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Conference Paper

Separate Housework Spheres

Beiträge zur Jahrestagung des Vereins für Socialpolitik 2023: Growth and the "sociale Frage"

Provided in Cooperation with:

Verein für Socialpolitik / German Economic Association

Suggested Citation: Jessen, Jonas; Schweighofer-Kodritsch, Sebastian; Weinhardt, Felix; Berkes, Jan (2023) : Separate Housework Spheres, Beiträge zur Jahrestagung des Vereins für Socialpolitik 2023: Growth and the "sociale Frage", ZBW - Leibniz Information Centre for Economics, Kiel, Hamburg

This Version is available at:

<https://hdl.handle.net/10419/277659>

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SEPARATE HOUSEWORK SPHERES*

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February 28, 2023

Abstract

Using novel time-use data from Germany before and after reunification, we document two facts: First, spouses that both work full-time exhibit the same housework pattern whether they do so voluntarily or due to a full-time mandate, as in the GDR. Second, men's amount of housework is the same regardless of their spouse's labour supply. We theoretically explain this pattern by the presence of two household goods and socially learnt gender-specific comparative advantage in their home production. We label this gender specialisation as separate housework spheres. Our explanation receives strong further empirical support, both from the German as well as international data covering 17 countries over four decades. Separation occurs along the lines of more time-intensive routine (female) vs. less time-intensive non-routine (male) housework. These separate housework spheres are independent of stated norms regarding female labour supply, norms regarding the sharing of housework, or the presence of children. We discuss implications for gender inequality and policy, as well as the effects of shocks such as COVID-19.

Keywords: gender, household allocation of time, norms

JEL Classification: D13 · J16 · J22

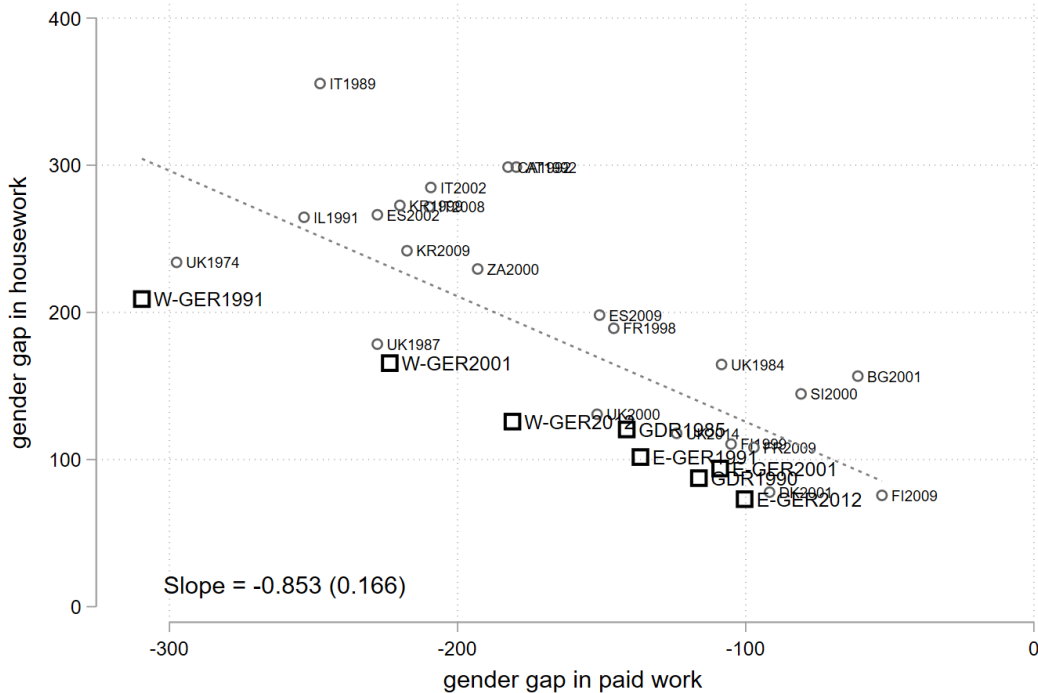
* We are grateful to Stefan Bauernschuster, Ludovica Gambaro, Johannes König, Noemi Peter, Almudena Sevilla and C. Katharina Spiess, as well as seminar participants at the EALE, SEHO Conference in London, DIW Berlin, ifo Munich, University of Würzburg and the Federal Institute for Population Research for helpful comments.

1 European University Viadrina, 2 Berlin School of Economics, 3 IZA, 4 Humboldt University of Berlin, 5 CEP at the LSE, 6 CESifo, 7 DIW Berlin, 8 Federal Ministry of Labour and Social Affairs. The views expressed in this paper are the authors' own and do not necessarily reflect the views of the institutions the authors are affiliated with.

1 Introduction

Figure 1 shows a pronounced negative relation between the gender gap in paid (market) work and housework using international household-level time-use data. To different degrees, the traditional gender norm dictating “separate spheres” for (heterosexual) couples, tying women to housework and men to market work, is still visible, although it appears to be getting smaller over time. Individual countries move towards more equality from the top left to the bottom right, while cross-country differences are as expected. For instance, West Germany moves rapidly from the top left in 1991 to the middle group in 2012. At the same time, countries that are generally perceived as more gender-egalitarian, such as Denmark (DK) in 2001 or Finland (FI) in 2009, as well as the former German Democratic Republic (GDR) in 1985 or 1990, show some of the smallest gender gaps in both, paid work and housework. Yet, no country is at equality, and, based on our slope estimate, it does not seem likely that countries will reach that point.

Figure 1: Female-male gap in time allocated to market and non-market work



Notes: Figure shows the female-male gap in housework and paid work in minutes per weekday.
Sources: GDR time budget study, German Time-Use Survey and MTUS.

This paper uses theory and time-use data to document an important limitation to gender

equality: underlying the trends shown in Figure 1, women and men share different kinds of housework following patterns that have changed little. As our key finding, we show the existence and persistence of separate spheres in housework. Regardless of the extent to which women engage in market work, couples continue to follow gendered patterns when it comes to who does what kind of (and how much) housework.

The tasks that spouses perform in home production break down along rather stereotypical gender lines: basically, women clean, cook, and shop, while men build and repair. Regardless of whether the couples have children or not, women overall operate a significantly more time-intensive domain.

While women’s increase in market work is accompanied by a decrease in their housework, their husbands neither adjust how much home production they engage in nor which tasks they perform; In short, separate (and unequal) housework spheres exist and persist. This has important implications for the extent to which women would respond to or benefit from policies targeting their labour supply, the effects of temporary shocks such as COVID-19, as well as which other changes might be required for achieving gender equality.

We first focus empirically on a region where differences in labour supply and gender norms are well researched: the German case (squares in Figure 1).¹ We conduct this first empirical analysis with newly sourced time-use data from the GDR as well as time-use data for reunified (East and West) Germany. Distinguishing the two main household types—differing by the female share of market work—into “male breadwinner” and “dual earner” households, we confirm Figure 1 both within East and within West Germany, as well as within the GDR: The female-male gap in housework is significantly smaller in dual-earner households than it is in male-breadwinner households. However, conditional on either household type, these gender gaps are similar across all three societies, both in relative and in absolute terms.

¹Germany provides an interesting starting point because of the differences in labour supply and gender norms that emerged during Germany’s division. For example, in West Germany, the norm for mothers was to stay at home and working mothers were called “Rabenmütter” (*raven mothers*). In contrast, in the GDR, mothers were working full-time and non-working mothers were called “Parasiten” (*parasites*) (Boelmann et al., 2022). Such differences in labour supply and norms have been extensively studied, e.g., by Bauernschuster and Rainer (2012); Beblo and Görges (2018); Campa and Serafinelli (2019); Jessen (2022). We discuss this literature and the institutional context in detail in section 2. Moreover, the German case is well-suited to derive first stylised facts because West Germany over time, the GDR and later East Germany, taken together, cover a large part of the total variation in Figure 1: West Germany in 1991 was one of the least gender-equal countries, while the GDR was one of the most gender-egalitarian countries.

The aggregate pattern observed for the “Germanies” in Figure 1, and in particular the lower amount of female housework in the GDR and East Germany than in West Germany, is therefore a pure composition effect, due to the predominance of dual-earner households in the GDR and the East, as opposed to the predominance of male-breadwinner households in the West. Most strikingly, men’s amount of housework is almost constant across both household types, and across all three societies. Husbands’ housework does not seem to provide a substitute for wives’ reduced housework when they increase their labour supply. We further confirm this using a decomposition analysis: The East-West difference in the female-male housework gap from Figure 1 is almost fully explained by female labour supply and male labour supply plays no role. Altogether, despite their drastic differences in norms/attitudes regarding working women, when it comes to gender roles in housework, the “two Germanies” appear to have remained united throughout.

To organise these findings, offer a causal perspective on them and guide further empirical analyses, we revisit the theoretical framework of Fernández, Fogli, and Olivetti (2004, FFO henceforth). This framework is ideally suited for the purpose, because in addition to households’ time allocation patterns, it will allow us to shed light on the potential roles of endogenous matching and norms.² First, we show that men’s irresponsiveness to their wives’ labour supply cannot be explained under standard assumptions on home production, even when allowing for endogenous matching.³ Second, we extend the FFO model to feature two household goods (rather than one) and are thus able to propose a disciplined explanation for the time allocation patterns observed in Germany. The key ingredient, besides a gender wage gap as observed also in the GDR, is that spouses’ time inputs into the production of each household good are perfect substitutes, whereby they fully specialise according to comparative advantage—i.e., there are “(gender-) separate housework spheres”— with women having such advantage in the quantitatively more important of the two household goods. Interpreting the GDR as a *forced-labour-supply constraint* shock on what would otherwise be West German households yields a causal perspective on our findings – exogenously en-

²Besides its richness while maintaining analytical tractability, this framework has also proven highly successful in recent applied work, see Bertrand et al. (2021) and Cortés and Pan (forthcoming).

³See Siminski and Yetsenga (2022), who test a “Beckerian” model (Becker, 1981), for a closely related point.

forced increases of female labour supply that turn what would otherwise be male-breadwinner households into dual-earner households.⁴ Adding minimal heterogeneity concerning women’s potential wages (high or low), the model is able to explain the full pattern of households’ time allocations observed in East and West Germany, in particular men’s general irresponsiveness to changes in their spouses’ labour supply.

Moreover, this formal exercise generates several implications that we then put to the test. First, its explanation for the observed household time allocation patterns relies on gender household specialisation into two *objectively* separate spheres (as opposed to a division of tasks that is household-idiosyncratic). We strongly confirm this with our detailed German time-use data. Loosely speaking, across the board, women do the cleaning, cooking and shopping, while men do repair and building works (an exception is gardening, which is roughly equally shared). This gender division follows the common distinction in the literature between so-called *routine* and *non-routine* housework (e.g., see [Coltrane, 2000](#); [Perry-Jenkins and Gerstel, 2020](#)).⁵ Second, we zoom in on this distinction in housework. We once again confirm our model’s explanation in that we indeed find essentially no substitution by either spouse for their partner’s type of input, as the latter’s time in market work varies. We also test further model predictions using education as proxy for earnings potential as well as the differences in labour supply for market work across East and West Germany. Throughout, we find empirical support for the model.

We then provide a number of extensions to validate these findings. Most importantly, they hold regardless of the presence of children, a key contributor to gender inequality in market work (see, e.g., [Cortés and Pan, forthcoming](#); [Kleven et al., 2019](#); [Jessen, 2022](#)). Institutional differences in the provision of childcare between the GDR and the West cannot explain the similarity in housework division once individual labour supply is accounted for.

Last but not least, we examine whether our results are specific to the German setting and present additional international evidence. We first extend our main empirical analysis using

⁴With our descriptive focus on housework, this is a useful modelling assumption. However, naturally, this *constraint* also meant progress for many women in the GDR, while women in the West were constrained in many other ways. E.g., societal norms and non-existent childcare infrastructure restricted their labour supply. Indeed, following FFO, our model allows to capture the important upside of this labour supply constraint that, in the longer run, (full-time) work by women becomes socially more acceptable.

⁵We would like to emphasise that this terminology does not refer to skill intensity of the tasks but to how regularly they have to be performed.

international time-use data across 85,671 households, for 17 countries, covering the time-span from 1974 to 2014. The international data also show strong support for the existence of separate housework spheres, throughout time and space. Second, we directly address the relation between gender norms regarding female labour supply and gender gaps in market work, as well as housework norms and housework gaps. Using the World Value Survey, we show that the extent to which respondents agree to the statement that “both husband and wife should contribute to household income” strongly correlates with gender gaps in market work. In contrast, norms regarding the importance of “sharing household chores” are unrelated to observed gender gaps in housework.

Separate housework spheres have wide-ranging implications, of which we highlight the most important three here. Firstly and most importantly, the persistence of separate housework spheres puts a ceiling on the degree of gender equality that can be achieved through the labour market. Even in the absence of children, the housework burden pushes women into more total working hours ([Burda et al., 2013](#))—the second shift—and will hinder them from working long hours on the labour market, with negative consequences on earnings growth and careers ([Gicheva, 2013](#); [Cortés and Pan, 2019](#)). Note here also that the nature of the “female” sphere of “routine” tasks makes women less flexible with regards to when to do their housework, putting them at additional disadvantage ([Goldin, 2014, 2021](#)). Separate spheres might therefore help to explain the slowing down of trends towards smaller gender pay gaps ([OECD, 2017](#)). Secondly, separate housework spheres contribute to our understanding of effects of shocks like COVID-19 or other trends towards more remote work from home: If work from home (even just by the man!) increases housework, then this is more demanding of women than men, which may explain a fair share of the “shecession” as documented in [Alon et al. \(2022\)](#). Thirdly, separate housework spheres offer a new perspective on underlying causes of gender inequality. Since we find housework norms not being related to housework gaps, the gender-specific comparative advantage in housework is most likely socially learnt (at a young age). One implication would be that learning interventions could promote gender equality by undoing or even reversing that comparative advantage. Alternatively, productivity-enhancing interventions in the female housework sphere can generate

more equality.⁶

Our study relates to several strands of literature. First of all, we build on the seminal theoretical framework by [Fernández et al. \(2004\)](#), which we extend by a second household good with gender-specific comparative advantage to explain the observed pattern of household time allocation. In this regard, our study relates to the literature that studies household time allocation, going back at least to [Becker \(1981\)](#). [Siminski and Yetsenga \(2022\)](#) reject the Beckerian framework based on related findings of a lacking increase in men’s housework contribution in response to increased female labour supply. We formalise separate *housework* spheres as a simple explanation for this phenomenon. [Lundberg and Pollak \(1993\)](#) propose a model of household bargaining in which non-cooperative marriage rather than divorce serves as the threat point, and the non-cooperative marriage is characterised by separate spheres in household contributions based on exogenously imposed gender roles/norms. While we obtain separate spheres as the efficient result of comparative advantage in housework, following [Fernández et al. \(2004\)](#), this comparative advantage is itself an endogenous “norm” arising from parental transmission.

Second, we contribute to the literature on “doing gender” ([Bertrand et al., 2015](#)) by zooming into home production. [Goldin \(2021\)](#) lays out that fundamental changes with regard to the organisation of work and family life are required to achieve gender equality in households. We argue that another impediment to (within-household) gender equality are the separate housework spheres we identify, as women are responsible for the both less flexible and more time-consuming tasks. In a cross-country analysis, [Hook \(2010\)](#) explicitly considers gender inequality in different household tasks and how these are related to institutional features of the respective countries. More generally, we relate to the sociological literature highlighting the distinction between routine and non-routine household tasks (e.g., [Coltrane, 2000](#); [Perry-Jenkins and Gerstel, 2020](#)).

We also contribute to the literature on long-term consequences of the German division on gender norms. [Bauernschuster and Rainer \(2012\)](#) document that West German households continue to hold substantially more gender conservative views regarding the role of women in

⁶While technological change until the 1970s has enabled women to work at all (e.g., [Greenwood and Seshadri, 2005](#)), the female housework sphere still dominates the male one in its time intensity.

the family and in the labour market. [Lippmann et al. \(2020\)](#) show that West German wives—but not East German ones—are more likely to increase their housework contribution and to withdraw from the labour market after out-earning their husbands in order to conform with traditional gender roles. Only in West German couples is the risk of divorce increased when the wife is earning more. [Zoch \(2021\)](#) analyses East-West differences in attitudes towards maternal employment and housework and finds pronounced disparities in attitudes, but those have become smaller for younger cohorts. Our findings imply that such differences—including those on housework norms—are likely to be primarily driven by higher (state-imposed) female labour force participation in the GDR and that norms on housework were not affected independently of this. More generally, the separate housework spheres that we document put into perspective narratives about gender equality that are merely based on market work, e.g., in the GDR/Soviet Union or the Scandinavian countries.

2 Institutional Setting

After the end of the atrocities of World War II, Germany was divided into four occupation zones by the victors in 1945. In 1949, the GDR was formally established in the Soviet occupation zone and the Federal Republic of Germany (FRG) consisting of the three western zones. The GDR was a socialist, one-party state under strong influence of the Soviet Union. In contrast, in the FRG a market-based democracy was established.

During 41 years of formal separation the two German states diverged in many regards, including female labour force participation ([Trappe, 1996](#)). The GDR generally mandated employment and enabled high participation rates also by mothers through several policies. For instance, childcare was strongly expanded,⁷ and not working was considered anti-social behaviour ([Beblo and Görges, 2018](#)). As a result, female labour force participation increased strongly and in 1989—with a rate of 89%—was among the highest in the world. Additionally, most women worked full time and differences by marital status and children were small ([Rosenfeld et al., 2004](#)).

⁷In 1989, 98% of children aged 3–6 attended childcare facilities, and so did more than 80% of children aged below 3 ([Jessen et al., 2022](#)). In contrast, in the FRG, childcare for under-threes was basically non-existent, and for older children almost all spots were part-time only.

Gender policies in the FRG were conservative in comparison. Limited childcare availability and afternoon care as well as joint taxation for married couples favoured male (main) breadwinner households (Boelmann et al., 2022). Female labour force participation was a third lower than men’s and part-time work was prevalent, especially so for young mothers—in the GDR it was mostly older women working reduced hours. A popular children’s song in the GDR was “Wenn Mutti früh zur Arbeit geht”⁸ (“*When mommy goes to work in the morning*”), whereas in the FRG wives by law only had “the right to be employed as far as this is compatible with her marriage and family duties” until 1977 (Lippmann et al., 2020). Despite these differences, gender earnings gaps were about similar, with 25% for full-time workers (Krueger and Pischke, 1995), but, as outlined above, due to almost universal participation employed women in the GDR were much less selected. Similarly, gender wage gaps differed relatively little, with 15% in the GDR and 18% in the FRG (Sørensen and Trappe, 1995). In summary, gaps in hourly wages were comparable, but gaps in labour supply large. We use this setting to study how resulting differences in earnings shift time allocation to unpleasant household tasks across these regimes. Notably, mirroring the institutionally induced differences, we study the relation between labour supply and time spent doing household tasks.⁹

The two German states were reunified in October 1990 following the fall of the Berlin Wall one year before. East Germany fully adapted the policies of the FRG, with arguably the most notable difference remaining being the higher provision of childcare spots in East Germany.

3 Data

For our analysis we obtained access to the 1985 and 1990 waves of the GDR time budget study (Zeitbudgeterhebung) at the German Federal Archives. To the best of our knowledge, the data has not been used by economists before. The study was conducted by the statistical

⁸[Link](#) to performance of the state radio preschool choir of the city of Leipzig.

⁹Pollak (2005) argues that what matters for household bargaining are not realised earnings but earnings potentials (i.e., wages). But this assumes that the hours worked are a choice variable, which is precisely not the case in the GDR.

office of the GDR to obtain data for the planning of demand for goods and services, to demonstrate the effectiveness of economic and social policies on the use of time outside of work and to design new reforms that foster efficient time use (Fiebiger, 1991).

The 1985 wave documents time-use in the GDR years before the fall of the wall in 1989. The 1990 wave was collected before Germany was officially reunified into a monetary, economic and social union. Data collection of the GDR time budget study only took place among worker, employee, and retiree households.¹⁰ Each household was supposed to fill out the survey on a pre-determined day of the week. Main tasks were documented for 24 hours, starting at midnight.

We use three waves of the German Time-Use Survey from after reunification. The study contains around 5,000 households in each survey wave taken in 1991/92, 2001/02 and 2012/13 (Maier, 2014). We mostly focus on the 1991/92 study conducted briefly after reunification. Each adult household member records their activities in ten-minute slots over three survey days (five minutes over two days in 1991/92). The activities are categorised at a detailed three-digit level. Besides the diary data for the survey days, the data also contain other household and individual characteristics. Throughout the analysis we treat East and West Germany separately.

We complement the German time use data with international time use surveys. The Multinational Time Use Study (MTUS) from the Centre for Time Use Research offers data from more than 70 national time use surveys and standardises them (Gershuny et al., 2020). Appendix Table A.2 shows the country and surveys used in the analysis. A fundamental requirement for the within-household analysis is a household-level sampling design and the existence of household identifiers in the data. We further set the restriction that we look at married (heterosexual) couples that we observe on the same day, so that we can directly infer the shares in each activity without any further assumptions. Finally, to reduce the impact of outliers, we demand at least 200 couple-day-level observations. These conditions lead to a sample of 24 time use surveys from 14 countries (plus the three “Germanies”).

¹⁰Priller (1993) confirms that the data is representative for worker and employee households by districts but that one-person households and young male respondents are slightly underrepresented. Since we exclusively study couple households, this is of less concern for our study.

Harmonisation of Data Sets, Sample Selection and Descriptives. For our analysis we harmonise the time use studies to make them directly comparable. First, we define consistent categories of activities. The broad categories we are primarily interested in are paid work, housework and care for others.¹¹ A detailed list of activities contributing to the broader categories are presented in Appendix Table A.3 using the German data. As our analysis is conducted on a household level, we impose some sample restrictions; we look at married couples and due to the focus on gender differences restrict this to heterosexual couples. As we look at the interplay of time invested in paid work and housework, we further restrict the couples to be of working age, i.e., 18–65 years old. We focus on weekdays which mostly are regular working days with a positive number of working hours.

Table 1: Summary statistics of time-use data

	GDR (85 and 90)			East Germany (91/92)			West Germany (91/92)		
	Women (1)	Men (2)	Diff. (3)	Women (4)	Men (5)	Diff. (6)	Women (7)	Men (8)	Diff. (9)
<i>Characteristics</i>									
Age	38.94	41.22	-2.28	40.88	43.28	-2.40	42.49	45.57	-3.08
Employed	0.92	0.98	-0.06	0.68	0.80	-0.12	0.62	0.91	-0.29
High vocational degree	0.34	0.32	0.02
Upper secondary school	.	.	.	0.25	0.30	-0.05	0.19	0.30	-0.11
Children under 10 in household	0.44	0.44	0.00	0.40	0.40	0.00	0.39	0.39	0.00
<i>Time use in minutes (weekday)</i>									
Paid work (total)	429.27	556.55	-127.27	325.87	462.42	-136.55	157.64	467.21	-309.57
Housework	223.78	121.89	101.89	250.55	148.86	101.68	325.55	116.53	209.02
Care for others	45.14	13.15	31.99	60.58	25.48	35.10	77.63	22.99	54.64
Leisure	157.98	194.18	-36.20	184.12	203.60	-19.49	229.91	221.28	8.62
Observations	3237	3237	3237	2154	2154	2154	6309	6309	6309

Notes: Table shows summary statistics of the time-use survey of the GDR and of the 1991/92 wave of the German time-use survey, separately for East and West Germany. Source: GDR time budget study (1985/90) and the German Time-Use Survey (1991/92).

Table 1 describes the German analysis sample.¹² The upper panel shows sample characteristics. Respondents are aged around 40 on average, with West Germans being somewhat older. Gender differences in age within couples are similar, as shown in columns (3), (6) and (9). Overall a substantially larger share of women are employed in the GDR than in

¹¹Larger other categories are leisure, sleep, eating, and personal hygiene.

¹²Descriptive statistics for the other countries from the MTUS are available from the authors upon request.

West Germany, but also East Germany. Around 40% of households have children under 10 years living in the household. The lower panel gives an overview of time-use. Both men and women in the GDR spent substantially more time in the labour market than those in East and West Germany. Notably, the gender difference in minutes spent in paid work is 310 minutes in West Germany compared to 127 and 137 minutes in the GDR and East Germany, respectively, as women in East Germany spent about twice as much time in the labour market as their West German counterparts. Those differences are also inversely reflected in the amount of housework that is done by women, which is much larger in West Germany, indicating a less gender egalitarian environment. The gender gap is 209 minutes per day in West German households, but ‘only’ 102 minutes in the GDR and East Germany.

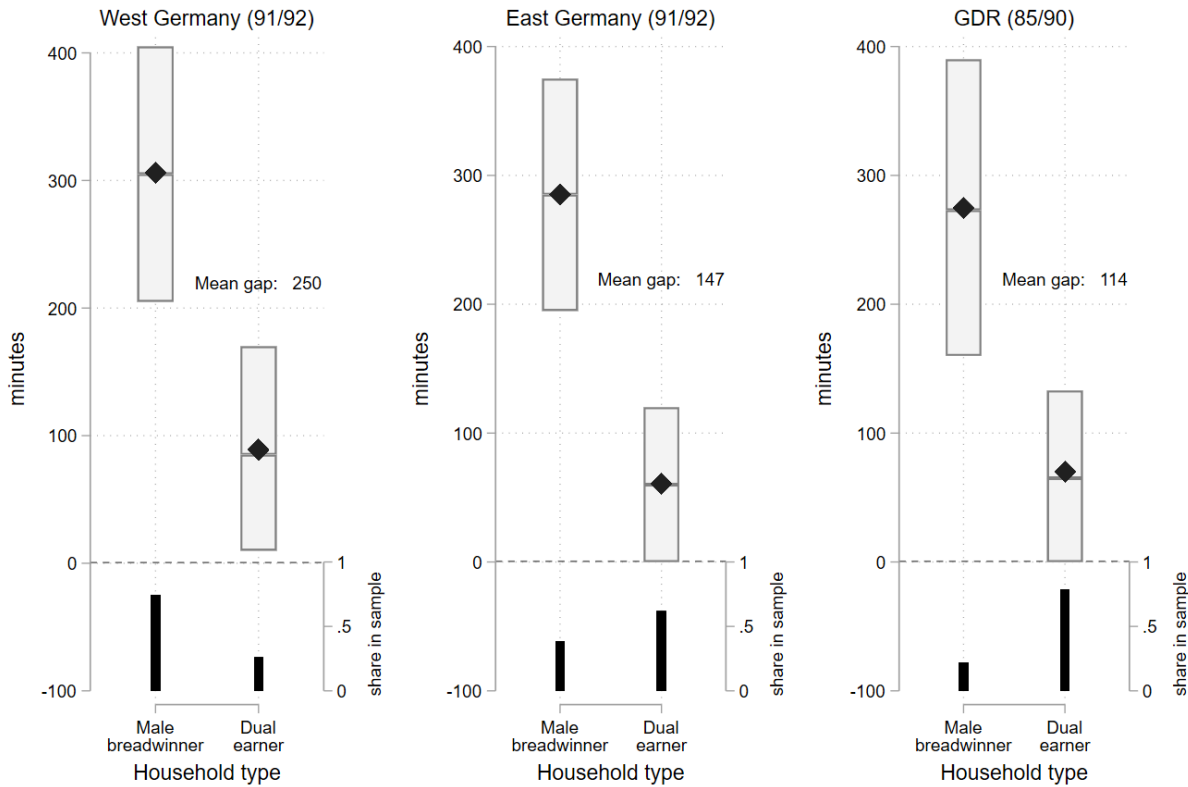
Appendix Figure A.1 displays cumulative density functions of paid work and housework in the GDR, and East and West Germany, by gender. In the GDR, only about 20% of women and less than 10% of men did not work on the weekday recorded. While almost all women did at least some housework, about 10% of men did not spend any time on housework. The lower panel of Appendix Figure A.1 shows that despite the lower average in paid work, the distributional gender differences in the GDR in 1985/90 and East Germany in 1991/92 were relatively similar. In West Germany, we observe a much more gender-traditional distribution of paid and housework work. Overall, women in East and West Germany differ strongly in their distributions, while men from East and West Germany look quite similar. The gender gaps in paid work and housework are substantially larger in West Germany than East Germany, indicating that the GDR (and later East Germany) was more gender equal.

4 Household Types and Housework Time Allocation

To shed light on the differences in gender inequality in paid work and housework, and their interplay, we now consider household heterogeneity and distinguish between the two main types of households. Specifically, we define household types by the female share of market work as follows: male breadwinner households $[0, 0.35)$ and dual earner households $[0.35 - 0.65)$. As laid out in section 2, the typical household in the GDR was of the dual earner type and is still, even after reunification, more prevalent in East Germany compared to

West Germany. As only 5% of households are of a (main) female breadwinner type [0.65, 1], we omit those households from the analysis. We restrict this analysis to households where at least one partner is working full-time (≥ 7 hours) which are the most relevant cases in our context.¹³

Figure 2: Female-male gap in housework by household types



Notes: Figure plots female-male gap in housework by household type for West Germany, East Germany and the GDR. Male breadwinner and dual earner households are defined by the female share of paid work in households (0-35 and 35.1-65%, respectively). Diamonds indicate the mean values, range plots show 25th, 50th and 75th percentiles of the distribution. Source: GDR time budget study (1985/90) and the German Time-Use Survey (1991/92).

Figure 2 illustrates the gender gap in housework within households in West Germany, East Germany and the GDR distinguished by the two dominant household types, i.e. male breadwinner and dual earner households. Mean values of the gap for all household types

¹³This excludes cases where both partners work very few hours, so that a shift between different types of households can occur with small changes in one's working time, which only provides limited insight in this context.

denoted in the graphs mirror the findings from Table 1; the gap is highest in West Germany with 250 minutes per weekday and lowest in the GDR (114 minutes), with East Germany lying in between but closer to the GDR.

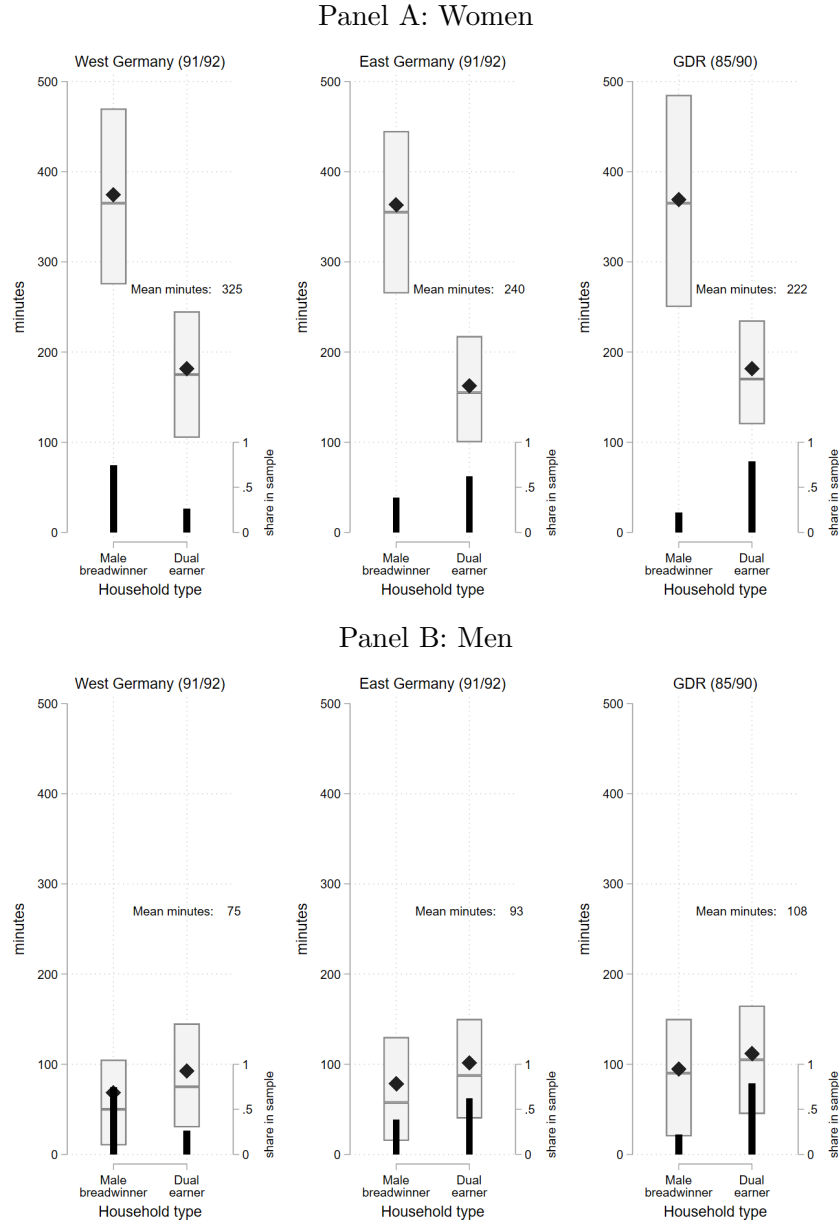
The solid bars (right-hand y -axis), however, indicate that the distribution of household types differs strongly. In West Germany most households (74%) are of the male breadwinner type, whereas in the GDR—and to a slightly lower degree in East Germany after reunification—dual earner households are the norm (shares of 79% and 61%, respectively). Once those differences in the distribution of household types are taken into account, the gender gap in housework looks remarkably similar in West and East Germany and the GDR, with no noticeable differences remaining as shown by the type-specific distributions of the gap (diamonds denote means, and range plots 25th, 50th and 75th percentiles). In male breadwinner households women do around 300 minutes more housework, and they do around 80 minutes more in dual earner households.

We next split the gap in housework into minutes contributed by women and men in Figure 3 across our two types of households. Very similar findings to Figure 2 emerge. Looking at women’s average contribution in Panel A, we see that women in West Germany do by far the most housework, but upon accounting for the type of household, the differences between West and East Germany and the GDR are small. Women do around three hours less housework when they are in a dual earner household.

Looking at men in Panel B reveals a striking pattern. In both household types, male breadwinner and dual earner households, men are working full-time. But despite the very large drop in female housework in dual earner households, we see no compensation by men; i.e., men’s housework is essentially irresponsive to the substantial decrease in women’s housework. This suggests that the negative relation between female share of paid work and the gender gap in housework is entirely driven by individual time constraints of women. Changes in women’s work arrangements hardly affect men’s decisions, at least in this cross-sectional comparison across two stylised types of households.¹⁴

¹⁴We show in a decomposition analysis in Table 3 to what degree covariates may explain differences in the gender housework gap between East and West German households. The raw East-West gap across all households is 107 minutes per day. Adding a rich set of control variables, including individual and household characteristics as well as women’s and men’s time spent in paid work reduces the difference to only 12 minutes. Individual and household characteristics have little explanatory power, but women’s paid work is

Figure 3: Housework in minutes by household types



Notes: Figure plots housework in minutes per weekday by household type for West Germany, East Germany and the GDR. Diamonds indicate the mean values, range plots show 25th, 50th and 75th percentiles of the distribution. Source: GDR time budget study (1985/90) and the German Time-Use Survey (1991/92).

responsible for more than 80 percent of the reduction of the difference whereas men's paid work—in line with the stylised findings in Panel B of Figure 3—explains less than 10 percent.

5 Theoretical Framework

To give more structure to our analysis and explain the irresponsiveness of own's housework to partner's time spend in paid work, we consider a theoretical model following the seminal framework of [Fernández et al. \(2004\)](#), FFO in what follows). The model by FFO has recently been applied successfully by [Cortés and Pan \(forthcoming\)](#) to better understand the role of children for the earnings gender gap, and by [Bertrand et al. \(2021\)](#) to explain the marriage gaps between skilled and unskilled women. This framework is particularly suitable here because, in addition to time allocation within households/couples, it also allows to endogenise marriage and heterogeneity in a very tractable manner, including dynamics due to parental transmission.

Within a (heterosexual) marriage, each partner $i \in \{f, m\}$ chooses how to allocate a perfectly divisible unit of time between housework h_i that produces a joint household good $b = H(h_f, h_m)$, and market work $l_i = 1 - h_i$ that yields income $w_i l_i$ for joint consumption $c = w_f l_f + w_m l_m$, where w_i is partner i 's market wage. Letting $u(c, b) = c + \beta \cdot \ln(b)$ denote the spouses' shared quasi-linear component of utility, the female wife f and the male husband m maximize

$$V_f(c, b \mid q_f) = u(c, b) + q_f \quad \text{and} \quad V_m(c, b \mid \alpha_m, q_m) = u(c, b) - \alpha_m l_f + q_m, \quad (1)$$

respectively, over their individual time allocation, subject to the aforementioned physical/technological constraints, and taking as given the other's time allocation, hence non-cooperatively. The values q_f and q_m are match values that determine who gets married in a prior stage (see the discussion section below) but at this point are decision-irrelevant; $\alpha_m \geq 0$ is a male characteristic that measures how strongly a husband dislikes his wife's engagement in market as opposed to household work, and the non-cooperative household time allocation again implies it is decision-irrelevant at this point, whilst being important for what marriages form (also see the discussion section below). Note that if the husband has $\alpha_m = 0$, the non-cooperative (Nash equilibrium) solution here coincides with that of a unitary household (see [Becker, 1981](#), and also [Vermeulen, 2002](#)).

We impose the following basic assumptions on the technology for producing the joint

household good: (1) $H(0,0) = 0$, which guarantees that some housework will take place; (2) each spouse's housework has positive and non-increasing marginal returns, i.e., for both $i \in \{f, m\}$, $H_i(h_f, h_m) \equiv \partial H(h_f, h_m)/\partial h_i > 0$ and $H_{ii}(h_f, h_m) \equiv \partial^2 H(h_f, h_m)/\partial h_i^2 \leq 0$; (3) each spouse's housework's marginal return is non-increasing in the partner's amount of housework, so the spouses' housework hours are substitutes, i.e., for both $i \in \{f, m\}$ and $j \in \{f, m\}$ with $j \neq i$, $H_{ij}(h_f, h_m) \equiv \partial^2 H(h_f, h_m)/\partial h_i \partial h_j \leq 0$.¹⁵ These assumptions generalise FFO, because we are especially interested in relating our findings to what is happening within the household regarding housework.

We will consider how this framework may generate the household time allocation patterns observed, including what kind of heterogeneities among men and women this requires. For comparing East and West Germany, we will apply the framework as above for the West and interpret the GDR as a “shock” in the form of a *forced labour supply constraint*, requiring—apart from rarely observed exceptions that we ignore here—that every adult and hence each spouse i must engage in full time market work, i.e., $l_i \equiv (1 - h_i) \geq K$ for $K \gg 0$.

5.1 Time Allocation and Household Types, East and West.

Following our empirical analysis in section 4, we focus on the two main types of household time allocation equilibrium (in the unconstrained West): (A) The “male breadwinner” equilibrium (MBE) type, in which only the husband engages in market work while also contributing some housework, i.e., the household's time allocation equilibrium (h_f^A, h_m^A) has $h_f^A = 1$ and $1 > h_m^A > 0$; and (B) the “dual earner” equilibrium (DEE) type, in which both spouses engage in both market work and housework, i.e., the household's time allocation equilibrium (h_f^B, h_m^B) has $1 > h_f^B \geq h_m^B > 0$. Hence, we again neglect the rare case of a “female breadwinner” type.

MBE is characterised by h_m^A such that

$$0 < h_m^A < 1, \quad \beta \cdot \frac{H_f(1, h_m^A)}{H(1, h_m^A)} \geq w_f \quad \text{and} \quad \beta \cdot \frac{H_m(1, h_m^A)}{H(1, h_m^A)} = w_m. \quad (2)$$

¹⁵ Assuming substitutes seems plausible a priori and also standard. In any case, it shall become clear that with complements the framework could not explain our empirical findings, as this would imply that spouses housework moves together, besides also the issue of equilibrium multiplicity.

Naturally, this could be explained by a gender wage gap, $w_m > w_f$, which can generate this type of equilibrium even when housework enters household production in a gender-symmetric manner. DEE, on the other hand, is characterised by (h_f^B, h_m^B) such that

$$0 < h_f^B, h_m^B < 1, \quad \beta \cdot \frac{H_f(h_f^B, h_m^B)}{H(h_f^B, h_m^B)} = w_f \quad \text{and} \quad \beta \cdot \frac{H_m(h_f^B, h_m^B)}{H(h_f^B, h_m^B)} = w_m. \quad (3)$$

Under our basic assumptions, equilibrium is unique (because best responses are), so the co-existence of these two household types requires some heterogeneity. A possible explanation would assume all men are alike while women/wives differ in the market wage they fetch, so that if their wage is low MBE is obtained, and DEE if the wage is high.

Rejection of Single Housework Sphere. Now recall our irresponsiveness finding that West German husbands' housework does not differ between these two household types, i.e., $h_m^A = h_m^B$ (see Figure 3, Panel B). Our basic assumptions imply that in a given marriage, a husband's (positive amount of) housework is decreasing in his wife's housework. If matching were random, the model could therefore not generate the observed irresponsiveness. Yet, unobserved heterogeneity and endogenous matching that depends on such heterogeneity could "coincidentally" generate this cross-sectional outcome (e.g., men may also differ in their market wages, though with a gender gap, and marriages may form between high wage men and low wage women, and between low wage men and high wage women, assuming that between these men and women there is hardly a gender gap). This is where our second irresponsiveness finding informs the analysis, namely that in comparing East and West German marriages with both spouses working on the "market" we find them to resemble each other closely in terms of housework (Figures 2 and 3). Interpreting the GDR as a shock that exogenously imposes a full-time labour supply constraint on household time allocation, this forces what would otherwise be MBE marriages (the dominating type in the West) into DEE marriages. Since, under our basic assumptions, husbands in an MBE marriage will reallocate some time into housework to substitute for their wives' housework in best response to a decrease in the latter, endogenous marriage formation (matching) could not explain this other irresponsiveness.

Separate Housework Spheres. We propose a simple extension of the basic framework that allows to explain our empirical findings with minimal heterogeneity. We assume that the household good aggregates two goods b_1 and b_2 , corresponding to two separate housework domains 1 and 2, where each b_k is produced from the spouses' inputs $h_{f,k}$ and $h_{m,k}$, and these are perfect substitutes; specifically, we impose the structure

$$b = H(b_1, b_2) = b_1^{\gamma_1} b_2^{\gamma_2}, \text{ with } b_k = c_{f,k} h_{f,k} + c_{m,k} h_{m,k}; \gamma_k, c_{i,k} > 0, \forall (g, k) \in \{f, m\} \times \{1, 2\}. \quad (4)$$

Without loss of generality, we impose that $\frac{c_{m,1}}{c_{f,1}} \leq \frac{c_{m,2}}{c_{f,2}}$, implying that any comparative advantage favours within-household specialisation so that wives work domain 1 and husbands work domain 2.

The only heterogeneity we will require is that women/wives differ in the wage their market work fetches, which is either high or low, and anyways no greater than that of any man/husband; i.e., we consider $w_f \in \{\underline{w}, \bar{w}\}$ such that $0 < \underline{w} < \bar{w}$. For simplicity, we assume that there are only two wage levels overall, so that \bar{w} equals w_m .¹⁶ Moreover, for the purpose of relating the model to our data, we will interpret GDR marriages as marriages subject to a forced-labour-supply constraint of the form $l_i \equiv (1 - h_i) \geq K$ for both $i \in \{f, m\}$, where $0 \ll K < 1$ and which is meant to capture that both spouses have to work full time.¹⁷ As gender wage gaps were also persistent in the GDR (Krueger and Pischke, 1995; Sørensen and Trappe, 1995), without the forced labour constraint we would not observe such different distribution of household types between GDR (later East Germany) and West Germany.

Let then $h_{i,k}^A$ and $h_{i,k}^B$ denote spouse i 's time devoted to housework in domain k in the household time allocation equilibrium of a marriage in which $w_f = \underline{w}$ (A) and in which $w_f = w_m = \bar{w}$ (B), respectively, when there is no forced-labour-supply constraint. Analogously, let $h_{i,k}^{KA}$ and $h_{i,k}^{KB}$ denote the corresponding housework when there is a forced-labour-supply constraint. Statements referring to “every marriage” are meant as holding true in household

¹⁶As a consequence, our model's explanation will have the feature that all married people that voluntarily supply labour to the market earn the same wage, so there is no observable gender gap in hourly wages, because low-wage wives will stay at home to do housework (unless forced to). It will feature a gender gap in total wage earnings, however, due to greater labour supply by men.

¹⁷92% of women in the GDR data indicated being employed. The slightly larger share of male breadwinner households that we observe looking at the hours worked on a weekday could stem from women simply not working on the specific day which the time-use data captures.

time allocation equilibrium regardless of the wife's wage and regardless of whether there is a forced-labour-supply constraint, and we write $h_{i,k}^*$ for spouse i 's time devoted to housework in domain k when referring to equilibrium of any marriage. We will say that a marriage has separate spheres, if its household time allocation equilibrium has the wife do all housework in one domain and the husband do all housework in the other domain.¹⁸ We are now ready to state the proposition that is our explanation of the empirical findings.

Proposition 1. *For any constraint value K with $0 < K < 1$, there exist values of the model parameters $(\underline{w}, \bar{w}, \beta, (\gamma_k, (c_{i,k})_{i \in \{f,g\}})_{k \in \{1,2\}})$ such that*

- (i) *every marriage has separate spheres, with $h_{f,2}^* = h_{m,1}^* = 0$;*
- (ii) *every marriage has the same time allocation by the husband, with $h_{m,2}^* = \frac{\beta\gamma_2}{\bar{w}} < (1 - K)$;*
- (iii) *every marriage without a forced-labour-supply constraint has the wife's time allocation to housework negatively depend on her wage, with $h_{f,1}^A = 1$ and $h_{f,1}^B = \frac{\beta\gamma_1}{\bar{w}}$, where $h_{m,2}^* < h_{f,1}^B < 1$;*
- (iv) *every marriage with a forced-labour-supply constraint has the wife's time allocation to housework either the same or negatively depend on her wage, with $h_{f,1}^{KA} = (1 - K)$ and $h_{f,1}^{KB} = \min\{(1 - K), h_{f,1}^B\}$.*

We prove this proposition in Appendix A, which also includes details of the set of parameters that imply (i)–(iv), in equation (7). It boils down to relations between $(\underline{w}, \bar{w}, (\beta\gamma_k, \frac{c_{m,k}}{c_{f,k}})_{k \in \{1,2\}})$ that, for given K with $0 < K < 1$, essentially imply a sufficient gender (potential-) wage gap, that working on the market is worth forgoing at least some household production when the wage is high, and that comparative advantages in housework are sufficiently strong and such that wives' comparative advantage is in the sufficiently more important housework domain (domain 1, where $\gamma_1 > \gamma_2$).

While the proposition establishes existence for any constraint value K with $0 < K < 1$, to reasonably apply to our actual setting, we would consider $K \gg 0$ as relatively large. More specifically, if we interpret $(1 - h_{f,1}^B) = (1 - \frac{\beta\gamma_1}{\bar{w}})$ as (approximately) full-time work, equal to K , then we obtain that all GDR marriages look alike in terms of housework allocation and,

¹⁸Formally, there is a mapping $s : \{f, m\} \rightarrow \{1, 2\}$ such that for each $i \in \{f, m\}$, we have $h_{i,k} > 0$ if $k = s(i)$ and $h_{i,k} = 0$ otherwise.

moreover, this allocation is also the same as in Western DEE marriages. (Men then work additional hours beyond such full time.) Also observe that to explain the predominance of MBE marriages in West Germany, the model simply requires the heterogeneity among married women to be such that most of them face the low market wage. (With forced labour supply in the GDR, there is no type distribution to explain, upon ignoring the rare exceptions to this dual earner rule.)

5.2 Discussion and Model Prediction

The point of the model is to show how within-household specialisation into separate spheres due to gender-specific comparative advantages in the production of two household goods *generally* implies irresponsiveness of husbands' housework to their wives' labour supply. In particular, marriages that would be MBE marriages in West Germany become similar to its DEE marriages within the household upon facing a forced-labour-supply constraint, as was present in the GDR. While the GDR certainly imposed a “shock” of far greater scope beyond this constraint, the similarity of DEE marriages in West Germany and marriages in the GDR with regards to time allocation within the household (Figure 2) is striking, and our model provides a simple explanation of the main household time allocation patterns. We now discuss the model's assumptions and implications, as they guide our subsequent further empirical analysis.

While all our results so far go through assuming unitary as opposed to non-cooperative marriages (i.e., assuming $\alpha_m = 0$ for all men, so that men do not experience disutility if their wife is working), building on FFO has the great advantage of allowing to endogenise marriages and any heterogeneity assumed. In particular, this concerns the assumption of gender-specific comparative advantage in housework, and also dynamics due to parental transmission of preferences or skills, in which the broader GDR shock would play an important role. Observe that upon substituting the equilibrium time allocations under our extension, household production takes the reduced form $b = H(h_f, h_m) = h_f^{\gamma_1} h_m^{\gamma_2}$, though with h_i an equilibrium allocation corresponding to $h_f = h_{f,1}$ for wives and $h_m = h_{m,2}$ for husbands. This fits FFO's assumptions, whereby their analysis of incentives to invest in marketable skills moderated by the marriage market carries over in a straightforward man-

ner.¹⁹ Hence, we only informally discuss its application and implications here, referring the interested reader to the original work for the formalism.

As FFO show theoretically and support empirically (see also [Bertrand et al., 2021](#), for closely related work), a low wage for most women may well be the result of low investments by women in their marketable skills due to “negative” incentives created through the marriage market. FFO propose two (non-exclusive) channels, which have in common the parental transmission by mothers to their sons: The first channel concerns men’s preferences, such that sons of housewives dislike working wives whereas sons of working wives do not (endogenous heterogeneity in α_m in the model); while one may also explain the predominance of MBE marriages in West Germany by a labour market that offers bad job prospects to women with high skills (so that most of them end up with low-paying jobs), there is also evidence that skilled women with high wages face a greater risk of not finding a man to marry them, as FFO suggest. The second channel concerns men’s housework skills, such that sons of working mothers develop better housework skills; with such a husband a woman would be freed from some housework and fetch a greater return on her labour market skills. Either way, the more marriages have working mothers, the better become the marriage prospects of next-generation women with marketable skills, and hence more of those next-generation women will invest in such skills (and get married).

The long-lasting GDR shock certainly imposed very different opportunities to invest in skills and reap returns on such investments. While a natural implication of FFO’s preference channel would be that women in the GDR should have invested more in “marketable” skills over time than women in the FRG, as the number of sons of working mothers increased drastically, this is impossible to seriously examine with our data set. In contrast, we are able to relate to the second channel. Its operation in favour of female investment in skills and labour supply is based on the premise that men’s housework would substitute for that of their wives. This is in contradiction to the irresponsiveness observed, and also our separate spheres model that explains it. However, it points to the likely origin of the gender-specific comparative advantage our model assumes, namely the parental transmission of housework

¹⁹The only exception is that our extension of household production requires revisiting the value of remaining single. Solving the time allocation problem in the absence of a spouse is itself straightforward, however (though a single will do housework in both domains as implied by the utility function).

skills that occurs from father to son and from mother to daughter.²⁰ As long as all marriages have the wife operate exclusively in the same one household domain and the husband exclusively in the other, this will remain so, and whether the mother works or not does not affect this transmission. This is consistent with our empirical findings, and it reconciles the “efficiently” separate spheres our theory imposes with the norm-based notion of separate spheres suggested by [Lundberg and Pollak \(1993\)](#) – certainly in the sense that these skills are not given by nature.

The theoretical model yields several predictions that can be readily tested in the data (see Proposition 1). (i) Every marriage has separate household spheres, i.e., there are household tasks that all women engage in and which are distinct from those that all men engage in. (ii) Men’s time allocation to (non-routine) housework is constant irrespective of his own or his wife’s time spent in paid work. Due to the absence of wage information we cannot directly test parts (iii) and (iv) of Proposition 1. However, we can conduct an analysis in the spirit of this and use educational attainment as a proxy for potential wages. We estimate whether without a forced labour supply constraint—i.e., in West Germany—wives’ time allocation depends negatively on her education as proposed by part (iii), and whether with forced labour supply—i.e., in the GDR—the relationship holds, but to a lesser degree, see part (iv).

6 Empirical Tests of Model Predictions

6.1 Separate Housework Spheres

Considering two gender-specific spheres of housework is by no means a new idea in the economic (and sociological) literature ([Coltrane, 2000](#); [Hook, 2010](#)). Our main innovation is to introduce the separate spheres into the theoretical framework following FFO to model partners’ contribution to paid work and housework. The literature leads us to a natural candidate for what the two spheres the model posits might objectively correspond to, namely *routine* and *non-routine housework* (e.g., [Borra et al., 2021](#); [Hersch and Stratton, 2002](#);

²⁰[Lundberg et al. \(2007\)](#); [Baker and Milligan \(2016\)](#) document that fathers spend more time with their sons.

Perry-Jenkins and Gerstel, 2020; Presser, 1994; Stancanelli and Stratton, 2014). Routine housework (sometimes referred to as *domestic chores*) contains activities that have to be done regularly—usually every day—and are “less optional and less able to be postponed” (Coltrane, 2000), these include cooking, cleaning the house, washing and grocery shopping. In contrast, non-routine housework is conducted irregularly and may be easier to skip on a given day or can be outsourced more easily (Hersch and Stratton, 2002); fixing things in the house or building things and gardening. In the following, we use the same distinction between routine and non-routine housework to test predictions derived in the theoretical model. We will first focus on Germany, which motivated the model, and then also consider cross-country evidence.

Table 2: Separate spheres - housework in minutes per weekday

	GDR (85 and 90)			East Germany (91/92)			West Germany (91/92)		
	Women (1)	Men (2)	Diff. (3)	Women (4)	Men (5)	Diff. (6)	Women (7)	Men (8)	Diff. (9)
<i>All housework</i>	223.78	121.89	101.89	250.55	148.86	101.68	325.55	116.53	209.02
<i>Routine housework</i>	187.30	49.27	138.04	222.57	81.81	140.77	293.39	63.44	229.95
Cooking	59.50	13.07	46.42	85.29	24.92	60.37	106.92	17.24	89.68
Cleaning	79.41	9.44	69.97	78.78	13.91	64.87	119.26	10.59	108.67
Shopping	37.76	19.40	18.36	25.39	14.63	10.76	32.16	11.99	20.17
Other housework	10.64	7.36	3.28	33.12	28.34	4.78	35.05	23.62	11.43
<i>Non-routine housework</i>	36.47	72.62	-36.15	27.97	67.06	-39.09	32.16	53.08	-20.93
Fixing and building things	14.76	29.43	-14.67	8.10	40.62	-32.52	8.29	32.41	-24.12
Gardening	21.71	43.19	-21.48	19.87	26.44	-6.57	23.86	20.67	3.20
Observations	2328	2328	2328	1673	1673	1673	4707	4707	4707

Notes: Table shows time-use in minutes per weekday for detailed list of housework categories. Source: GDR time budget study (1985/90) and the German Time-Use Survey (1991/92).

We first consider empirical support for the separate household spheres in our context. Table 2 shows time spent in detailed²¹ housework categories on weekdays and the female-male gap. Gender-specific spheres of housework are evident as the gender gap for routine

²¹The German time budget study contains fine-grained 3-digit activities which add up to the 2-digit activities shown in Table 2. For instance, *cooking* consists of “preparing meals,” “setting the table,” “cleaning dishes,” “conserving food,” and “putting food away.”

housework is in fact larger than the overall gap. Women spent substantially more time on each type of routine housework with the gaps for cooking and cleaning, the quantitatively most important elements, being the largest. The gap ranges from 138 minutes in the GDR to 230 minutes per weekday in West Germany. For non-routine housework, on the other hand, we find a negative gap, i.e. men are spending 21 (West Germany) to 36 (GDR) minutes *more* on these tasks. Clearly, the two spheres of housework are empirically not entirely separated, but we still see strong support for this useful modelling assumption and for part (i) of Proposition 1, as women spent 2.7 to 4.7 times more minutes in routine housework while men spent 1.7 to 2.4 times more minutes in non-routine housework.

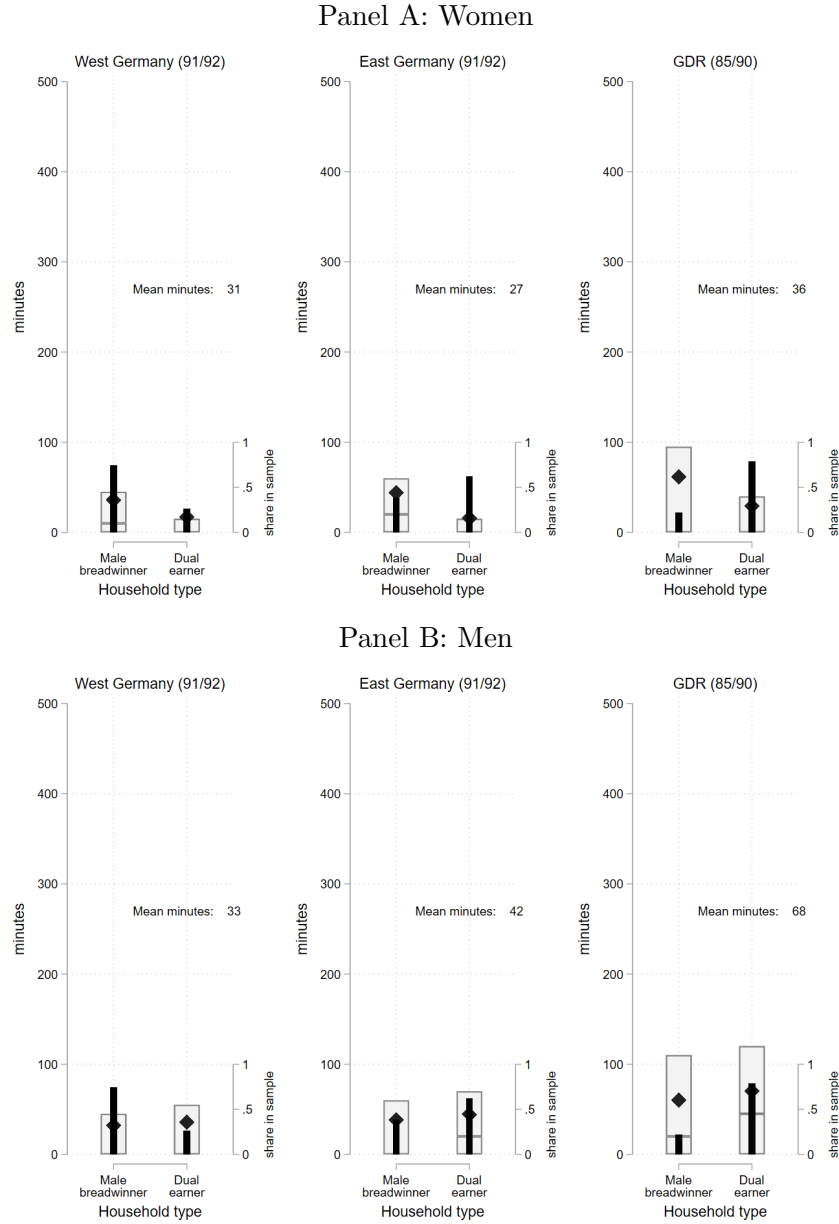
6.2 Male Housework and Female Market Work

We next consider part (ii) of the proposition. How does men’s housework depend on their wives’ time spent in paid work, and does this differ by the type of household (type A or B, i.e., male breadwinner or dual earner households)? Figure 4 shows the minutes spent in non-routine housework similar to Figure 3. Panel B confirms the prediction that men’s time allocation does not differ between household types. We only observe level differences between regimes, which might be due to availability of technology, as men in the GDR spent about twice as much time on these tasks as men in West Germany. Figure 5 additionally presents time spent in routine housework by household type. Women’s time allocation to routine housework drops strongly, and much more than for non-routine housework (Panel A of Figure 4) when comparing male breadwinner and dual earner households. Routine housework is thus primarily responsible for the large reduction of women’s time spent in housework shown in Figure 3. For completeness, Appendix Figure A.2 shows the gap female-male gap for routine and non-routine housework confirming a large reduction in the gap for routine housework and a smaller reduction for non-routine housework driven by women’s reduction in this task.

Table 3 shows a decomposition of the East-West German gender in all housework, and separately for routine and non-routine housework to account for other characteristics that may impact on the gender gap which may differ between East and West German households.²²

²²The decomposition also allows to include all household types, i.e. including the rare female breadwinner

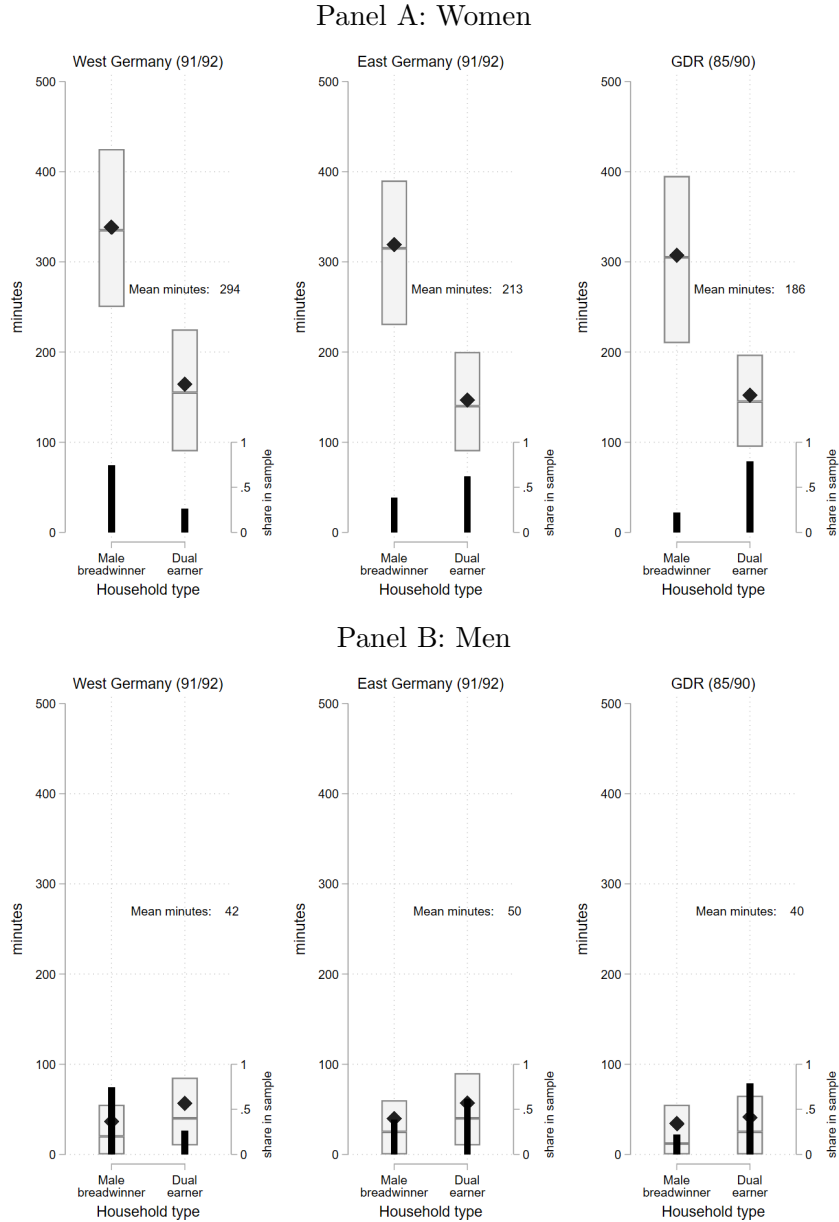
Figure 4: Non-routine housework in minutes by household types



Notes: Figure plots non-routine housework in minutes per weekday by household type for West Germany, East Germany and the the GDR. Diamonds indicate the mean values, range plots show 25th, 50th and 75th percentiles of the distribution. Source: GDR time budget study (1985/90) and the German Time-Use Survey (1991/92).

We use the conditional decomposition by [Gelbach \(2016\)](#) to analyse the role that different covariates play in explaining the East-West difference. In a first step, the housework gap is household and households where no partner is working full-time.

Figure 5: Routine housework in minutes by household types



Notes: Figure plots routine housework in minutes per weekday by household type for West Germany, East Germany and the the GDR. Diamonds indicate the mean values, range plots show 25th, 50th and 75th percentiles of the distribution. Source: GDR time budget study (1985/90) and the German Time-Use Survey (1991/92).

regressed on a dummy for East German households. In a second step, the full model using all explanatory factors is estimated. Taking into account both the correlation between the dependent variables and the outcome variable as well as the correlation between the regions

Table 3: Decomposition of the East-West gender gap in routine and non-routine housework

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
	All (West mean: 209 mins)		Female-male housework gap Routine (West mean: 230 mins)		Non-rout. (West mean: -21 mins)	
East dummy	-107.337*** (5.435)	-12.291** (4.611)	-89.179*** (4.575)	-10.031* (4.175)	-18.158*** (2.763)	-2.260 (2.995)
<i>Covariates:</i>						
Basic controls		-7.084*** (1.117)		-6.712*** (1.053)		-0.372 (0.470)
Household income (5 categories)		-3.922 (2.115)		0.839 (1.895)		-4.761*** (1.384)
Women's paid work		-77.829*** (3.578)		-69.293*** (3.177)		-8.536*** (1.012)
Men's paid work		-6.211* (3.041)		-3.982* (1.832)		-2.229 (1.256)
Specification of female / male work		5 FEs		5 FEs		5 FEs
Share coef. movement due to women's work		.819		.875		.537
Observations	6,380	6,380	6,380	6,380	6,380	6,380

Notes: Table shows a decomposition of the female-male routine and non-routine housework gap following [Gelbach \(2016\)](#). Lower rows show the contribution of the groups of explanatory variables in moving the East dummy. Basic controls: Children under 10 in household (0/1), household size, age, partner's age, education dummies. Robust standard errors in parentheses. Source: German Time-Use Survey 1991/92

(East or West) and the dependent variables, the conditional decomposition from [Gelbach](#) provides consistent estimates on the role of each covariate in moving the East dummy from the baseline to the full model.

The initially large East-West difference in the gender gap of all housework of 107 is reduced to only 12 minutes with female paid work responsible for more than 80 percent of the reduction.²³ The East-West difference in the gender gap of 89 minutes in routine housework similarly reduces to 10 minutes when we control for covariates and women's time allocation to paid work is again responsible for more than 80 percent of the reduction of the East-West gap, providing further support that the only difference between East and West German households with respect to housework is differential selection into paid work for women. It is not relative contributions to paid work that determines housework, but only women's own contribution.²⁴

²³Results are robust to difference specification of male and female paid work, namely including a larger set of FEs (10) for equally large bins or including paid work as a continuous variable.

²⁴In [Appendix B](#) we study the role of children in more detail which is particularly important in the German context due to differences in the childcare infrastructure between East and West Germany. For households without children—arguably the cleanest comparison as these institutional differences matter less for those households—East-West differences in the gender gap in routine housework become precisely zero with women's paid work again being responsible for almost the entire reduction.

6.3 Housework and Earnings Potential

Table 4: Women's time allocation to housework - education gap

	West Germany		East Germany		GDR	
	(1)	(2)	(3)	(4)	(5)	(6)
All housework						
High education	-51.793*** (5.489)	-40.033*** (5.283)	-51.252*** (8.078)	-40.017*** (7.882)	-20.831*** (6.023)	-18.008** (6.025)
Routine housework						
High education	-41.630*** (5.033)	-33.643*** (4.841)	-44.230*** (7.203)	-36.527*** (7.049)	-15.765** (5.102)	-15.306** (5.099)
Control variables	-	Y	-	Y	-	Y
Observations	4,707	4,707	1,673	1,673	2,327	2,327

Notes: High education in West and East Germany is defined by the women having an university entrance qualification (*Abitur*) and in the GDR by having a higher vocational degree. Control variables are number of children in the household, total number of persons in the household (only West and East Germany), and women's and her partner's age. Robust standard errors in parentheses. Source: GDR time budget study (1985/90) and the German Time-Use Survey (1991/92).

Parts (iii) and (iv) of Proposition 1 imply that wives' time allocation to housework depends negatively on her wage and that this relationship is less pronounced in GDR households with a forced labour supply constraint. Regrettably, neither of the time-use data sets contain information on hourly wages and only the German time budget study includes household income. Due to this we cannot test these parts of the proposition directly, but we can instead examine the relationship between women's time allocation to housework and her educational attainment. In fact, this approach is closer to the spirit of the proposition compared to using observed hourly wages as the argument in the proposition relates to potential wages, as observed wages are already directly impacted by household's time allocation, i.e. an outcome of the bargaining process.

Table 4 shows the education gap for all housework and for routine housework only for women. Uneven columns show the raw difference and even numbered columns show conditional differences with a basic set of control variables added to the regression (see table notes). The education gap in housework for women is pronounced; depending on the specification,

the gap is 40-52 minutes in both West and East Germany, i.e. wives with more educational attainment allocate substantially less time to housework. Interestingly, the differences are virtually identical in West and East Germany. In the GDR, however, this education gap is also visible but is less than half the gap in East and West Germany.

7 International Evidence

7.1 Time-use Data

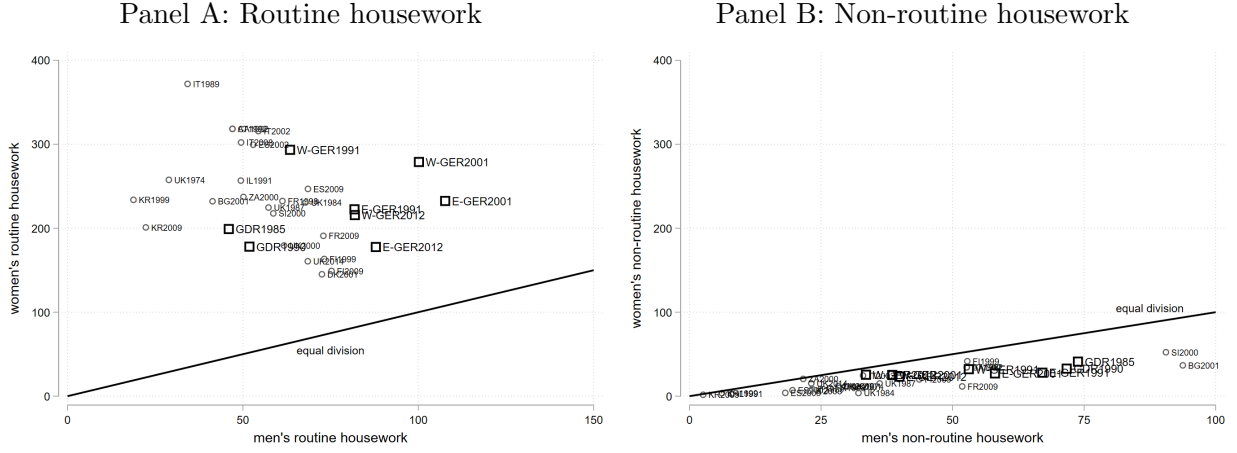
The case of Germany with a forced labour supply constraint in the GDR and the incompatibility of a single housework sphere in a theoretical framework motivated us to extend the framework by [Fernández et al. \(2004\)](#) by considering separate, gender-specific housework spheres. This simple extension led to four main testable predictions, for which we found ample support using German time-use data. Naturally this raises the question to what degree the results are context-specific. Do separate spheres exist in different cultural and institutional settings and across time and how is time spent in market work linked to that in non-market work?

To answer this question we use data from 17 countries from 31 time-use surveys from the MTUS ([Gershuny et al., 2020](#)) plus Germany. For the analysis we use all countries available in the MTUS which are conducted on a household level and contain identifiers for households, and for which we have at least 200 household-level observations on weekdays. As for the German time-use surveys, we only consider mixed-sex couples aged 18-65.

Figure 6 highlights that separate housework spheres exist in all countries and at different times. We collapse each time-use study into one single scatter showing women’s and men’s average time allocation per weekday to routine (Panel A) and non-routine (Panel B) housework. No observation indicates an even division of either housework sphere with all points substantially above the 45 degree line for routine housework and below for non-routine housework. Separate housework spheres seem to be a universal phenomenon—or, at least, within the countries studied.

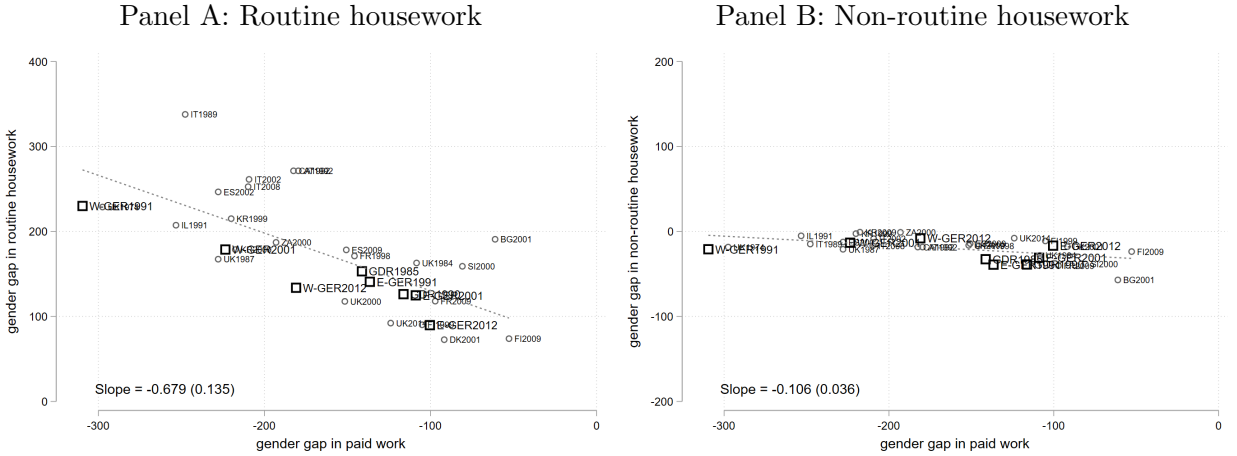
Figure 7 plots gender gaps in routine and non-routine housework (minutes per weekday)

Figure 6: Separate spheres across countries



Notes: Figure shows women's and men's time allocation to routine and non-routine housework per weekday. Sources: GDR time budget study, German Time-Use Survey and MTUS

Figure 7: Gender gaps in housework and paid work across countries



Notes: Sources: Figures shows the correlation between gender gaps in different types of housework and gender gaps in paid work. GDR time budget study, German Time-Use Survey and MTUS

and in paid work. The graph for routine housework closely mirrors the graph for all housework in Figure 1. A closing of the gender gap in paid work by ten minutes is associated with a seven minutes lower gender gap in routine housework. Panel B considers non-routine housework for which Proposition 1 suggested that the time-allocation of men is independent of the household type, i.e., in most cases, women's time allocation to paid work. Indeed, the gender gap in non-routine housework is barely related to the gender gap in paid work.²⁵

²⁵The estimated slope for the linear fit is statistically significant, but is much smaller in magnitude than

We now turn from the *between*-country to a *within*-country analysis. Figure 2 demonstrated that households in the GDR, East and West Germany looked similar in their relative allocation of housework when similar household types as defined by the female share of paid work were considered (male breadwinner or dual earner households). Or in other words; women’s selection into paid work differed, but despite the very different selection patterns the allocation of housework within these couple is almost indistinguishable. We replicate this analysis for a wide range of countries in Figure 8.²⁶

The key insight from Figure 8 is that households from all 24 time-use surveys fulfilling our sample criteria look remarkably alike once the same household type is considered. And this is, as the black bars indicate (see also Panel A, Figure 7), despite vast differences in the distribution of household types. Consider the case of Austria (AT1992) and Bulgaria (BG2001); in Austria 70% of households are of type A (male breadwinner) whereas in Bulgaria only 38% are of this type. But despite these very different selection patterns into paid work the distribution of household gaps hardly differs between the countries. Across countries, in male breadwinner households the female-male gap in housework is around 400 minutes per weekday and around 100 minutes in dual earner households (type B). In Appendix Figures A.4 and A.5 the same cross-country figure is shown separately for routine and non-routine housework, respectively. Results for routine housework closely resemble those for all types of housework. The gap in non-routine is overall much smaller and differs little by household type.

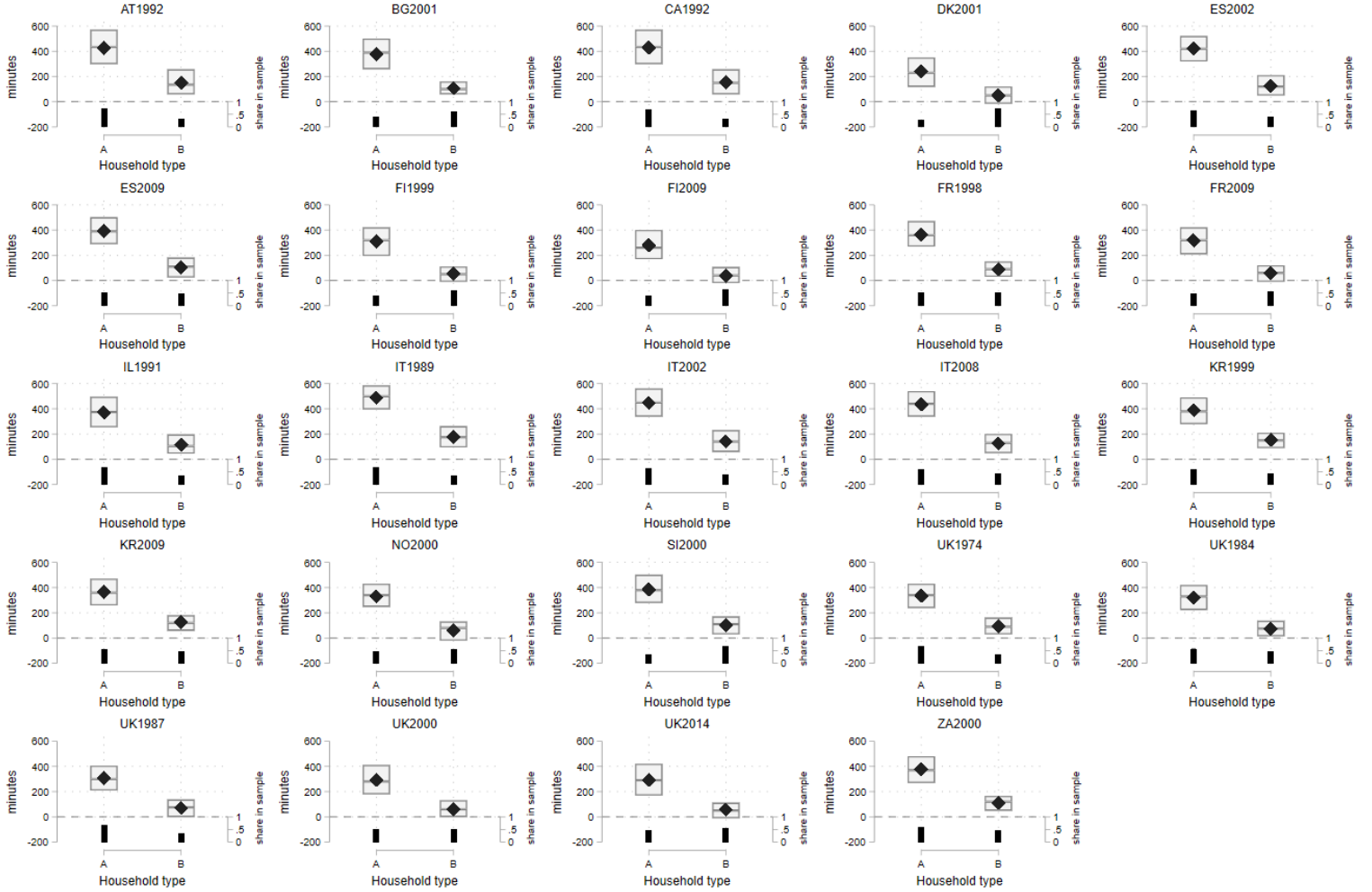
7.2 Values and the Division of Market and Non-market Work

In a final step of our analysis we look at the correlation between the division of work in households and stated preferences regarding this division. For this we use the World Value Survey (WVS, Inglehart et al., 2014) which elicits attitudes on a wide range of topics. We make the same sample restrictions as for the time-use surveys (18-65 years old and

the slope for routine housework by a factor of six. In Appendix Figure A.3 we additionally show women’s and men’s time allocated to housework by women’s paid work and find again that women’s housework decreases strongly with time spent in paid work, while men only weakly increase their housework contribution, suggesting only very limited compensation, at best.

²⁶We again condition the sample to weekdays, to households with at least one partner working full-time and to countries with at least 200 household-level observations.

Figure 8: Female-male gap in housework by household types across countries



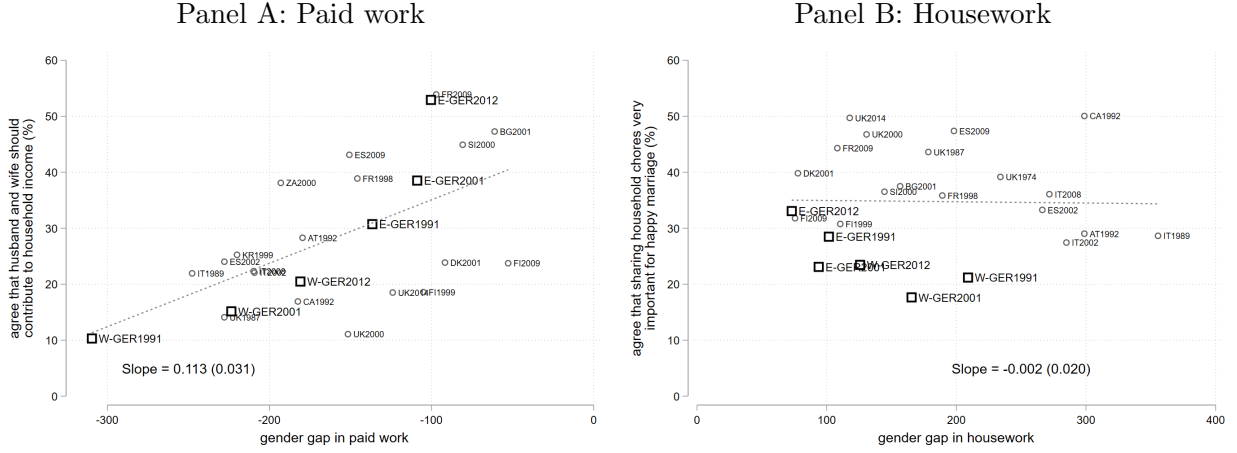
Notes: Figure plots female-male gap in housework by household type for all countries from the MTUS conducted on a household level. Household type A are male breadwinner households and type B are dual earner households (female share of paid work of 0–35% and 35.1–65%, respectively). Diamonds indicate the mean values, range plots show 25th, 50th and 75th percentiles of the distribution. Source: MTUS

cohabiting²⁷) and use survey years that are as close as possible to the year the time-use studies were conducted.

Figure 9, Panel A, correlates the share agreeing with the statement that both husband and wife should contribute to household income with the gender gap in paid work. On

²⁷The WVS does not contain reliable information on whether respondents are cohabiting with a different- or same-sex partner.

Figure 9: Values and the division of work



Notes: Figure correlates the share agreeing to statements from the World Value Survey with gender gaps in paid work and housework. Sources: GDR time budget study, German Time-Use Survey, MTUS and WVS

average, countries with lower gender gaps in paid work have a much higher share agreeing that both should contribute to household income. A six percentage point increase in support for that statement is associated with a 50 minutes reduction in the gender gap in paid work. So stated preference are evidently reflected in time allocation concerning market work in the aggregate.

A different picture, though, emerges when housework is considered in Panel B of Figure 9. If preferences for housework and the time allocation to housework were directly linked, one would expect a negative correlation between the share agreeing to the statement that sharing household chores is important for a happy marriage and the gender gap in housework. In fact, the variables appear orthogonal to each other. Although no causal relationships can be derived from these cross-country correlations, the findings lend further support to the hypothesis that it is predominantly gender attitudes towards paid work that matter both for the division of paid work and, as a consequence, of housework. Attitudes towards housework itself appear to be of minor relevance when it comes to the gender division of non-market work.

8 Conclusion

This paper documents separate housework spheres that have largely resisted developments towards more gender equality. Women do the cleaning, cooking and shopping, while men primarily fix or build things and do repairs. The female housework sphere is more time-demanding and less flexible in nature. These housework spheres exist independent of female employment in the labour market and of norms regarding female employment. Separate housework spheres are observed to be a stable characteristic of household time allocation—they even persisted throughout German division and reunification. Equally, they exist independent of the presence of children, though children might reinforce inequalities in housework via production complementarities between childcare and the female housework domain.

We organise our argument around an extension of the framework proposed by [Fernández et al. \(2004\)](#), which we extend by a second household good. We obtain separate housework spheres as an efficient solution following gender-specific comparative advantage in home production. As a result, gender equality cannot be achieved as an efficient outcome without changing the underlying pattern of gendered comparative advantage.

Following [Fernández et al. \(2004\)](#), this implies a direct route toward more equality via interventions into (inter-generational) learning; e.g., as part of their compulsory school education, boys could be trained in routine tasks such as cleaning, shopping and cooking, while girls could be trained in fixing and repairing things. Alternatively, the female housework domain could be reduced in its importance with technological change or outsourcing. In the meantime, any shock or gradual development that increases the need for housework, such as more teleworking from home like during the COVID-19 pandemic, will increase the pressure on the female housework sphere disproportionately and put women at increased disadvantage.

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A Appendix: Proof of Proposition 1

First, rewrite utility $u(c, b) = c + \beta \ln(b)$ with $b = b_1^{\gamma_1} b_2^{\gamma_2}$ and $b_k = c_{f,k} h_{f,k} + c_{m,k} h_{m,k}$ as

$$c + \sum_{k=1,2} \beta_k \ln(c_{f,k} h_{f,k} + c_{m,k} h_{m,k}), \text{ where } \beta_k \equiv \beta \gamma_k.$$

Consider then married individual $i \in \{f, m\}$, taking as given spouse j 's choice of $(h_{j,1}, h_{j,2})$, $j \neq i$, and solving, for some $K \geq 0$ with $K < 1$ (marriages without a forced-labor-supply constraint correspond to $K = 0$),

$$\begin{aligned} \max_{h_{i,1}, h_{i,2}} \quad & w_i \cdot (1 - h_{i,1} - h_{i,2}) + (w_j - \alpha_i) \cdot (1 - h_{j,1} - h_{j,2}) + \sum_{k=1,2} \beta_k \ln(c_{f,k} h_{f,k} + c_{m,k} h_{m,k}) + q_i, \\ \text{s.t.} \quad & (1 - h_{i,1} - h_{i,2}) \geq K, h_{i,1} \geq 0, h_{i,2} \geq 0. \end{aligned}$$

Letting $x_{j,k} = c_{j,k} h_{j,k}$, and omitting the decision-irrelevant $(w_j - \alpha_i) \cdot (1 - h_{j,1} - h_{j,2})$ and q_i , this problem has the Lagrangian function

$$\begin{aligned} \mathcal{L}(h_{i,1}, h_{i,2}, \mu_{i,0}, \mu_{i,1}, \mu_{i,2}) = & w_i \cdot (1 - h_{i,1} - h_{i,2}) + \mu_{i,0} \cdot (1 - h_{i,1} - h_{i,2} - K) \\ & + \sum_{k=1,2} \beta_k \ln(c_{i,k} h_{i,k} + x_{j,k}) + \mu_{i,k} h_{i,k}, \end{aligned}$$

and the following associated (Kuhn-Tucker-) necessary conditions for optimality, which are here also sufficient and yield a unique solution because of our basic assumptions:

$$\begin{aligned} \forall k \in \{1, 2\}, \quad & \beta_k \frac{c_{i,k}}{c_{i,k} h_{i,k} + x_{j,k}} + \mu_{i,k} = w_i + \mu_{i,0}, \\ \mu_{i,0} \cdot (1 - h_{i,1} - h_{i,2} - K) = \mu_{i,1} h_{i,1} = \mu_{i,2} h_{i,2} = & 0, \\ (1 - h_{i,1} - h_{i,2} - K), h_{i,1}, h_{i,2}, \mu_{i,0}, \mu_{i,1}, \mu_{i,2} \geq & 0. \end{aligned}$$

This characterizes households' equilibrium time allocation as time allocation profiles $(h_{i,1}, h_{i,2})_{i \in \{f, m\}}$ for which there exist values $(\mu_{i,0}, \mu_{i,1}, \mu_{i,2})_{i \in \{f, m\}}$ such that the above conditions simultaneously hold for both spouses $i \in \{f, m\}$, given $x_{j,k} = c_{j,k} h_{j,k}$. We now use this characterization to obtain necessary and sufficient conditions on the model parameters for the stated equilibrium household time allocation in each of the four cases to be considered. We do so case by case because this makes the role of various conditions most transparent. Finally, we summarize all the conditions thus obtained into a simple set of sufficient conditions for all cases. (It will be clear that this set is non-empty.)

Consider first the case of a marriage facing the low female wage $w_f = \underline{w}$, starting without a forced-labor-supply constraint, i.e., $K = 0$. Using the above characterization, we obtain that allocation $(h_{i,1}, h_{i,2})_{i \in \{f, m\}}$ with $h_{f,2} = h_{m,1} = 0$, $h_{f,1} = 1$ and $h_{m,2} = \frac{\beta_2}{\bar{w}}$ is an equilibrium outcome if and only if, simultaneously,

$$\begin{aligned} \beta_1 \geq \underline{w} \quad \text{and} \quad \beta_1 \geq \frac{c_{f,2}}{c_{m,2}} \bar{w}, \quad \text{and} \\ \beta_1 \frac{c_{m,1}}{c_{f,1}} \leq \bar{w} \quad \text{and} \quad \beta_2 < \bar{w}. \end{aligned}$$

If $K > 0$, this allocation is not feasible, of course, but simply reallocating the wife's time from "her" housework domain 1 to market work to just satisfy the constraint, i.e., setting $h_{f,1} = (1 - K)$, restores equilibrium if and only if, simultaneously,

$$\begin{aligned} \beta_1 &\geq \underline{w} \cdot (1 - K) \quad \text{and} \quad \beta_1 \geq \frac{c_{f,2}}{c_{m,2}} \bar{w} \cdot (1 - K), \quad \text{and} \\ \beta_1 \frac{c_{m,1}}{c_{f,1}} &\leq \bar{w} \cdot (1 - K) \quad \text{and} \quad \beta_2 \leq \bar{w} \cdot (1 - K). \end{aligned}$$

Comparing these, note that the two conditions for the wife's best response from when $K = 0$ imply the two corresponding ones for when $K > 0$, and the two conditions for the husband's best response from when $K > 0$ imply the two corresponding ones for when $K = 0$. That is, we can reduce the above conditions for marriages facing the low female wage $w_f = \underline{w}$ to the following:

$$\max \left\{ \underline{w}, \frac{c_{f,2}}{c_{m,2}} \bar{w} \right\} \leq \beta_1 \quad \text{and} \quad \max \left\{ \beta_1 \frac{c_{m,1}}{c_{f,1}}, \beta_2 \right\} \leq \bar{w} \cdot (1 - K). \quad (5)$$

Consider then also the case of a marriage facing the high female wage $w_f = \bar{w}$ (equal to the male wage), again starting without a forced-labor-supply constraint, i.e., $K = 0$. Allocation $(h_{i,1}, h_{i,2})_{i \in \{f,m\}}$ with $h_{f,2} = h_{m,1} = 0$, $h_{f,1} = \frac{\beta_1}{\bar{w}}$ and $h_{m,2} = \frac{\beta_2}{\bar{w}}$ is an equilibrium outcome if and only if, simultaneously,

$$\begin{aligned} \beta_1 &< \bar{w} \quad \text{and} \quad \frac{c_{f,2}}{c_{m,2}} \leq 1, \quad \text{and} \\ \frac{c_{m,1}}{c_{f,1}} &\leq 1 \quad \text{and} \quad \beta_2 < \bar{w}. \end{aligned}$$

If $K > 0$, this equilibrium remains intact if and only if the allocation remains feasible, i.e., both $\beta_1 \leq \bar{w} \cdot (1 - K)$ and $\beta_2 \leq \bar{w} \cdot (1 - K)$. Otherwise, simply reallocating the wife's time from "her" housework domain 1 to market work to just satisfy the constraint, i.e., setting $h_{f,1} = (1 - K)$, restores equilibrium also here if and only if, simultaneously,

$$\begin{aligned} \beta_1 &\geq \bar{w} \cdot (1 - K) \quad \text{and} \quad \beta_1 \geq \frac{c_{f,2}}{c_{m,2}} \bar{w} \cdot (1 - K), \quad \text{and} \\ \beta_1 \frac{c_{m,1}}{c_{f,1}} &\leq \bar{w} \cdot (1 - K) \quad \text{and} \quad \beta_2 \leq \bar{w} \cdot (1 - K). \end{aligned}$$

Except for $\beta_1 \geq \bar{w} \cdot (1 - K)$ featuring the high female wage, these conditions are identical to those for the "simple reallocation" in marriages facing the low female wage. Moreover, given that the conditions in (5) imply $\beta_2 \leq \bar{w} \cdot (1 - K)$, upon imposing them the forced-labor-supply constraint binds the marriage if and only if $\beta_1 > \bar{w} \cdot (1 - K)$, which implies $\beta_1 \geq \bar{w} \cdot (1 - K)$. Hence, in addition to (5), we only require the conditions for when $K = 0$, which we reproduce more compactly as

$$\frac{c_{f,2}}{c_{m,2}} \leq 1 \leq \frac{c_{f,1}}{c_{m,1}} \quad \text{and} \quad \max \{\beta_1, \beta_2\} < \bar{w}. \quad (6)$$

Now observe that condition $\frac{c_{f,2}}{c_{m,2}} \leq 1$ in (6) is implied—as a strict inequality in fact—by the combination of $\beta_1 \geq \frac{c_{f,2}}{c_{m,2}}\bar{w}$ from (5) with $\beta_1 < \bar{w}$ in (6), and condition $\beta_2 < \bar{w}$ in (6) is implied by $\beta_2 \leq \bar{w} \cdot (1 - K)$ in (5) whenever $K > 0$. Finally, to have wives spend more time on housework than their husbands in DEE marriages without a forced-labor-supply constraint, i.e., $h_{m,2}^* = \frac{\beta_2}{\bar{w}} < h_{f,1}^B = \frac{\beta_1}{\bar{w}}$, as in the proposition's part (iii), we additionally impose $\beta_1 > \beta_2$, which is equivalent to $\gamma_1 > \gamma_2$ and loosely says that the wives' household sphere is more important. In summary, we obtain the following characterization of the set of parameter values that imply (i)–(iv) as stated in the proposition:

$$\beta_2 < \beta_1, \max \left\{ \underline{w}, \frac{c_{f,2}}{c_{m,2}}\bar{w} \right\} \leq \beta_1 < \bar{w}, \max \left\{ \beta_1 \frac{c_{m,1}}{c_{f,1}}, \beta_2 \right\} \leq \bar{w} \cdot (1 - K), \text{ and } c_{m,1} \leq c_{f,1}. \quad (7)$$

As a rather arbitrary example to show that such parameter values exist, recalling $\beta_k = \beta\gamma_k$, take

$$\bar{w} = 3, c_{f,1} = c_{m,2} = \gamma_1 = 2, \underline{w} = c_{f,2} = c_{m,1} = \beta = \gamma_2 = 1, \text{ and } K = \frac{1}{2}.$$

B Appendix: The Role of Children

We study the role of children in more detail as institutional differences in childcare availability between the GDR and the FRG, particularly for children under the age of 3, persisted after reunification. Women’s sphere of housework (routine housework) is strongly related to children and differences in childcare provision are likely to play a role for East-West differences in conditional housework gender gaps. Having young children in formal childcare instead of home care might reduce the amount of housework needed, which could then cause West German women to work more in the household than East German women, even conditional on employment. [Jessen \(2022\)](#) shows that a large share of East-West differences in within-household inequality can be attributed to children.

Table A.1: Decomposition of the East-West gender gap in housework by children

Dependent variable	Female-male routine housework gap				Female-male domestic gap	
	229 minutes		231 minutes		326 minutes	
West mean:						
Sample:	No children ≤ 10		Children ≤ 10			
	(1)	(2)	(3)	(4)	(5)	(6)
East dummy	-70.441*** (6.272)	1.299 (5.370)	-116.180*** (6.410)	-36.356*** (6.613)	-148.244*** (8.671)	-38.805*** (8.159)
<i>Covariates:</i>						
Basic controls		-6.706*** (1.159)		-6.228*** (1.741)		1.518 (1.768)
Household income (5 categories)		-1.121 (2.680)		5.410* (2.568)		7.261* (3.158)
Women’s paid work		-60.162*** (4.389)		-74.328*** (4.502)		-111.955*** (6.454)
Men’s paid work		-3.751 (2.546)		-4.678 (2.510)		-6.264 (3.724)
Share coef. movement due to female work		.839		.931		1.023
Observations	3,868	3,868	2,512	2,512	2,512	2,512

Notes: Table shows a decomposition of the female-male housework gap and domestic work gap (routine housework + childcare) following [Gelbach \(2016\)](#). Samples are split by whether children under 10 live in households. Lower rows show the contribution of the groups of explanatory variables in moving the East dummy. Basic controls: household size, age, partner’s age, education dummies. Robust standard errors in parentheses. Source: German Time-Use Survey (1991/92)

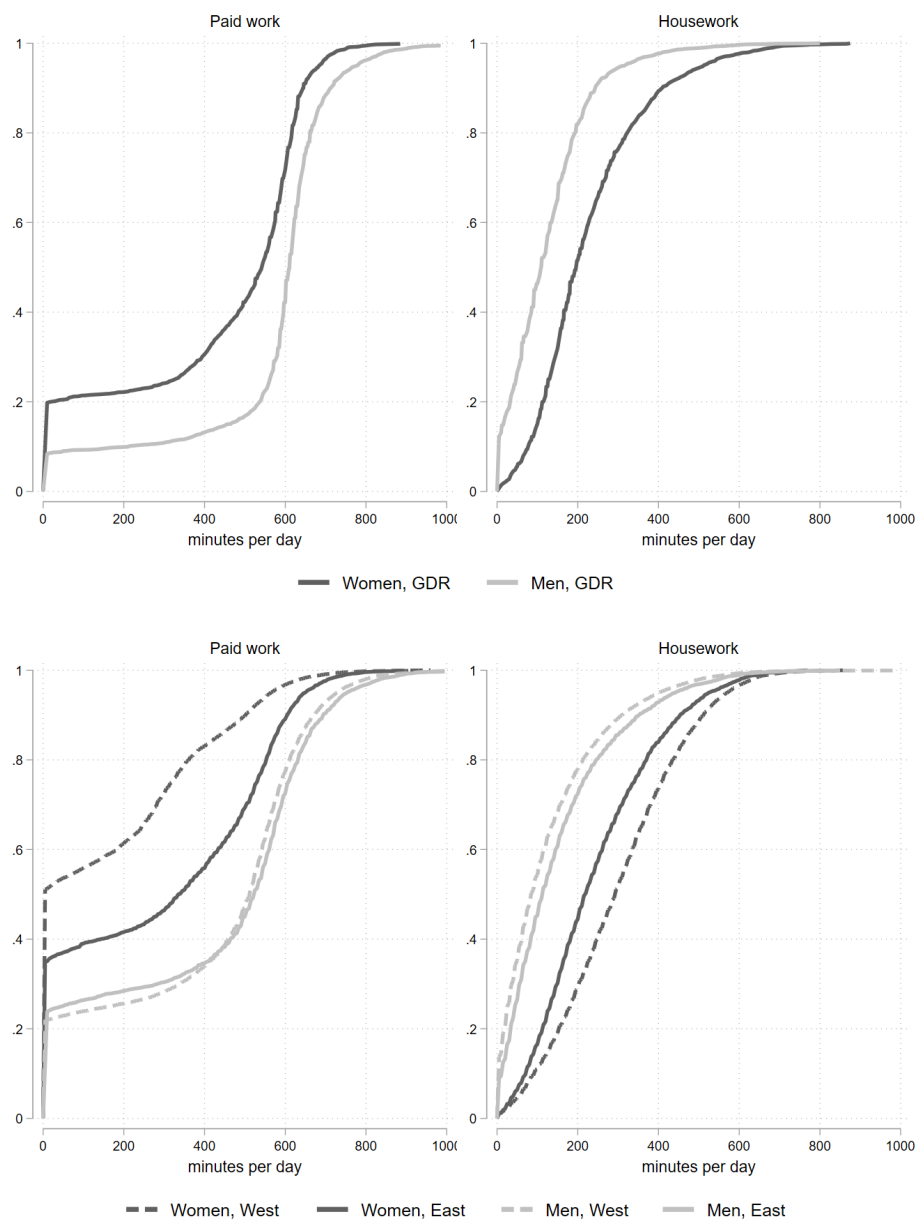
Results separately for households with children under the age of 10 and couples with only older or no children are presented in Table [A.1](#). Columns (1)-(4) contain estimates for the gender gap in routine housework. In families with no young children, controlling for the covariates leads the East dummy to essentially become zero and the coefficient movement is almost entirely driven by female work. As institutional differences in childcare provision (and afternoon care for primary school children) between East and West are irrelevant for this group, this is arguably the cleanest comparison for housework norms conditional on observed covariates. Columns (3)-(4) contain the estimates for households with children. While the East dummy is strongly reduced by the covariates by about 69%, the larger remaining gap of 36 minutes highlights the relieving effect of the East German childcare infrastructure for mothers. In an additional step (columns (5)-(6)), we change the dependent variable to

the female-male *domestic* gap, which in addition to routine housework also includes time spent on childcare. Women were predominantly responsible for childcare in the GDR and both parts of reunified Germany ([Jessen, 2022](#)). The raw gender gap in domestic work is accordingly larger, as is the East-West gap of 148 minutes. Conditional East-West differences are much smaller with 39 minutes (26%) but also highlight that children impact East and West German households differently. The entire reduction in the gap can be attributed to women's paid work in column (6).

C Appendix: Figures and Tables

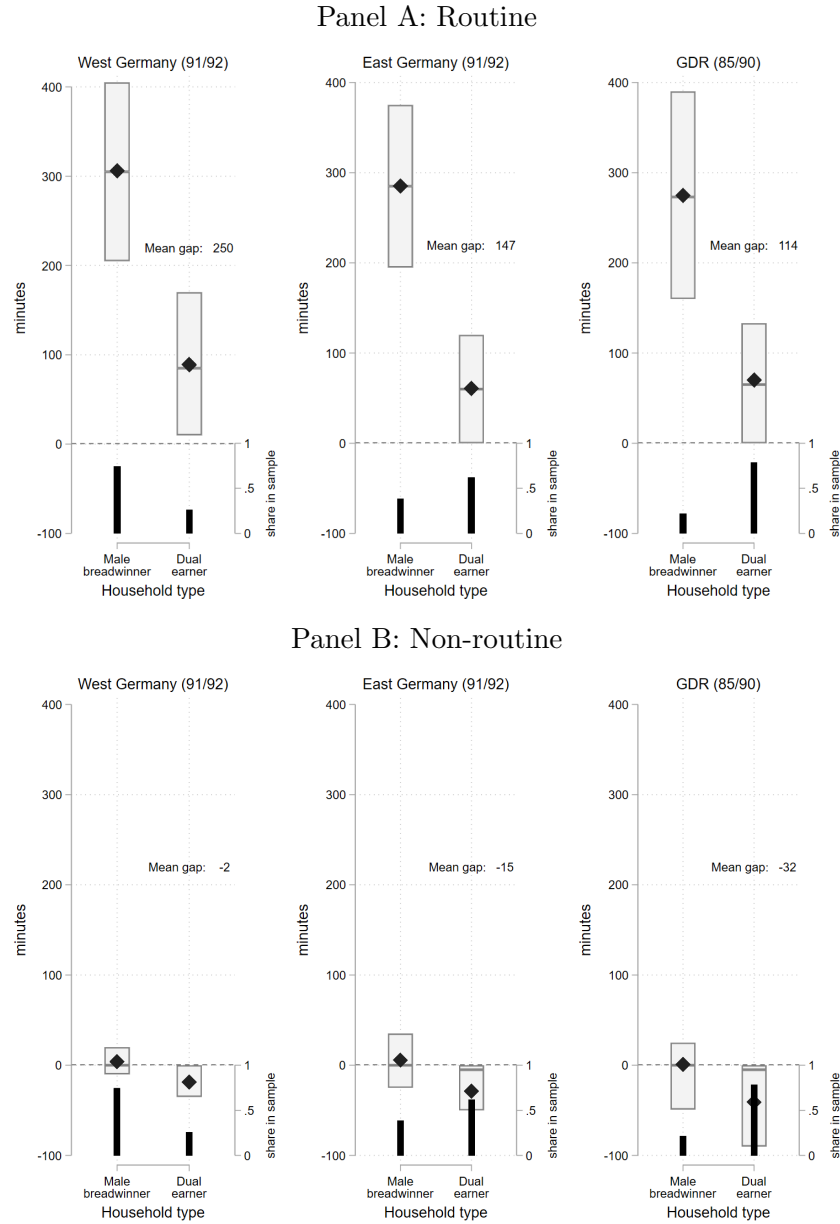
Figures

Figure A.1: Cumulative distributions of paid work and housework



Note: The figure plots cumulative density functions of paid work and housework among women and men. The upper panel uses the GDR time budget study (1985/90), the lower panel the German time-use survey (1991/92), separately for East (solid) and West Germany (dashed).

Figure A.2: Female-male gap in routine and non-routine housework by household types



Notes: Figure plots the female-male gap routine and non-routine housework per weekday by household type for West Germany, East Germany and the the GDR. Diamonds indicate the mean values, range plots show 25th, 50th and 75th percentiles of the distribution. Source: GDR time budget study (1985/90) and the German Time-Use Survey (1991/92).

Figure A.3: Women's and men's housework by women's paid work

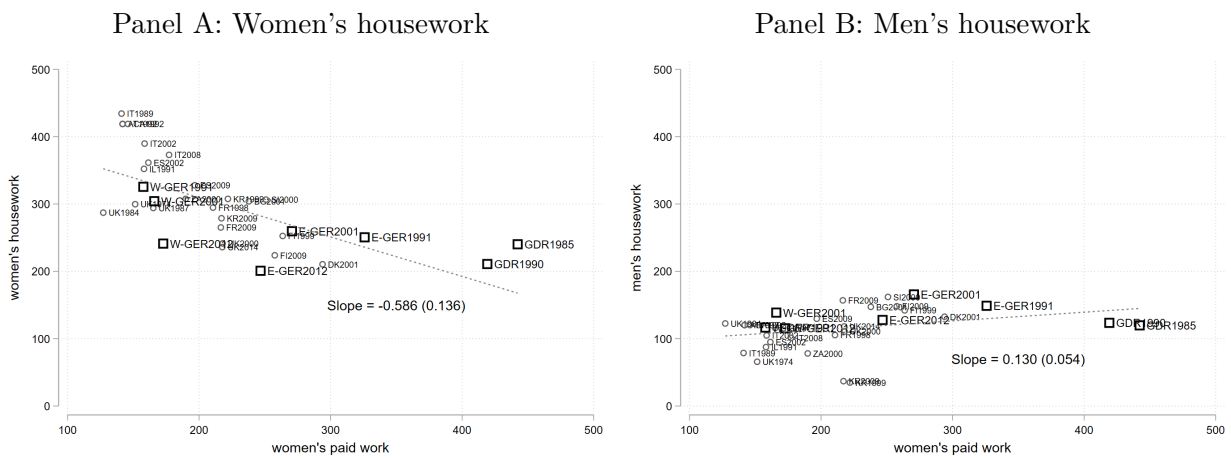
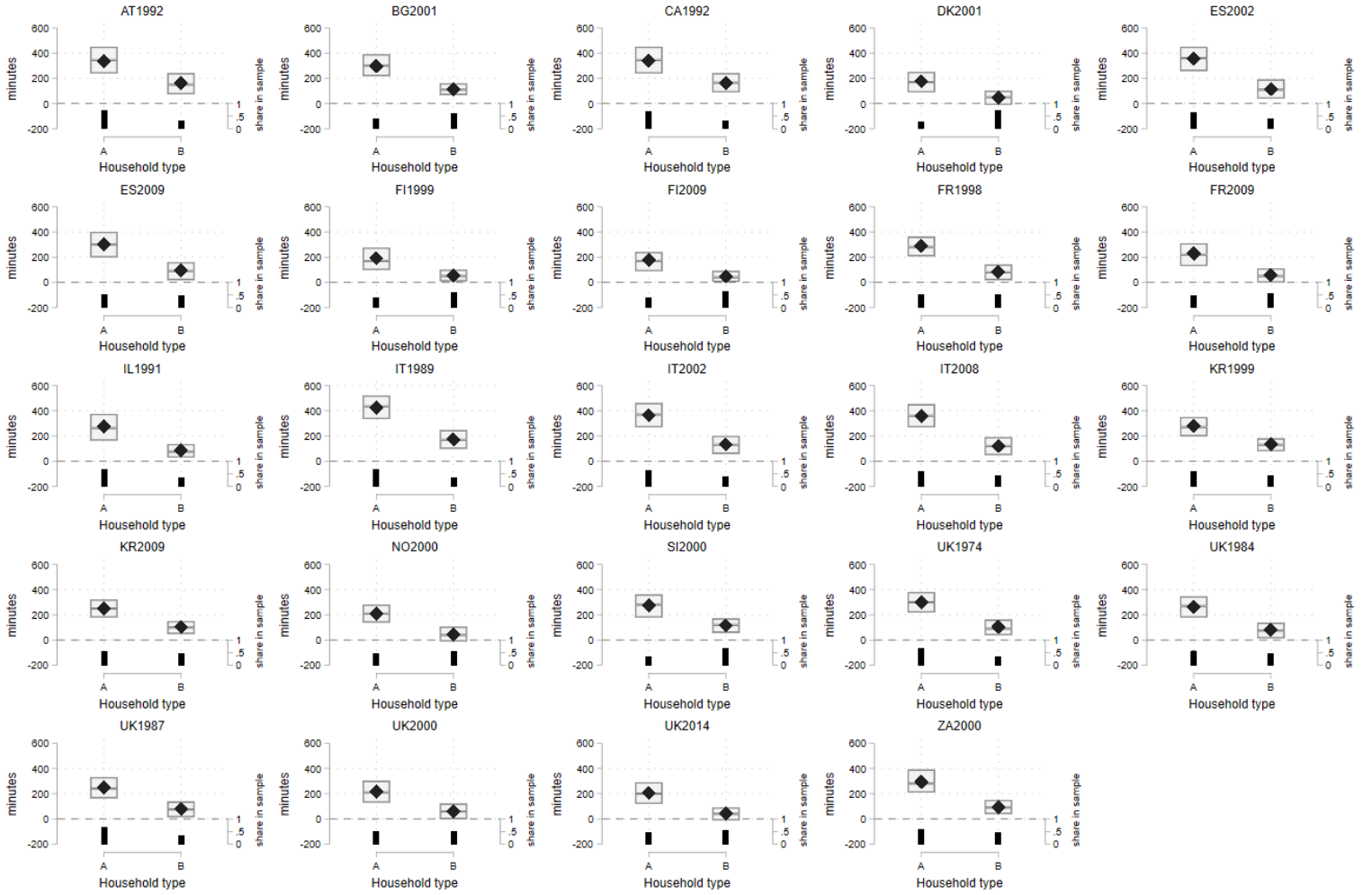
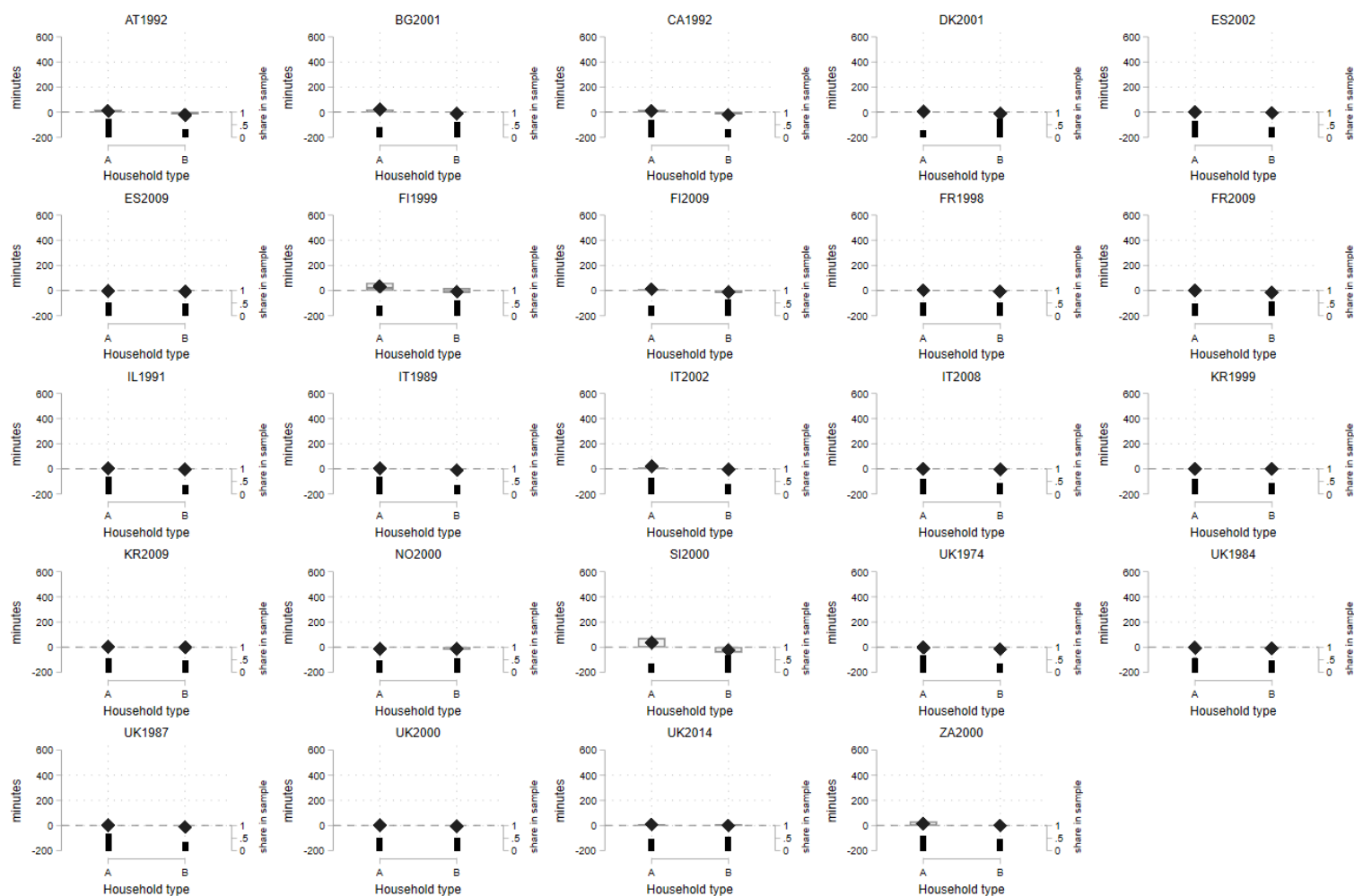


Figure A.4: Female-male gap in routine housework by household types across countries



See Figure 8 for notes.

Figure A.5: Female-male gap in non-routine housework by household types across countries



See Figure 8 for notes.

Tables

Table A.2: Countries and surveys used from the Multinational Time Use Study

Country	Survey year	Observations
Austria	1992	3,571
Bulgaria	2001	1,042
Canada	1992	3,571
Denmark	2001	1,002
Finland	1999	1,055
	2009	729
France	1998	2,275
	2009	2,602
Israel	1991	534
Italy	1989	2,582
	2002	2,716
	2008	2,292
Slovenia	2000	957
South Africa	2000	684
South Korea	1999	11,405
	2009	5,240
Spain	2002	5,010
	2009	2,043
United Kingdom	1974	2,867
	1984	461
	1987	1,971
	2000	1,864
	2014	1,138

Notes: Table shows the list of countries, surveys and number of observations that are used from the Multinational Time-Use Study. Samples are restricted to different-sex couples aged 18-65. Observation numbers are at the couple-level. We use all countries and survey waves from the Multinational Time Use Study with a household-level sampling design and the existence of household identifiers in the data. Finally, we require to have at least 200 couple-day-level observations.

Table A.3: Time-use data: detailed activities (minutes per weekday)

	GDR (85 and 90)		East Germany (91/92)		West Germany (91/92)	
	Women	Men	Women	Men	Women	Men
Paid work	429.27	556.55	325.87	462.42	157.64	467.21
Working	364.00	471.86	266.82	396.24	131.10	403.14
Work-related (breaks, travel time etc.)	64.09	82.20	42.76	54.54	17.90	57.45
School / studies	1.19	2.49	16.29	11.64	8.64	6.63
Housework	223.78	121.89	250.55	148.86	325.55	116.53
Cooking	59.50	13.07	85.29	24.92	106.92	17.24
Cleaning	79.41	9.44	78.78	13.91	119.26	10.59
Fixing and building things	14.76	29.43	8.10	40.62	8.29	32.41
Shopping	37.76	19.40	25.39	14.63	32.16	11.99
Gardening	21.71	43.19	19.87	26.44	23.86	20.67
Other housework	10.64	7.36	33.12	28.34	35.05	23.62
Care for others	45.14	13.15	60.58	25.48	77.63	22.99
Childcare	41.59	11.80	47.87	18.23	59.10	16.91
Care for adults	3.55	1.35	2.25	1.00	5.38	1.63
Leisure	157.98	194.18	184.12	203.60	229.91	221.28
Cultural activities	16.00	21.57	2.30	3.65	7.71	7.04
Sports (active and passive)	12.32	13.07	11.83	14.66	21.32	22.06
Media consumption	90.38	120.23	109.34	132.90	111.95	129.31
Social contacts	24.35	22.79	51.35	43.62	74.88	50.17
Other leisure	24.78	24.10	9.29	8.77	14.04	12.71
Observations	2328	2328	1673	1673	4707	4707

Notes: Table shows fine-grained activities that are contributing to the broader categories the analyses build on.