

# Undoing Gender with Institutions. Lessons from the German Division and Reunification.

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## Abstract

Using the 41-year division of Germany as a natural experiment, we show that the GDR's gender-equal institutions created a culture that has undone the male breadwinner norm and its consequences. Since reunification, East Germany still differs from West Germany not only by a higher female contribution to household income, but also because East German women can earn more than their husbands without having to increase their number of housework hours, put their marriage at risk or withdraw from the labor market. By contrast, the norm of higher male income, and its consequences, are still prevalent in West Germany.

**JEL codes:** D13, I31, J16, P51, Z1

**Keywords:** Gender norms, Culture, Institutions, German division, Family, Housework, Divorce, Labor market.

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Men spend more time in paid work, and women more time in housework. In spite of the rise in female participation in the labor market and the feminist struggle for greater symmetry, this gender-wise specialization within couples remains a quasi-universal norm. As a consequence, gender gaps in labor force participation and earnings have not subsided (Bertrand *et al.*, 2015; Blau and Kahn, 2017) and the male breadwinner model remains prevalent.

What is the rationale for the stability of this pattern? Household economists have proposed various explanations based on the notion of comparative advantage (Becker, 1973, 1974), with or without bargaining between spouses (Chiappori, 1988, 1992; Weiss, 1997). These comparative advantages can be seen in turn as partly natural or as being dictated by the nature of economic activity and job characteristics at each stage of a society's development (Alesina *et al.*, 2013; Autor *et al.*, 2003; Beaudry and Lewis, 2014; Black and Spitz-Oener, 2010). Institutions also certainly play a role in designing the architecture of choices for men and women, and providing incentives for more or less specialization (Esping-Andersen, 2009).

On top of these potential determinants, social scientists have pointed out the superimposition of norms (Akerlof and Kranton, 2000, 2013), postulating that people may attach some value to the roles they endorse per se, such as gender roles. An entire set of stylized facts that cannot be rationalized within standard economic models comes in support of this idea. One of the most striking of these observations is the reaction of households when the male breadwinner norm is violated. While any economic model of decision-making within the family would predict that a spouse should decrease her number of housework hours as her personal contribution to the household income increases, empirical evidence shows that things are not so simple. Beyond spouses' income equality threshold, when a woman becomes the primary breadwinner, she starts *doing gender* (West and Zimmerman, 1987) by increasing her number of housework hours, and sometimes withdrawing from the labor force. Such marriages also become more unstable.<sup>1</sup>

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<sup>1</sup>See Greenstein (2000), Akerlof and Kranton (2000), Bittman *et al.* (2003), Evertsson and Nermo (2004) and Schneider (2011) on housework, Heckert *et al.* (1998), Jalovaara (2003) and Liu and Vikat

It would be difficult to make sense of such behaviors without recourse to the notion of gender identity. Existing studies have mostly contributed to establishing the existence of this gender-unequal norm, but little is known about its origin and the part played by public policy in constructing or deconstructing it.

This paper brings the first causal evidence that the male breadwinner norm is cultural and can be undone by institutions. Developing a causal test of the role of institutions is a major empirical challenge. Specifically, gender-equalizing institutions are much more likely to emerge in an environment where mentalities have already become more gender friendly. To overcome this empirical hurdle, we focus on Germany and exploit the natural experiment constituted by the 41-year division of the country. Before World War II, prior to the division, gender norms, including female labor force participation, were essentially similar in Eastern and Western regions. During the division, East Germany adopted gender-equalizing policies, in line with the universal "right" (and obligation) to work. Work-family balance programs, kindergarten and other childcare facilities were put in place ([Bauernschuster and Rainer, 2012](#)). In the meantime, a traditional family policy prevailed in West Germany. The institutions and policies implemented in the two regions radically diverged and so did gender roles. As a result, in 1989, women's labor force participation in the German Democratic Republic (GDR) had reached about 89%, one of the highest in the world, against 56% in West Germany ([Rosenfeld \*et al.\*, 2004](#)). After reunification, the government of the former Federal Republic of Germany (FRG) took over East Germany and rapidly dissolved its institutions and structures and absorbed them into those of West Germany, which remained unchanged.

Using data from the German Socio-Economic Panel from 1991 to 2012, we establish that, since reunification, the male breadwinner norm has been prevalent in West Germany but not in the East. First, we show that women who earn more than their husbands "compensate" by increasing their number of housework hours in West Germany. But this is not the case in East Germany, where women monotonically keep decreasing the [\(2007\)](#), on the risk of divorce, and [Bertrand \*et al.\* \(2015\)](#) on the three types of consequences.

time they spend on housework as their contribution to the household finances rises. Consistently, in West Germany, the risk of divorce increases for couples where the wife switches from earning less to earning more than her husband, whereas this is not the case in East Germany. Finally, we show that when a woman's potential income is higher than that of her husband, she is more likely to withdraw from the labor market, but only in West Germany. Likewise, when a West German woman actually starts earning more than her husband, she is more likely to withdraw from the labor market in the following year. These behaviors are mirrored by self-reported preferences, as East German women attach almost as much value to paid work as men, in contrast with West German women.

To demonstrate the robustness of our results, we run systematic placebo exercises to establish that it is the focal point of equal incomes that triggers these reactions, and not any other alternative cut-off point. Similarly, we show that it is the former Berlin wall that constitutes the dividing line, and not any other division of Germany. We also provide substantive evidence showing that our results do not stem from pre-existing or current differences between Eastern and Western regions. First, we show that before the division, Eastern and Western regions had similar industrial, employment and social structures: we show this using first-hand statistical sources pertaining to the year 1933, as well as Prussian data from 1886 and 1849. We also illustrate the diverging trends in terms of female labor market participation. Second, we rule out the suspicion that East-West differences in household behavior could be due to other historical differences in unobservables or persisting structural differences, such as economic conditions. To do so, we focus on areas where it is likely that people face the same structural conditions. We show that among couples who currently live in the West, i.e. in the same environment, those who migrated from the East after 1990 display much more egalitarian behavior in terms of female labor market participation, wage earnings and housework time. In the same spirit, we use another survey (GoGold) to show that among women who currently live in East or West Berlin, those who were born in a former socialist country, or whose mother was born in a former socialist country, are much more likely to be working full

time (*ceteris paribus*) than those who were not. We also focus on couples who live near the former East-West border and document the sharp spatial discontinuity of the female contribution to household income at the border and re-establish our main results on this subsample. Finally, we exploit the heterogeneity within West Germany to rule out the suspicion that our findings may be driven by wage structure differentials.

These results shed light on the sources of gender inequality. After decades of progress, female labor force participation has recently plateaued (Blau and Kahn, 2017) and researchers have started to investigate the determinants of social norms influencing gender equality. These include technological changes (Goldin and Katz, 2002), the influence of ancestors (Fernández *et al.*, 2004; Fernandez and Fogli, 2009), information (Alessandra and Laura, 2011) and past technology (Alesina *et al.*, 2013). We add to this literature by considering the role of institutions in sustaining the male breadwinner norm.

Our results are directly related to the literature on social norms and preferences, beyond gender issues. Experiments in behavioral economics have shown that, in dictator games for instance, the situation of equal earnings is a focal point that powerfully influences decisions (Rabin, 1993; Charness and Rabin, 2002). Cultural economics has also shed light on the evolution of social norms (Bisin and Verdier, 2001, 2011; Alesina and Giuliano, 2015; Fernández, 2013). Here, we illustrate the influence of institutions on social norms and identity.

This paper is in the line of Alesina and Fuchs-Schündeln (2007) who exploited the same episode of socialism in Germany to study the lasting (and progressively withering) effect of socialist institutions on mentalities. Regarding gender attitudes, several studies, such as Breen and Cooke (2005), Bauernschuster and Rainer (2012) or Beblo and Gorges (2018) have illustrated the smaller gender gap in East Germany, as compared with West Germany, in terms of self-reported attachment to work. Campa and Serafinelli (2016) show that this appears to be a hallmark of socialist states. Besides work attitudes, Lippmann and Senik (2018) have also shown that the gender gap in mathematics is smaller in East Germany and in former socialist countries..

The rest of this work is organized as follows. Section 1 recalls the institutional background of East and West Germany. Section 2 describes the data. Section 3 presents the empirical strategy. Section 4 studies the impact of higher female earnings on housework hours, the risk of divorce, and female labor market participation. Section 5 provides robustness checks. Section 6 illustrates the differences in work attitudes among Western and Eastern couples. Section 7 concludes.

# 1 The German Division as a Natural Experiment

## 1.1 Before the Division

The division of Germany was drawn by a postwar agreement between the Allies, on the basis of the zones occupied by the Soviet Union and Western countries. In 1949, five Länder formed the GDR and the remaining eleven constituted the FRG. The line of division was thus arguably unrelated to pre-existing differences between the two regions.

To provide evidence on this matter, we collected data from German statistical year-books before the division. Table 1 describes the situation in 1933.<sup>2</sup> Columns 1 and 2 provide descriptive statistics for the Eastern and Western regions of Germany. Column 3 computes the differences between the two regions. In 1933, the employment structure was similar in the two regions. About 45% of East Germans worked in industry against 40% in the West. As regards gender behavior, the table shows that the female share of employment was 2.8 percentage points higher in the East, and the birth rate (per thousand) 1.95 points higher in the West.

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<sup>2</sup>In the Appendix Table B1, we replicate the same exercise using data from the 19th century in 1886 and 1849. Similarly, we find that there was very little differences between East and West Germany in the 19th century.

Table 1: East and West Germany in 1933. Descriptive Statistics

	<i>East</i>	<i>West</i>	$ East - West $	Average Regional Differences	P-value
	(1)	(2)	(3)	(4)	(5)
Industry and Handcraft %	44.64	40.08	4.55	4.69 (2.92)	0.47
Retail and Transport %	16.32	16.65	0.33	2.05 (1.77)	0.89
Agriculture %	16.01	21.21	5.20	5.79 (3.66)	0.51
Services%	9.10	9.60	0.51	0.49 (0.46)	0.66
Free occ. / Self-employed %	13.95	12.98	0.97	0.66 (0.49)	0.12
Female share of employees** %	35.92	33.12	2.80	2.94 (1.91)	0.46
Female share of high school students%	31.61	34.87	3.26	2.32 (1.57)	0.28
Marriages per 1000 inhabitants	9.87	9.45	0.42	0.52 (0.34)	0.57
Births per 1000 inhabitants	13.02	14.97	1.95	1.02 (0.78)	0.15
Population (in Millions)	11.43	35.44			

*Notes:* Own calculations based on Statistisches Reichsamt (1936:27, 37, 1935:297) for 1933. We use the regions of the former German Empire that coincide with the later boundaries of GDR and FRG, excluding Berlin. East: Anhalt, Mecklenburg, Prov. Sachsen, Sachsen, Thüringen. West: Baden, Bayern, Bremen, Hamburg, Hessen, Hohenzollerische Lande, Lippe, Lübeck, Oldenburg, Prov. Hannover, Prov. Hessen-Nassau, Prov. Westfalen, Rheinprovinz, Schaumburg-Lippe, Württemberg. \*\* For these statistics, the divide is based on the State Employment Office Districts, i.e. for GDR: Mitteldeutschland, Sachsen, and for FRG: Bayern, Hessen, Niedersachsen, Rheinland, Südwestdeutschland, Westfalen. Column (4) displays the average absolute value of differences between regions in all possible regional partitions of 20 regions into 5 + 15, as well as the standard error of these averages in parenthesis. Column (5) displays the probability that these differences are higher than the East/West difference displayed in column (3), which corresponds to the share of these differences that is higher than the East/West difference. In row 6 (female share of employees), the calculation was made on the basis on the 8 regions available in official statistics (instead of 20). In row 7 (female share of high school students), data are missing for Schaumburg-Lippe, and the resulting number of available Länder is 19.

How did the small East/West differences compare with the average regional differences? To investigate this question, we performed a permutation test that follows the

logic of a Fisher exact test, and compared, for each measure, the East-West difference with the picture that would emerge from any random partition of Germany (excluding Berlin) into two groups of respectively 15 and 5 regions (column 5). It turns out that in 1933, the structural dissimilarities between the two regions that would later become East Germany and West Germany (excluding Berlin) were not any different from what would stem from any random division of the 20 regions into two groups of 5 + 15 regions. This is attested by the p-value (column 5). This result supports the idea that the division of Germany was not influenced by pre-existing regional differences.

## 1.2 Diverging Trends during the Division

After the division, between 1949 and 1990, the GDR rapidly set up institutions in favor of gender equality. Beyond its constitution ensuring full equality between men and women, the *Mother and Child Care* and *Women's Rights* Acts, adopted in 1950, aimed at '*establishing* a range of social services in support of full female employment, including a network of public childcare centers, kindergartens and facilities for free school meals' (Cooke, 2007, p. 935), as well as paid maternity leave. By 1972, additional policies expanded childcare facilities and extended paid maternity leave to 18 weeks. A final set of reforms implemented between 1972 and 1989 improved childcare facilities, extended parental leave to 20 weeks and allowed fathers as well as grandmothers to take this leave (Cooke, 2007). In summary, these policies were targeted at making participation in the labor force compatible with maternity (see Goldstein and Kreyenfeld, 2011 about fertility trends in both regions).

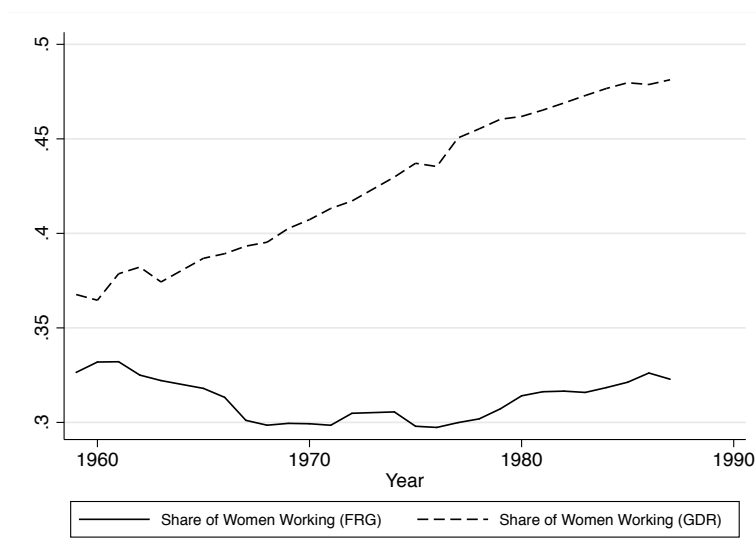
In the meantime, the FRG's policies strengthened the traditional family model. Irregular school schedules and scarce childcare facilities inhibited female employment. The tax system favored single earner families, as non-employed spouses and children could get public health insurance at no extra cost. Until 1977, the Marriage and Family law stated that: '*The wife is responsible for running the household. She has the right to be employed as far as this is compatible with her marriage and family duties*' (Civil Code



on the *Effects of Marriage in General*, title Five, Section 1356).<sup>3</sup> Subsequent policies then alternated more or less conservative incentives for female participation in the labor market.

As a result of these very different policies, the female labor market participation rate started to diverge after the division. To illustrate the impact of the two different sets of policies during the division, we collected data from statistical yearbooks from 1959 to 1987. Figure 1 displays the diverging trends of women’s share in total employment. In the FRG, the share of employed women, as a percentage of the total female population remains steadily around 30%, whereas in the GDR, it rises from approximately the same level to 50% between 1959 and 1987 (the years for which these statistics are available).<sup>4</sup>

*Figure 1: Evolution of Women’s Participation in the Labor Market*



*Notes:* Authors’ computation using the statistical yearbooks of FRG and GDR from 1959 to 1987. The shares of working women are computed by dividing the number of working women by the total number of women in the population. We do not report data for years prior to 1959 because self-employed starts being included in the number of workers from 1959 only, making longer time series inconsistent.

<sup>3</sup>See also [Rheinstein and Glendon \(1978\)](#).

<sup>4</sup>These diverging trends happened notwithstanding migration. [Cornelius and Tsuda \(2004\)](#) reports that 730,000 Germans moved from the Soviet zone to the other zones in the late 1940s, and another 3.8 million moved from East Germany to West Germany between 1949 and the building of the Berlin Wall in August 1961; then only 600,000 Germans moved West between 1961 and 1988.

### 1.3 Persisting Differences after Reunification

After reunification, the government of the former Federal Republic of Germany (FRG) took over East Germany and rapidly dissolved its institutions and structures, absorbing them into those of West Germany, which remained unchanged. Yet, persisting differences between the two regions were still observable ten years later in 2000. Labor force participation was still approximately the same across gender in the former GDR (around 80%), whereas the gap remained wide in West Germany, with 65% of women in the labor force against 81% of men (Schenk, 2003). As we will show, these objective differences are supported by opinions regarding gender roles. In terms of paid work time, in 2000, East German workers generally worked longer hours than West Germans: 35 hours for women and 42 hours for men in the former GDR against respectively 29 and 40 hours in the former FRG. This is probably a legacy of the different labor laws that prevailed during the division.<sup>5</sup> The status of part-time employment also differed considerably across regions. In West Germany, part-time workers, most of whom were women, often worked less than 20 hours, and were not eligible for the same social benefits as full-time workers (Rosenfeld *et al.*, 2004). In East Germany, part-time workers had longer hours, received identical social benefits and used these contracts primarily as a transition to retirement.

This does not mean that there are no gender differences at all in East Germany. For instance, Rosenfeld *et al.* (2004), document the existence of gender wage gaps and occupational segregation. Additionally, within the household, although men participate more in housework in the East than in the West, Eastern women still take on a greater share of housework (Cooke, 2007).

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<sup>5</sup>The standard regulatory full-time number of work hours per week was 43.75 in the GDR against 36 to 39 in the FRG (Rosenfeld *et al.*, 2004.)

## 2 Data

### 2.1 Source

We use the *German Socio-Economic Panel*, a longitudinal survey run by the German Institute for Economic Research (DIW, Berlin).<sup>6</sup> This survey was started in 1984 in West Germany and was extended to East Germany in 1990. In 1998, 2000, 2002, 2006, 2009, 2011 and 2012, additional German households were added to the initial sample. We use 22 waves, from 1991 to 2012.

### 2.2 Main Explanatory Variables

**East versus West.** Our exercise consists in contrasting the behavior of East versus West Germans. We exploit the biographical information contained in the dataset. The questionnaire asked all individuals: "*Where did you live before 1989?*". We define an *East* dummy variable that takes the value 1 (0) if both spouses lived in GDR (FRG) before 1989, independently of where they live at the time of the survey.<sup>7</sup>

**Relative Income.** Our main explanatory variable is a dummy that equals 1 if the wife earns more than her husband and 0 otherwise (hereafter: *WifeEarnsMore*), where income measures monthly labor earnings.

### 2.3 Main Outcomes

**Housework.** The time spent on housework is measured using the following question: "*What is a typical weekday like for you? How many hours per normal workday do you spend on housework (washing, cooking, cleaning)?*". The definition of housework, i.e. the list of tasks included in the survey, follows the general usage in the literature. In

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<sup>6</sup>Socio-Economic Panel (SOEP), data for years 1984-2012, version 29, SOEP, 2013. For more details, see [Goebel et al., 2018](#).

<sup>7</sup>This definition excludes mixed couples where one spouse originates from GDR and the other from FRG. For robustness, we also included this type of couple and define an *East* dummy variable that takes the value 1 (0) if only one spouse lived in GDR (FRG) before 1989. We performed this robustness check using successively the origin of the wife and of the husband. The results remained similar.

particular, it does not include the time parents spend with children. The norm concerning childcare has changed since the 1970s: a new norm of intensive parenting has diffused, whereby the time spent with children is more and more considered as leisure. This is particularly true of more educated parents and wealthier families (Sullivan, 2010). For this reason, we leave this aspect of couples' time-use aside from our main housework measure.

**Divorce.** In Section 4.2, we look at the impact of female relative income on the risk of divorce. We consider the sample of married working couples, aged 18 to 65 years old, and estimate the likelihood of divorce within the coming years, according to their relative income. We use the marital status reported by both spouses at each wave, as well as the biographic data file. As divorce takes time, our main variable of interest is the risk of divorce in a 5-year horizon.

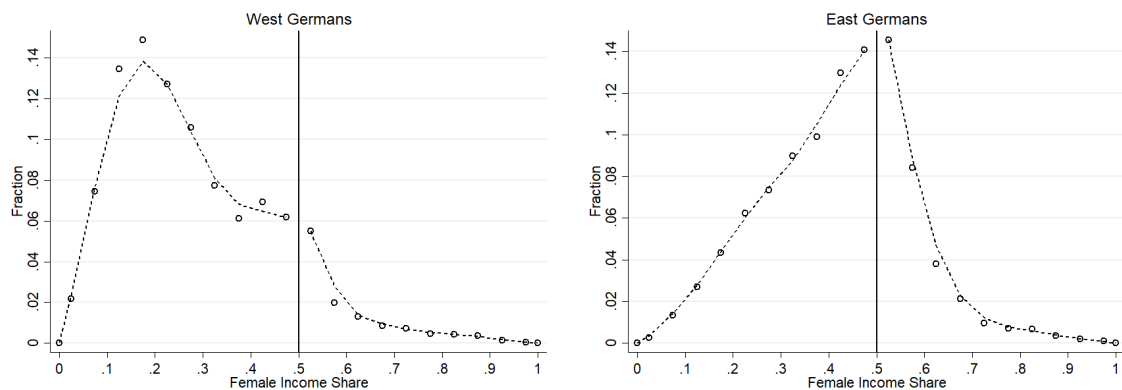
**Labor Market Participation.** In Section 4.3, we look at the impact of female relative income on her participation in the labor market. We estimate the likelihood of withdrawing from the labor market in a one-year horizon (T+1). Consequently, the variable of interest is a dummy that codes 1 if the individual has no labor earnings in T+1 (out of the labor market) and 0 otherwise.

**Attitudinal Variables.** We use subjective attitudes elicited in the SOEP survey, namely: *How important is success at work for satisfaction? How important is marriage for satisfaction? How important is work for satisfaction? How important is a successful career for satisfaction? How important is family for your satisfaction ?* The first two questions were asked in 1992, 1995, 2004, 2008 and 2012. The remaining three questions were asked in 1991, 1994, 1998 and 1999. Given the distribution of preferences (see Figure F1 to Figure F5 in the Appendix), we define dummy variables that equal 1 if the respondent has declared the matter to be very important and 0 otherwise.

## 2.4 Descriptive Statistics

Figure 2 depicts the entire distribution of female relative income in dual-earner married couples, aged 18 to 65 years old according to where they lived during the division (East or West Germany). The distribution is extremely skewed to the left in the sample of West German couples, where the mode is the point where the wife earns about 20% of the total family earnings. By contrast, in the East German sample, the distribution is much more symmetric, with a mode around equal earnings.<sup>8</sup> Nevertheless, in both regions, there are significantly fewer couples in a situation where the wife earns more than her husband than the opposite and the two distributions seem very similar beyond the point where the wife earns about 70% of the total income.

Figure 2: Female Income Share among Western and Eastern German Couples



Notes: The data comes from the German Socio-Economic Panel using all the waves from 1991 until 2012. Sample: dual-earner married couples between 18 and 65 years of age. Female Income Share is defined as  $\text{Female Income} / (\text{Female Income} + \text{Male Income})$ . The vertical black line corresponds to Female Income Share = 0.5. Each dot represents the fraction of couples in a 0.05 relative income bin. Eastern (Western) couples are those in which both spouses lived in GDR (FRG) before 1989.

Table 2 presents descriptive statistics on our main sample, using housework hours as the outcome. There are 6,104 couples for whom we know whether both members lived in East or West Germany before reunification: 1,976 are from East Germany and 4,129 from West Germany. On average, these couples are present in the sample for 5.6 years, which makes a total of 34,205 observations over 22 years (22,091 from West Germany

<sup>8</sup>Additionally, Figure C1 shows that these patterns display a slight convergence across cohorts and Figure C2 describes the limited evolution over time.

and 12,114 from East Germany).

*Table 2: Descriptive Statistics of the East/West Samples*

	<i>West Germans</i>				<i>East Germans</i>			
	Mean	S.D.	Min	Max	Mean	S.D.	Min	Max
Relative Income	0.29	0.17	0	1	0.42	0.15	0	1
WifeEarnsMore	0.11	0.31	0	1	0.29	0.45	0	1
Woman's Housework Time	2.61	1.50	0	20	1.98	1.09	0	12
Man's Housework Time	0.61	0.72	0	16	0.68	0.73	0	10
Hswk Woman - Hswk Man	1.99	1.73	-15	19	1.30	1.32	-9	12
Paid Work Time Woman	27.03	13.29	1	80	37.72	10.40	1	80
Paid Work Time Man	44.60	9.81	1	80	45.70	9.77	1	80
Income HH (Euros)	3679.14	2405.09	10	200000	2660.94	1234.34	102	16259
Income Woman (Euros)	973.45	835.55	2	30170	1056.71	640.34	17	15000
Income Man (Euros)	2456.87	1703.53	46	99999	1477.82	913.59	25	15000
Hourly Wage Woman	8.62	5.43	0	129	6.79	4.11	0	96
Hourly Wage Man	13.14	8.62	0	392	7.84	4.99	0	138
Woman's Age	43.64	8.46	20	65	42.90	8.49	19	65
Man's Age	46.26	8.73	22	65	45.23	8.68	21	65
Kids in HH (1=YES)	0.68	0.47	0	1	0.72	0.45	0	1
Observations	22091				12114			

*Notes:* The data comes from the German Socio-Economic Panel using all the waves from 1991 until 2012. Descriptive statistics are based on the main sample: married couples with positive income. Eastern (Western) couples are those in which both spouses lived in GDR (FRG) before 1989. Income measures are based on 2010 constant euros. Number of housework or paid-work hours per day.

Households differ in several dimensions across the two samples. On average, West German households are richer, and more often childless. Men's level of income and contribution to household finance is higher in Western couples than in Eastern ones.<sup>9</sup> The opposite holds for women. There are more Eastern couples where women earn more than their spouse (29% versus 11% for Western couples). East German men spend a

<sup>9</sup>Note that household income includes all elements of income, including transfers and return on financial assets, whereas we use net labor income to construct our measure of women's relative contribution to household finance.

slightly higher number of hours in housework than West German men, and the reverse is true for women.

In the West, we observe 698 transitions to a situation where the wife earns more and 513 in the opposite direction. These numbers are respectively 719 and 602 in the East. There are 16,208 observations where the wife always earns less than her husband in the West (resp. 6,190 in the East) and 1,423 where the wife earns more in all periods (resp. 2,316 in the East).

In the Appendix, Tables C1 and C2, we present descriptive statistics of the sample for the study of divorce and labor market participation. These samples are very similar to that described in Table 2. West German couples exhibit a higher divorce rate (within a 5-year horizon) than East German ones (9% versus 7%). Additionally, West German women withdraw more often from the labor market than East German ones (2% versus 1%).

### 3 Econometric Specification

We use the German division as a natural experiment and argue that, absent this division, similar preferences would prevail in East and West Germany. In a sense, this setting is similar to a difference-in-differences strategy where we assume a similar starting point and a common trend assumption between the two regions. To illustrate the existence of the male breadwinner norm, we follow [Bertrand \*et al.\* \(2015\)](#) and focus on the specific point of equal incomes of spouses.<sup>10</sup> Three outcomes are considered: the number of housework hours, the risk of divorce and labor market participation.

Formally, we estimate the following equation:

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<sup>10</sup>Although this paper does not build on a structural model, we discuss in the Appendix Section A how our findings can be incorporated in the framework of a structural model of household behavior. In this framework, transgressing the male breadwinner norm produces a decrease in the value of the marriage which increases the risk of divorce or leads the wife to restore this value by shifting the division of tasks toward a more traditional arrangement.

$$Y_{it} = \gamma_1 WifeEarnsMore_{it} + \gamma_2 WifeEarnsMore_{it} * East_i + \beta X_{it} + \mu_i + \epsilon_{it} \quad (1)$$

Where  $i$  is the subscript for the individual and  $t$  for time.  $WifeEarnMore_{it}$  is a dummy that equals 1 if the wife  $i$  earns more than her husband at time  $t$ . If the norm is prevalent among West Germans but not among East Germans, we expect  $\gamma_1$  to be positive and significant, whereas  $\gamma_2$  should be negative. If this norm does not exist among East Germans,  $\gamma_2$  should totally offset  $\gamma_1$ .

The controls included in  $X_{it}$  are the log of household income, respondent and partner's age and age squared, respondent and partner's education level (4 categories), a dummy controlling for the presence of children, year fixed-effects and regional fixed-effects (at the Land level, 16 categories). Depending on the outcome considered, we also control for the degree of specialization within the couple, namely relative income, as this variable is likely to be correlated with the division of housework or the probability of withdrawing from the labor market.<sup>11</sup>

Our preferred specification contains individual fixed-effects  $\mu_i$ . This is important because it is likely that spouses match on unobserved characteristics, such as their preferences in terms of household income structure, which produces self-sorting of spouses into different types of families. For instance, without individual fixed-effects, the results could be driven by overachieving wives who earn more than their husbands and also spend more time on housework, or alternatively underachieving husbands with a strong preference for idleness. Introducing fixed-effects alleviates this selection issue.

One crucial assumption in this setting is the exogeneity of the treatment. If an individual could move from East to West Germany, or vice-versa, because of her preferences

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<sup>11</sup>As pointed by [Bertrand et al. \(2015\)](#), controlling for relative income is important when standard Beckerian forces influence the outcome. In particular, they will lead the wife to do less housework when her relative income increases. For instance, couples where the wife earns 10% of the household income are probably couples where the wife has specialized in unpaid work activities. She is thus mechanically more likely to perform housework than a woman earning 40% of household income.



for some gender-relevant aspect of institutions, this would bias our analysis. To overcome this issue, as explained in section 2.2, we define an *East* dummy variable that takes the value 1 if both spouses lived in GDR before reunification, independently of where they live at the time of the survey. Given that migration between the two regions was forbidden during the division and that there were no stark differences between East and West Germany before the division, exposure to the institutions can be considered as random.<sup>12</sup>

Unlike Bertrand *et al.* (2015), we do not test for the existence of a discontinuity in the distribution of household income. This is because, in our dataset, the number of observations at the point of equal earnings is too high, and is higher in the East (2.75%) than in the West (1.37%). This makes it impossible to run a McCrary test for the discontinuity of the distribution function at the point of equal earnings.<sup>13</sup> However, in order to test for the relevance of the point of equal income, we run a robustness exercise consisting in estimating all of our regression equations with alternative thresholds, i.e. alternative focal points, as explained in section 5.3.1. We establish that the only relevant threshold is that of equal earnings.

The sample used in our main specification contains dual-earner married couples, aged 18 to 65 years old. The reason for not including households with unemployed adults is that this situation is most likely transitory and might not be reflected by the division of housework between spouses. We do not include couples where one spouse is out of the labor force, as the contribution of the latter to household finance is in most cases nil, and the allocation of her time into paid-work versus housework is trivially skewed. Moreover, couples where the wife changes from being out of the labor force to earning more than her husband are likely to be atypical. We select married couples rather than all couples because the former are generally more "stable" than simply cohabiting couples. However, in order to alleviate concerns about selection biases, we replicate all of our results using

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<sup>12</sup>In the Appendix, we replicate all our results with a geographical definition based on where households currently live. They remain essentially unchanged.

<sup>13</sup>We attribute this to the approximation of self-declared income by respondents in the SOEP survey, but we have no means to correct these figures and we are reluctant to -artificially- simply drop these observations.

a larger sample including non-married and one-earner couples (See Appendix).

## **4 Results - Consequences of Violating the Male Breadwinner Norm**

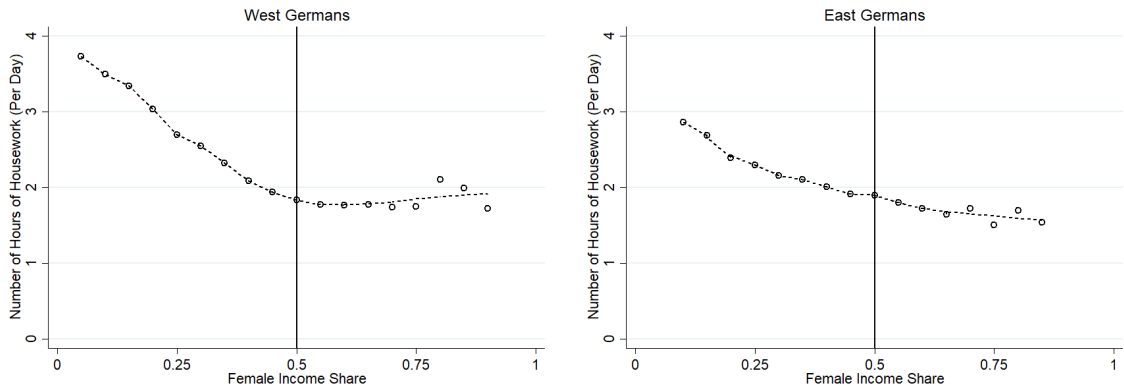
We study whether there is a difference across Western versus Eastern German couples in terms of the consequences of a wife earning more than her husband. Our outcomes of interest are: housework hours, the risk of divorce and female participation in the labor market.

### **4.1 Housework. Couples of the Former GDR are Not "Doing Gender"**

We start with non-parametric visual evidence about the supply of housework hours by women, according to whether the spouses lived in the former GDR or not. Figure 3 displays the number of female housework hours according to the contribution of female earnings to the total earnings of the couple.

The left-hand-side panel shows that among West German couples, women decrease their number of housework hours as their relative earnings rise, until they reach the vicinity of equal earning. Beyond that point, their number of housework hours stops decreasing and remains at about 2 hours per day. It even seems to increase again at about 75%. By contrast, the right hand-side panel shows that East German women monotonically reduce the time they devote to housework as their relative contribution to household finances increases. One can suspect an inflection in the curve at the point where women earn more than 80% of the couple's income, but due to the small number of couples who are in this situation, it is not possible to draw more than one dot.

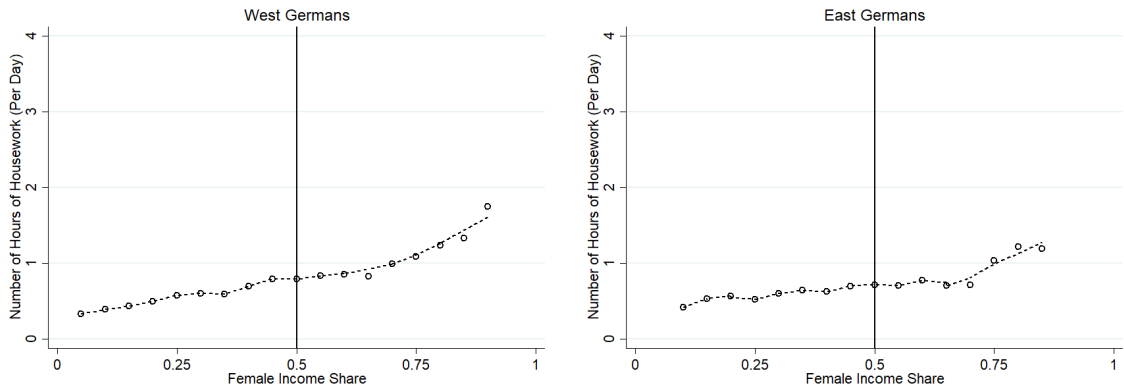
Figure 3: Women's Housework Time Depending on their Share of Income



Notes: The data comes from the German Socio-Economic Panel using all the waves from 1991 until 2012. Sample: dual-earner married couples between 18 and 65 years of age. Female Income Share is defined as  $\text{Female Income} / (\text{Female Income} + \text{Male Income})$ . Each dot represents at least 50 observations in a 0.05 relative income bin (99.5% of the total sample). The vertical black line corresponds to Female Income Share = 0.5. Eastern (Western) couples are those in which both spouses lived in GDR (FRG) before 1989.

Figure 4 represents the relationship between men's housework time and their wives' relative income. Men monotonically increase their number of housework hours, with a small plateau around the point of equal incomes.

Figure 4: Male Housework Time Depending on Female's Share of Income



Notes: The data comes from the German Socio-Economic Panel using all the waves from 1991 until 2012. Sample: dual-earner married couples between 18 and 65 years of age. Female Income Share is defined as  $\text{Female Income} / (\text{Female Income} + \text{Male Income})$ . Each dot represents at least 50 observations in a 0.05 relative income bin (99.5% of the total sample). The vertical black line corresponds to Female Income Share = 0.5. Eastern (Western) couples are those in which both spouses lived in GDR (FRG) before 1989.

Next, we estimate Equation 1 with and without individual fixed-effects using house-

work hours as an outcome. Following [Gupta \(2007\)](#) who argues that individual income is a decisive determinant of the number of housework hours, as it reflects women's degree of autonomy, we augment the baseline specification and control for individual labor incomes (in the Appendix, we also test without controlling for individual incomes or introducing hourly wages). This is not totally collinear with household income as the latter includes non labor income.

The results are displayed in [Table 3](#). Columns 1 to 3 display cross-sectional OLS estimates and columns 4 to 6 estimations including individual fixed-effects. Panel A is restricted to the sample of women, panel B to their husbands and panel C studies the time gap between the spouses.

Columns 3 and 6 of panel A show that, as expected, the number of housework hours performed by West German women increases when they earn more than their husband. In column 6, we see that West German women increase their time spent on housework by about 0.18 hours per day when they start earning more than their husbands. This is not the case in East Germany. The interaction between the two variables, *East* and *WifeEarnsMore* is negative, and its order of magnitude is sufficient to offset exactly the positive coefficient of *WifeEarnsMore*, so that there is no effect left for East German couples. Accordingly, the coefficient on *WifeEarnsMore* is statistically significant when the regression is run on the subsample of West German women (in columns 1 and 4) but it is not when the subsample includes only East German women (columns 2 and 5). These results hold in cross-sectional as well as in fixed-effects specifications. Additionally, the East dummy variable (column 3) attracts a negative coefficient, indicating that East German women spend less time on housework than West German women.

Table 3: Housework Time and Relative Income

	West (1)	East (2)	All (3)	West (4)	East (5)	All (6)
<i>Panel A: Women</i> <span style="float: right;"><i>Dep Var: Housework Time (hours per day)</i></span>						
WifeEarnsMore	0.10** (0.05)	-0.02 (0.04)	0.12** (0.05)	0.17*** (0.04)	0.01 (0.03)	0.18*** (0.04)
WifeEarnsMore*East			-0.14** (0.06)			-0.18*** (0.05)
East			-0.67*** (0.09)			
Observations	22091	12114	34205	22091	12114	34205
<i>Panel B: Men</i> <span style="float: right;"><i>Dep Var: Housework Time (hours per day)</i></span>						
WifeEarnsMore	-0.07** (0.03)	-0.04 (0.03)	-0.08** (0.03)	-0.04 (0.03)	-0.01 (0.02)	-0.04 (0.03)
WifeEarnsMore*East			0.04 (0.04)			0.03 (0.04)
East			0.17*** (0.06)			
Observations	22091	12114	34205	22091	12114	34205
<i>Panel C: Couple</i> <span style="float: right;"><i>Dep Var: Housework Time Gap (Woman's - Man's)</i></span>						
WifeEarnsMore	0.17*** (0.06)	0.03 (0.05)	0.19*** (0.06)	0.21*** (0.05)	0.02 (0.04)	0.23*** (0.05)
WifeEarnsMore*East			-0.18** (0.08)			-0.21*** (0.06)
East			-0.84*** (0.11)			
Individual fixed-effects	No	No	No	Yes	Yes	Yes
Individuals	4128	1976	6104	4128	1976	6104
Observations	22091	12114	34205	22091	12114	34205

*Notes:* \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01. The data comes from the German Socio-Economic Panel using all the waves from 1991 until 2012. The sample contains only dual earner married couples. Standard errors clustered at the individual level are given in parentheses. East is a dummy equals to 1 when both spouses lived in the former GDR before 1989. Controls: relative income between spouses, log of household income, respondent and partner's log of individual income, respondent and partner's age and age squared, respondent and partner's education level, a dummy controlling for the presence of children, year fixed-effects, Land fixed-effects and individual fixed-effects (columns 4,5 and 6).

Because *doing gender* is about within-couple interactions, it is of interest to observe

the difference in the time spent on housework by each spouse. Panel C presents estimates of the time gap on the usual controls. Again, for West German couples, the time gap increases when the wife earns more than her husband all other things being equal (column 1 and 4), but this is not the case for East German couples (columns 2 and 5). Likewise, the coefficients on *WifeEarnsMore* and *WifeEarnsMore \* East* totally compensate each other, so that no effect is left in East Germany (columns 3 and 6).

To probe the robustness of the results, we also replicate our results with a definition of housework that includes childcare (Table D1). Results are similar but the magnitude is much stronger when childcare is included. We also use the female share of total housework as the outcome variable instead of the time gap (Table D2). Results point in the same direction but are less precisely estimated.

## 4.2 Marriage Instability

Where gender norms are compelling, transgressing them should put one's marriage at risk. To enquire, we look at the association between women's relative income and marital instability.

Table 4 displays the probability of divorce within the next five years according to whether the wife earns more than her husband.<sup>14</sup> The coefficient on *WifeEarnsMore* is positive and statistically significant in estimates that include individual fixed-effects (columns 4 and 6), but not in the cross-sectional estimates (column 1 to 3). Hence, it is a change in the situation of a couple that triggers divorce, rather than the difference between couples. This is consistent with the idea of self-selection of spouses into different types of couples.

Looking at column 4, we see that, among West German couples, when a wife starts earning more than her husband, the risk of divorce in the next 5 years increases by about 3 percentage points. Column 5 shows that nothing happens for East German couples

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<sup>14</sup>It would be unrealistic to imagine that couples divorce immediately as soon as the wife starts earning more than her spouse. Accordingly, Table D7 displays the estimates of a linear probability model of the risk of divorce at different time-horizons.

and consequently, when pooling both types of couples (column 6), the coefficient on *WifeEarnsMore* is offset by the one on *WifeEarnsMore \* East*. This is consistent with the results concerning the number of housework hours.

Table 4: Risk of Divorce and Relative Income

<i>Dependent variable: Divorced within a 5-year time horizon (1=Yes)</i>						
	West	East	All	West	East	All
	(1)	(2)	(3)	(4)	(5)	(6)
WifeEarnsMore	0.01 (0.02)	0.00 (0.01)	0.02 (0.02)	0.03** (0.02)	-0.01 (0.01)	0.03** (0.02)
WifeEarnsMore*East			-0.01 (0.02)			-0.05*** (0.02)
East			-0.01 (0.03)			
Couple fixed-effects	No	No	No	Yes	Yes	Yes
Couples	1900	882	2782	1900	882	2782
Observations	9054	4919	13973	9054	4919	13973

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The data comes from the German Socio-Economic Panel using all the waves from 1991 until 2012. The dependent variable is a dummy that equals 1 if the couple has divorced within a 5-year time horizon. The sample contains only dual earner married couples. Standard errors clustered at the couple level are given in parentheses. East is a dummy equals to 1 when both spouses lived in the former GDR before 1989. Controls: log of household income, man and woman's log of individual income, man and woman's age and age squared, man and woman's education level, a dummy controlling for the presence of children, year fixed-effects, Land fixed-effects and couple fixed-effects (columns 4,5 and 6).

### 4.3 Labor Market Participation

Bertrand *et al.* (2015) show that, in order to abide by the male breadwinner model, American women avoid earning more than their husband. This drives some of them, when their earning capacity is greater than that of their husband, to simply withdraw from the labor market. We ask whether this traditional behavior is also adopted by Eastern and Western German couples.

To do so, we estimate Equation 1 with and without fixed-effects, where the outcome variable is a dummy variable indicating whether an individual leaves the labor market

within a year (in T+1). Table 5 displays the results. Columns 1 to 3 display cross-sectional OLS estimates and columns 4 to 6 estimates that include individual fixed-effects. Panel A is restricted to the sample of women and panel B to their husbands.

Table 5: Labor Market Participation and Relative Income

	West (1)	East (2)	All (3)	West (4)	East (5)	All (6)
<i>Panel A: Women</i>						
<i>Dep. Var.: Out of the labor market in T+1 (1=Yes)</i>						
WifeEarnsMore	0.02*** (0.00)	0.00 (0.00)	0.02*** (0.00)	0.01* (0.00)	-0.00 (0.00)	0.01* (0.00)
WifeEarnsMore*East			-0.02*** (0.00)			-0.01 (0.01)
East			-0.03*** (0.01)			
Individual fixed-effects	No	No	No	Yes	Yes	Yes
Individuals	3255	1510	4765	3255	1510	4765
Observations	22159	12115	34274	22159	12115	34274
<i>Panel B: Men</i>						
<i>Dep. Var.: Out of the labor market in T+1 (1=Yes)</i>						
HusbandEarnsMore	-0.01** (0.00)	-0.00 (0.00)	-0.01* (0.00)	-0.01* (0.00)	-0.00 (0.00)	-0.01* (0.00)
HusbandEarnsMore*East			0.01 (0.00)			0.01 (0.01)
East			-0.01* (0.01)			
Individual fixed-effects	No	No	No	Yes	Yes	Yes
Individuals	3255	1510	4765	3255	1510	4765
Observations	22159	12115	34274	22159	12115	34274

Notes: \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01. The data comes from the German Socio-Economic Panel using all the waves from 1991 until 2012. The sample is restricted to dual earner married couples in T. Standard errors clustered at the individual level are given in parentheses. The dependent variable is a dummy that equals 1 if the individual is not in the labor market in T+1 (1 year horizon). East is a dummy equals to 1 when both spouses lived in the former GDR before 1989. Controls include relative income, log of household income, respondent and partners' age and age squared, respondent and partner's education level, a dummy controlling for the presence of children, year fixed-effects, Land fixed-effects and individual fixed-effects (columns 4,5 and 6).

The results are consistent with the previous outcomes. Columns 3 and 6 of panel A show that, as expected, the probability of a West German woman withdrawing from the



labor market in  $T+1$  increases when she earns more than her husband. The interaction between the two variables, *East* and *WifeEarnsMore* is negative, and its order of magnitude is sufficient to offset exactly the positive coefficient of *WifeEarnsMore*, so that there is no effect left for East German couples. In column 6, although the coefficient related to *WifeEarnsMore \* East* is not significant, it is close to standard significant levels (p-value of 0.129). Consistent with the previous outcomes, panel B shows that men do not withdraw from the labor market when their wife earns less than them. On the contrary, this situation reinforces the probability that they will remain in the labor market, especially in the West.

We now look at the labor market participation of women according to their potential income. We first predict individuals' potential income based on a Heckman selection model that includes a dummy variable for the presence of children in the selection equation.<sup>15</sup> We then estimate potential wages for the entire sample of women based on the following characteristics: education (6 categories), age, age squared, year and Land fixed-effects. Next, we build a dummy that equals 1 if the potential wage of the individual is higher than the actual wage of his/her spouse (*WifeEarnsMorePotentially* and *ManEarnsMorePotentially*). About 21% of couples in our sample are in a situation where the potential earnings of the wife are higher than the actual earnings of her husband.<sup>16</sup> Finally, we run a linear probability model in order to predict the likelihood of an individual participating in the labor market, according to the dummy *WifeEarnsMorePotentially* for the sample of women and *ManEarnsMorePotentially* for the sample of men. Since potential income can only change because of age, this specification does not include individual fixed-effects.

It turns out that when the potential wage of a woman is higher than the actual wage of her husband, the probability that she is out of the labor force increases by about 3 percentage points for West German women, whereas this pattern is reversed for East

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<sup>15</sup>In the Appendix Table D8, we reproduce these estimates including a married dummy in the selection equation. We obtain similar results.

<sup>16</sup>In terms of actual incomes, 19% of couples in our sample are in that situation.

German women (Table 6). When they earn potentially more than their husband, the probability of their withdrawal from the labor market *diminishes* by about 3 percentage points. Turning to the analysis of male behavior, we find a consistent pattern with the previous table. West German men are more likely to work when they earn potentially more than their wife, whereas East German men remain insensitive to this possibility.

Table 6: Labor Market Participation and Potential Relative Income

	<i>Women</i>			<i>Men</i>		
	<i>Out of the labor force in T</i>			<i>Out of the labor force in T</i>		
	West	East	All	West	East	All
	(1)	(2)	(3)	(4)	(5)	(6)
WifeEarnsMore Potentially	0.03** (0.01)	-0.03*** (0.01)	0.02* (0.01)			
WifeEarnsMore Potentially*East			-0.05*** (0.02)			
ManEarnsMore Potentially				-0.04*** (0.02)	-0.01 (0.01)	-0.04*** (0.02)
ManEarnsMore Potentially*East						0.04** (0.02)
East			-0.14** (0.05)			-0.11** (0.05)
Observations	35848	14290	50138	32104	14647	43783

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The data comes from the German Socio-Economic Panel using all the waves from 1991 until 2012. Standard errors clustered at the individual level are given in parentheses. East is a dummy equals to 1 when both spouses live in East Germany. Controls include log of husband income, log of household income, respondent and partners' age and age squared, respondent and partner's education level along with year fixed-effects and Land fixed-effects.

## 5 Robustness Checks

The norm of higher male earnings seems to be influential among West German couples, but not among former East German couples. All of the modalities of the typical *doing gender* behavior that have been documented in the literature seem to be at work among West German couples, i.e. higher female earnings are associated with longer housework hours, greater marriage instability and less participation in the labor market. This section

tests the robustness of these results. We first test alternative samples and specifications. Then, we examine alternative mechanisms that could drive the results. Finally, we run several placebo tests for different focal points and other possible divisions of Germany.

## 5.1 Alternative Samples and Specifications

To ascertain our results, we run several robustness tests on the definition of the *East* dummy, the choice of the sample, specifications and period. The related Tables and Figures are in the Appendix.

First, we change the definition of the *East* dummy. The measure used previously required that both spouses lived in the former GDR or the former FRG before 1989. We now relax this assumption and show how the results vary depending on whether it is the wife or the husband who originates from either region. We find similar results using only the information about the husband or the wife (Table E3). We also consider the case of mixed-couples. Although it is not possible to perform similar regressions on this sample because of its limited size, we display descriptive statistics in Table E1 and show that they appear to behave in between purely Western and Eastern couples. Moreover, we replicate all of our main results using an alternative, purely geographic, definition of the East-West divide, i.e. classifying couples according to whether they currently live in a Land of the former GDR or of the former FRG at the time of the survey. Descriptive statistics are in Table E4 and the results are presented in Tables E5 and E6. They are similar to those obtained using the biographic definition (i.e. whether couples lived in East or West Germany before reunification).

Second, we run the same regressions on each of our three outcomes (housework hours, divorce and labor market participation) using alternative samples and specifications. We enlarge the sample to include single-earner couples and, alternatively, unmarried couples (Table E7): the results are identical. We also check the robustness of our results to the exclusion of outliers (Table E8). We use alternative specifications without controlling for individual incomes or household income, including quadratic terms in wages and

introducing hourly wages (Table E9 for housework, Table E10 for divorce and Table E11 for labor market participation). The results remain essentially unchanged. We also use larger clusters to compute the standard errors. In our setting, part of the treatment is at the regional level but clustering at this level would lead to a number of clusters that is arguably too small (only two). We could also cluster at smaller geographical units but doing so would fail to capture the serial-correlation for households who moved across the territory. For this reason, we chose to cluster at the household level (which coincides with the individual level) in the main specification and repeat our main analysis with the relevant alternative options (district and Land level). The results do not change (see Tables E12 and E13 ).

Third, as market work and housework decisions can be made simultaneously, we check that our results are robust even for couples whose market work time does not vary. This is important, as it provides supporting evidence that our findings are not driven by a reallocation of time between paid-work and housework time, but instead by a variation in hourly wages. To do so, we replicate the main analysis related to housework and restrict the sample to couples whose female absolute and relative paid-work time remains constant or varies marginally. The results are displayed in Figure E1 and Figure E2. They show that the main results on housework remain similar. This supports an interpretation in terms of shock, where the variation in income is due to a change in hourly wages.

Finally, we drop the first years of reunification one by one, progressively, and re-run our analysis of female housework. This is because these years may have been experienced as exceptionally chaotic and uncertain, thus triggering certain behavior that is not generalizable. We display the results on housework as this is the outcome with the highest number of observations and statistical power. Table E14 shows that the results are unchanged even once these years have been dropped.

## 5.2 Alternative Mechanisms

### 5.2.1 Historical Differences in Unobservables: Evidence from the East/West Border

We have established that the differences between the Eastern and Western parts of Germany were not larger than the average interregional differences in 1933, 1886 and 1849 but there may remain concerns about differences in unobservables characteristics related to gender norms. If there had been some regional differences before 1949, following an East-West axis, it is likely that the legacy of these historical differences in unobservables would be weaker in the vicinity of the East/West border. Therefore, we would expect more homogenous behavior as we move closer to the border.

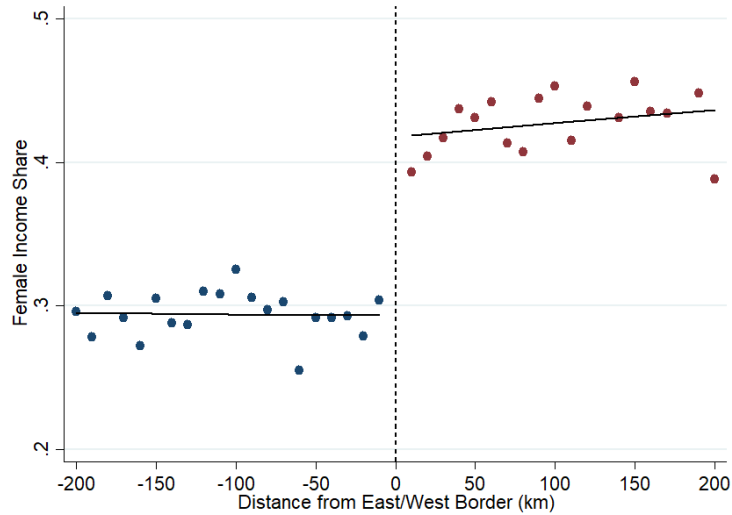
To enquire, we exploit geolocated data and examine the behaviors of couples according to which side of the East/West border they currently live. For each household, we calculate the relative distance from its district to the East-West border.<sup>17</sup> Figure 5 below displays the wife's contribution to household income at different points of space across the East-West border. We see that the wife's contribution to household finance is sharply discontinuous at the border, i.e. ten kilometers East and West from the former political border. More generally, the relative share of female income slightly increases as one moves from the Western part of Germany to the Eastern border, following parallel trends. This spatial discontinuity within an otherwise homogenous region is confirmed by the regressions displayed in Table E15. Even within a distance of 50 kilometers, the wife's share of income is 10 percentage points higher in couples who live at the East of the former border, than in couples who live on the West side (the difference is statistically significant at 1%). This asymmetry in the structure of household income is not due to the fact that Eastern couples are poorer, hence need to rely more on female income. Indeed, the coefficient barely changes after controlling for household income in addition to spouses'

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<sup>17</sup>The geographical unit refers to the so-called *Kreis*. This corresponds to a level of administration that is intermediate between the German States (Länder) and the municipalities. There are 404 districts in the database.

age, age squared, a dummy controlling for the presence of children and education level (Model C of Table E15).

Figure 5: Female Share in Household Income Depending on the Distance to the East/West Border



Notes: The data comes from the German Socio-Economic Panel using all the waves from 1991 until 2012. Sample: dual-earner married couples between 18 and 65 years of age without movers from East to West (or the opposite). The relative distance is defined as the euclidean distance in kilometers from the centroid of the district to the East/West border. A positive (negative) distance means that the couple is geographically located in the East (West). The vertical dashed line corresponds to the border. Each dot represents the average value of the female income share in total household income, in a 10 km bin.

We also replicate the main results related to housework around the East/West border (we focus on housework because it is the most robust result and the least likely to be undermined by a smaller sample size). The results are available in Figure E3 and Table E16. Although the precision of the estimates is weaker closer to the border, we see that the coefficients remain essentially stable in magnitude across the territory, whereas historical and persisting differences in unobservables are expected to grow as we move away from the East/West border. This suggests that our findings are not driven by historical differences in unobservables but rather by the lasting consequences of the division of Germany.

### 5.2.2 Is the Difference Due to the Wage Structure?

Although Eastern and Western Länder are now part of the same country, they still differ in several dimensions and in particular regarding the wage structure. We explore the role of three factors: lower household income, lower male hourly wage and lower wage dispersion in East Germany. These three factors could potentially explain our findings. For instance, in a context of low household income, individuals may not engage in *doing gender* behaviors because they simply cannot afford to divorce, to spend more time on housework or to withdraw from the labor market. Also, in a context of low male hourly wage, women could have a higher bargaining power within the household which could explain the absence of *doing gender* behaviors. Similarly, in a context of low dispersion of wages, the focal point of 50% could lose its meaningfulness.

To rule out these alternative explanations, we investigate the possible relationship between the wage structure and *doing gender* behaviors. We exploit the heterogeneity within West Germany (culturally homogeneous) and contrast the behavior of couples whose household income is high (similarly where male hourly wages and the dispersion of wages at the Land level are high) to couples whose household income is low (similarly where male hourly wages and the dispersion of wages at the Land level are low). Provided that there is sufficient heterogeneity within West Germany, this exercise will indicate whether our results may be due to these three confounding factors.

To quantify the level of heterogeneity, we use two types of measures. First, regional measures based on the average level of household income, male hourly wage and wage dispersion within a Land (macro definition). Second, individual measures based on the relative position of a household in West Germany in terms of household income and male hourly wages (micro definition). For each of these measures, we classify couples in two groups according to their position relative to the median value of the measure.

Descriptive statistics about the heterogeneity within West Germany are described in Table [E17](#) for the household income level, Table [E19](#) for the male hourly wage level and Table [E21](#) for the dispersion of wages. Considering these three factors, we see that East

German couples are often close to West German couples who stand below the median.

For each of these factors, we observe similar *doing gender* behaviors for households above or below the median. Women keep increasing their number of housework hours when they earn more than their husbands in West Germany, whether they are in a low or a high income household (Table E18). Similarly, the level of male hourly wages does not seem to alter the results (Table E20). Finally, measuring the dispersion of income using a Gini coefficient, we observe similar *doing gender* behaviors in Länder where the dispersion is below or above the West German median (Tables E22, E23, E24). This suggests that the East-West difference in household behavior is not due to the different structure of earnings in these regions.

### 5.2.3 Other Institutional Differences

Some of the East/West differences could be due to current objective structural disparities that might exist across German Länder. For example, unemployment is more pervasive in the East. It is also likely that the eastern part of Germany is still better equipped with childcare facilities than the western part, which could obviously influence women's work behavior. We extend the arguments developed in the previous section to focus on areas where Eastern and Western households live together.

**The Case of Migrants.** We first focus on Western Länder and contrast the behavior of West German "natives" to that of East German "immigrants" (i.e. those who lived in East Germany before 1990). In order to rule out the possibility that movers, as such, have idiosyncratic features that happen to be more gender-equal, we distinguish couples who always lived in the same Western Land (since they entered the survey) from those who moved from one Land to another within West Germany. Figure 6 displays the entire distribution of female relative income. In each of the three groups, the distribution has two hicks. Among non-mover Western couples, the principal mode is around 20%, and we can see a minor one around 45% for "native" Western couples. But for former



Eastern couples, the pattern is reversed. Finally, for movers from one Western Land to another, the two modes are approximately of equal importance. Hence, among couples who currently live in the West, those who immigrated from the East after 1990 still follow a much more gender-equal script. We also provide descriptive evidence in Table E25 about the characteristics of these couples. Considering the gender gap in housework hours and relative income, Eastern couples seem to be more gender equal than couples who have moved from one Western Land to another or than non-mover Western couples.

*Figure 6: Distribution of Female Relative Income in Western Länder Depending on Couples' Former Location*

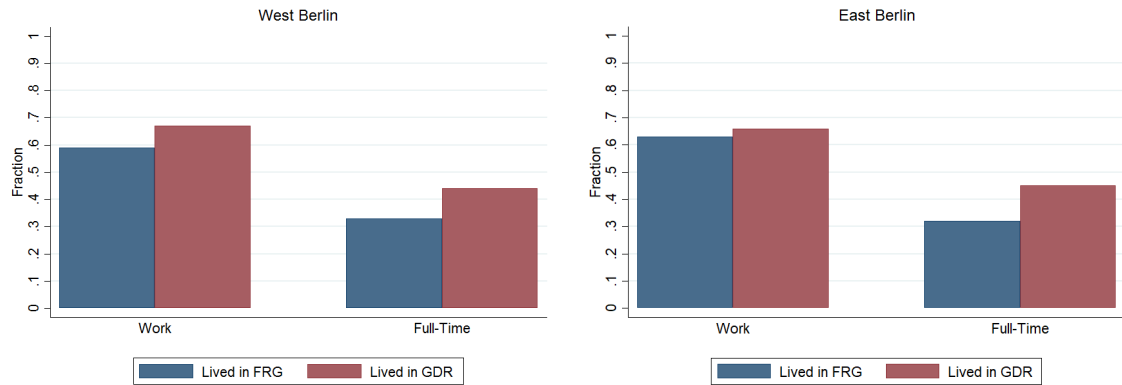


*Notes:* The data comes from the German Socio-Economic Panel using all the waves from 1991 until 2012. Sample: dual-earner married couples between 18 and 65 years of age living in Western Länder. Female Income Share is defined as  $\text{Female Income}/(\text{Female Income} + \text{Male Income})$ . The vertical black line corresponds to Female Income Share = 0.5. Eastern (Western) couples are those in which both spouses lived in GDR (FRG) before 1989.

**Focusing on Berlin.** Finally, to rule out the possibility that persisting differences in the availability of childcare institutions explain the observed differences in terms of household behavior, we profit from a survey that was run in Berlin in 2011 (see Dolan *et al.*, 2016). We use this additional database because it offers the unique feature of surveying a large sample of individuals located in a single city, with a distinction between dwellers in West Berlin and East Berlin. This gives us the possibility of observing people

who live in a small, economically and spatially integrated and homogenous area. The survey asked respondents (all living in Berlin) where they used to live before 1990, and, if they were too young, where their mother used to live before 1990. People can choose between the following answers: East Berlin (within the former GDR), West Berlin (within the former FRG), GDR excluding Berlin, FRG excluding Berlin, other country part of the socialist bloc, or other country. The survey includes over 6,000 respondents, of whom 3,147 women, with 1,666 living in West Berlin and 1,481 living in East Berlin. We look at women's participation in the labor market, arguably the first outcome affected by the availability of childcare institutions, according to whether they (or their mother) lived in the FRG or the GDR during the division. Figure 7 displays the main results. It turns out that the effect of having lived in the East is of similar magnitude whether women currently live in East or West Berlin as of 2011: the proportion of women working part-time or full-time is about 12 percentage points higher, i.e. approximately one third, among women who used to live in the East before 1990 as compared to women who used to live in the West. The results displayed in Figure 7 hold in Probit estimates that control for age, age squared and the presence of children under 16 in the household, and these differences hold only for women and not for men. Hence, even within a small geographic area, where childcare facilities are identically accessible to every household, the attachment to work is higher for women with an "East German" culture. In Figure E4, we also show that a similar pattern holds among young women.

Figure 7: Female Participation in the Labor Market in Berlin



Notes: The left graph is restricted to women living in West Berlin. The graph on the right is restricted to women living in East Berlin.

## 5.3 Placebo Tests

### 5.3.1 Other Possible Focal Points

We have followed the literature in testing for the influence of the focal point of equal earnings between spouses. But could the threshold be lower or higher? To enquire, we run our preferred specification, following Equation 1, with respectively the number of female housework hours, the risk of divorce and the probability of being out of the labor force as independent variables, and we successively replace the dummy *WifeEarnsMore* by a dummy which equals 1 if the income of the wife is greater than 10%, 30%, 50%, 70% or 90%, and 0 otherwise. The coefficient on the dummy variable starts being statistically significant only when the share of the wife's income reaches 50%. This is true for the estimates of female housework hours (Table E27), marital instability (Table E28) and labor market participation (Table E29). The 50% threshold is also the only point at which the results are significant for the three studied outcomes. Beyond this point, most of the coefficients turn statistically insignificant because many of the couples who are *doing gender* are on the other side of the cut-off point and because of the low number of observations.

### 5.3.2 Other Possible Divisions of Germany

The paper's main claim is that the difference between East and West Germany stems from the different institutions that prevailed during the division. In order to challenge this interpretation, we run a systematic placebo exercise, which consists in testing the relevance of all of the possible divisions of the 15 German regions (excluding Berlin) into two groups of respectively 5 (Group 1) and 10 (Group 2) regions. This mimics the division of Germany into the GDR (5 Länder) and the FRG (10 Länder), excluding Berlin (by definition, this exercise uses a geographical definition of the East dummy variable). We run our preferred specification, following Equation 1 (with the number of female housework hours as the independent variable, as it provides the highest statistical power) and look at whether our coefficients of interest, i.e. those associated with the dummy *WifeEarnsMore*, and the interaction of *WifeEarnsMore \* Group1*, are statistically significant, and at which level.

It turns out that out of 3,003 combinations, there are only 101 cases, i.e. 3.36% cases, where both coefficients are statistically significant at the 1% level. Table E30 displays a synthetic analysis of the results, i.e. estimates of the probability that both coefficients of interest are statistically significant, according to the composition of Group 1 and Group 2, i.e. to how many Eastern Länder are included in Group 1. Column 1 displays the probability that the coefficients of interest are significant at the 10% level; column 2 at the 5% level and column 3 at the 1% level. The table shows that as more Eastern Länder are included in Group 1, the coefficients become more statistically significant. The difference between Eastern and Western Länder thus does not seem to be hiding another more relevant divide.

## 6 Direct Evidence on the East/West Divide in Gender Preferences

We interpret the contrasted behavior of German couples, according to their origin, as the mark left by four decades of socialism on gender identity norms. In order to sustain this interpretation, we present some evidence of self-stated preferences and attitudes. This complements the information produced by [Bauernschuster and Rainer \(2012\)](#) and [Beblo and Gorges \(2018\)](#), who used the German General Social Survey (ALLBUS). Table 7 presents the marginal effect of the following equation:

$$Preference_{it} = \gamma_1 East_i + \gamma_2 Female_i + \gamma_3 Female_i * East_i + \beta X_{it} + \epsilon_{it} \quad (2)$$

where the preferences of individual  $i$  in year  $t$  depend on her gender and whether she has lived in East Germany or not before 1989, controlling for the usual socio-demographic variables (household income, age, age squared, presence of children in the household, education of both spouses, year and Land fixed-effects).

Table 7: Attitudes to Work of East versus West Germans

<i>Dependent Variable: How Important is ... for your satisfaction ?</i>					
	(1)	(2)	(3)	(4)	(5)
	Work	Success At Work	A Successful Career	Marriage	Family
East	0.117*** (0.021)	0.018* (0.011)	0.015 (0.017)	0.006 (0.012)	0.012 (0.011)
Female	-0.19*** (0.015)	-0.122*** (0.008)	-0.146*** (0.014)	0.037*** (0.008)	0.032*** (0.008)
Female*East	0.119*** (0.02)	0.099*** (0.015)	0.09*** (0.019)	-0.008 (0.012)	0.022** (0.011)
Observations	11147	20362	11098	20611	11271

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Probit marginal effects. The data comes from the German Socio-Economic Panel using all the waves from 1991 until 2012. The sample contains only married couples. Standard errors clustered at the individual level are given in parentheses. East is a dummy equals to 1 when both spouses lived in the former GDR before 1989. Controls: log of household income, respondent and partner's age and age squared, respondent and partner's education level, a dummy controlling for the presence of children, a dummy representing whether the woman is working, a dummy representing whether the man is working and their interaction with the East dummy, year fixed-effects and Land fixed-effects.

As expected, column 1 of Table 7 shows that the probability of considering work as being important is 18.9 percentage points lower for a West German woman than for a West German man, but only 4.8 percentage points  $(-0.189 + 0.141)$  lower for an East German woman than for an East German man. Other outcomes, such as the importance of success at work (column 2) and a successful career (column 3) follow the same pattern. For these three columns, the negative sign of  $\gamma_2$  and the positive sign of  $\gamma_3$  suggest that the gender gap in work-related preferences is narrower in East Germany than in West Germany.

One may wonder whether in East Germany, work values have crowded out family values, but this is not the case. Columns 4 and 5 respectively display estimates of the self-reported importance of marriage and family. The coefficients of interests are not statistically significant for column 4 and positive for column 5, which suggests that there was no shift in preferences concerning marriage or family in East Germany.

Additionally, in Figure F6 and Table F1, we investigate cohort patterns and find supporting evidence that the gender gap in preferences is particularly small among cohorts who lived in the GDR and were aged between 20 to 40 at the time of reunification. For older and younger cohorts, who were less exposed to socialist institutions, the gender gap seems closer to what is observed among West Germans.

## 7 Conclusions

During the four decades of the socialist episode in East Germany, institutions provided strong incentives for women's participation in the labor market, which, in turn, instilled more equal gender norms concerning the division of tasks between spouses. We show that these institutions created a culture that has undone the male breadwinner norm and its consequences. In particular, East German women can earn more than their husband without having to increase their number of housework hours, put their marriage at risk or withdraw from the labor market. By contrast the traditional norm of higher male earnings, and its consequences, are still prevalent in West Germany. These attitudes are mirrored by subjective preferences, as East German women attach almost as much value to paid work as men, contrarily to West German women.

We showed that these results are directly attributable to the cultural legacy created by the different institutions that prevailed during the division. To rule out alternative explanations, we first showed that the East-West differences did not preexist before the 1949 division, using first-hand statistical data pertaining to 1933, and exploiting Prussian data from the 19th century. We also provided evidence of the different behavior of women currently living in Berlin, according to which side of the iron curtain they used to live before reunification, and showed a similar pattern among East German couples who migrated to West Germany. Additionally, we replicated our results in a small geographical area surrounding the East/West border in order to rule out the role of historical differences in unobservables. We also analyzed the potential role of wage structure differentials and

ran placebo exercises of alternative divides. Finally, we established that it is the focal point of equal incomes that triggers *doing gender* behaviors, as opposed to any other cut-off point.

Admittedly, this paper uses a reduced-form model in order to distinguish the cultural drivers of the East-West difference from other potential structural factors, such as local labor markets, marriage markets, income distribution, infrastructure, or other contextual features. The aforementioned robustness tests attempt to rule out the role of such alternative mechanisms. However, they do not measure the respective weight of these different factors. Future research using structural models of household behavior could fill that gap.

From a public policy perspective, one can wonder which of the many institutional differences that opposed the East and the West had the largest influence on gender norms. It would be difficult not to recognize that the root of the change was the full-time employment norm that became prevalent in the East during the Socialist era. This, in turn, was made possible by the work-family balance policy that was implemented in East Germany. In Western countries, the male breadwinner norm is likely to progressively vanish with the current extension of female education and labor market participation. How much time it will take is an open question but what this paper shows is that a large part of the answer is in the hands of policy-makers.

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