment shown in Figure 2.

Previous studies show that the different politico-economic systems imposed on East and West Germany triggered the evolution of different cultural norms regarding the appropriate role of women. For example, using a spatial discontinuity at the border, Campa and Serafinelli (2019) show that women in East Germany rate their career success to be more important than women in West Germany. The results by Lippmann et al. (2020) suggest that women in East Germany can earn more than their husband without putting their marriage at risk, having to do more housework ("doing gender" hypothesis, West and Zimmerman, 1987) or withdrawing from the labour market. Several studies show that East and West Germans exhibit strikingly different attitudes regarding the appropriate role of women, have different beliefs about the potential costs of maternal employment for children and exhibit different gender gaps in preferences for work (e.g. Bauernschuster and Rainer, 2012; Beblo and Görges, 2018). These studies do not find convergence of cultural norms over time. East Germans moving to West German continue to have more gender-egalitarian cultural norms as evident in their substantially lower child penalties (Boelmann et al., 2022; Jessen, 2022).

2.2 East to West Migration

A series of unforeseen political events and large-scale public demonstrations in East Germany cumulated in the fall of the Berlin wall on November 9, 1989, and the formal reunification of West and East Germany on October 3, 1990. Large East-to-West (net) migration flows followed in the upcoming years.

Extent of Migration We use administrative records from all West German registration offices in order to identify migrants from the East and quantify the magnitude of migration flows. In Germany, by law (Bundesmeldegesetz §17) every person has to register any change in her place of residence with the registration authorities within two weeks after moving. From these records, we construct exact measures of migration by age group and year. Panel (a) of Figure 3 shows the total East-West migration flows over the years 1950 - 2015. Immigration from East Germany was almost completely prevented during the period of the Berlin Wall. Within three years after the sudden collapse of the Wall around 1.05 million people migrated from East to West Germany. This number corresponds to about 6.5% of the population in the former GDR in 1989 and about 1.7% of the population in West Germany. In our analysis we focus on this sudden initial wave of immigration from East Germany into West Germany in the three years after the fall of the wall.[10]

First-Wave Immigration We focus on the first-wave immigrants for three reasons. First, this ensures that immigrants were socialised under the former GDR regime. As described previously, individuals who grew up in reunified East Germany were exposed to different family policies and female labour market patterns, e.g. child care provision was massively reduced after reunification. Second, a large fraction of the early migrants stayed in the region where they first immigrated to in West Germany. We estimate the share of early migrants who stayed in the region they were first observed to be around 75-85%.[11] This is important because cultural learning likely takes time. Third, and most importantly, we show in the following that the first wave of immigrants from East Germany were primarily driven by distance and not the economic conditions in the receiving counties.

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[10]Due to differences in local data availability we base much of our results on inflows in 1991. We do not find significant differences in location decisions within these early years, where data is available (correlation coefficient of $r = 0.9$), see Appendix Figure A2.

[11]This estimate is based on representative data from the German Socio-Economic Panel Study (Goebel et al., 2019).

Location Decisions of Migrants   Panel (b) of Figure 3 maps the inflows in 1991 relative to the population in each county. Evidently the distance to the border is a key predictor of location choice with counties in proximity to the former border experiencing much larger relative inflows of East Germans. We provide evidence that the location decision of first-wave migrants was mostly untargeted with regard to local characteristics of the destination county: Appendix Table A1 shows determinants of migration flows to West Germany from East and West Germans. This exercise is in the spirit of experimental randomisation tests and each estimate comes from a separate regression of the treatment on the characteristic of interest. Columns 1 and 2 show whether local characteristics predict the treatment indicator, above median inflow of East Germans after reunification, without and with state fixed effects as controls. The main result from this exercise is that East-West migration is hardly related to these characteristics. This holds in regardless of the the state fixed effects. Out of 25 local controls only three are significant at the five percent level or higher for East-West migrants (column 2). In contrast, West-West mobility (columns 3 and 4) during the same years can be explained to a larger degree by observable county characteristics. In column 4, which includes state fixed effects, 20 out of 27 variables are significant at the five percent level of statistical significance for West-West movers. Finally, distance to the border strongly predicts East-West mobility, but is unrelated to West-West mobility. All in all, first-wave East-West migrants thus appear relatively untargeted with respect to local characteristics and this also holds for average dialect distance to East Germany serving as a proxy for cultural ties (Falck et al., 2012, 2018), which alleviates concerns about pre-existing cultural ties being a confounding factor in our analysis.[12]

Note that in our DD strategy, it is sufficient if these migration decisions were unrelated to trends in local outcomes.

3   Data and empirical framework

We use a combination of administrative and survey data to study local cultural learning effects in West Germany following German reunification. The various data sets

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[12]We considered using pre-existing family ties as in Burchardi and Hassan (2013) as a predictor for migration flows within an IV framework. However, when considering West German counties with at least 100 observations in the SOEP on family ties (to reduce the influence of outliers), we found that the relationship between family ties and migration patterns in the immediate aftermath of reunification was positive but weak, making it unsuitable for an IV estimation. This also reaffirms the untargeted nature of the migration patterns of East Germans.

come at different levels of aggregation and we always use the lowest-level possible.[13]

3.1 Data, analysis sample and outcomes

Our main analysis is based on data from the German Microcensus, an annual household survey that samples one percent of the German population. The Microcensus is the largest annual household survey in Europe and contains various information on labour market outcomes and socioeconomic characteristics. If selected to participate, households are required to respond by law.

In our analysis, we use information covering the period from 1982 to 2015. More precisely, we rely on information from 1982, 1985, 1987, 1989, 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2008, 2010, 2012, 2013 and 2015. Before 1995, this coincides with all waves that are available at a smaller regional level than state-level. Hence, we have information on four pre-reunification years and 14 post-reunification waves to study long-run cultural learning effects.

Our analysis sample consists of women aged 25 to 55, i.e. women who are out of education but far from retirement, who have grown up and who are at the time of the survey living in West Germany. Unfortunately, the Microcensus does not ask directly whether a respondent grew up in West Germany. To implement this restriction, we identify and drop from the sample East Germans living in the West based on their educational degree using recorded GDR-specific educational qualifications that were universal until reunification.[14] In our main estimation sample, we restrict the analysis to cohorts born between 1945 and 1975. This ensures that we can identify women growing up in the West as the cohorts will have obtained basic educational degrees by reunification. Descriptive statistics for the main analysis sample of West German women living in West Germany are reported in Table 1. Appendix Table A2 contains the same descriptives for East German women who have migrated to West Germany.

We focus on four main outcomes: (i) women's labour force participation; (ii) women's working hours; (iii) working hours of women in employment; and (iv) relative working hours within households. Labour force participation is coded as a binary indicator and equals one if women report either being in employment or looking for

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[13]As a result, our analysis is conducted at the county-level ("Kreis") or the regional level "Raumordnungsregion" (ROR), where a ROR usually consist of two counties and is a commonly used definition of local labour markets based on commuter flows (e.g. Pischke and Velling, 1997).

[14]For a detailed description on how we identify individuals who grew up under the former GDR regime and plausibility checks, see a working paper of this article (Jessen et al., 2022, Appendix section B). Our results are highly unlikely to be driven by remaining very small numbers of misclassified East Germans living in the West.

a job. Working hours are measured as contracted working hours per week. Relative working hours are defined as the share of working hours provided by the women in the household (either married or cohabiting). In addition, we include a vector of exogenous controls (age, age squared, highest educational degree in three categories and nationality). As a robustness check, we also control for potentially endogenous variables such as separate indicators for the number of children in the household and the marital status, i.e. single, married, widowed and divorced.

To examine mechanisms, we use a number of supplementary data sets. Appendix Table A3 provides an overview of the data used. More details about the supplementary data are provided as they are introduced in the respective sections.

3.2   Empirical strategy

We use different empirical models to estimate labour supply and cultural learning effects in the aftermath of German reunification. Our baseline model is a simple difference-in-differences (DD) model, which formally reads:

$$Y_{irt} = \beta_0 + \beta_1 \text{ HighInflow}_r * \text{Post}_t + X'_{irt}\beta_2 + \mu_r + \kappa_{rt} + \epsilon_{irt} \tag{1}$$

Post_t is an indicator variable taking the value of one in post-reunification periods, i.e. from 1991 onwards, and HighInflow_r is our treatment indicator that is equal to one if a woman i lives in a region r that received above median inflow from the former GDR after the fall of the wall.[15] μ_r are a set of region fixed effects and we additionally include state-by-year fixed effects κ_{rt} to non-parametrically allow for economic shocks at the state level, e.g. changes in government or educational policies. In addition, we include a vector of exogenous individual controls X'_{irt}. β_2 is allowed to vary in pre- and post-reunification periods. We cluster standard errors ϵ_{irt} at the regional level to allow for idiosyncratic within-region correlations.

In this specification, under common trend assumptions, β_1 identifies the average change in outcomes Y_{irt} between pre- and post-reunification periods for high inflow regions compared to low inflow regions conditional on covariates. Under the additional assumption of no compositional changes, this effect over time can be interpreted as the impact of immigration of East Germans on outcomes of West Germans.

To study the local dynamic adjustments and to additionally assess pre-trends, we estimate event study versions of equation (1), by interacting the variable that

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[15]We conduct several robustness checks using different treatment definitions, all yielding similar results (see section 5).

measures the inflow right after the fall of the wall, HighInflow$_r$, with year-specific dummies. Effectively, this results in the following specification:

$$\mathrm{Y}_{irt} = \gamma_0 + \sum_{t \neq 1989} \gamma_1^t \, \mathrm{HighInflow}_r + X'_{irt}\gamma_2 + \mu_r + \kappa_{rt} + u_{irt} \qquad (2)$$

We omit the last pre-treatment indicator (γ_1^{1989}) to standardise the outcomes. Thus, γ_1^t identifies the effect on outcome Y_{irt} relative to the year 1989. We plot these coefficients in event study graphs which neatly depict the evolution of treatment effects over time.

4   Results

Table 2 reports estimates for equation (1) for the four main outcomes that we study using the Microcensus data. The baseline estimates are reported in the odd-numbered columns. All of these specifications included state by year fixed effects to account for broad regional heterogeneity and state-specific changes in legislation (such as child care provision). The even-numbered columns include additional individual-level controls, namely age, age squared, highest educational degree in three categories and nationality, which are allowed to differ in pre- and post-periods in columns. If unobserved (economic) shocks at the state level or compositional changes were driving the results, the DD coefficient of interest would be expected to differ across specifications.

The first two columns show no effects at the extensive margin with precisely estimated zeros. Moving to columns 3 to 4, the DD coefficients for working hours of all women are positive but relative small (1.3-1.6% relative to the pre-unification mean) and statistically not different from zero. Next, we move on to working hours of *employed* women, i.e. a pure intensive margin effect. The DD coefficients indicate that regions with above median inflow shares after German reunification experience an increase in working hours of employed women of 0.8 to 0.9 hours per week (2.4-2.6% relative to pre-unification mean) and an increase in working hours of women relative to their cohabiting partner of about 0.6 percentage points. Across outcomes, coefficients with (even-numbered columns) and without (odd-numbered columns) individual controls are very similar. All future estimates are based on regressions with the set of control variables.

Recall that given the lack of comprehensive data for the years 1989 and 1990, these estimates are based on inflows for the year 1991 alone. To provide a quantification

with respect to the inflow-share of the local population nevertheless, we scale these coefficients using overall inflows in 1991 vs. the initial three years after reunification combined (0.3m and 1.05m respectively).[16] Using the estimate from column (6), increasing the share of migrants by 1.05 pp within the first 3 years after the fall of the wall increases the working hours of employed women by 0.81 hours per week, or about 2.3 percent in the 15 years following re-unification, and by 0.6 pp relatively to their partner (using column 8). In the conclusion we compare these effect sizes against the scarce related literature.

We also tested for heterogeneity along the education and age-of-child dimension. The main effect is mostly driven by individuals with low levels of education (Panel A in Appendix Table A4). In contrast, we do not find clear evidence that the age of the youngest child in the household matter much (Panel B).

To examine the effect evolution, Figure 4 plots event study coefficients from equation (2) for our main outcomes. In pre-unification years, the estimated coefficients are close to zero and not statistically significant for all outcomes, indicating that before reunification treated and control regions exhibit similar trends in outcomes. In line with the results in Table 2, all post-reunification coefficients for labour force participation (panel (a)) and workings hours of all women (panel (b)) are close to zero and statistically insignificant. Concerning working hours of *employed women* in panel (c), we find the positive and significant effect on working hours of employed women which seems to level of at about 1 hour per week (2.9% relative to the pre-reunification mean). It takes about 6 years for the coefficients to become statistically significant at the 5% level. Subsequently, they stay roughly constant. Similarly, panel (d) shows a positive effect on the relative working hours of women within households, which peaks at about 1 percentage point.

Overall, the findings of the different empirical specifications are consistent with slow moving cultural learning effects, as reflected by the labour supply decisions of women solely at the intensive margin, which has also been documented by Nicoletti et al. (2018) who only identify family peer effects for female labour force participation in Norway at this margin. One interpretation of the lack of significant effects at the extensive margin is that this margin is less malleable as it constitutes a more fundamental element of the identity (being a housewife or not) than the decision on how many hours to work if one already participates in the labour force. Another

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[16]Scaling by factor of 1.05/0.3=3.5, migrants amount to 2.07 percent (0.59 percent * 3.5) relative to the West German population in high inflow and 1.02 percent (0.29 percent * 3.5) in low inflow regions. The overall difference in population shares of East-West migrants that is captured by our main DD estimation therefore amounts to 1.05 percentage points (pp).

interpretation concerns the channels through which West German women are affected by the inflows. It may be that nearby employed women are observed (Fogli and Veldkamp, 2011) which, in turn, is more likely to be done by other working women (or they are more likely to respond to this observation). Alternatively, it could come directly from learning through workplace interactions: Boelmann et al. (2022) show that West Germans with a larger share of colleagues from East Germany take shorter parental leave, i.e. more similar to their East German peers.[17] The decision to work and how many hours to work may also depend on the local child care infrastructure, or identity formation which happens maybe only once in life. We will return to these issues which in section 6. Next, we examine the robustness, with a particular focus on the role of distance to the inner-German border.

5 Robustness

In this subsection we conduct a number of robustness checks to support the validity of the empirical findings of slow-moving changes of female labour supply at the intensive margin as a result of the quantitatively large immigration of East Germans.

First and foremost, a key concern is that unobserved distance-to-border related economic factors are responsible for the results.[18] To examine this possibility, we conduct two additional checks that are presented in Table 3. The even-numbered columns show the main estimates excluding a buffer of 50 km around the inner-German border. Reassuringly, the estimates from this "no border" sample in the odd-numbered columns are very similar to the baseline. In order to test for potential non-parametric distance effects also over greater distances, we include eight equally sized distance-to-border bins in interaction with year-fixed effects to our main estimation equation. This specification is very demanding as it controls away some of the variation used to identify the effects (recall that distance was a strong determinant of East German immigration, see Figure 3 and Appendix Table A1). Again, however, the estimates in the odd-numbered columns are very close to the main results. Taken

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[17]See also the literature on peer effects in parental leave taking (Dahl et al., 2014; Welteke and Wrohlich, 2019), documenting substantial spill-overs between coworkers.

[18]Studying differences close to the border is problematic because Becker et al. (2020) document that local differences across the inner-German border existed even pre-WWII. Moreover, Redding and Sturm (2008) find regions close to the Iron Curtain experience a decrease in population growth due to the loss of market access after German division, though no statistically significant effects after German reunification. In addition, in 1971 the West German government introduced a subsidy program ("Zohnenrandfördergesetz") for regions within 40 kilometres of the border (e.g. Seidel and von Ehrlich, 2014).

together, distance-to-border related economic unobservables are unlikely to generate our pattern of results. In Appendix Table A5, Panel A, we additionally examine how the relation between distance to the inner-German border has changed before relative to after reunification. For this we interact the *Post* dummy with distance measured in 100 km to the former inner-German border. Findings are overall consistent with our main estimates; we see a quantitatively small effect at the extensive margin and, more importantly, we identify negative coefficients for working hours of women in employment (columns 5-6) and for the within-household margin (columns 7-8).[19][20]

Second, the effects on women at the intensive margin could potentially be driven by unobserved local labour market effects. If this was the case, one would expect to also identify similarly sized effects on men. To assess this, we repeat the same estimates for men in Table 4 and additionally include a test of the difference of the DD coefficients of men and women. Note that we do not include again the specifications of columns 7-8 of Table 2 on the within household division, since these just mirror the results already presented. For men, there are no significant effects at the extensive margin. Interestingly, we find some evidence for small positive effects on working hours of employed men in columns 5 and 6. However, compared to the effects on females, these are much smaller and the difference of the coefficients for men and women is statistically different at the five percent significance level as displayed in the bottom row of estimates.[21] We thus do not want to over-interpret the positive effects on men as they are relatively small and only marginally significant at the ten percent level but one explanation could be that males also react to females working more by increasing their own hours to remain the top earner (Bertrand et al., 2015; Lippmann et al.,

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[19]To facilitate the interpretation, in Panel B of Appendix Table A5 we also report coefficients for the relationship between distance to the border and the East German immigration shock. For this we regress the share of East German immigrants on distance to the border and add state fixed effects (as in our main estimates) as well as individual controls in subsequent steps. In line with Appendix Table A1, we see that if a West county is 100 km farther from the former inner German border the inflow of East Germans decreases by around 0.1 percentage points on average (based on the 1991 data only, see section 2.2). This corresponds to an increase in immigration of about 25% per 100 km.

[20]There are two main reasons why distance to the border may have differential effects on labour market outcomes by gender. Importantly, as demonstrated in our study, the larger inflows of East Germans is on average in counties closer to the border and the inflow of more gender egalitarian immigrants has had a positive effects on working hours of employed women but only, if anything, a very muted effect on men. The second reason is unrelated to the border itself, but rooted in West German regional labour market inequalities which are pronounced in the period of study (Suedekum, 2004), but already existing long before even the German division (Becker et al., 2020).

[21]This naturally also holds in relative terms. When using log working hours as the dependent variable, the effect on women is 0.031 compared to an effect of 0.06 on men (the difference is statistically significant at the five percent level).

2020). In our context, it is thus possible that males in West German households respond to their partner's increases in hours by working more themselves, rather than by reducing own hours and enjoying the extra household income provided by the women. However, while such a reaction would be fully in line with this literature on the interplay of household-decisions, we note again that the male estimate are close to zero and that migrants from East Germany primarily affected female labour supply at the intensive margin.

We conduct five important additional robustness checks that are presented in the Appendix. First, we present event study graphs with and without exogenous and potentially endogenous controls (Appendix Figure A3). These inclusions do not affect our pattern of results.

Second, we present event study graphs that control for region-specific linear trends. These trends are estimated based on the pre-period and then predicted for all post-reunification years. Including this predicted trend again has only minimal effects on our estimates (Appendix Figure A4).

Third, the median split into high and low inflow regions is ad-hoc—albeit common in the literature (see Havnes and Mogstad, 2011)—so we also use other treatment definitions. Appendix Table A6 presents results based on a tercile split (odd-numbered columns) as well as the continuous measure of the inflow share (even-numbered columns). We return in our conclusions to these estimates when we benchmark standardised effects sizes to the existing literature. Overall, the pattern of results is as expected: the tercile split shows larger effects compared to the median-split and the continuous estimates are equally highly statistically significant at the 5 percent or even 1 percent level of statistical significance (column 8).

Fourth, we include endogenous controls as well as potentially endogenous time-varying economic controls to our estimation, i.e. the local unemployment rate, GDP per-capita and population density at the country-by-year level. Again, these changes hardly affect the coefficients (Appendix Table A7). Unobserved local labour market are thus unlikely to be driving our effects (recall also that we identify no effect on men at the extensive margin and only small effects at the margin of statistical significance at the intensive margin in Table 2).

In a fifth and final check we assess whether our estimates might simply reflect compositional changes, e.g. due to selective out-migration as a response to the inflow of East Germans. This concern is particular severe given our long post-treatment period, which we chose to capture slow moving cultural learning effects. In Appendix Table A8, we examine if the regional amount of outflow and the age patterns

of outflow in reunified Germany differs by treatment status. Coefficients are small and statistically insignificant throughout. Furthermore, compositional changes might evolve due to selective in-migration. However, coefficients in Panel B of Appendix Table A8 suggest no difference in the amount and age pattern of immigration from other West German regions by treatment status. Again coefficients are negative and statistically insignificant at conventional levels. To sum up, systematic compositional changes in age groups should either result in positive values in inflow measures and negative values in outflow measures, or vice versa. We find no evidence for this.

6   Mechanisms

There may be different mechanisms at play that could explain the positive labour supply responses of West German women. It could be that West German women simply mimic the behaviour of East Germans (Akerlof and Kranton, 2000), that there is some sort of information and cultural norm transmission (Fogli and Veldkamp, 2011) through social interactions or that East Germans change the local infrastructure for families (e.g. child care provision) either through their direct demand or indirectly through voting outcomes. All of these potential mechanisms are likely to reinforce each other over time.

Empirically, it is challenging to net out one single explanation for the observed effects. However, we can use additional data sets and outcomes to better understand the observed patterns in the data and to provide additional evidence on cultural learning effects. The additional survey and administrative data used to examine effects on local cultural norms, East-West friendship and intermarriage as well as the local child care infrastructure are summarised in Appendix Table A3.

6.1   Local cultural norms

Studies show that individuals who grew up under the former GDR regime developed different cultural norms regarding the appropriate role of women, beliefs about the potential costs of maternal employment for children, and importance of women's careers (Bauernschuster and Rainer, 2012; Beblo and Görges, 2018; Campa and Serafinelli, 2019; Jessen, 2022; Lippmann et al., 2020).

To empirically examine if cultural norms and beliefs were transmitted to West Germans, we examine the agreement of West Germans to statements regarding the appropriate role of women in the family and beliefs about the potential costs of

maternal employment for children and the marriage using data from the General Social Survey (ALLBUS) (GESIS, 2018). We combine the agreement to the single items shown in Figure 2 to a single index by standardising each variable (measured on 4-point scale ranging from 1 "completely disagree" to 4 "completely agree") and then add up each item such that higher values correspond to more "progressive" gender attitudes and beliefs about how maternal employment affects children and the family.

In the ALLBUS survey, these question were first asked in 1982. However, regional county identifiers only become available in 1994.[22] Although we do not have data on norms and beliefs before and after reunification at this level, meaning we do not have a pre-period required for a DD estimation, we can test whether individuals living in high inflow counties exhibit less traditional cultural norms after reunification, controlling for a rich set of covariates including state times year fixed effects. We note that without a pre-period we cannot reject that attitudes between high- and low-inflow counties already differed before reunification. However, we argue that large differences are unlikely as we show in Appendix Table A1 that within states these counties are similar in characteristics in many other dimensions, including factors that are more likely to correlate with gender norms (such as religion, party preference and the population composition). Regardless, estimated coefficients should be interpreted more cautiously than the DD estimates.

Estimated coefficients in Table 5 are positive and statistically significant, suggesting that individuals living in high inflow counties in West Germany in post-reunification periods exhibit more "progressive" gender attitudes and beliefs about detrimental effect of maternal employment for children and the family. This holds when controlling for state year fixed effects, capturing state specific shocks and a rich set of individual controls. The magnitude amounts to about 6% of a standard deviation. The estimated relationship increases with time. Examining heterogeneities by gender and individual statements shows that this result is driven by women who adjust their beliefs about the costs of working for children and families (first, third and fourth statements in Figure 2), while attitudes toward the appropriate role of women (other statements in Figure 2) are less affected.

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[22]Before 1994, the ALLBUS data only contain regional state identifiers. In our tight identification strategy we always include $state \times yearFEs$, such that we exploit county-level variation in inflows *within* these federal states. Other German surveys containing questions on gender norms, or adequate proxies for such norms, are SOEP or pairfam. Regrettably, these questions have been only added to SOEP in 2012 and pairfam itself was only launched in 2008. Due to data limitations we are thus not able to implement the same DD strategy as for labour market outcomes.

6.2 Social interactions: friendships and intermarriages

The transmission of cultural norms or information is likely to happen more rapidly if there is notable interaction between local West Germans and individuals who grew up under the former GDR regime. Since East Germans are observationally similar to West Germans in many regards, i.e. they speak the same language and have similar levels of education, one would not expect to find a "clustering" or enclaves of immigrants as it is common for other immigration groups.

To examine to what extent West Germans interact with people who grew up under the former GDR regime, we rely on data from the Socio-Economic Panel Study (SOEP). SOEP is an annual household-panel survey representative of the entire population in Germany (Goebel et al., 2019). We construct measures of the prevalence of East Germans in the friendship network of West Germans living in West Germany and the share of marriages where one partner is from East Germany. In particular, we construct a friendship dummy equal to one if a respondent indicates to have at least one East German friend.[23]

Appendix Table A9 shows that in treated regions the share with at least one East German friend is significantly higher (1.1 percentage points or 17% relative to the sample mean) than in control regions. In addition, when we define the dependent variable as being having at least friend from East Germany *and* being employed, we see a similar higher share in treated regions of one percentage point (20%). The equally sized coefficients indicate that some of the cultural learning is likely to take place over the workplace—regrettably, SOEP contains no information on the origins of colleagues at work—but that non-work related interactions may also play a role . Intermarriages rates is also higher in treated regions (by 0.4 percentage points).

Examining friendship ties over time shows that while treated and control regions exhibit the same outcomes in 1996 (first year available), the coefficient increase over time (available upon request). In sum, friendships and intermarriages between East and West Germans remained at a low level in the first decade following German reunification.[24] However, it increased substantially in high inflow regions in the years that followed enabling a larger local transmission of norms over time.

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[23]This information is derived from a question on friendship networks that is available in the years 1996, 2001, 2006, 2011 and 2016. Respondents are asked to think of three friends or relatives (excluding people living in the same household) with whom they go out with or meet regularly.

[24]Note that the level of intermarriages is very low so that this channel does not explain our results based on within-household bargaining in marriages of West German women with East German men.

6.3 The local child care infrastructure

As described in section 2, in the GDR almost all children were in formal child care from a rather early age. In West Germany, on the other hand, child care places[25] for young children or after-school care for school-age children were very rare. Most child care for children under the age of three was provided informally by the mothers, grandparents or other family members and friends. Only in the mid-2000s did child care provision for under threes start to expand in West Germany induced by two federal laws—*TAG, KiföG*—committing local authorities to have an adequate supply of spots until 2013 (a legal right for a child care spot came into effect in August that year).

Administrative data on the number of children in publicly funded child care on the county-level is available starting in 1986.[26] We construct child care ratios separately for children under the age of three and for children aged three and above (all-day child care). Child care ratios are defined as the fraction of children using subsidised formal child care in the respective age group.

Figure 5 plots the event study coefficients for child care attendance.[27] Summarising DD estimates are reported in Table 6. In regions with above median inflow formal child care supply for under three year olds expanded at a much faster pace than in other regions. By 2015 the coefficient amounts to about 2.5 percentage points (7% relative to the mean in 2015). The coefficients averaged over all years corresponds to 1.2 percentage points (see Table 6).

Interestingly, child care ratios do not increase right away, though in the administrative data set we cannot differentiate between the children of East and West Germans. Thus, one might have expected an immediate increase caused by the direct demand of East Germans themselves. One explanation why it takes so long for the supply to respond to the demand is that the expansion of institutionalised care for children under the age of three was only promoted on the national level in 2005 and 2008, when the government passed two laws (and provided money) to expand child

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[25]In Germany - in contrast to other industrialised countries - about 98% of all child care places are publicly funded and provided by the municipalities themselves or by non-profit organisations, i.e. churches or welfare organisations (Jessen et al., 2020). The administration in Germany is up to the states and counties.

[26]Until 2002 this data set was collected in four-year intervals and contained information on the number of approved child care slots. Starting in 2007 the actual number of children in publicly funded child care is provided annually. Due to severe child care shortages, the change in definition does not cause a discontinuity in the data. The data from 1986 is obtained from the Familien-Atlas of the Deutsches Jugendinstitut (1993).

[27]Since in 1986, there are some missings in the data, we also show estimates when using 1994 as a baseline.

care provision for this age group. Similarly, the estimated coefficient for the fraction of children above the age of three (until school entry) in all-day formal child care amounts to about 3 percentage points (11% relative to the overall mean).

The fact that we identify effects on child care provision only 17/18 years after the first arrival of East Germans highlights a common challenge in the analysis of changes in norms;[28] in their nature, norms rarely exhibit jumps and commonly change slowly, especially if the change is induced by social learning. Female working hours already increased in the mid-1990s, but this is an outcome more closely related to individual or household decision making rather than public policies. That we identify an effect on female labour supply more than a decade before the effects on child care speaks against the mechanism that the effect on child care provision is in fact the main mechanism enabling an increase in working hours of employed women, but rather that the effect on working hours is initially driven by a change in norms. To illustrate the different timing of the effects, we plot the effects on workings hours of employed women and on child care provision in the same graph in Appendix Figure A5.

In the context of child care provision, the expansionary period provided scope for the change in norms (and change in demand) due to the larger arrival of East Germans to materialise in a public policy. Accordingly, the interplay of a national policy and gender norms resulted in the larger expansion of child care slots. The presence of immigrants from a more gender egalitarian background was not by itself sufficient to trigger this increase, but once a national policy creates a suitable environment, immigration accelerated this expansion. The larger increase in high inflow areas may be due to the change in gender norms documented in Table 5 which makes it more acceptable for mothers of young children to work, but could also be directly linked to higher demand by East Germans (local administrations predict demand for child care slots when planning the provision).

6.4 Migrants as substitutes in household production

Another channel would be that immigrants start working in services that are close substitutes of household production (e.g. as caregivers or household help), thus low-

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[28]Ex ante, it is often not clear how long after a *treatment* changes in norms would be expected to show up empirically. For this reasons, studies analysing changes in norms often take a very long-term perspective which ensures that interactions and social learning has taken place. E.g., Miho et al. (2023) study the effect of forced relations of Chechen and Germans Soviet citizens at the end of WWII to eastern parts of the Soviet Union. Effects of the deportation are measured in 2010, i.e. around 65 years after the treatment. Like in our context, immigrants with different social norms had an impact on local gender attitudes.

ering the prices of these goods (e.g. Córtes, 2008). For example, Córtes and Tessada (2011) show that low skilled immigration increases working hours of highly-skilled women in the US. This alternative interpretation is very unlikely to apply to our setting for several reasons. First, East German immigrants are if anything positively selected and work in similar occupations like West Germans, and rarely work in the child care sector (about 4%). Second, we observe larger effects for lower skilled West German women, who are very unlikely to employ private child minders. Third, over the period considered informal child care by child minders is generally not very common in Germany (e.g. Büchel and Spieß, 2002). In Germany, effects through childcare are captured by the formal provision.

Based on the evidence on stated norms, friendship ties and intermarriage these are best explained by slow-moving adjustments in local culture.

7 Conclusion

We exploit the unique setting of the German reunification to study the local evolution of behaviour of natives.[29] We show that large migration inflows of individuals with different social norms and beliefs about how maternal employment affects children and the family can have substantial spillover effects on West German families, reflected in an increase of working hours of employed women. We carefully examine the robustness of these findings with respect to the specification, distance-to-border related unobservables, or measurement of the treatment. Moreover, we rule out traditional labour market channels by providing placebos against males, examining the timing of the effect evolution, and by noting that local gender-specific demand shocks unlikely occurred in the West German setting that we study.

We require additional assumptions in order to quantify the effects, as discussed in section 4. To more directly compare our result to the scarce existing evidence on related questions, we can also express these results in standard deviations (SD) of inflows: using the estimates for the continuous treatment from Appendix Table A6, a one SD increase in inflows shares increases hours of working mothers by 0.14 hours, or by 0.16 pp within the household. Miho et al. (2023) study the effects of ethnicity-

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[29]We focus our analysis on female labour supply and associated gender norms which play a prominent role in current policy debates to reduce gender inequalities and address labour shortages in ageing societies. Besides gender norms, communism has been shown to have had an impact on diverse outcomes (see, e.g., Alesina and Fuchs-Schündeln, 2007; Fuchs-Schündeln and Schündeln, 2005; Laudenbach et al., 2020). Studying the effects of migration on other outcomes of the local population in this setting will doubtlessly be an intriguing field for future research and we hope that our work will spur interest among other researchers to pursue this.

based deportations during the Soviet Union on norms and behaviour of the local populations 65 years after the treatment. For this much longer treatment period, they find that a one SD increase in the share of protestant deportees increases the probability that an average female resident of a deportation destination region is in the labour force by 0.8 pp (1 percent from mean). Boelmann et al. (2022) find that a 1 standard deviation increase in the share of East German colleagues throughout the post-reunification phase increases the probability that a West German mother is employed by about 0.75 - 1.04 pp and full-time employment one year after child birth by about 0.75 - 0.98 pp. In comparison, our results are on the modest side, yet economically significant. Moreover, the scaling against the total West German population might lead us to understate the effect. Many of the migrants from the East were young, i.e. young families, and scaling by the presence of young families in the West, rather than the total population, would lead to larger estimates.

We examine mechanisms and find our results best accommodated by cultural learning and endogenous child care infrastructure, which result in gradual change. We support this interpretation by providing evidence on effects on stated beliefs and attitudes and the local social interaction between East and West Germans. We additionally examine the effects of immigrants with different gender norms on the expansion of formal child care provision. We document significant effects on the local provision of child care, which, however, only emerge in the mid- to late 2000s. This is a period when the lack of child care as a limiting factor for female labour supply hit the national policy agenda.

Taken together, this study highlights a number of novel findings regarding the impacts of migrants over time. First, our finding on within-household labour supply of working women are best explained by local cultural learning. Effects are then reinforced by endogenous changes in the local child care infrastructure in later years. In contrast to our findings for working women, we find very limited evidence for effects at the extensive margin of labour supply.

We argue that the historical setting that we study is well suited to better understand the impact of immigrants on local cultural norms. But what does this imply for external validity? The immigrants that we study have different cultural norms, but speak the same language, have accredited educational degrees, and are fairly similar in many other respects. The effects of immigration working through local social interaction are likely to take longer to materialise whenever immigrants integrate less well with the native population. As a result, different and less integrated immigrants are less likely to immediately affect the natives through horizontal between-group cultural

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transmission and might not even do so in the second generation. However, the absence of direct immigrant-native interaction does not mean that such less integrated immigrants have no impact on natives at all. Instead, they might have an effect via changes in the local infrastructure, which does not depend on direct immigrant-native interaction.

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Figures and Tables

Figure 1: Female labour supply in East and West Germany

(a) Labour force participation   (b) Working hours of women
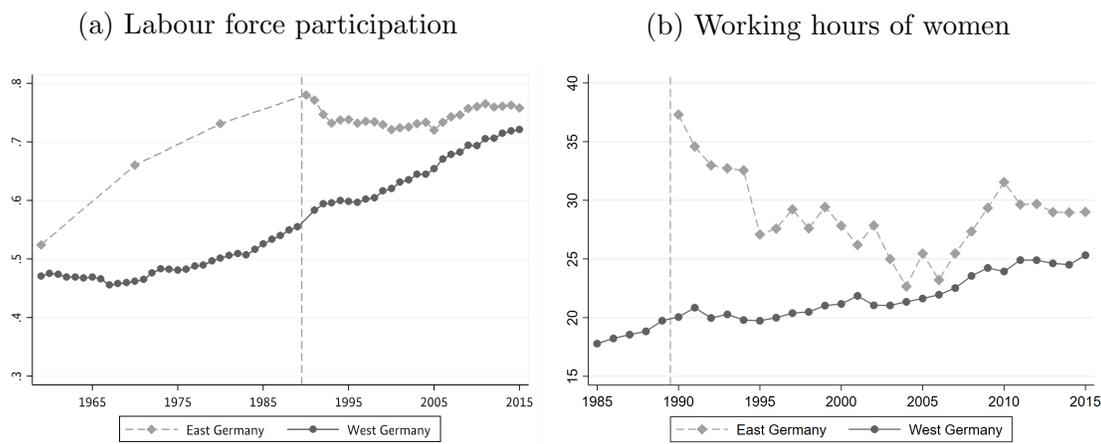
Notes: Panel (a) shows labour force participation rates of women aged 15 - 65 in East and West Germany over time. The vertical line indicates German reunification in 1989. Panel (b) shows working hours of women. *Sources*: Statistisches Amt der DDR (1959-1990), MZ (1991 - 2015), SOEP (1984-2015), own calculation.

Figure 2: Cultural Norms and beliefs of West and East Germans in 1991
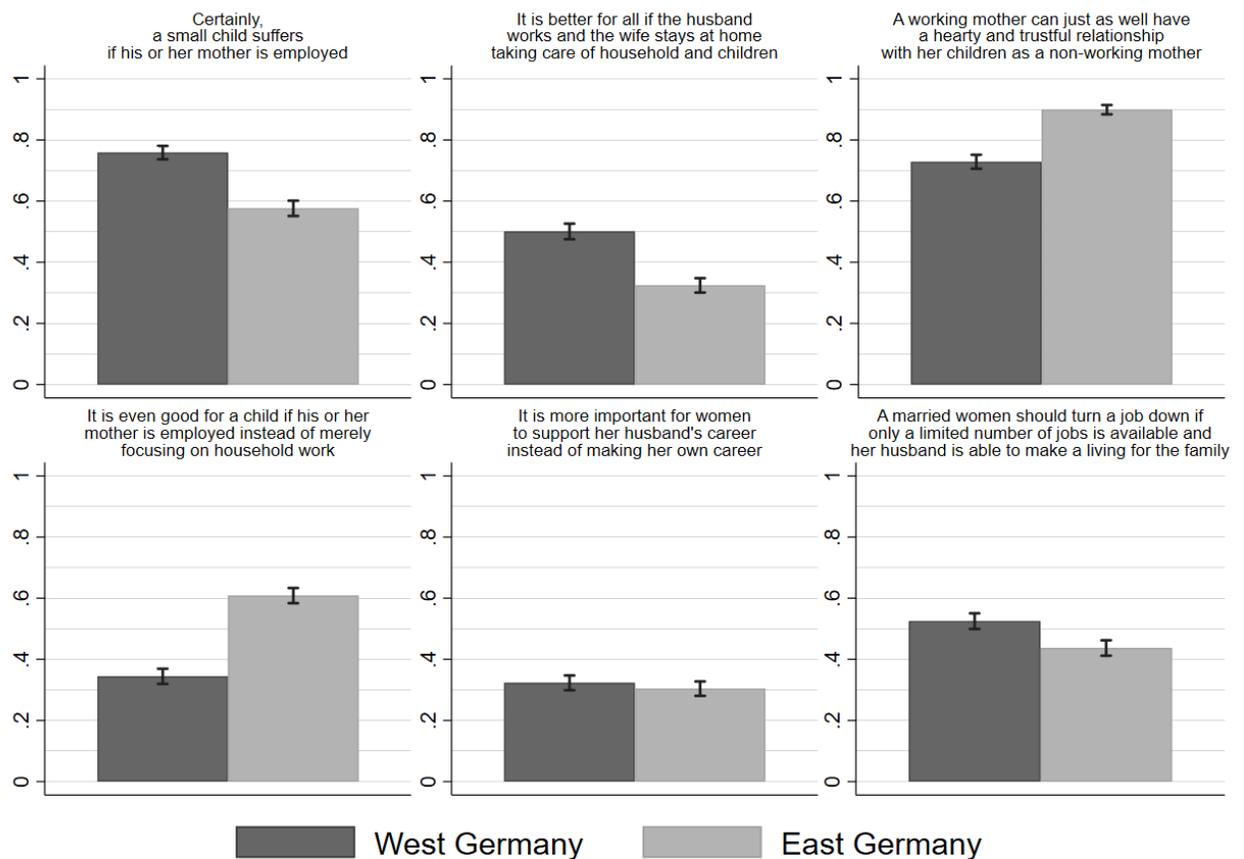
Notes: Figure shows the fraction of individuals agreeing ('rather agree' and 'fully agree') to listed statements by East and West Germans in 1991. Whiskers indicate 95% confidence intervals. *Source*: ALLBUS 1991, own calculation

Figure 3: Immigration from East to West Germany

(a) Number of immigrants over time
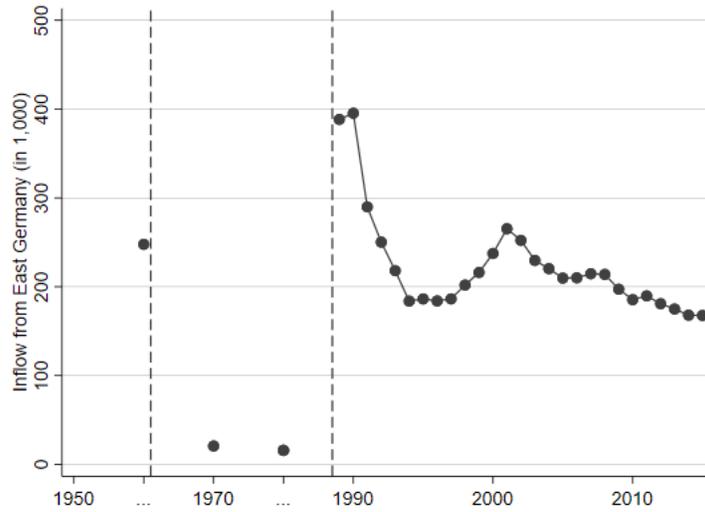
(b) Inflows in 1991
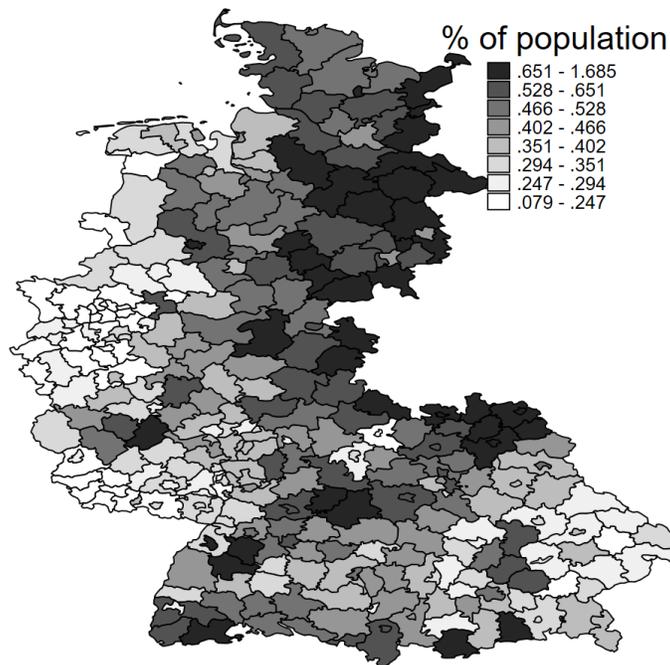
Notes: Panel (a) plots the number of immigrants from East to West Germany over time. The vertical lines indicate the construction of the Berlin Wall in 1961 and the fall of the wall in 1989. Panel (b) show West German counties distinguished by the percent of the local county-level population that migrated from East Germany in 1991 (in eight equally large bins). *Sources*: BBSR (2017), German Statistical Offices, own calculation.

Figure 4: Event analysis
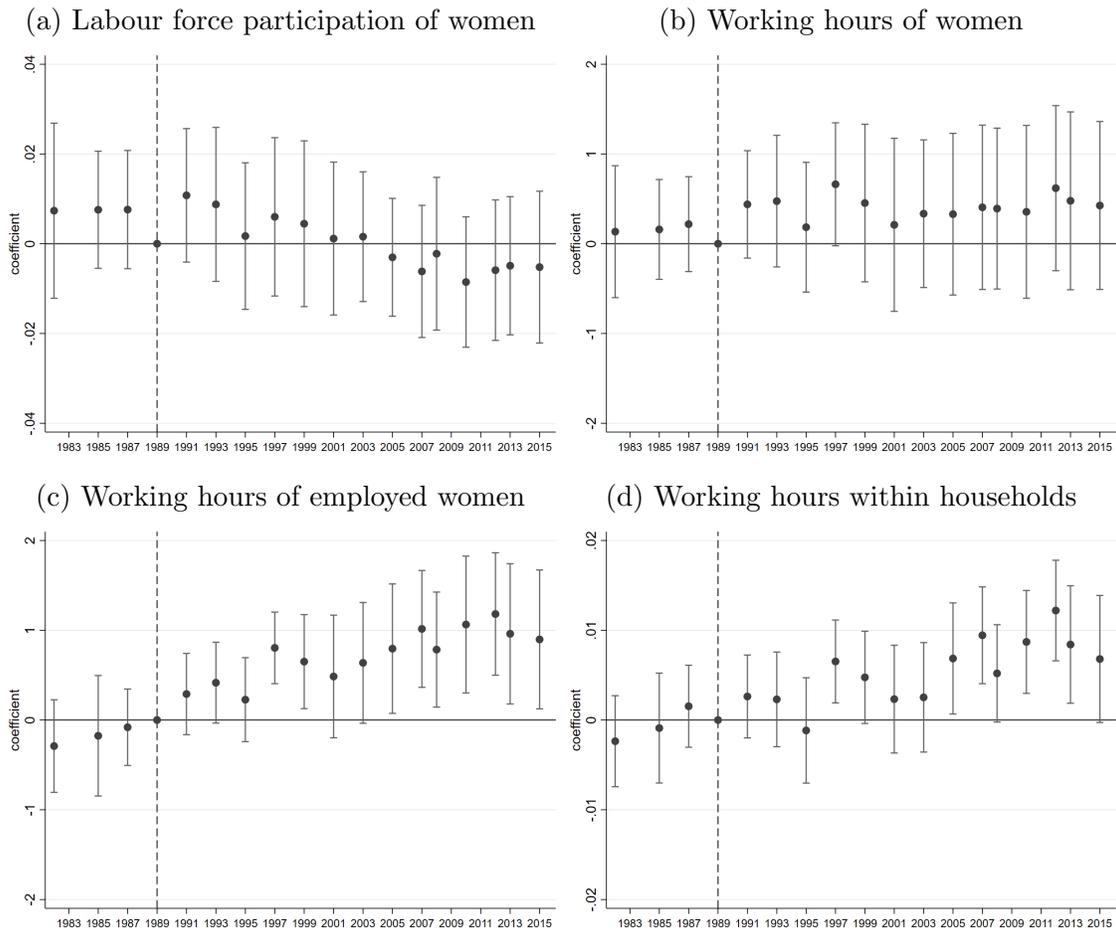
(a) Labour force participation of women

(b) Working hours of women

(c) Working hours of employed women

(d) Working hours within households

Notes: The figures plots the estimated γ_1 coefficients from equation (2) and corresponding 95% confidence intervals. *Sources:* MZ 1982-2015, BBSR (2017), own calculation.

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Figure 5: Formal child care provision for children below age three
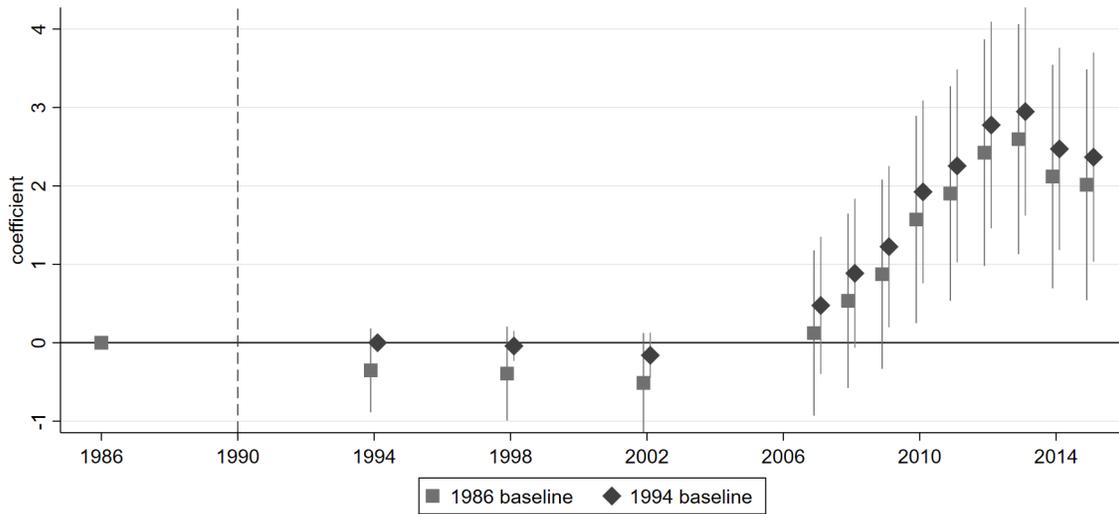
Notes: The figures plots the estimated γ_1 coefficients from equation (2) and corresponding 95% confidence intervals using 1986 and 1994 as base levels. *Sources:* Statistisches Bundesamt (2017), BBSR (2017)

Table 1: Descriptive statistics

	Mean (1)	Std. Dev. (2)	N (3)
Female labour market outcomes			
Labour force participation	0.75	0.43	1,467,852
Working hours / week	22.72	17.39	1,401,201
Working hours / week of employed women	30.44	13.04	1,045,458
Relative working hours within household	0.38	0.13	663,664
Individual controls			
Age	40.01	8.21	1,467,852
Degree from basic school track (*Hauptschule*)	0.43	0.49	1,467,852
Degree from middle school track (*Realschule*)	0.32	0.47	1,467,852
Degree from high school track (*Abitur*)	0.25	0.43	1,467,852
Foreign nationality	0.07	0.25	1,467,852
Individual potentially endogenous controls			
Married	0.71	0.45	1,467,852
Divorced	0.09	0.29	1,467,852
Widowed	0.02	0.13	1,467,852
Single	0.18	0.39	1,467,852
Number of children in household	0.87	1.01	1,467,852
No children in household	0.48	0.50	1,467,852

Notes: The sample includes all women aged 25 - 55 with non-missing information on individual controls, who are currently living in West Germany and do not have an East German educational degree. *Source*: MZ 1982-2015, own calculation

Table 2: The labour supply effect of exposure to East Germans

	Labour force participation of women		Working hours of women		Working hours of employed women		Relative workings hours within the household	
	Dependent variable							
Mean of dep. variable before reunification	0.64 (1)	0.64 (2)	21.56 (3)	21.56 (4)	34.79 (5)	34.79 (6)	0.42 (7)	0.42 (8)
DD coefficient	-0.005 (0.005)	-0.005 (0.005)	0.342 (0.354)	0.285 (0.329)	0.918** (0.364)	0.842** (0.299)	0.006** (0.002)	0.006** (0.002)
State x year FE	✓	✓	✓	✓	✓	✓	✓	✓
Ind. controls		✓		✓		✓		✓
Observations	1,467,852	1,467,852	1,401,201	1,401,201	1,045,458	1,045,458	1,045,458	1,045,458

Notes: Difference-in-differences coefficients from equation (1). For set of individual controls see Table 1. Standard errors clustered at the regional level in parentheses, $^*<0.1$ $^{**}<0.05$ $^{***}<0.01$. *Sources*: MZ 1982-2015, BBSR (2017), own calculation.

Table 3: Excluding border regions and controlling for distance

	Labour force participation of women		Working hours of women		Working hours of employed women		Relative working hours within households	
	Dependent variable							
Mean of dep. variable before reunification	0.64 (1)	0.64 (2)	21.41 (3)	21.57 (4)	34.84 (5)	34.79 (6)	0.42 (7)	0.42 (8)
DD coefficient	0.002 (0.005)	-0.001 (0.005)	0.586 (0.373)	0.438 (0.395)	0.898** (0.312)	0.909** (0.336)	0.005** (0.002)	0.006** (0.002)
Specification								
Distance to border bins (8) x year FE	✓		✓		✓		✓	
Excluding border regions (50 km)		✓		✓		✓		✓
State x year FE	✓	✓	✓	✓	✓	✓	✓	✓
Ind. controls	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1,467,836	1,306,387	1,401,188	1,248,852	1,045,448	929,252	663,657	589,186

Notes: Difference-in-differences coefficients from equation (1). Odd-numbered columns excludes regions within 50 km of the former inner German border. Even-numbered columns add an interaction of equally sized border bins interacted with year FEs to the estimation equation. For set of individual controls see Table 1. Standard errors clustered at the regional level in parentheses, $^*<0.1$ $^{**}<0.05$ $^{***}<0.01$. *Sources*: MZ 1982-2015, BBSR (2017), own calculation.

Table 4: Effects on men and difference of coefficients

	Labour force participation		Working hours		Working hours of employed	
			Dependent variable			
Mean of dep. variable of men before reunification	0.94	0.94	39.43	39.43	42.13	42.13
	(1)	(2)	(3)	(4)	(5)	(6)
DD coefficient men	-0.001	-0.001	0.221	0.153	0.292*	0.262*
	(0.004	(0.002)	(0.279)	(0.157)	(0.154)	(0.136)
DD coefficient (difference men-women)	0.004	0.003	-0.121	-0.137	-0.626**	-0.579**
	(0.007)	(0.006)	(0.273)	(0.280)	(0.267)	(0.223)
State x year FE	✓	✓	✓	✓	✓	✓
Ind. controls		✓		✓		✓
Observations Men	1,474,161	1,474,161	1,403,427	1,403,427	1,321,794	1,321,794
All Observations	2,942,013	2,942,013	2,804,628	2,804,628	2,367,252	2,367,252

Notes: Difference-in-differences coefficients from equation (1). The first row contains the estimates from men, the second row contains the difference in coefficients of men and women (as in Table 2) from a fully interacted estimation. For set of individual controls see Table 1. Standard errors clustered at the regional level in parentheses, * < 0.1 ** < 0.05 *** < 0.01. *Sources*: MZ 1982-2015, BBSR (2017), own calculation.

Table 5: Cultural norms and beliefs

Dependent variable:	Index of gender attitudes		
	(1)	(2)	(3)
HighInflow	0.0579**	0.0611**	0.0626**
	(0.0287)	(0.0287)	(0.0256)
State x year FEs		✓	✓
Individual controls			✓
Observations	6,009	6,009	6,009

Notes: The dependent variable is a composite index of attitudes towards maternal employment and the appropriate role of women (see upper three items of Figure 2 for the wording of each statement). A higher value indicates less gender-traditional attitudes. All estimates include year fixed effects. The individual controls include age, age squared, highest schooling degree in three categories, religion and city size in three categories. Standard errors clustered at the regional level in parentheses, * < 0.1 ** < 0.05 *** < 0.01. Sources ALLBUS 2000-2016, BBSR (2017), own calculation.

Table 6: Formal child care provision

	(1)	(2)	(3)	(4)	(5)	(6)
	Under 3 year olds			Full-day care over 3 year olds		
Mean of dep. variable in 1986 / 2009	1.426	1.357	1.365	20.334	20.298	20.248
DD coefficient	0.993**	1.078**	0.951*			
	(0.459)	(0.525)	(0.542)			
HighInflow				2.296*	2.296*	4.066***
				(1.327)	(1.341)	(0.942)
State x year FE		✓	✓		✓	✓
Pre-treat county char.			✓			✓
Observations	3,994	3,981	3,943	2,261	2,254	2,233

Notes: All estimates include state and year fixed effects. Columns (3) and (6) include the pre-treatment county characteristics measured in the 1980s (share of children under 10, share of single households, share catholic, youth welfare expenditures by child and share of female employees). Data on child care enrolment of under 3 year olds available since 1986, data on full-day care of over 3 year olds since 2009. Standard errors clustered at the regional level in parentheses, $^{*} < 0.1$ $^{**} < 0.05$ $^{***} < 0.01$. *Sources*: Statistisches Bundesamt (2017), Familien-Atlas I (1993), BBSR (2017)

Appendix A: Figures and tables

A.1 Figures

Figure A1: Child care ratios 1950 - 2015

(a) Children < 3 years   (b) Children ≥ 3 years
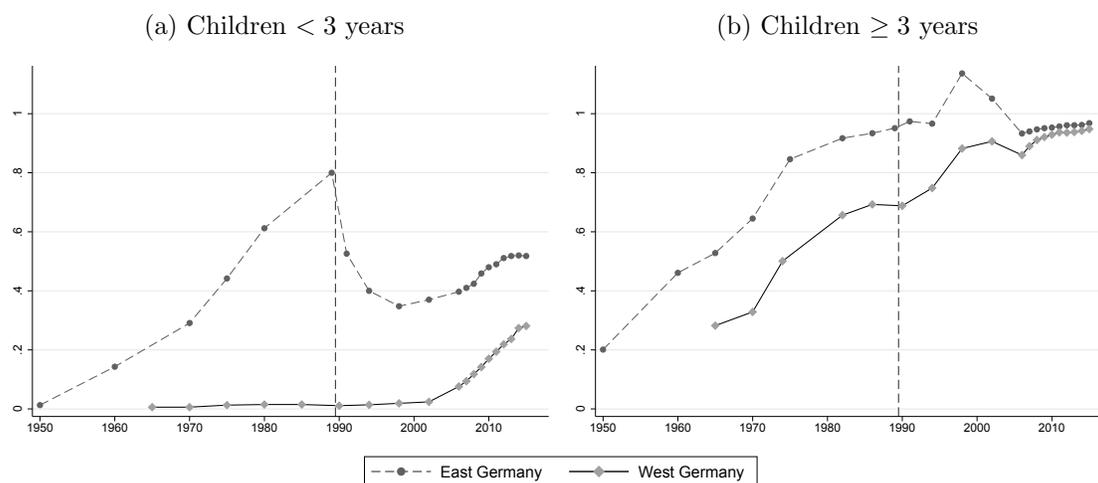
Notes: The figure shows the fraction of children in different age groups being cared for in formal child care in East and West Germany over time. For West Germany there is no data available before 1965. The vertical line indicates the fall of the Berlin wall in 1989. *Sources:* Statistisches Bundesamt (2018), BMFSFJ (1994), Winkler (1990)

Figure A2: Correlation inflows from East Germany in 1989/90 and 1991
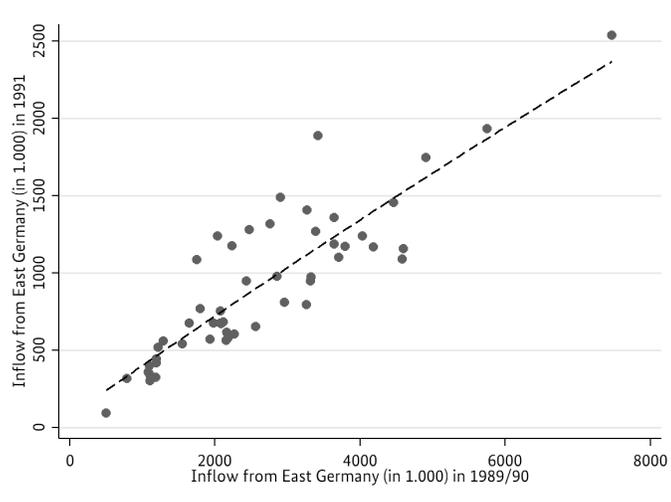
Notes: The figure shows the correlation between the inflow from East Germany in 1989/90 and 1991 for two West-German states (North Rhine-Westphalia and Bremen) at the county level. *Source:* Statistisches Landesamt NRW and Bremen (2017), BBSR (2017).

Figure A3: Event analysis - controls
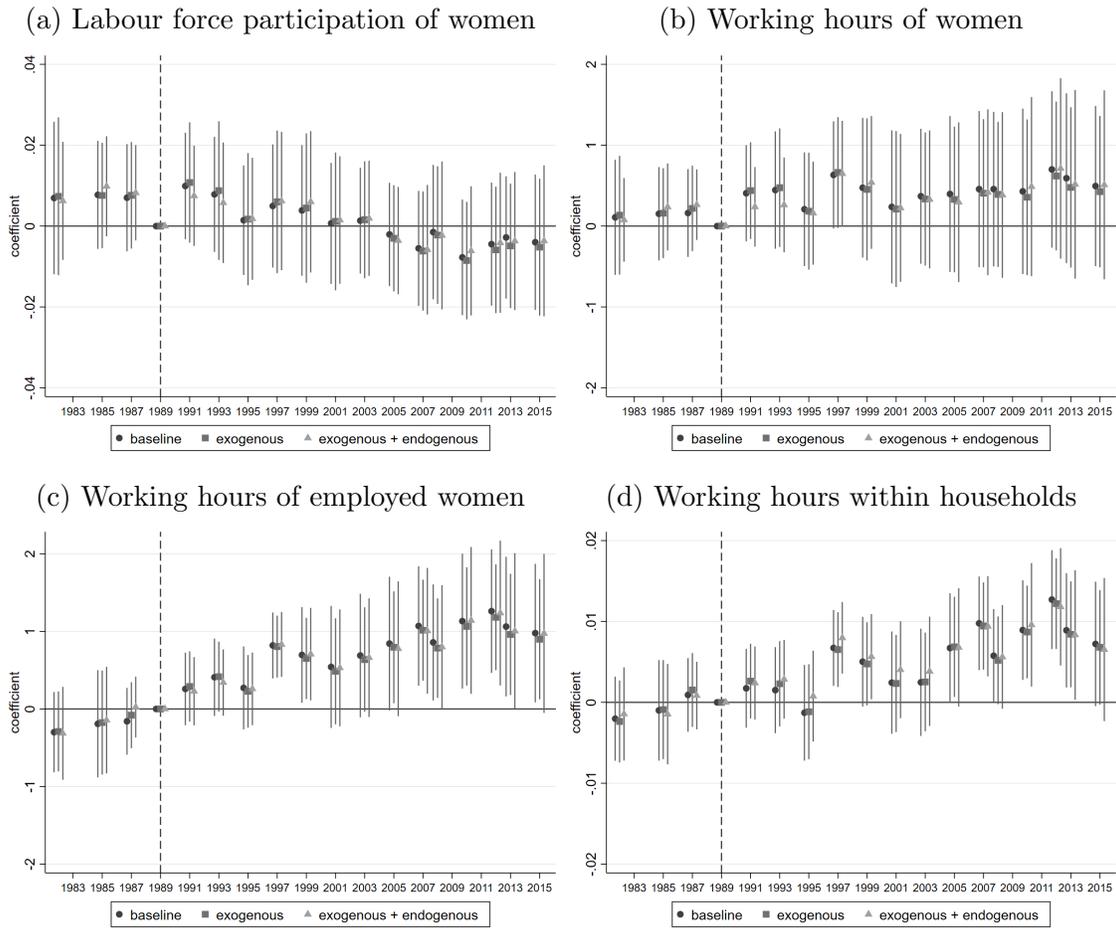
(a) Labour force participation of women

(b) Working hours of women

(c) Working hours of employed women

(d) Working hours within households

Notes: The figures plots the estimated γ_1 coefficients from equation (2) and corresponding 95% confidence intervals using different sets of control variables. See Table 1 for list of exogenous and endogenous control variables. *Sources:* MZ 1982-2015, own calculation.

Figure A4: Event analysis - trend specification
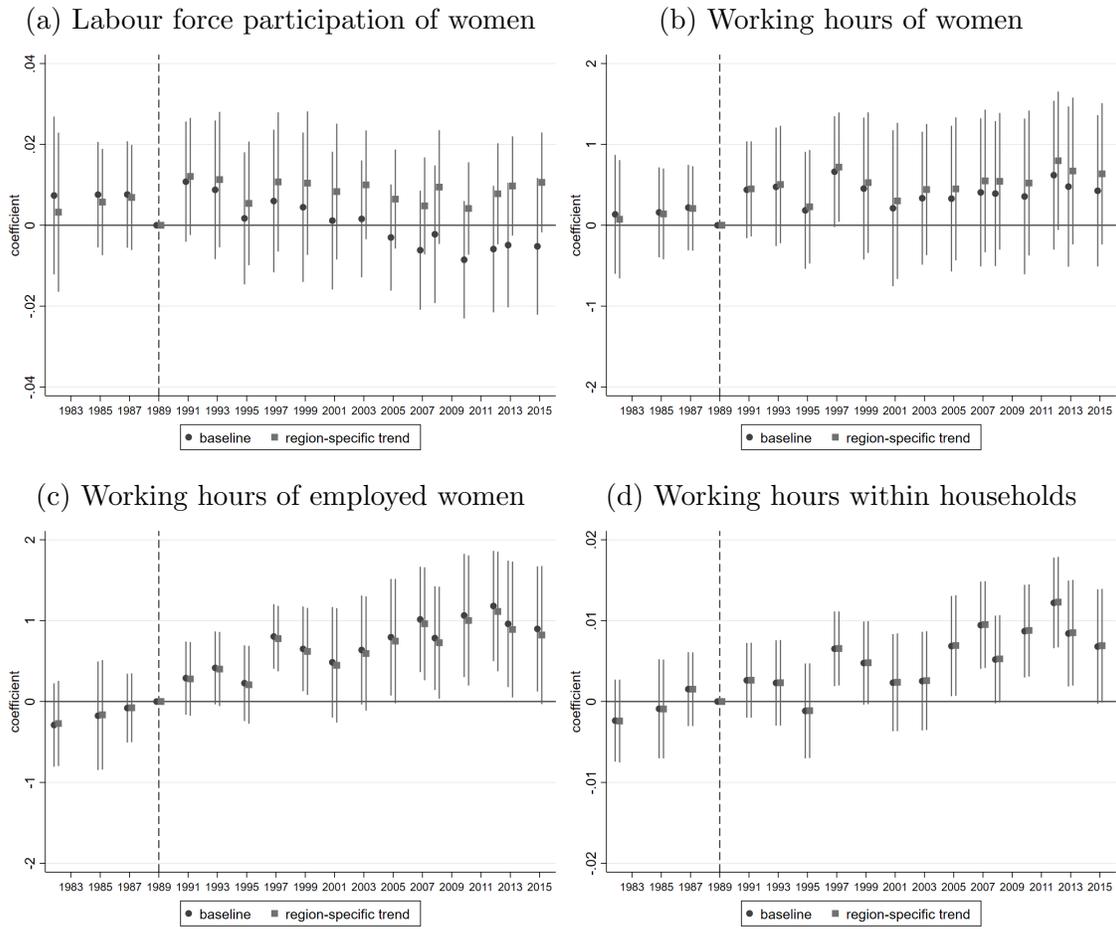
(a) Labour force participation of women

(b) Working hours of women

(c) Working hours of employed women

(d) Working hours within households

Notes: The figures plots the estimated γ_1 coefficients from equation (2) and corresponding 95% confidence intervals using different regional trend specifications. Baseline results (black circles) include no regional trends, the square grey estimates use a linear time trend estimated using pre-reunification data only.
Sources: Microcensus 1982-2015, BBSR (2017), own calculation.

Figure A5: Working hours of employed women and child care provision
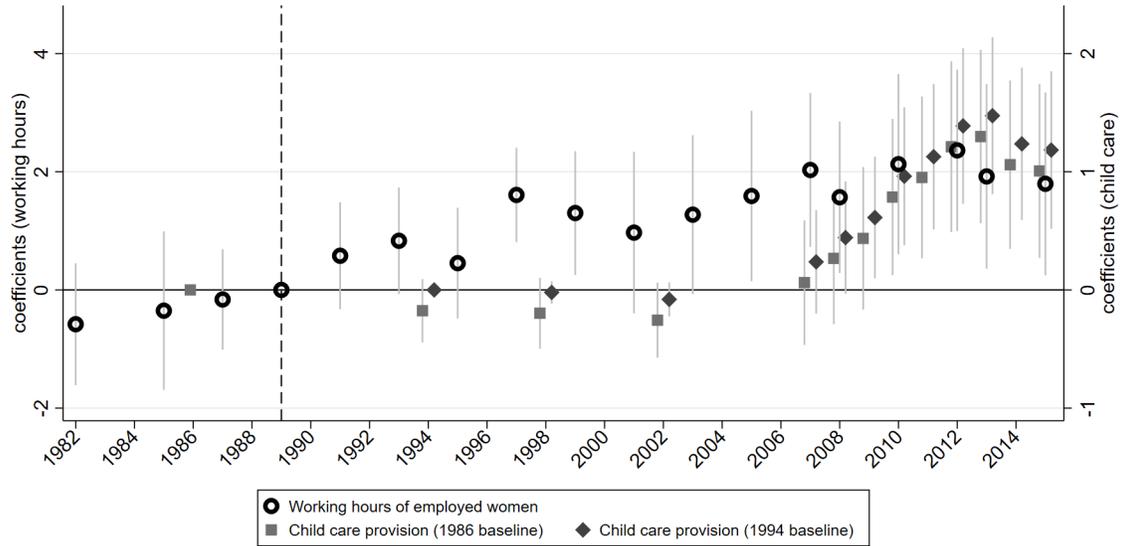
Notes: The figure plots the effect on working hours of employed women (as in Figure 4) and the effect on child care provision (as in Figure 5) to highlight the difference in timing of the effects. *Sources:* Statistisches Bundesamt (2017), Microcensus 1982-2015, BBSR (2017)

A.2 Tables

Table A1: Determinants of East-West and West-West migration

| High inflow from	East Germany		West Germany	
	(1)	(2)	(3)	(4)
Industry/firm structure in 1987: Share of employees working in ...				
Agriculture and forestry	0.952**	0.710*	-0.882**	-1.678***
	(0.380)	(0.397)	(0.380)	(0.380)
Trade	-0.244	-0.341	0.830**	1.388***
	(0.313)	(0.308)	(0.310)	(0.286)
Manufacturing	1.608	2.082*	-5.245***	-6.609***
	(1.148)	(1.164)	(1.115)	(1.035)
Energy, water supply and mining	-0.656**	-0.363*	-0.914***	-0.484**
	(0.242)	(0.188)	(0.240)	(0.181)
Small firms (2 - 19 employees)	1.334	0.934	-0.071	-1.521*
	(0.897)	(0.943)	(0.898)	(0.888)
Large firms ($\geq$ 100 employees)	-0.062	-0.039	0.133**	0.220***
	(0.059)	(0.062)	(0.058)	(0.059)
Religion in 1987, dialect distance, voting outcomes 1989:				
Christian religion	-0.617	0.297	-2.393**	-4.604***
	(0.774)	(0.699)	(0.764)	(0.607)
Dialect distance to East	-0.387	-0.447	0.132	-0.114
	(0.400)	(0.452)	(0.394)	(0.402)
Vote share Christian Democratic Union	0.009	0.012	-0.021**	-0.038***
	(0.010)	(0.009)	(0.010)	(0.009)
Vote share Social Democratic Party	-0.012	0.000	-0.024**	-0.005
	(0.012)	(0.008)	(0.012)	(0.008)
Vote share Greens	-0.002	-0.006*	0.019***	0.024***
	(0.003)	(0.003)	(0.003)	(0.003)
Vote share Free Democratic Party	0.003	0.002	0.009***	0.012***
	(0.002)	(0.002)	(0.002)	(0.002)
Formal child care in 1986:				
Child care ratio (0–2 year olds)	0.349	0.043	0.692**	0.767**
	(0.323)	(0.333)	(0.311)	(0.293)
Child care ratio (3–6 year olds)	-2.150	0.819	3.341	0.863
	(2.385)	(1.883)	(2.380)	(1.757)
Child and youth welfare expenditures	-0.260**	-0.285**	0.392***	0.462***
	(0.114)	(0.129)	(0.113)	(0.122)
Population composition in 1987:				
Share singles	0.408	-0.192	0.249	0.198
	(0.287)	(0.293)	(0.287)	(0.296)
Share married	-0.365	0.177	-1.052***	-1.235***
	(0.261)	(0.279)	(0.255)	(0.260)
Share divorces	-0.214	-0.260*	0.773***	1.008***
	(0.135)	(0.148)	(0.129)	(0.123)
Share single households	-0.820	-1.218	4.612***	6.136***
	(0.868)	(0.934)	(0.828)	(0.807)
Share households $\geq$ 4 person	1.824**	1.615*	-3.940***	-5.199***
	(0.777)	(0.841)	(0.752)	(0.731)
Housing in 1987:				
Average rent (per m^2 in DM)	-0.224*	-0.298**	0.718***	1.002***
	(0.124)	(0.137)	(0.118)	(0.113)
Average number of rooms per person	0.031***	0.021**	0.034***	0.017**
	(0.008)	(0.008)	(0.008)	(0.008)
Female labour supply in 1987:				
Share female employees	0.955**	0.542	1.661***	1.360***
	(0.347)	(0.397)	(0.338)	(0.352)
Share of women working part-time	0.547	0.626*	-0.016	0.672**
	(0.419)	(0.363)	(0.420)	(0.341)
Share of women working as family worker	0.587*	0.544	-0.842**	-1.612***
	(0.321)	(0.342)	(0.319)	(0.317)
Distance to former East boarder:				
Distance (in km)	-66.386***	-63.437***	1.586	3.826
	(8.139)	(8.262)	(8.952)	(8.753)
State FEs	-	Y	-	Y
Observations	322	322	322	322

Notes: Each coefficient is obtained from a separate regression for 322 counties. Column (2) and column (4) include state fixed effects. Robust standard errors in parentheses, $*$ < 0.1 $**$ < 0.05 $***$ < 0.01. *Sources*: Census 1987 based on DJI Regional Database (1993), BBSR 2017, own calculation, dialect data by Falck et al. (2012).

Table A2: Descriptives statistics - East German women in West Germany

	Mean (1)	Std. Dev. (2)	N (3)
Female labour market outcomes			
Labour force participation	0.85	0.36	19,154
Working hours / week	26.59	15.84	18,100
Working hours / week of employed women	31.64	11.79	15,219
Relative working hours within household	0.41	0.12	10,133
Individual characteristics			
Age	41.14	7.87	19,154
Foreign nationality	0.02	0.14	19,154
Individual potentially endogenous controls			
Married	0.70	0.46	19,154
Divorced	0.14	0.35	19,154
Widowed	0.02	0.12	19,154
Single	0.15	0.35	19,154
Number of children in household	0.73	0.92	19,154
No children in household	0.52	0.49	19,154

Notes: The sample includes all women aged 25 - 55 with non-missing information on individual controls, who are currently living in West Germany and have an East German educational degree. *Sources:* MZ 1982-2015, own calculation

Table A3: Overview of different data sets

Data set	Access	Type	Main variables	Years
Migration statistics	Sonderaus- wertung	admin	Inflow from East Germany by age groups	1991 - 2015
Microcensus	on-site use	admin	Women's labor supply Socio-economic characteristics	1982, 1985, 1987, 1989, 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2008, 2010, 2012, 2013, 2015
Socio-economic Panel Study (SOEP)	on-site use	survey	East Germans in friendship network and intermarriage rates. Working hours of employed women over time	1985 - 2015
German General Social Survey (ALLBUS)	on-site use	survey	Social norm and beliefs	2000, 2004, 2008, 2012, 2016
Population statistics	open access	admin	Population size by age	1990 - 2015
Child care statistics	open access	admin	Child care ratios for different age groups	1986, 1994, 1998, 2002, 2007 - 2015
Regionaldatenbank DJI	open access	admin	Various county charact. mainly based on Population Census and Occupation Census	1986, 1987, 1989

Data on county-level migration statistics was purchased from the Federal Statistical office for use in this project. Microcensus (MZ) data: The MZ data that includes regional identifier is accessible on-site (https://www.forschungsdatenzentrum.de/en/household/microcensus) through any of the statistical offices' Secure Data Centers. Researchers are also required to sign a special usage agreement and output is cleared by the statistics office to ensure anonymity. ALLBUS data: The data sets used for our analysis contain detailed regional information and are accessible at the Secure Data Center (www.gesis.org/en/sdc) of the GESIS Data Archive for Social Sciences in Cologne Germany. Researchers are required to sign a special usage agreement and to work within an individually tailored secure virtual work space. SOEP Data: the SOEP data including regional identifiers is available to researchers, after signing a special usage agreement, on-site at the DIW Berlin.

Table A4: Heterogenous effects

	Labour force parti-cipation of women			Working hours of women			Working hours of employed women			Relative working hours within households		
Stratified by	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: Education	low	middle	high	low	middle	high	low	middle	high	low	middle	high
Mean of dep. variable:	0.59	0.71	0.70	19.43	24.45	24.22	34.33	35.16	35.47	0.42	0.42	0.43
DD coefficient	-0.007	0.006	0.009	0.437	0.618**	0.201	1.433***	0.555**	-0.128	0.010***	0.002	0.003
	(0.006)	(0.005)	(0.009)	(0.302)	(0.279)	(0.546)	(0.353)	(0.245)	(0.350)	(0.003)	(0.002)	(0.003)
Observations	630,338	467,937	369,552	594,502	450,516	356,161	401,415	357,784	286,241	268,083	229,343	166,227
Panel B: Age of youngest child	<3	[3,6]	>6	<3	[3,6]	>6	<3	[3,6]	>6	<3	[3,6]	>6
Mean of dep. variable:	0.40	0.46	0.56	11.49	12.92	16.52	31.60	29.96	31.17	0.40	0.38	0.39
DD coefficient	0.009	-0.006	-0.017*	0.900	0.119	-0.208	1.499**	0.869	0.863**	0.008**	0.006	0.005*
	(0.014)	(0.010)	(0.010)	(0.596)	(0.522)	(0.453)	(0.439)	(0.580)	(0.356)	(0.004)	(0.005)	(0.002)
Observations	155,290	135,530	555,905	149,120	127,699	530,507	71,590	73,990	373,498	61,718	61,135	289,739
State x year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ind. controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: Difference-in-differences coefficients from equation (1) assessing heterogeneous effects by highest schooling degree, marital status and age of the youngest child. Standard errors clustered at the regional level in parentheses, $^*<$ 0.1 $^{**}<0.05$ $^{***}<0.01$. Sources: MZ 1982 - 2015, BBSR 2017, own calculation.

Table A5: Distance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Distance DD								
				Dependent variable				
	Labour force participation of women		Working hours of women		Working hours of employed women		Relative working hours within households	
*Distance * Post*	0.012**	0.012**	0.098	0.137	-0.436*	-0.366*	-0.005**	-0.004**
	(0.004)	(0.004)	(0.197)	(0.178)	(0.225)	(0.184)	(0.002)	(0.001)
State x year FE	✓	✓	✓	✓	✓	✓	✓	✓
Ind. controls		✓		✓		✓		✓
Observations	1,467,836	1,467,836	1,401,188	1,401,188	1,045,448	1,045,448	663,657	663,657
Panel B: Distance and size of immigration shock. Dependent variable: Inflows 1991 in % of population								
Distance to border (100 km)	-0.132***	-0.107***	-0.108***					
	0.030	0.025	0.025					
State FEs		✓	✓					
Ind. controls			✓					
Observations	1,467,835	1,467,835	1,467,835					

Notes: Distance measured in 100 km to the Inner-German boarder. For set of individual controls see Table 1. Standard errors clustered at the regional level in parentheses, $^*<0.1$ $^{**}<0.05$ $^{***}<$ 0.01. *Sources*: MZ 1982-2015, BBSR (2017), own calculation.

Table A6: Robustness to treatment definition

	Labour force participation of women		Working hours of women		Working hours of employed women		Relative working hours within households	
Treatment assignment:	3rd vs. 1st tercile	continuous	3rd vs. 1st tercile	continuous	3rd vs. 1st tercile	continuous	3rd vs. 1st tercile	continuous
Mean of dep. variable:	0.637	0.640	21.43	21.57	34.81	34.79	0.42	0.42
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DD coefficient	-0.012	-0.032*	0.139	0.071	1.004**	2.576**	0.008**	0.027***
	(0.008)	(0.018)	(0.361)	(0.853)	(0.405)	(0.795)	(0.003)	(0.006)
State x year FE	✓	✓	✓	✓	✓	✓	✓	✓
Ind. controls	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1,018,761	1,467,836	971,046	1,401,188	717,670	1,045,448	455,852	663,657

Notes: Difference-in-differences coefficients from equation (1) using different treatment definitions. Odd-numbered columns show coefficients from a tercile split contrasting the 3rd with the 1st tercile. Even-numbered columns use a continuous treatment definition (inflow share per region). For set of individual controls see Table 1. Standard errors clustered at the regional level in parentheses, * < 0.1 ** < 0.05 *** < 0.01. *Sources*: Microcensus 1982-2015, BBSR (2017), own calculation.

Table A7: Endogenous individual controls and time-varying economic controls

	Labour force participation of women		Working hours of women		Working hours of employed women		Relative working hours within households	
Mean of dep. variable	0.64	0.64	21.57	21.567	34.79	34.79	0.42	0.42
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DD coefficient	-0.005	-0.005	0.263	0.285	0.833**	0.842**	0.007**	0.006**
	(0.005	(0.005)	(0.383)	(0.329)	(0.380)	(0.299)	(0.003)	(0.002)
Specification								
Endogenous individual controls	✓		✓		✓		✓	
Time-varying economic controls		✓		✓		✓		✓
State x year FE	✓	✓	✓	✓	✓	✓	✓	✓
Ind. controls	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1,467,836	1,467,836	1,401,188	1,401,188	1,045,448	1,045,448	663,657	663,657

Notes: Difference-in-differences coefficients from equation (1) with additional control variables. Odd-numbered columns show coefficients from a regression including endogenous individual control listed in Table 1. Even-numbered columns include unemployment rate, GDP per capita and population density at the county-by-year level. Standard errors clustered at the regional level in parentheses, * < 0.1 ** < 0.05 *** < 0.01. *Sources*: Microcensus 1982-2015, BBSR (2017), own calculation.

Table A8: Compositional changes - outflows and inflows

Panel A: Outflow into West German regions		stratified by age groups					
	overall (1)	[0,17] (2)	[18,24] (3)	[25,29] (4)	[30,49] (5)	[50,64] (6)	≥65 (7)
Mean of dep. variable	6397	986	1300	1191	2103	472	345
HighInflow	-118	27	68	-57	-153	-15	10
	(678)	(107)	(110)	(128)	(255)	(56)	(39)
Observations	8,125	8,125	8,125	8,125	8,125	8,125	8,125
Panel B: Inflow from West German regions		stratified by age groups					
	overall (1)	[0,17] (2)	[18,24] (3)	[25,29] (4)	[30,49] (5)	[50,64] (6)	≥65 (7)
Mean of dep. variable	6383	990	1291	1183	2103	473	344
HighInflow	-344	-37	-12	-63	-211	-22	1
	(641)	(75)	(156)	(150)	(220)	(40)	(26)
Observations	8,125	8,125	8,125	8,125	8,125	8,125	8,125

Notes: Outflow (number of individuals) in other West German regions (Panel A) and inflow (number of individuals) from other West German regions (Panel B) of treated relative to control regions in post reunification years (1991 - 2015). Regressions control for year fixed effects. Standard errors clustered at the regional level in parentheses, $*< 0.1$ $**< 0.05$ $***< 0.01$. *Sources*: BBSR 2017, own calculation

Table A9: Friendships and intermarriages in West Germany

	At least one friend from East Germany		Employed and one friend from East Germany		Partner from East Germany	
	(1)	(2)	(3)	(4)	(5)	(6)
Mean of dep. variable	0.062	0.062	0.051	0.051	0.012	0.012
HighInflow	0.012***	0.011***	0.010***	0.010***	0.005**	0.004**
	(0.004)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)
State x year FE	✓	✓	✓	✓	✓	✓
Ind. controls		✓		✓		✓
Observations	32,996	32,957	32,996	32,957	236,681	236,524

Notes: Sample consists of West Germans aged 25-55 who lived in West Germany in 1989. Covariates are age, years of education, number of children in household, indicators for being protestant or catholic, and municipality size. Friendship information is available every fifth year starting in 1996. Standard errors clustered at the county level in parentheses, $*< 0.1$ $**< 0.05$ $***< 0.01$. Sources: SOEP 1984-2018, BBSR (2017), own calculation

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