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SEPARATE HOUSEWORK SPHERES*

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Abstract

Using novel time-use data from Germany before and after reunification, we document two facts: First, spouses who both work full-time exhibit similar housework patterns whether they do so voluntarily or due to a full-time mandate, as in the GDR. Second, men’s amount of housework is independent of their spouse’s labour supply. We theoretically explain this pattern by the presence of two household goods and socially learned gender-specific comparative advantage in their home production. We label this gender specialisation as separate housework spheres. Empirical evidence strongly confirms separate housework spheres in the GDR, West Germany, subsequent years post-reunification, and in international time-use data across 17 countries since the 1970s. We consider several implications, such as those for child penalties, where separate housework spheres provide a novel explanation for why it is the mothers whose labour market outcomes strongly deteriorate upon the arrival of children.

Keywords: gender, household allocation of time, norms

JEL Classification: D13 · J16 · J22

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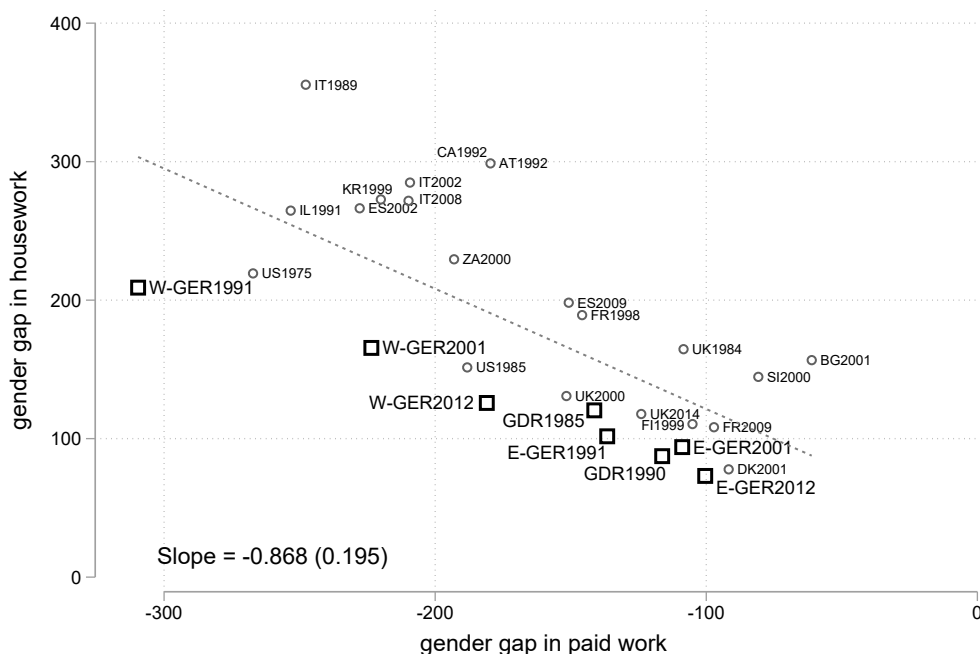
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1 Introduction

Figure 1 shows a negative correlation between the gender gap in paid (market) work and housework, based on international household-level time-use data. The traditional gender norm of “separate spheres” for (heterosexual) couples, which assigns women to housework and men to market work, remains visible to varying extents but appears to be diminishing over time. Individual countries move towards a more equal division from the top left to the bottom right, with cross-country differences aligning with expectations.¹ However, no country has achieved full equality. Indeed, a recent OECD report on the gender-equality-leading Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) suggests that the “last mile” to gender equality may well be the longest (OECD, 2018).

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



Notes: Figure shows the female-male gap in housework and paid work in minutes per weekday. Housework refers to domestic chores but does not include childcare in this figure. We return to this point later and then also consider childcare. Sources: GDR time budget study, German Time-Use Survey and MTUS (Gershuny, Vega-Rapun, and Lamote, 2020)

This paper utilises time-use data and theory to document a remaining fundamental limitation to gender equality that is rooted in the household division of labour: women and men

¹West Germany moves rapidly from the top left in 1991 to the middle group in 2012. 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.

share different kinds of housework following patterns that have changed little.

As our key result, we show the persistence of separate spheres in housework. Regardless of the extent to which women engage in market work, couples continue to follow gendered patterns in the type and amount of housework performed. Tasks in home production are divided along stereotypical gender lines: women typically clean, cook, and shop, while men build and repair. Women generally handle a significantly more time-intensive domain, even before having children. While an increase (decrease) in women’s market work corresponds to a decrease (increase) in their housework, their husbands neither change the amount of housework they do nor the types of tasks they perform. In short, separate (and unequal) housework spheres persist. This has important implications, one of which we highlight here: it helps to explain the child penalty, i.e., that mothers’ labour market outcomes are more negatively affected by the arrival of children than those of fathers, as the arrival of children significantly increases the demands in the already established “female” housework sphere.

We focus empirically on a region where differences in labour supply and gender norms are well-researched: the German case (squares in Figure 1).² We conduct our empirical analysis with newly sourced time-use data from the GDR as well as time-use data for reunified (East and West) Germany. Our data provide household time-use diaries (rather than individual), allowing us to capture the time allocations of actual couples. We first focus on time-use data from 1985/90 for the GDR and from 1991/92 for 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 West Germany, as well as within the GDR: the female-male gap in housework is significantly smaller in dual-earner households than in male-breadwinner households. However, conditional on either household type, these gender gaps are similar across both societies,

²Germany provides an interesting starting point because of the within-country 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, Raute, and Schönberg, forthcoming). Such differences in labour supply and norms have been extensively studied (e.g. Bauernschuster and Rainer, 2012; Beblo and Görge, 2018; Campa and Serafinelli, 2019; Jessen, 2022). We discuss this literature and the institutional context in detail in Section 2.1. Moreover, the German case is well-suited to derive first stylised facts because West Germany over time, the GDR and later East Germany 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.

both in relative and in absolute terms. The aggregate pattern observed for the “Germanies” in Figure 1, particularly the lower amount of female housework in the GDR compared to West Germany, is therefore a pure composition effect, due to the predominance of dual-earner households in the GDR, 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 both societies. Husbands’ housework does not seem to substitute for wives’ reduced housework when their labour supply is higher, even when this happens for exogenous reasons as in the GDR due to its full-time mandate. Despite their drastic differences in norms and attitudes regarding working women, when it comes to gender roles in housework, Germany appears 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.³ 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.⁴ 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, which—as we discuss below—can be rooted in productivity differences or preferences. This leads to “(gender-) separate housework spheres,” with women having such an advantage in the quantitatively more important sphere. Interpreting the GDR as “shock” in the form of a *(full-time) labour-supply constraint* on what would otherwise be West German households yields a causal perspective on our findings – exogenously imposed increases of female labour supply that turn what would otherwise be male-breadwinner households

³Besides its richness while maintaining analytical tractability, this framework has also proven highly successful in recent applied work, see [Bertrand, Cortés, Olivetti, and Pan \(2021\)](#) and [Cortés and Pan \(2023\)](#).

⁴See [Siminski and Yetsenga \(2022\)](#) for a closely related point.

into dual-earner households.⁵ Adding minimal heterogeneity concerning women’s potential wages (high or low), the model can explain the full pattern of households’ time allocations observed in the GDR and West Germany, in particular men’s general irresponsiveness to changes in their spouses’ labour supply.

This formal exercise generates several implications that we then put to the test. The most important one is that 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).⁶ 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 work (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](#)). Note that this terminology does not refer to the skill intensity of the tasks but to how regularly they have to be performed.

As a test for the generalisability of the separate housework spheres explanation for time allocation, we first extend the empirical analysis to study East and West Germany after reunification. Across all periods and regions, separate housework spheres remain a constant phenomenon, even after reunification. In a second step, we examine time allocation into routine and non-routine housework at an even broader level using international time-use data across 70,925 households in 17 countries, covering the period from 1974 to 2014. Across all societies and periods for which household-level time-use data is available, separate housework spheres are a stable phenomenon.

Last but not least, we provide two extensions to better understand the emergence of separate housework spheres and their implications. The key ingredient to separate housework spheres is given by the model: a gender-specific comparative advantage across housework

⁵This *constraint* also came with 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.

⁶In line with another model implication, we find essentially no substitution by either spouse for their partner’s type of input, as the latter’s time in market work varies. We test further model predictions using education as a 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.

tasks. While we cannot disentangle the exact mechanisms that give rise to housework specialisation, we document its early emergence. Teenagers already show clear evidence of gendered housework division: girls spend significantly more time on routine housework activities, and boys on non-routine tasks. We highlight a potential mechanism of intergenerational transmission of norms and skills by documenting that parents spend more time with children of their sex.

As the second extension, we investigate the role of children, a key contributor to gender inequality in market work (see, e.g., [Cortés and Pan, 2023](#); [Jessen, 2022](#); [Kleven, Landais, and Søgaaard, 2019](#)). First, in line with their early emergence, we show in our time-use data that housework gaps are fully established even for couples without children. We then estimate child penalties using the SOEP, a German survey panel, which includes questions about routine and non-routine housework. We find that the arrival of children results in a large increase in the female sphere of routine housework, but not in non-routine housework (in addition to childcare). Consistent with this finding, we observe that the additional housework burden created by children (net of childcare!) falls entirely on mothers. Separate housework spheres thus provide a new explanation for child penalties in the labour market. In the conclusion, we discuss further implications related to flexible work arrangements and technological advancements.

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, Kamenica, and Pan, 2015) by zooming into home production. Goldin (2021) lays out that fundamental changes concerning 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 both less flexible and more time-consuming tasks.⁷

We also contribute to the literature on long-term consequences of the German division on gender norms.⁸ Bauernschuster and Rainer (2012) document that West German households continue to hold substantially more gender conservative views regarding the role of women in the family and in the labour market. Lippmann, Georgieff, and Senik (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

⁷Another related literature is about outsourcing of housework and childcare. Cortés and Tessada (2011) document that low-skilled immigrants affect time-use allocations of women at the upper quartile of the income distribution in the US. Low-skilled immigrants often work in sectors substituting some household production and if their presence is higher, the time spent in housework of high-skilled women decreases, and their hours in paid work increase. Similar effects are found in the case of foreign domestic workers in Hong Kong, who enable women to work and increase their welfare (Cortés and Pan, 2013). Theoretically, it is unclear if outsourcing affects the gendered division of housework. Households with a household aid might also outsource large parts of the non-routine/male-sphere, leaving separation and relative contributions unaffected. Moreover, it is possible that outsourcing of routine tasks merely allows some women to shift parts of the burden of their housework sphere onto other women, again leaving the global division of housework spheres unaltered. Similar to the availability of childcare, outsourcing could thus allow high-income women to work but leave the separation of the household spheres untouched. In any case, outsourcing routine tasks such as cooking will likely remain a privilege of the highest income groups (only about 4% of households in the German data have a household aid). We return to the discussion of outsourcing when we discuss technological change in the conclusions.

⁸This also ties in with the literature on how the different political and economic regimes in Europe during the Iron Curtain have affected gender norms and preferences more broadly (see Campa and Serafinelli, 2019; Fuchs-Schündeln and Schündeln, 2020).

were not affected independently by 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, other Eastern European countries, or Scandinavian countries.

2 Institutional Background and Data

2.1 GDR and West Germany

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 so was 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, a market-based democracy was established in the FRG.

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,⁹ and not working quickly came to be considered anti-social behaviour ([Beblo and Gorges, 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, Trappe, and Gornick, 2004](#)).

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., forthcoming](#)). Female labour force participation was a third lower than men’s, and part-time work was prevalent, especially among young mothers, whereas 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”¹⁰ (“*When mommy*

⁹In 1989, 98% of children aged 3–6 attended childcare facilities, and so did more than 80% of children aged below 3 ([Jessen, Schmitz, and Weinhardt, 2024](#)). In contrast, in the FRG, childcare for under-threes was almost non-existent, and for older children, almost all spots were part-time only.

¹⁰[Link](#) to performance of the state radio preschool choir of the city of Leipzig. Notice how this song is

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” up until 1977 (Lippmann et al., 2020).

Despite these differences, gender earnings gaps were similar, amounting to 25% for full-time workers (Krueger and Pischke, 1995). However, 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).¹¹ In summary, gaps in hourly wages were comparable between the two societies, while the gaps in labour supply were starkly different, from negligible in the GDR to large/traditional in the FRG. We use this setting to study how institutionally induced differences in (female) labour supply affect within-household division of time spent doing household tasks.

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

2.2 Data and Sampling

For our main 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 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 took place among

about daughters, but not sons, helping with routine housework so that mothers can work in the labour market.

¹¹In contrast, the average wage *level* was two to three times higher in West Germany than in the GDR in 1988 (Stephan and Wiedemann, 1990).

worker and employee households.¹² Each household member aged 16 or above was supposed to fill out the survey on a randomly pre-determined day of the week. Main tasks in detailed three-digit categories were documented for 24 hours, starting at midnight.

We also use three waves of the German Time-Use Survey conducted 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 as in this wave almost all households are likely to have been socialised in the region (East or West Germany) where they are surveyed. Each household member aged 12 or above records their activities in ten-minute slots over three survey days (five minutes over two days in 1991/92). The activities are similarly categorised at the three-digit level. Besides the diary data for the survey days, the data also contain other household and individual characteristics.

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 and housework, which are common to all households. While this excludes childcare, we also analyse how time allocation to these categories is causally affected by the presence of children in Section 6.2. A detailed list of activities contributing to the broader categories is presented in Appendix Table A.1. As our analysis is conducted at the household level, we impose some sample restrictions. We look at married or cohabiting couples and—due to the focus on gender differences—restrict this to different-sex couples. Moreover, we are here interested in the interplay of gaps in paid work and housework, so we further restrict the couples to both be of working age, i.e., 18–65 years old, and we focus our analysis on weekdays.¹³

In terms of time periods, we focus initially on the comparison of the GDR (data from

¹²Priller (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 no concern for our study.

¹³We confirmed the surveys' randomisation in that the days of the week are uniformly distributed in all our datasets. An alternative would be to create a household-level weighted average of weekday and weekend observations in order to have an entire week as a natural unit of time. As only limited substitution occurs on weekends (Samtleben, 2019), such that even without the time constraint imposed by paid work women do more than twice as much housework as men, patterns look very similar with this approach; e.g., see section 3.2.

1985 and 1990) versus West Germany (data from 1991/92). This comparison offers the starkest contrast in institutional settings, and the data were collected within a short-time period from each other. In Section 5.2, we expand the analysis to include all available data and show that our results hold for all time periods.

3 Stylised Facts

3.1 Summary Statistics

Table 1: Summary statistics of time-use data

	GDR (85/90)			West Germany (91/92)		
	Women (1)	Men (2)	Diff. (3)	Women (4)	Men (5)	Diff. (6)
<i>Characteristics</i>						
Age	38.94	41.22	-2.28	42.49	45.57	-3.08
Employed	0.92	0.98	-0.06	0.62	0.91	-0.29
High vocational degree	0.34	0.32	0.02	.	.	.
Upper secondary school	.	.	.	0.19	0.30	-0.11
Children under 10 in household	0.44	0.44	0.00	0.39	0.39	0.00
<i>Time use in minutes (weekday)</i>						
Paid work	429.27	556.55	-127.27	157.64	467.21	-309.57
Housework	223.78	121.89	101.89	325.55	116.53	209.02
Childcare	41.59	11.80	29.80	59.10	16.91	42.20
Leisure	157.98	194.18	-36.20	229.91	221.28	8.62
Observations	3237	3237	3237	6309	6309	6309
Observations on weekdays	2328	2328	2328	4707	4707	4707

Notes: Table shows summary statistics of our main analysis sample. Source: GDR time budget study (1985/90) and German Time-Use Survey (1991/92)

Table 1 describes the sample of German households we focus on initially. The upper panel contains sample characteristics. Respondents are aged around 40 on average, with West Germans being somewhat older. Overall, a substantially larger share of women is employed in the GDR than in West 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 West Germany. Notably, the gender difference in minutes spent in paid work is 310 minutes in West Germany compared to 127 minutes in the GDR, as women in the GDR spent about 2.75 times 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 generally less gender-egalitarian environment. The housework gender gap is 209 minutes per day in West German households, but “only” 102 minutes in the GDR. See also Appendix Figure A.1 for an additional illustration of these basic facts, displaying cumulative density functions of paid work and housework in the GDR and in West Germany by gender.

3.2 Household Types and Housework Time Allocation

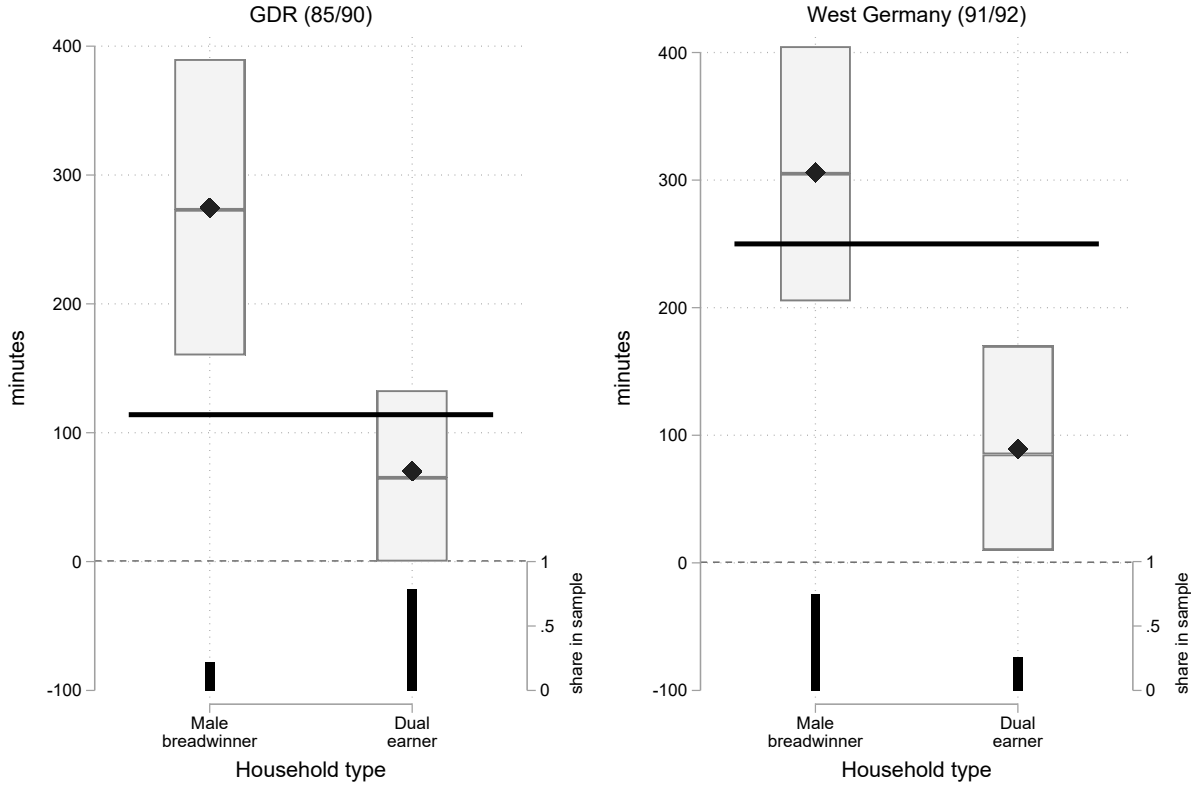
To shed light on the differences in gender inequality in paid work and housework, and their interplay, we now consider household heterogeneity and distinguish between the two main types of households. Specifically, we define household types by the female share of market work as follows: male-breadwinner households $[0, 0.35)$ and dual-earner households $[0.35 - 0.65)$. As only 5% of households are of a (main) female breadwinner type $[0.65, 1]$, we omit those households from the analysis. We also 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.¹⁴

Figure 2 illustrates the within-household gender gap in housework in the GDR and in West Germany, distinguished by the two dominant household types, i.e., male-breadwinner and dual-earner households. Mean values of the gap, depicted as horizontal solid black lines, for both household types, mirror the findings from Table 1: the gap is very large in West Germany, at 250 minutes per weekday, and notably lower—in fact less than a half—in the GDR, at 114 minutes.

The solid bars in the lower end of the figure, and using the right-hand y -axis, however,

¹⁴This excludes cases where both partners work only a few hours, so that a shift between the different household types can occur already with small changes in one partner’s working time.

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



Notes: Figure plots female-male gap in housework by household type for the GDR and West Germany. 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 the 25th, 50th, and 75th percentiles of the distribution. The solid horizontal lines denote the sample averages. Observations (household-level): 3479 in West Germany and 2029 in the GDR. Source: GDR time budget study (1985/90) and German Time-Use Survey (1991/92)

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 dual-earner households are the norm (79%). Once those differences in the distribution of household types are taken into account, the gender gap in housework looks remarkably similar, with no large differences remaining as shown by the type-specific distributions of the gap (diamonds indicate means, and range plots show the 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, regardless of the society.

As explained in Section 2.2, in the empirical analysis we use only those observations

from the various time-use surveys that were recorded on weekdays. To study the extent to which dynamic allocation of time over the week potentially affects patterns in housework gaps, we replicate Figure 2 upon including observations from all days of the week. The results of this additional analysis are reported in Appendix Figure A.2. The patterns are very similar, with women doing much more housework than men: about 250 minutes more in male-breadwinner households and about 100 minutes more in dual-earner households, regardless of society. There is thus evidence for male breadwinners shifting some housework to the weekend but including the weekend in the analysis even increases the gender gap for dual-earner households. As the overall pattern of housework gaps is not affected, we continue considering weekdays only for the remaining analysis.

We next split the gap in housework into absolute contributions by women and men, respectively, in Figure 3. Looking at women’s average contribution in Panel A (horizontal solid black lines), 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 Germany and the GDR are again small. Women do around three hours less housework when they are in a dual-earner rather than a male-breadwinner household.

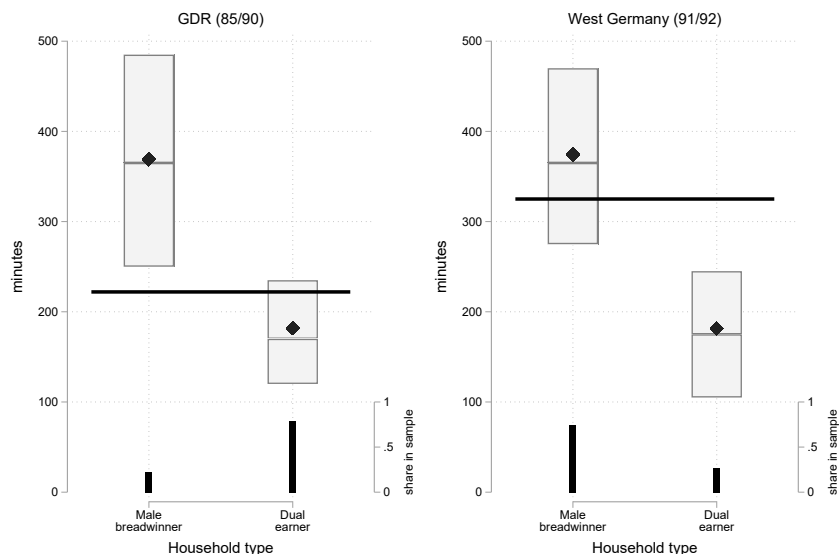
Looking at men in Panel B reveals a striking pattern. In both household types, male-breadwinner and dual-earner households, men are working full-time. But despite the large drop in female housework in dual-earner households, we see no compensation by men; i.e., men’s housework is essentially irresponsive to the substantial decrease in women’s housework. This suggests that the negative correlation between the female share of paid work and the female-male 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.

4 Theoretical Framework

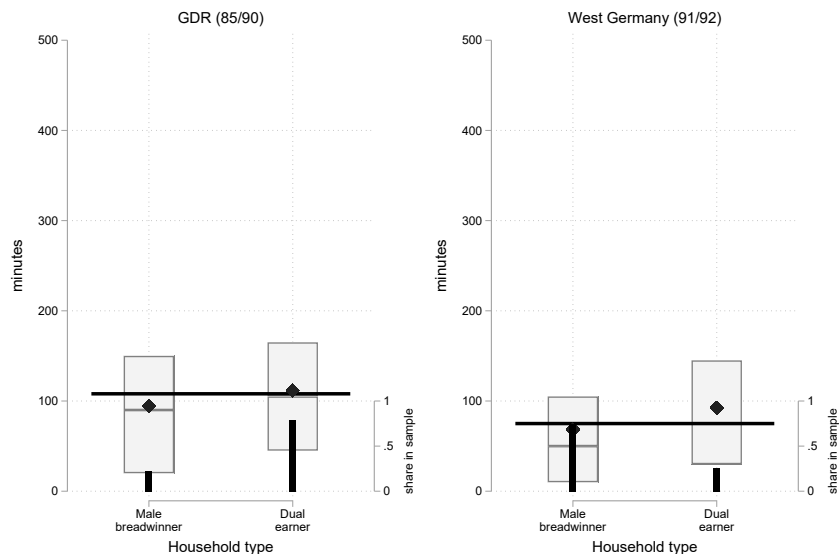
To give more structure to our analysis and explain the irresponsiveness of husbands’ housework to their wives’ time allocation (in particular time spent on paid work), we consider a theoretical model following the seminal framework of [Fernández et al. \(2004\)](#), FFO in what

Figure 3: Housework in minutes by household type

Panel A: Women



Panel B: Men



Notes: Figure plots housework of women (Panel A) and men (Panel B) in minutes per weekday by household type for the GDR and West Germany. 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 the 25th, 50th, and 75th percentiles of the distribution. The solid horizontal lines denote the sample averages. Observations (household-level): 3479 in West Germany and 2029 in the GDR. Source: GDR time budget study (1985/90) and German Time-Use Survey (1991/92)

follows).¹⁵ The model by FFO has recently been applied successfully by [Cortés and Pan \(2023\)](#) to better understand the role of children for the 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 (i.e., household types and their distribution) in a very tractable manner, including dynamics due to parental (or cultural) transmission.

Within any (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 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 work as opposed to household work, and the non-cooperative household time allocation again implies it is decision-irrelevant at this point. Its distribution in the single men population will matter, however, for what marriages form, and thus also for single women's incentives to invest in marketable skills, 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 want to emphasize at this point that the purpose of our model is purely descriptive, meaning we make no claim whatsoever about whether the time allocation within any given couple maximises

¹⁵The terminology of marriage and husband/wife is for illustrative purposes only. We take the model to apply as well to cohabiting couples, as in all our empirical analyses.

joint welfare, even when $\alpha_m = 0$.

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 $H_{ii}(h_f, h_m) \equiv \partial H_i(h_f, h_m)/\partial h_i \leq 0$; (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 $j \neq i$, $H_{ij}(h_f, h_m) \equiv \partial H_i(h_f, h_m)/\partial h_j \leq 0$.¹⁶ 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. We will apply the framework as above for the West (or FRG) and interpret the GDR as a “shock” in the form of a (*full-time*) *labour-supply constraint*, requiring that every adult and hence each spouse i must engage full-time in market work, i.e., $l_i \equiv (1 - h_i) \geq K$ for $K \gg 0$.

4.1 Time Allocation and Household Types

Following our empirical analysis in Section 3, 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 market work as well as housework, i.e., equilibrium (h_f^B, h_m^B) has $1 > h_f^B \geq h_m^B > 0$.

MBE is characterised by h_m^A such that

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

¹⁶Assuming 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 creating an 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 MBE obtains if their wage is low, and DEE obtains if their 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.¹⁷ 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. This is where our second irresponsiveness finding informs the analysis, namely that in comparing the GDR 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 re-allocate 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.

¹⁷Husbands’ housework may fail to respond to changes in their wives’ housework (labor supply) also when their labor supply hits the time constraint, so they don’t do any housework to begin with. However, we do observe that husbands do some housework.

Separate Housework Spheres. We propose a simple extension of the basic framework that allows to explain our empirical findings with minimal heterogeneity. Most fundamentally, we assume that the household 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;¹⁸ specifically, we impose the structure

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

The intuition for men's housework's irresponsiveness to their wives' labour supply is then that it is a consequence of specialisation, where women take over the entire production of b_1 , say, and men that of b_2 , which we call separate housework spheres. An exogenous increase in women's labour supply (due to a full-time labour-supply constraint, see below) still increases the marginal benefit of housework in the "female" sphere, of course. However, the two spouses' returns/costs to housework in a given domain are now disentangled, so that this does not necessarily imply that the husband's optimal time allocation changes.

Any gender difference in the relative returns or costs to the two types of housework results in separate housework spheres due to comparative advantage. We consider two basic sources of such comparative advantage, (1) gender differences in housework *productivities* and (2) gender differences in housework *preferences*.¹⁹ For (1), comparative advantage such that women exclusively work domain 1 and men exclusively work domain 2 will obtain from $\frac{c_{f,2}}{c_{m,2}} < \frac{c_{f,1}}{c_{m,1}}$, and for (2), we impose that spouses' productivities are the same $c_{f,k} = c_{m,k} \equiv c_k$ for each household good $k \in 1, 2$, while introducing (greater) psychological costs $\rho_{i,k} h_{i,k}$, with $\rho_{i,k} \geq 0$, for spouse i when spending time $h_{i,k}$ in the other gender's domain k , i.e., $\rho_{m,1} > \rho_{f,1}$ and $\rho_{f,2} > \rho_{m,2}$.²⁰ Note that, whatever the source of comparative advantage, if the "female"

¹⁸With multiple household goods, we may interpret them as being produced via different housework tasks that are performed more or less regularly, whereby the perfect substitutes assumption appears natural, also a priori.

¹⁹The latter is in the spirit of the seminal work by [Akerlof and Kranton \(2000\)](#), where one's identity enters the utility derived from certain actions. In our case, this would mean doing a certain type of housework which is not conforming with one's gender identity reduces utility. What does or does not conform with a certain gender identity is largely a matter of social norms, and these could also be misperceived (for evidence, see [Bursztyn, González, and Yanagizawa-Drott, 2020](#)).

²⁰While we consider (1) and (2) as alternative explanations here, they are non-exclusive. Indeed, see [Appendix A](#), where we initially analyse a general model, which nests (1) and (2).

domain is more important, in the sense that $\gamma_1 > \gamma_2$, then even when both spouses face the same wage, the husband will spend more time doing market work and the wife will spend more time doing housework.

The only (within-gender) 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 $0 < \underline{w} < \bar{w} \leq w_m$, where we note that gender wage gaps were also persistent in the GDR (Krueger and Pischke, 1995; Sørensen and Trappe, 1995). For simplicity, we assume that there are only two wage levels overall, so that \bar{w} equals w_m .²¹ Moreover, for the purpose of relating the model to our data, we will interpret GDR marriages as subject to a 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.²²

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 labour-supply constraint. Analogously, let $h_{i,k}^{KA}$ and $h_{i,k}^{KB}$ denote the corresponding housework when there is this constraint. Statements referring to “every marriage” below are meant to hold true in equilibrium regardless both of the wife’s wage and of whether there is a labour-supply constraint, and we then write $h_{i,k}^*$ for spouse i 's time devoted to housework in domain k . We will say that a marriage has separate housework 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, while at least he also voluntarily engages in market work. We are now ready to state the proposition that is our explanation of the empirical findings.

Proposition 1. *The following holds true under either (or both) of the two sources (1) and*

²¹As 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 constrained to working). It will feature a gender gap in total wage earnings, however, due to greater labour supply by men.

²²92% 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. Notably, in the GDR, women working full-time had one “household day” per month (unofficially also known as “housewife day”). They were then not required to do paid work, but could instead take care of their household.

(2) of comparative advantage considered: For any constraint value K with $0 < K < 1$, there exist values of the respective model parameters such that

(i) every marriage has separate housework spheres, with $h_{f,2}^* = h_{m,1}^* = 0$;

(ii) every marriage has the same time allocation by the husband, with $l_m^* = (1 - h_{m,2}^*) > K$, and the wife do more housework than her husband, with $h_{m,2}^* < \min\{h_{f,1}^A, h_{f,1}^B, h_{f,1}^{KA}, h_{f,1}^{KB}\}$;

(iii) every marriage without a labour-supply constraint has the wife's time allocation to housework negatively depend on her wage, with $h_{f,1}^A = 1 > h_{f,1}^B$, while every marriage with a labour-supply constraint has the wife's time allocation to housework either the same or also 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 characterises the parameters such that all of parts (i)–(iii) hold true and also expresses the (interior) time allocations $l_m^* = (1 - h_{m,2}^*)$ and $l_f^B = (1 - h_{f,1}^B)$ as explicit functions of the respective model parameters (i.e., under either or also both sources of comparative advantage considered).

While the proposition concerns any constraint value K with $0 < K < 1$, to reasonably apply to our actual setting, we would consider full-time labour supply $K \gg 0$ as relatively large. More specifically, if we interpret $l_{f,1}^B = (1 - h_{f,1}^B)$ as (approximately) full-time work, equal to K , then we obtain that all GDR marriages look alike in terms of housework allocation and, moreover, this allocation is 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 a full-time labour-supply constraint in the GDR, there is no type distribution to explain, upon ignoring the rare exceptions to this dual earner rule, but see also the discussion that follows below.)

4.2 Discussion and Further Implications

The point of the model is to show how within-household specialisation into separate housework 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 have been MBE marriages in West Germany

become similar to its DEE marriages within the household upon facing a 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 (Figures 2 and 3) is striking, and our model provides a simple explanation of the main household time allocation patterns. Notably, such separate housework spheres immediately imply that equalising labour-market conditions for women and men is insufficient for achieving gender-equality in outcomes, in general: As long as the female housework sphere is more important (above, $\gamma_1 > \gamma_2$) gender gaps in both paid work and housework as in Figure 1 will persist (Proposition 1’s part (ii) covers all marriages, hence including those with $w_f = w_m = \bar{w}$). Moreover, any increase in the relative importance of home production will then increase female-male housework gaps (parameter β multiplies housework under either source of comparative advantage, see Appendix A.3). We now discuss the model’s assumptions and (further) implications, as they guide our subsequent empirical analysis.

First of all, note that the explanation of male irresponsiveness does not *require* that all spouses specialise in the very same “gendered” way when it comes to housework. For this, what is household good/sphere 1 in some households could correspond to household good/sphere 2 in others; they could even bundle various tasks arbitrarily into two separate spheres, so that in the aggregate they would be unrelated to gender. However, our simple separate-housework-spheres model does imply a universal definition of spheres and specialisation according to gender, i.e., that housework gets divided into tasks that only/all wives perform and tasks that only/all husbands perform (Proposition 1’s part (i)). A more detailed analysis of our main analysis sample will allow us to examine the extent to which this—and Proposition 1 more generally—is supported empirically (see Section 5.1). Using additional data, we will also be able to examine the generality of our empirical findings across time and space (see Sections 5.2 and 5.3).

Second, 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 single women’s incentives to invest in marketable skills moderated by the marriage market carries over in a straightforward manner.²³ 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. [Bertrand et al. \(2015\)](#) similarly show that higher earning women are shunned in the marriage market. 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. (From the perspective of the two sources of comparative advantage we consider, better housework skills need not only be about productivity but could also be about lower psychological costs of doing traditionally female housework.) Either way, the more marriages have working mothers,

²³The 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, where a single will do housework in both domains as implied by the utility function. It is questionable, however, how comparable the time allocation problem of individuals as singles vs. within a marriage is, through this simple model; e.g., singles’ time allocation may be affected by partner search (e.g., see the signaling evidence in [Bursztyn, Fujiwara, and Pallais, 2017](#)), and also spouses’ behaviors/preferences may adjust to each other (e.g., see the “chameleon effect” evidence in [Chartrand and Bargh, 1999](#)).

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).

Our findings directly 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 housework spheres model that explains it. Furthermore, while our dataset does not allow us to directly examine the first channel, we can and will do so indirectly: Given the long time horizon of our comparison, the couples we observe in the GDR should feature fewer and fewer “ α -men,” so that more and more of them should have wives that invested in skills and voluntarily engage in full-time market work; this implies that following re-unification and the removal of a full-time labour-supply constraint, the distribution of household types in East Germany will not (fully) “revert” to that in West Germany, but that there will remain significantly more dual-earner households (see Section 5.2).

Third, following FFO further in spirit, we also expect cultural/parental transmission of gendered comparative advantage in housework (regardless of whether it is about productivities or preferences). If so, we should see separation already among teenagers or young adults living at home with their parents, whereby females and males engage predominantly in those housework tasks that their mothers and fathers perform, respectively. Fortunately, our dataset for reunified Germany also includes related information, so we can examine whether there is evidence for such transmission (see Section 6.1).

Finally, the literature has identified the arrival and presence of children in the household as the main force behind gender gaps in labour market outcomes due to “child penalties” (Kleven, Landais, and Sjøgaard, 2019), especially in highly developed countries (Kleven, Landais, and Leite-Mariante, forthcoming). This raises the question of how fertility choices and children relate to the empirical findings so far—gender gaps, irresponsiveness, household types—and the separate housework spheres proposed here. Given the established importance of children, we will also investigate these relationships, with additional panel data (see Section 6.2).

5 Empirical Evidence: Separate Housework Spheres

Considering two gender-specific spheres of housework is by no means a new idea in the literature, especially in sociology (Coltrane, 2000; Hook, 2010). Our main innovation is to explain such separation within FFO’s theoretical framework 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, however, namely *routine* and *non-routine housework* (e.g., Borra, Browning, and Sevilla, 2021; Hersch and Stratton, 2002; Perry-Jenkins and Gerstel, 2020; Presser, 1994; Stancanelli and Stratton, 2014). Routine housework (sometimes also referred to as *domestic chores*) comprises household tasks which have to be done regularly—usually every day—and are “less optional and less able to be postponed” (Coltrane, 2000, p. 1210). These include cooking, cleaning the house, washing, and grocery shopping. In contrast, non-routine housework is conducted irregularly and typically easier to skip on a given day (Hersch and Stratton, 2002);²⁴ e.g., 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 the predictions derived from the theoretical model.

5.1 Detailed Household Time Allocation, GDR and W-GER

We first consider empirical support for the separate housework spheres in our context. Table 2 shows time spent in detailed²⁵ housework categories on weekdays and the female-male gap. Gender-specific spheres of housework are evident as the gender gap for routine housework is 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 categories—being the largest. The gaps are 138 minutes per weekday in the GDR and 230 minutes per weekday in West Germany. For non-routine housework, on the other hand, we find a negative gap, with men spending 21 (West Germany) to 36 (GDR) minutes *more*

²⁴Both types of housework have the potential to be outsourced, but as household aids have found to be closer substitutes to housework done on weekend days (Stancanelli and Stratton, 2014), it is more likely that housework which can be planned to be done on a certain day would be replaced by an increase in outsourcing. This holds for all of non-routine housework and only for some routine housework tasks.

²⁵The 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.”

Table 2: Separate spheres – housework in minutes per weekday

	GDR (85/90)			West Germany (91/92)		
	Women (1)	Men (2)	Diff. (3)	Women (4)	Men (5)	Diff. (6)
<i>All housework</i>	223.78	121.89	101.89	325.55	116.53	209.02
<i>Routine housework</i>	187.30	49.27	138.04	293.39	63.44	229.95
Cooking	59.50	13.07	46.42	106.92	17.24	89.68
Cleaning	79.41	9.44	69.97	119.26	10.59	108.67
Shopping	37.76	19.40	18.36	32.16	11.99	20.17
Other	10.64	7.36	3.28	35.05	23.62	11.43
<i>Non-routine housework</i>	36.47	72.62	-36.15	32.16	53.08	-20.93
Fixing and building things	14.76	29.43	-14.67	8.29	32.41	-24.12
Gardening	21.71	43.19	-21.48	23.86	20.67	3.20
Observations	2328	2328	2328	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 German Time-Use Survey (1991/92).

on these tasks. The two spheres of housework are empirically not perfectly separated, but we still see strong support for the usefulness of our key modelling assumptions driving part (i) of Proposition 1, as women spent 2.7 to 4.7 times more minutes per weekday in routine housework while men spent 1.7 to 2.4 times more minutes per weekday in non-routine housework.

In the Appendix, we show that the predictions of Proposition 1 generally receive strong empirical support. In particular, concerning part (ii), male housework irresponsiveness holds true for each type of housework, and female-male housework gaps are not only overall substantial due to the much greater importance of the “female” sphere of routine housework, but also basically indistinguishable between the GDR and West Germany conditional on household type (i.e., female labour supply). For details, see Figure A.3, which splits Figure 2 up into routine and non-routine housework gender gaps (Panels A and B, respectively), and Figures A.4 and A.5, which analogously split up Figure 3 to show daily time spent on routine and non-routine (Panel B) housework, respectively, for women and men in each household

type, always comparing the GDR and West Germany.²⁶ Concerning part (iii), using higher educational attainment as a proxy for women’s potential wages in a regression framework,²⁷ we find a substantial education gap in women’s total housework in West Germany, which is driven by routine housework, and while these education gaps are present in the GDR as well, they are less than half the size there (depending on the specification/controls used, 40–52 vs. 18–21 minutes per day for total housework); see Table A.2 for details.

The central findings here, however, are the (approximate) gendered specialisation into two objectively different spheres, where women end up with the much larger sphere of routine housework tasks, and that men do not increase their housework in response to an increase in their female partner’s labour supply (which entails a reduction in female housework due to time constraints). Conditional on household type—capturing female labour supply—gender gaps (in each type of housework) are hence highly similar across the two very different societies.

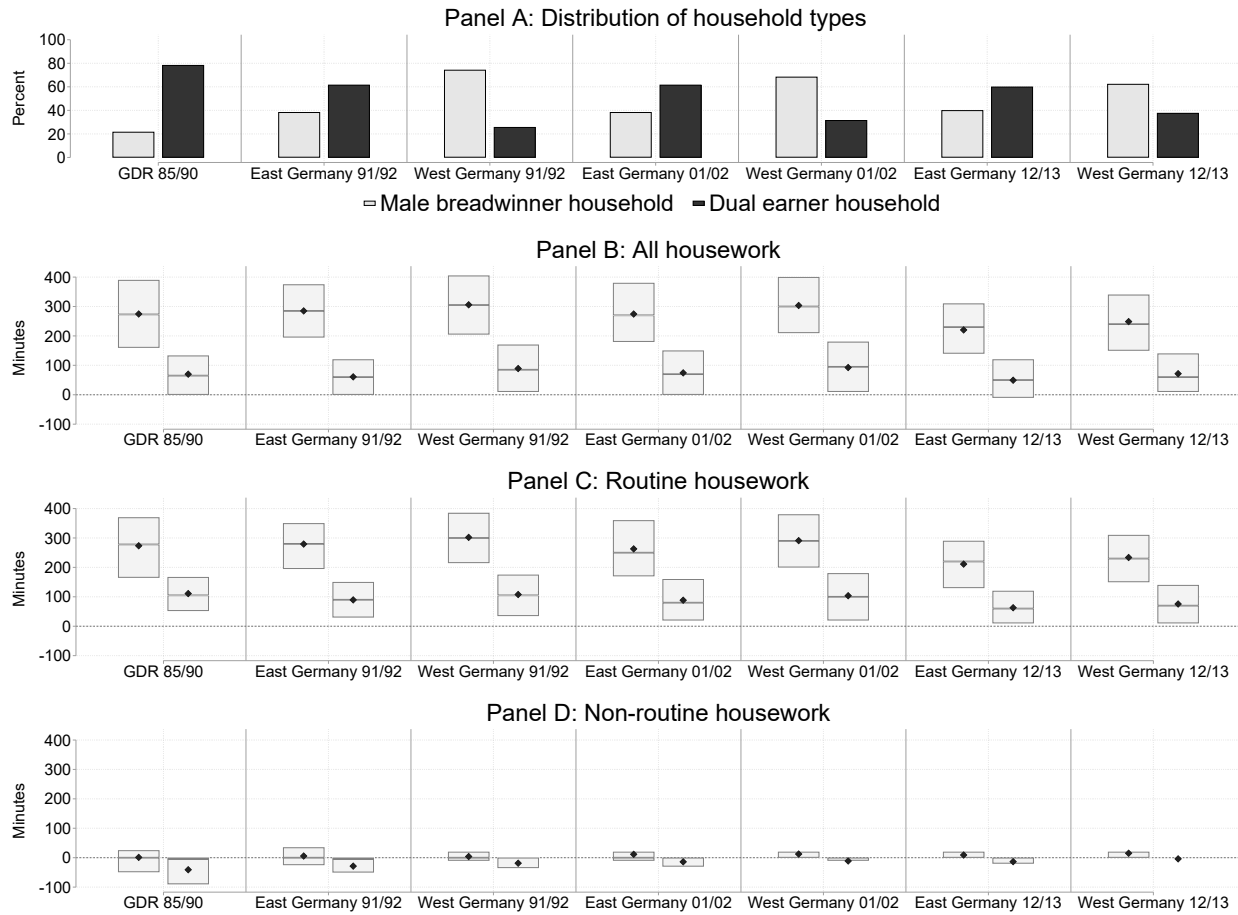
5.2 Separate Housework Spheres after German Reunification

A natural question that arises is whether these findings are specific to the period considered and the comparison between the GDR and West Germany. Figure 4 demonstrates that separate housework spheres are not merely a construct relevant to the study of economic historians. Moving from left to right, the figures show evidence from household-level time-use data for seven different periods/countries: the GDR 1985/90, East Germany 1991/92, West Germany 1991/92, East Germany 2001/02, West Germany 2001/02, East Germany 2012/13, and West Germany 2012/13. The top panel shows the relative incidence of the male-breadwinner and dual-earner household types. Interestingly, in terms of this distribution, East Germany in 91/92—so just after reunification and the removal of the GDR’s full-time labour-supply mandate—falls right in-between the GDR just before (85/90) and West Germany at the same time (91/92). This indeed lends support to FFO’s channel whereby

²⁶A small qualification is a level effect, apparent especially in Figure A.5, whereby men in the GDR generally engaged in more non-routine housework than their Western counterparts (in the form of gardening, see Table 2).

²⁷Neither of the time-use datasets contain information on hourly wages, and only the German time budget study includes household income. However, the proposition is anyways about potential rather than actually earned wages.

Figure 4: Gender gaps in housework and distribution of household types



Notes: Panels show the distribution of household types (Panel A) and gender gaps in housework (Panels B–D) for the GDR and for East and West Germany at different points in time. Figure 2 shows the same information for all housework only for the GDR (85/90) and West Germany (91/92). 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 the 25th, 50th, and 75th percentiles of the distribution. The solid horizontal lines denote the sample averages. Observations at household-level from left to right: 2029, 1214, 3479, 581, 2666, 470, 1863. Source: GDR time budget study (1985/90) and German Time-Use Survey (1991/92, 2001/02 and 2012/13)

more working mothers mean fewer “ α -men” and more voluntary dual earners in subsequent generations. Over time, however, household types become more comparable across West and East Germany, mainly because West Germany is moving towards more dual earners.

Panel B shows female-male gender gaps in total minutes spent on any housework (again, without childcare). In all seven cases—subsuming those of the GDR 85/90 and West-Germany 91/92, as compared earlier in Figure 1—there is a clearly visible and time-wise

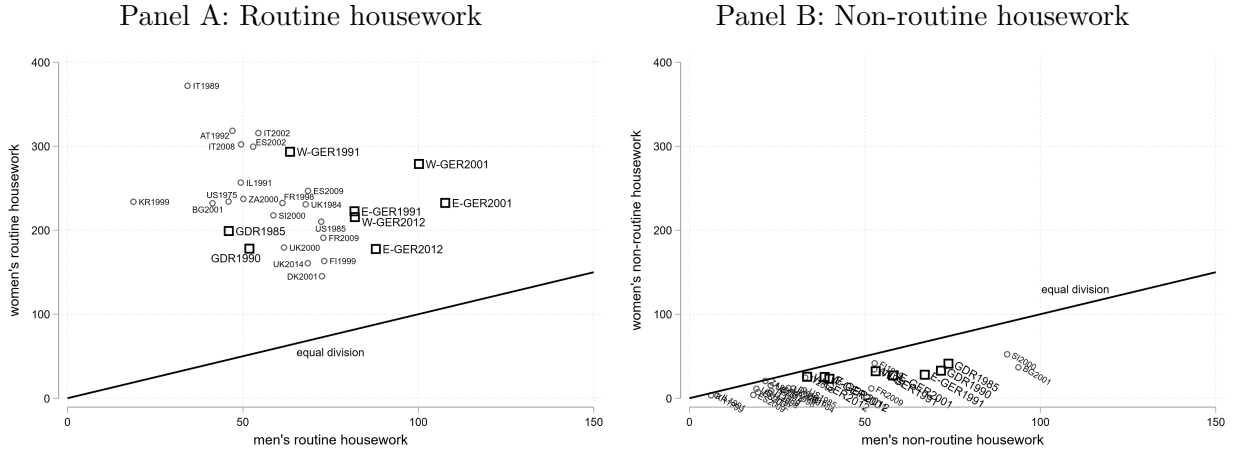
very stable such gender gap in total housework, which negatively correlates with female labour supply. Panels C and D now decompose this gap into routine and non-routine housework. Just as found already for the case of the GDR 85/90 and West Germany 91/92, in all instances there is a large and significant gender gap in routine housework, and this gap is driving the stable overall gender gap in total housework. Non-routine housework gaps are much smaller – and in all settings point in the opposite direction, at least initially, where it is the men spending more time on non-routine housework. The relative incidence of female labour supply, i.e., the household-type distribution shown in Panel A, governs aggregate gaps in routine housework, while conditional gaps are indistinguishable across East and West also after reunification. The phenomena documented earlier for the GDR 85/90 vs. West Germany 90/91 are thus not limited to the particular setting and time period in German history. The separation of the two housework spheres—especially, the specialisation of women in the dominant category of routine housework—remains very constant over time and across countries/regions, and so do the respective housework gaps conditional on female labour supply/household type.

5.3 Separate Housework Spheres around the World

We now utilise the international household-level time-use data underlying Figure 1 to examine separate housework spheres internationally. We use all of the studies from the Multinational Time Use Study (MTUS, [Gershuny et al., 2020](#)) which were conducted at the household level and contain corresponding identifiers. As for the German time-use surveys, we continue to restrict to cohabiting, different-sex couples aged 18–65 on weekdays. To avoid results being driven by outliers, we impose the restriction of at least 400 household-level observations fulfilling the aforementioned criteria. Our analysis sample then contains data from 17 countries from the MTUS in addition to the German surveys.

Figure 5 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-

Figure 5: Separate spheres across countries



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

routine housework. Separate housework spheres seem to be a universal phenomenon – at least, within the countries studied.

We have previously found that households in the GDR, East, and West Germany looked similar in their time allocations to housework when considering similar household types as defined by the female share of paid work (male-breadwinner or dual-earner households). We replicate this analysis for a wide range of countries in Appendix Figure A.6.²⁸ The key insight from Figure A.6 is that households from all 20 time-use surveys fulfilling our sample criteria look remarkably alike once the same household type is considered. This holds true despite vast differences in the distribution of household types, as indicated by the black bars. Take Austria (AT1992) and Bulgaria (BG2001) as examples: in Austria, 70% of households are of the male-breadwinner type (there denoted A, while dual-earner households are denoted B), whereas in Bulgaria, only 38% are of this type. However, despite these differing patterns in paid work selection, conditional on the household type, the gender gaps in housework hardly differ between the two countries. Across all countries considered, in male-breadwinner households, the female-male gap in housework is around 400 minutes per weekday, and it is around 100 minutes in dual-earner households. In Appendix Figures A.7 and A.8, the

²⁸We again condition the sample to weekdays, different-sex couples aged 18–65, with at least one partner working full-time, for Germany, and to countries with at least 200 household-level observations fulfilling the tighter criteria of additionally being either a dual-earner or a male-breadwinner household, respectively (so also with at least one partner working full-time), for the other countries.

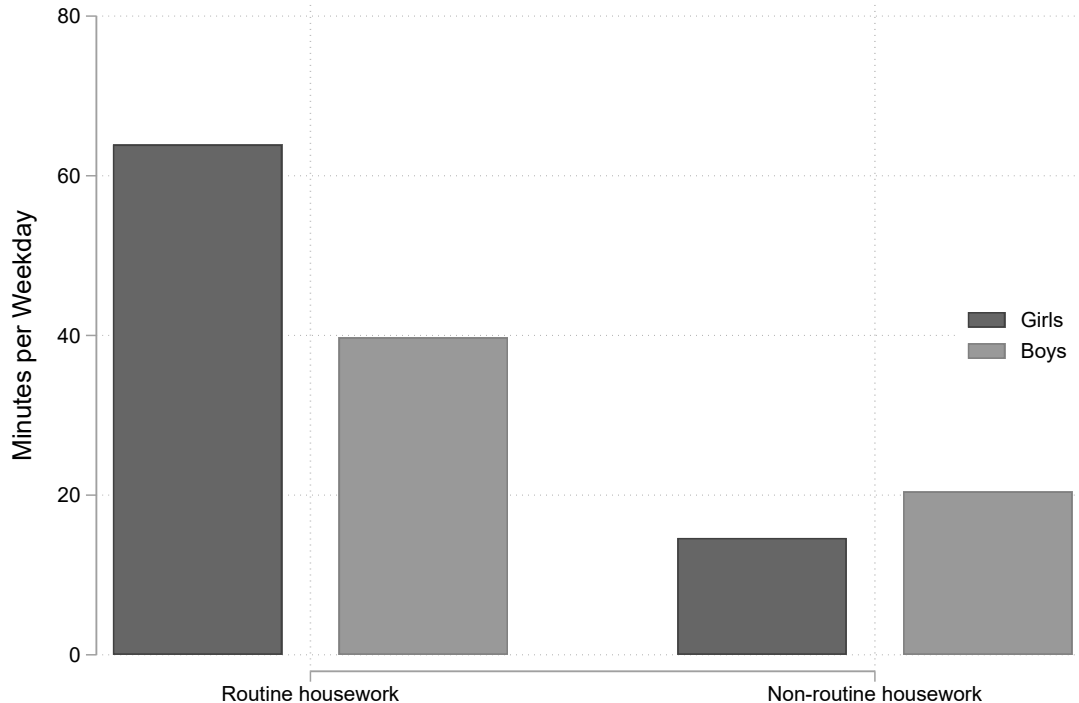
same cross-country figure is shown separately for routine and non-routine housework. Also in these international data, results for routine housework closely resemble those for all types of housework, while the gaps in non-routine housework are throughout much smaller and differ little by household type.

6 Extensions

6.1 Origins of Comparative Advantage

This paper has established the existence of separate housework spheres using theory and empirical investigation. A central element for the separate housework sphere explanation is the female (male) comparative advantage in routine (non-routine) housework tasks, based on differences in either productivity or preferences. In this section, we provide novel descriptive evidence of the early emergence and parental transmission of such comparative advantage.

Figure 6: Separate housework spheres for teenagers



Notes: Figure plots teenage girls' and boys' housework in minutes per weekday, by type of housework. Teenagers are 12–19 years old, and sample is restricted not to be in paid work. Observations: 1561 (girls) and 1571 (boys). Sources: German Time-Use Survey 1991/92

Figure 6 reports time allocation to housework tasks for teenagers aged 12–19 years and not in employment (84% of teenagers). As patterns for East and West Germany do not differ markedly, we pool them in this figure. Already at this young age, when they mostly live with their parents, teenage girls allocate around 50% more of their time to routine housework tasks compared to boys.

This pattern is in line with the idea of parental transmission of housework skills or norms. Such transmission could occur in two ways. First, teenage girls and boys could just take their mother and fathers, respectively, as their role models, thus learning predominantly their housework skills by doing what they do—in particular, girls becoming more skilled in routine housework than boys—or internalising this as part of their identity as a woman vs. man in terms of preferences over housework. Second, however, mothers and fathers could also invest differently in the housework skills of their offspring, depending on their biological sex, and potentially in response to expectations regarding the returns to various such skills in the marriage market. This second channel suggests mothers should spend more time with their girls, while fathers should spend more time with their boys. (If such time investment were about passing on the “right values” concerning one’s role in the household, this could plausibly be done by either parent, regardless of the child’s sex.)

Now focusing on households with only one child under 10 years, we can assess in the German data whether mothers and fathers are more likely to spend time with a child of their sex. Results are reported in Appendix Figure A.9: Mothers dedicate eight more minutes daily (10.6%) to explicit childcare activities if their only child is a girl, compared to if it is a boy, and they also spend 25 more minutes daily (8%) together with their child—i.e., in its presence, while doing other things such as housework—when it is a daughter, compared to with a son (both differences are statistically significant at the 5% level). For fathers, we find the reversed pattern, though the differences are not statistically significant. Besides serving as role models, parents therefore seem to invest differently into their children, depending on biological sex, thus potentially generating patterns of gendered comparative advantage across different household tasks (also) through the inter-generational transmission of skills.

6.2 Children and Housework

Children have been identified as the main force behind gender gaps in labour-market outcomes (e.g., see [Cortés and Pan, 2023](#); [Kleven et al., forthcoming](#)). Norms are a key candidate to explain child penalties, and a recent paper shows how norms shape responses to incentives in the household division of childcare tasks ([Ichino, Olsson, Petrongolo, and Thoursie, forthcoming](#)). We now consider how “separate housework spheres” relate to children. Section 6.1 established that housework specialisation occurs already in teenagers, i.e., long before children enter the scene. Appendix Figures A.10 replicates Figure 2 using households without children only, and Figures A.11–A.13 provide details by additionally showing the gender gaps as well as women’s and men’s individual contributions to routine and non-routine housework, respectively, by household type. The results are almost identical to those found earlier for all households, at every level of detail, so the patterns documented are not driven by couples with children. They might be driven by couples without children, however. Hence, what remains to be understood is the impact of children on (types of) housework and its division.

To calculate child penalties also for housework directly, we need a panel structure in the data that is not available in household-level time-use datasets. Instead, we use data from the SOEP, a large German household panel data survey ([Goebel, Grabka, Liebig, Kroh, Richter, Schröder, and Schupp, 2019](#)). Important for our purposes and rare in panel studies, the SOEP includes separate questions on time spent on routine and non-routine housework activities. We proceed and estimate the basic child penalty specification as in [Kleven et al. \(2019\)](#):

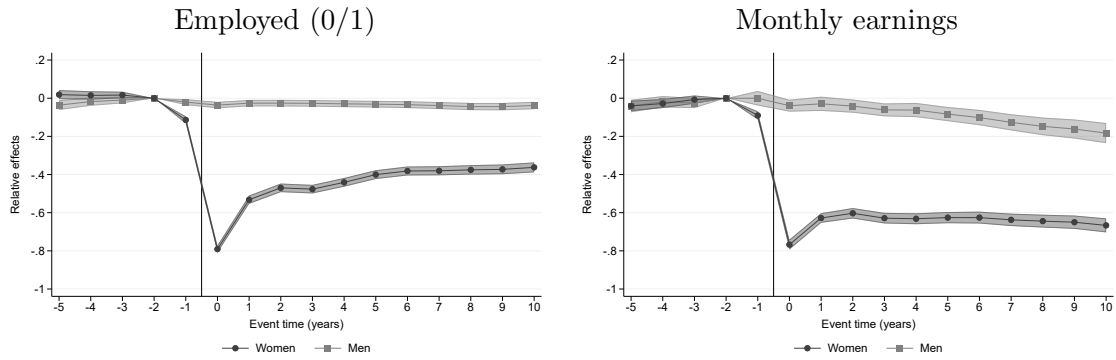
$$y_{ist}^g = \sum_{j \neq -2} \alpha_j^g \cdot \mathbb{I}[j = t] + \sum_k \beta_k^g \cdot \mathbb{I}[k = age_{is}] + \sum_y \gamma_y^g \cdot \mathbb{I}[y = s] + \epsilon_{ist}^g \quad (5)$$

Equation (5) is estimated separately for men and women. After netting out life-cycle and time effects, the α_j coefficients indicate how the dependent variables evolve around (first) childbirth and during the progression of parenthood.

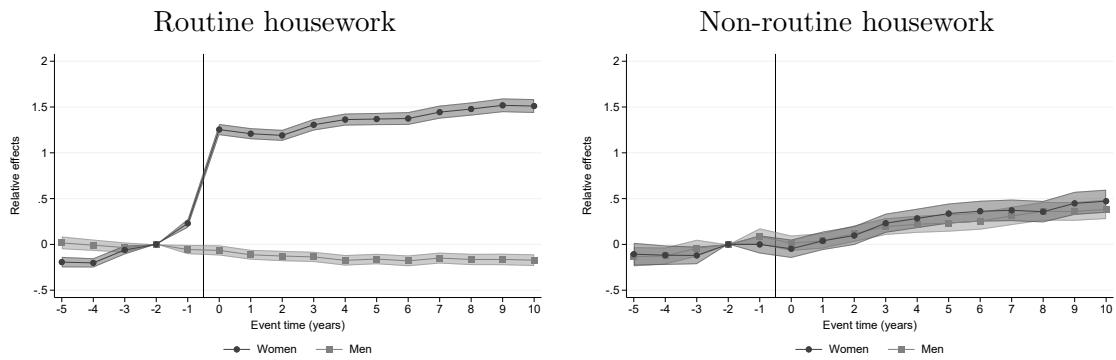
Figure 7 shows the child penalties for employment and monthly earnings in Panel A, which we find to be similar to existing findings ([de la Vega, 2022](#); [Kleven et al., forthcoming](#)): both of these labour-market outcomes drop substantially and persistently upon motherhood, whereas there is hardly any effect for fathers. Using an identical specification, Panel B shows

Figure 7: Child penalties

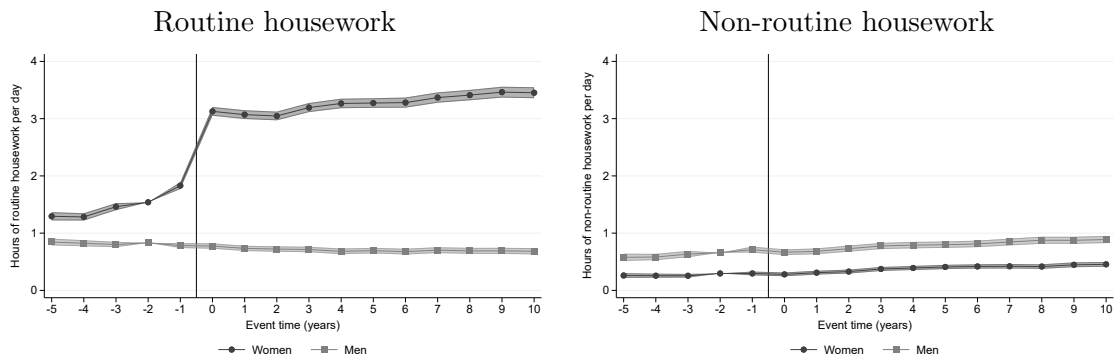
Panel A: Labour-market outcomes – relative effects



Panel B: Housework – relative effects



Panel C: Housework – absolute effects



Notes: Plots show the event-time coefficients α_j obtained from estimating equation (5). Panel A and B show the effects in percentages relative to the normalised pre-birth period. In Panel C the absolute levels/effects of housework are displayed, which highlights pre-birth differences in the dependent variables. Shaded areas represent 95% confidence intervals calculated with standard errors clustered at the individual level. Observations for women and men, respectively: 51647 and 44357 (employed), 51609 and 44349 (monthly earnings), 51484 and 44324 (routine housework), 51579 and 44267 (non-routine housework). The sample covers 1990–2020. Source: SOEP-Core, v37

child penalty estimates also for routine and non-routine housework. Following the literature, we again normalise existing gaps just before the arrival of the first child to zero so that differences after the arrival of children can be more readily interpreted as their relative impact on the respective outcome. There is clear evidence for a child penalty on women concerning routine housework, which more than doubles upon childbirth, and persistently so, while for men there is again hardly any effect; in contrast, there are no discernible gender differences regarding non-routine housework, which moves smoothly and very slowly as well as similarly increases for both partners.

Panel C of Figure 7 reproduces panel B, but without normalising gaps to zero before the arrival of children, thus revealing absolute levels/effects. The advantage of this representation is that it becomes clearly visible how the arrival of children does not generate but further inflate the pre-existing gendered specialisation into routine and non-routine housework activities. Before the arrival of children, the specialisation that we already observe in teenagers in the time-use data is also visible in the SOEP for these couples, though the scale of the overall gender housework gap is relatively small: women spend more time on routine activities (about 1.5 hours per day, vs. about 1 hour for men) but men spend almost as much more time on non-routine housework (about 40 minutes vs. 20 minutes for women). As we know from the existing literature, time constraints that arise from these differences are not large enough to generate large gaps in the labour market. This changes with the arrival of children: routine housework jumps up by two hours a day which entirely fall onto women's shoulders, while non-routine housework remains unaffected both totally and individually. The previously established specialisation into the two housework spheres thus generates significant new time constraints for women, but not for men. It is worthwhile recalling that this concerns time spent *net* of childcare.²⁹ To this extent, separate housework spheres that originate long before the arrival of children can rationalise the finding for heterosexual couples that there are substantial child penalties in the labour market for women but not for men.

²⁹If childcare and housework, as the two main components of unpaid domestic work, were considered jointly, the gender differences in unpaid work documented in this paper are even more pronounced – overall as well as for both male-breadwinner and dual-earner households separately.

7 Conclusion

This paper documents separate housework spheres. 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, and while housework gaps decrease in the extent to which women supply labour in the market, the housework separation—and hence housework inequality—prevails regardless of it. Such separate housework spheres are observed to be a stable characteristic of household time allocation. They are evident in international time-use data since the 1970s and even persisted throughout German division and reunification. Moreover, they emerge long before the presence of children, while children only reinforce inequalities in housework by substantially increasing housework time demands in the female sphere, and only there.

We organise our analysis and arguments around the theoretical framework proposed by [Fernández et al. \(2004\)](#), which we extend by a second household good, such that both partners’ time inputs are perfect substitutes in the production of each household good. We thus obtain separate housework spheres as specialisation in the two household goods’ home production following gender-specific comparative advantages. This extended model overall receives strong empirical support, with important implications.

Most fundamentally, it implies that gender equality cannot be achieved without changing the underlying pattern of gendered comparative advantage. In other words, policies that focus on equalising labour-market conditions alone are insufficient, so our model parsimoniously captures that the last mile to gender equality appears to be the longest ([OECD, 2018](#)). Moreover, it also implies that any increase in the importance of home production—such as with teleworking during the COVID-19 pandemic, or due to the presence of children—will exacerbate pre-existing gender inequality; thus, it contributes a potential explanation of the “shecession” observed in [Alon, Coskun, Doepke, Koll, and Tertilt \(2022\)](#).

Following [Fernández et al. \(2004\)](#), we also offer evidence on parental transmission. First of all, this evidence speaks to the two mothers-and-sons transmission channels they considered; it indicates that having experienced a working mother makes their sons more accepting of working wives, but this comes without any supporting change in their housework contri-

butions. Second, our evidence from teenagers and parent-child interactions confirm the importance of parental/inter-generational transmission of gendered comparative advantage. This implies a direct route toward more equality via interventions into such 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. This could affect comparative advantage both, by changing productivity as well as through changing preferences over housework. A better understanding of the source and emergence of the gendered comparative advantage across the two household spheres is an exciting route for future research, which should eventually also allow to better assess separate housework spheres also from a welfare perspective, including the role of matching frictions in the marriage market.

As an alternative to addressing this inequality at source, the female housework domain could be reduced in its importance with technological change improving routine housework tasks' efficiency or outsourcing. To date, the potential for outsourcing housework has primarily benefited high-income women (Cortés and Tessada, 2011), but technological advances may lead to further reductions benefiting a wider population. In the meantime, any shock or gradual development that increases the need for housework (e.g., more working from home) or for flexibility in timing housework (e.g., greedier paid work) will increase the pressure on the female housework sphere disproportionately and put women at an increased disadvantage.

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A Appendix: Model Details and Proofs

We consider here a **generalised model**, which nests both sources of comparative advantage introduced in section 4, i.e., we allow for gender norms as gender differences in both (1) housework productivities and (2) housework costs. We begin by characterising household equilibrium for this generalised model, in terms of equilibrium conditions, in A.1. Then, in A.2, we first characterise the parameter conditions such that this equilibrium has separate housework spheres, in Lemma 1, where we allow for any (positive) wages (w_f, w_m) and any (minimum) labour-supply constraint L with $0 \leq L < 1$. These will subsequently be the main parameters of interest in comparing different household types in different institutional settings, while all other parameters will be assumed to be the same for all households. In Theorem 1, we essentially prove a general version of Proposition 1 in the main text. Finally, we then use this result to establish Proposition 1 as a corollary of Theorem 1, for each source of comparative advantage alone, in A.3.

A.1 Generalised Model and Household Equilibrium Conditions

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 L with $0 \leq L < 1$ (marriages without a labor-supply constraint correspond to $L = 0$), the following problem, which includes spouses' $j \in \{f, m\}$ psychological costs $\rho_{j,k} h_{j,k}$ of doing different types of housework in amounts $h_{j,k}$, $k \in \{1, 2\}$:

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

Letting $x_{j,k} \equiv c_{j,k}h_{j,k}$ and $M_L \equiv 1 - L$ (so $0 < M_L \leq 1$), and omitting the decision-irrelevant terms, this problem has the Lagrangian function:³⁰

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

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:³¹

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

This characterises households' equilibrium time allocation as 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 $x_{j,k} = c_{j,k}h_{j,k}$.

A.2 Separate Housework Spheres Equilibrium

We say that household equilibrium has **separate housework spheres**, if $h_{f,2} = h_{m,1} = 0$ and $(M_L - h_{m,2}) > 0$; i.e., the wife does all housework in domain $k = 1$, while the husband does all housework in domain $k = 2$ and also works on the market without hitting the labour-supply constraint. (Note that this does not necessarily imply asymmetry/inequality within a couple.) We obtain the following general characterisation of household parameters for separate-spheres equilibrium, where $l_i \equiv 1 - h_{i,1} - h_{i,2}$ denotes spouse i 's time spent on market work, and $\tau_i \equiv (l_i, h_{i,1}, h_{i,2})$ denotes i 's full time allocation. For better interpreting the parameter conditions below, note that, given any housework domain $k \in \{1, 2\}$ and individual i , $\beta_k \frac{1}{M_L}$ is i 's marginal benefit from housework in domain k under separate housework spheres where i specialises in this domain and works it at the constrained maximal level of M_L , while $w_i + \rho_{i,k}$ is i 's marginal cost of housework in domain k , and $c_{i,k}/c_{j,k}$ is i 's relative

³⁰The decision-irrelevant/given terms are $(w_j - \alpha_i) \cdot (1 - h_{j,1} - h_{j,2})$, $(\rho_{j,k}h_{j,k})_{k \in \{1,2\}}$, and q_i . Note that we have formulated the problem such that each individual i internalises spouse j 's disutility from doing housework. Thus, the non-cooperative solution coincides with that of a unitary household when $q_f = q_m = 0$ also under this generalisation. However, the non-cooperative solution would also be the same if i did not internalise j 's such disutility, because she/he takes as given the spouse's choices.

³¹The constraint set is convex, and the objective function is strictly (quasi-) concave. This guarantees that best responses are unique. Equilibrium still need not be unique, in knife-edge cases. However, the type of equilibrium that is our focus—with separate housework spheres, see below—is unique, whenever it exists.

advantage in housework domain k (relative to spouse j).³²

Lemma 1. *Household equilibrium has separate housework spheres if and only if*

$$\max \left\{ \beta_1 \frac{1}{M_L}, w_f + \rho_{f,1} \right\} \leq \frac{c_{f,1}}{c_{m,1}} (w_m + \rho_{m,1}), \text{ and} \quad (6)$$

$$\beta_2 \frac{1}{M_L} < w_m + \rho_{m,2} \leq \frac{c_{m,2}}{c_{f,2}} \left((\rho_{f,2} - \rho_{f,1}) + \max \left\{ \beta_1 \frac{1}{M_L}, w_f + \rho_{f,1} \right\} \right). \quad (7)$$

Any household equilibrium with separate housework spheres has the husband's time allocation independent of M_L and equal to

$$\tau_m = \left(1 - \frac{\beta_2}{w_m + \rho_{m,2}}, 0, \frac{\beta_2}{w_m + \rho_{m,2}} \right), \quad (8)$$

while the wife's time allocation depends on M_L and equals

$$\tau_f = \left(1 - \min \left\{ \frac{\beta_1}{w_f + \rho_{f,1}}, M_L \right\}, \min \left\{ \frac{\beta_1}{w_f + \rho_{f,1}}, M_L \right\}, 0 \right). \quad (9)$$

Proof. Separate housework spheres immediately imply $h_{f,1} > 0$ and $h_{m,2} > 0$, since the marginal returns to housework approach infinity as any sphere's housework level approaches zero, whereby $\mu_{f,1} = \mu_{m,2} = 0$. The husband's unconstrained market work, $h_{m,2} < M_L$, means we also have $\mu_{m,0} = 0$. Then, however, $h_{m,2} = \beta_2 / (w_m + \rho_{m,2}) \equiv h_{m,2}^*$ is pinned down, and to indeed have $h_{m,2}^* < M_L$, parameters must satisfy

$$\beta_2 \frac{1}{M_L} < w_m + \rho_{m,2}.$$

For $i = m$, all of this then leaves us with only two conditions to satisfy, namely

$$\begin{aligned} \beta_1 \frac{c_{m,1}}{c_{f,1} h_{f,1}} + \mu_{m,1} - \rho_{m,1} &= w_m \text{ and } \mu_{m,1} \geq 0, \text{ i.e.,} \\ w_m + \rho_{m,1} &\geq \beta_1 \frac{c_{m,1}}{c_{f,1} h_{f,1}}, \end{aligned} \quad (10)$$

while for $i = f$, it leaves us with

$$\begin{aligned} \beta_1 \frac{1}{h_{f,1}} - \rho_{f,1} &= w_f + \mu_{f,0}, \\ \frac{c_{f,2}}{c_{m,2}} (w_m + \rho_{m,2}) + \mu_{f,2} - \rho_{f,2} &= w_f + \mu_{f,0}, \\ \mu_{f,0} \cdot (M_L - h_{f,1}) &= 0, \\ (M_L - h_{f,1}), \mu_{f,0}, \mu_{f,2} &\geq 0. \end{aligned}$$

Indeed, the only part of the allocation left to pin down is then the wife's $h_{f,1} > 0$, where we

³²All of this excludes potential shadow costs/values.

will need to distinguish according to whether she hits the labour-supply constraint or not, i.e., whether $h_{f,1} = M_L$ or $h_{f,1} < M_L$.

Case $h_{f,1} < M_L$: Given $h_{f,1} < M_L$, we have $\mu_{f,0} = 0$ and $h_{f,1} = \beta_1/(w_f + \rho_{f,1}) = h_{f,1}^*$, analogous to the husband, so for this equilibrium, parameters must satisfy

$$\beta_1 \frac{1}{M_L} < w_f + \rho_{f,1};$$

moreover, (10) becomes parameter condition

$$\frac{w_m + \rho_{m,1}}{w_f + \rho_{f,1}} \geq \frac{c_{m,1}}{c_{f,1}},$$

and we also have an analogous condition from the wife's problem, which is that

$$\frac{w_f + \rho_{f,2}}{w_m + \rho_{m,2}} \geq \frac{c_{f,2}}{c_{m,2}}.$$

In summary, the household time allocation

$$\tau_f = \left(1 - \frac{\beta_1}{w_f + \rho_{f,1}}, \frac{\beta_1}{w_f + \rho_{f,1}}, 0\right) \text{ and } \tau_m = \left(1 - \frac{\beta_2}{w_m + \rho_{m,2}}, 0, \frac{\beta_2}{w_m + \rho_{m,2}}\right)$$

is an household equilibrium if and only if the parameters satisfy

$$\beta_1 \frac{1}{M_L} < w_f + \rho_{f,1} \leq \frac{c_{f,1}}{c_{m,1}} (w_m + \rho_{m,1}), \text{ and } \beta_2 \frac{1}{M_L} < w_m + \rho_{m,2} \leq \frac{c_{m,2}}{c_{f,2}} (w_f + \rho_{f,2}).$$

Case $h_{f,1} = M_L$: In this case, (10) becomes parameter condition

$$w_m + \rho_{m,1} \geq \beta_1 \frac{1}{M_L} \frac{c_{m,1}}{c_{f,1}},$$

and the remaining multipliers are pinned down as

$$\mu_{f,0} = \beta_1 \frac{1}{M_L} - (w_f + \rho_{f,1}) \text{ and } \mu_{f,2} = \mu_{f,0} + (w_f + \rho_{f,2}) - \frac{c_{f,2}}{c_{m,2}} (w_m + \rho_{m,2}),$$

so their non-negativity yields the following two further parameter conditions

$$\beta_1 \frac{1}{M_L} \geq w_f + \rho_{f,1} \text{ and } \beta_1 \frac{1}{M_L} \geq \frac{c_{f,2}}{c_{m,2}} (w_m + \rho_{m,2}) - (\rho_{f,2} - \rho_{f,1}).$$

In summary, the household time allocation

$$\tau_f = (1 - M_L, M_L, 0) \text{ and } \tau_m = \left(1 - \frac{\beta_2}{w_m + \rho_{m,2}}, 0, \frac{\beta_2}{w_m + \rho_{m,2}}\right)$$

is an household equilibrium if and only if the parameters satisfy

$$w_f + \rho_{f,1} \leq \beta_1 \frac{1}{M_L} \leq \frac{c_{f,1}}{c_{m,1}} (w_m + \rho_{m,1}) \quad \text{and} \quad \beta_2 \frac{1}{M_L} < w_m + \rho_{m,2} \leq \frac{c_{m,2}}{c_{f,2}} \left((\rho_{f,2} - \rho_{f,1}) + \beta_1 \frac{1}{M_L} \right).$$

Note that $w_f + \rho_{f,1} \leq \beta_1 \frac{1}{M_L}$ is equivalent to $w_f + \rho_{f,2} \leq \beta_1 \frac{1}{M_L} + (\rho_{f,2} - \rho_{f,1})$, as well as to $M_L \leq \beta_1 / (w_f + \rho_{f,1})$. Hence, the two cases combine via $\max\{\beta_1 \frac{1}{M_L}, w_f + \rho_{f,1}\}$ in terms of parameter conditions, to (6) and (7), as well as via $\min\{\beta_1 / (w_f + \rho_{f,1}), M_L\}$ in the wife's time allocation (9), completing the lemma's proof. \square

We now use the general characterisation of Lemma 1 with only two types of households, differing (only) by whether the wife earns the same wage as the husband or a lower one: **A-households** with $w_f = \underline{w} < w_m = \bar{w}$ and **B-households** with $w_f = w_m = \bar{w}$. (A-households now necessarily feature asymmetry/inequality within couples.) Moreover, we study these households under two institutional settings, differing (only) by whether there is a labour-supply constraint or not: $L = 0$ for the ‘‘West,’’ and $L = K$ with $0 < K < 1$ for the ‘‘East.’’ Denoting by τ_i^T the time allocation of spouse $i \in \{f, m\}$ in household type $T \in \{A, B\}$ when facing no labour-supply constraint ($L = 0$) and by τ_i^{KT} the same household/spouse's time allocation when facing a labour-supply constraint with $L = K > 0$, we obtain the following characterisation.

Theorem 1. *Fix any K with $0 < K < 1$. Then, if and only if*

$$\underline{w} + \rho_{f,1} \leq \beta_1 \leq \bar{w} + \rho_{f,1}, \quad \max \left\{ \beta_1 \frac{1}{1-K}, \bar{w} + \rho_{f,1} \right\} \leq \frac{c_{f,1}}{c_{m,1}} (\bar{w} + \rho_{m,1}), \quad \text{and} \quad (11)$$

$$\beta_2 \frac{1}{1-K} < \bar{w} + \rho_{m,2} \leq \frac{c_{m,2}}{c_{f,2}} ((\rho_{f,2} - \rho_{f,1}) + \beta_1), \quad (12)$$

the following holds true: Household equilibrium has separate housework spheres for both household types $T \in \{A, B\}$ in both institutional settings $L \in \{0, K\}$, and is such that the husband's time allocation is independent of the household type and the institutional setting, equal to

$$\tau_m^A = \tau_m^B = \tau_m^{KA} = \tau_m^{KB} = \left(1 - \frac{\beta_2}{\bar{w} + \rho_{m,2}}, 0, \frac{\beta_2}{\bar{w} + \rho_{m,2}} \right), \quad (13)$$

while the wife's time allocation depends on the household type and the institutional setting, and equals

$$\tau_f^T = \begin{cases} (0, 1, 0), & \text{if } T = A, \\ \left(1 - \frac{\beta_1}{\bar{w} + \rho_{f,1}}, \frac{\beta_1}{\bar{w} + \rho_{f,1}}, 0 \right), & \text{if } T = B, \end{cases} \quad \text{and} \quad (14)$$

$$\tau_f^{KT} = \begin{cases} (K, 1 - K, 0), & \text{if } T = A, \text{ or if } T = B \text{ and } \beta_1 \frac{1}{1-K} \geq \bar{w} + \rho_{f,1}, \\ \left(1 - \frac{\beta_1}{\bar{w} + \rho_{f,1}}, \frac{\beta_1}{\bar{w} + \rho_{f,1}}, 0 \right), & \text{if } T = B \text{ and } \beta_1 \frac{1}{1-K} < \bar{w} + \rho_{f,1}. \end{cases} \quad (15)$$

Proof. First, suppose that $L = 0$. Then, if and only if

$$\underline{w} + \rho_{f,1} \leq \beta_1 \leq \bar{w} + \rho_{f,1} \leq \frac{c_{f,1}}{c_{m,1}} (\bar{w} + \rho_{m,1}), \text{ and} \quad (16)$$

$$\beta_2 < \bar{w} + \rho_{m,2} \leq \frac{c_{m,2}}{c_{f,2}} ((\rho_{f,2} - \rho_{f,1}) + \beta_1), \quad (17)$$

the following holds true: Household equilibrium has separate housework spheres for both household types $T \in \{A, B\}$, such that the husband's time allocation is independent of the household type and equal to

$$\tau_m^A = \tau_m^B = \left(1 - \frac{\beta_2}{\bar{w} + \rho_{m,2}}, 0, \frac{\beta_2}{\bar{w} + \rho_{m,2}} \right) \equiv \tau_m^*,$$

while the wife's time allocation depends on the household type and equals

$$\tau_f^T = \begin{cases} (0, 1, 0), & \text{if } T = A, \\ \left(1 - \frac{\beta_1}{\bar{w} + \rho_{f,1}}, \frac{\beta_1}{\bar{w} + \rho_{f,1}}, 0 \right), & \text{if } T = B. \end{cases}$$

This result is immediate from Lemma 1 for $M_L \equiv 1 - L = 1$ and the two household types' wages, upon noting that τ_f^T requires

$$\max \left\{ \beta_1 \frac{1}{M_L}, w_f + \rho_{f,1} \right\} = \max \{ \beta_1, w_f + \rho_{f,1} \} = \begin{cases} \beta_1, & \text{if } w_f = \underline{w}, \\ \bar{w} + \rho_{f,1}, & \text{if } w_f = \bar{w}, \end{cases}$$

and that this is indeed implied by the given parameter conditions.

Now introduce the labour-supply constraint with $L = K \in (0, 1)$, for the same households, i.e., assuming parameters satisfy (16) and (17). Consider the two household types in turn.

A-households: Taking Lemma 1 for $M_L = M_K \in (0, 1)$ and $(w_f, w_m) = (\underline{w}, \bar{w})$, A-households' equilibrium time allocation becomes

$$\tau_f^{KA} = (K, 1 - K, 0) \text{ and } \tau_m^{KA} = \tau_m^*,$$

if and only if

$$\underline{w} + \rho_{f,1} \leq \beta_1 \frac{1}{M_K} \leq \frac{c_{f,1}}{c_{m,1}} (\bar{w} + \rho_{m,1}), \text{ and} \quad (18)$$

$$\beta_2 \frac{1}{M_K} < \bar{w} + \rho_{m,2} \leq \frac{c_{m,2}}{c_{f,2}} \left((\rho_{f,2} - \rho_{f,1}) + \beta_1 \frac{1}{M_K} \right). \quad (19)$$

Since $M_K < 1$, all of (16) through (19) hold true, if and only if

$$\underline{w} + \rho_{f,1} \leq \beta_1 \leq \bar{w} + \rho_{f,1}, \beta_1 \frac{1}{M_K} \leq \frac{c_{f,1}}{c_{m,1}} (\bar{w} + \rho_{m,1}), \text{ and} \quad (20)$$

$$\beta_2 \frac{1}{M_K} < \bar{w} + \rho_{m,2} \leq \frac{c_{m,2}}{c_{f,2}} ((\rho_{f,2} - \rho_{f,1}) + \beta_1). \quad (21)$$

B-households: Taking Lemma 1 for $M = M_K$ and $w_f = w_m = \bar{w}$, B-households' equilibrium time allocation becomes

$$\tau_m^{KB} = \tau_m^* \text{ and } \tau_f^{KB} = \begin{cases} \tau_f^B, & \text{if } \beta_1 \frac{1}{M_K} \leq \bar{w} + \rho_{f,1}, \\ \tau_f^{KA}, & \text{if } \beta_1 \frac{1}{M_K} > \bar{w} + \rho_{f,1}, \end{cases}$$

if and only if

$$\max \left\{ \beta_1 \frac{1}{M_K}, \bar{w} + \rho_{f,1} \right\} \leq \frac{c_{f,1}}{c_{m,1}} (\bar{w} + \rho_{m,1}), \text{ and} \quad (22)$$

$$\beta_2 \frac{1}{M_K} < \bar{w} + \rho_{m,2} \leq \frac{c_{m,2}}{c_{f,2}} \left((\rho_{f,2} - \rho_{f,1}) + \max \left\{ \beta_1 \frac{1}{M}, \bar{w} + \rho_{f,1} \right\} \right). \quad (23)$$

Since $M_K < 1$, all of (20) through (23)—hence all of (16) through (23)—hold true, if and only if (11) and (12) hold true. \square

A.3 Proof of Proposition 1

A.3.1 Gender Norms as Housework Productivities

Consider now the special case where there are no direct/psychological costs of housework, i.e., assume $\rho_{i,k} = 0$ for all $(i, k) \in \{f, m\} \times \{1, 2\}$. To obtain Proposition 1 as a corollary of Theorem 1, simply apply the latter under that assumption: First, observe that then (11) and (12) become

$$\underline{w} \leq \beta_1 \leq \bar{w}, \max \left\{ \beta_1 \frac{1}{M_K}, \bar{w} \right\} \leq \frac{c_{f,1}}{c_{m,1}} \bar{w}, \text{ and } \beta_2 \frac{1}{M_K} < \bar{w} \leq \frac{c_{m,2}}{c_{f,2}} \beta_1; \quad (24)$$

second, observe that the corresponding time allocations, (13) through (15), then become

$$\begin{aligned} \tau_m^T &= \tau_m^{KT} = \left(1 - \frac{\beta_2}{\bar{w}}, 0, \frac{\beta_2}{\bar{w}} \right), \text{ for both } T \in \{A, B\}, \\ \tau_f^T &= \begin{cases} (0, 1, 0), & \text{if } T = A, \\ \left(1 - \frac{\beta_1}{\bar{w}}, \frac{\beta_1}{\bar{w}}, 0 \right), & \text{if } T = B, \end{cases} \text{ and} \\ \tau_f^{KT} &= \begin{cases} (K, 1 - K, 0), & \text{if } T = A, \text{ or } T = B \text{ and } \beta_1 \frac{1}{M_K} \geq \bar{w}, \\ \left(1 - \frac{\beta_1}{\bar{w}}, \frac{\beta_1}{\bar{w}}, 0 \right), & \text{if } T = B \text{ and } \beta_1 \frac{1}{M_K} < \bar{w}; \end{cases} \end{aligned}$$

finally, additionally impose that

$$\beta_2 < \beta_1 \quad \left(\iff 1 - \frac{\beta_2}{\bar{w}} > 1 - \frac{\beta_1}{\bar{w}} \right), \quad (25)$$

to ensure that husbands' labour supply is always greater than that of their wives, even when they are married to a high-wage wife that voluntarily supplies more than K (see Proposition 1's part (ii)).

Note that (24) requires the comparative advantage assumption $\frac{c_{f,2}}{c_{m,2}} \leq \frac{c_{f,1}}{c_{m,1}}$ given in the main text (there in its strict version): $\max\{\beta_1 \frac{1}{M_K}, \bar{w}\} \leq \frac{c_{f,1}}{c_{m,1}} \bar{w}$ implies $1 \leq \frac{c_{f,1}}{c_{m,1}}$, while $\beta_1 \leq \bar{w}$ and $\bar{w} \leq \frac{c_{m,2}}{c_{f,2}} \beta_1$ jointly imply $1 \leq \frac{c_{m,2}}{c_{f,2}}$, which is equivalent to $\frac{c_{f,2}}{c_{m,2}} \leq 1$.

As a rather arbitrary example to show that, for any K with $0 < K < 1$, the parameter space defined by (24) and (25) is non-empty indeed, recalling $\beta_k = \beta \gamma_k$, take

$$\beta = \underline{w} = c_{f,2} = 1 - K, \quad \gamma_2 = c_{m,1} = 1, \quad \gamma_1 = \bar{w} = c_{f,1} = c_{m,2} = 2;$$

note that this example applies, *a fortiori*, to the characterisation for the generalised model in Theorem 1.

A.3.2 Gender Norms as Housework Preferences

Consider now also the special case where there is no comparative advantage in housework, i.e., assume $\frac{c_{f,1}}{c_{m,1}} = \frac{c_{m,2}}{c_{f,2}} = 1$. Applying Theorem 1 with this assumption, (11) and (12) become

$$\begin{aligned} \underline{w} + \rho_{f,1} \leq \beta_1 \leq \bar{w} + \rho_{f,1}, \quad \max \left\{ \beta_1 \frac{1}{M_K}, \bar{w} + \rho_{f,1} \right\} \leq \bar{w} + \rho_{m,1}, \quad \text{and} \\ \beta_2 \frac{1}{M_K} < \bar{w} + \rho_{m,2} \leq (\rho_{f,2} - \rho_{f,1}) + \beta_1; \end{aligned} \quad (26)$$

the corresponding time allocations, (13) through (15), then become

$$\begin{aligned} \tau_m^T = \tau_m^{KT} &= \left(1 - \frac{\beta_2}{\bar{w} + \rho_{m,2}}, 0, \frac{\beta_2}{\bar{w} + \rho_{m,2}} \right), \quad \text{for both } T \in \{A, B\}, \\ \tau_f^T &= \begin{cases} (0, 1, 0), & \text{if } T = A, \\ \left(1 - \frac{\beta_1}{\bar{w} + \rho_{f,1}}, \frac{\beta_1}{\bar{w} + \rho_{f,1}}, 0 \right), & \text{if } T = B, \end{cases} \quad \text{and} \\ \tau_f^{KT} &= \begin{cases} (K, 1 - K, 0), & \text{if } T = A, \text{ or } T = B \text{ and } \beta_1 \frac{1}{M_K} \geq \bar{w} + \rho_{f,1}, \\ \left(1 - \frac{\beta_1}{\bar{w} + \rho_{f,1}}, \frac{\beta_1}{\bar{w} + \rho_{f,1}}, 0 \right), & \text{if } T = B \text{ and } \beta_1 \frac{1}{M_K} < \bar{w} + \rho_{f,1}, \end{cases} \end{aligned}$$

so the only difference to the time allocations in A.3.1 is that, for all high-wage individuals (women in B-couples, as well as all men), the gender-specific (constant) marginal cost $\rho_{i,k}$ of “their” housework adds to the opportunity cost of housework that is a high wage \bar{w} (as a consequence, in the most natural case where $\rho_{f,1} = \rho_{m,2} = 0$, so that there is no psychological cost to housework in one’s gender domain, the time allocations even coincide); finally, additionally impose here that

$$\frac{\beta_1}{\bar{w} + \rho_{f,1}} > \frac{\beta_2}{\bar{w} + \rho_{m,2}}, \quad (27)$$

analogous to (25) in A.3.1 and for the very same reason—so that husbands’ labour supply is greater than that even high-wage wives that voluntarily work more than K —to obtain all of Proposition 1.

Note that (26) requires the comparative advantage assumption $\rho_{m,1} \geq \rho_{f,1}$ and $\rho_{f,2} \geq \rho_{m,2}$ given in the main text (there in its strict version): the former follows from $\max\{\beta_1 \frac{1}{M_K}, \bar{w} + \rho_{f,1}\} \leq \bar{w} + \rho_{m,1}$, and the latter follows from combining $\bar{w} + \rho_{m,2} \leq (\rho_{f,2} - \rho_{f,1}) + \beta_1$ with $\beta_1 \leq \bar{w} + \rho_{f,1}$.

As another rather arbitrary example to show that, for any K with $0 < K < 1$ (as well as any $(c_{i,k})_{(i,k) \in \{f,m\} \times \{1,2\}}$ such that $c_{f,k} = c_{m,k}$ for both $k \in \{1,2\}$), the parameter space defined here is non-empty indeed, recalling $\beta_k = \beta \gamma_k$, take

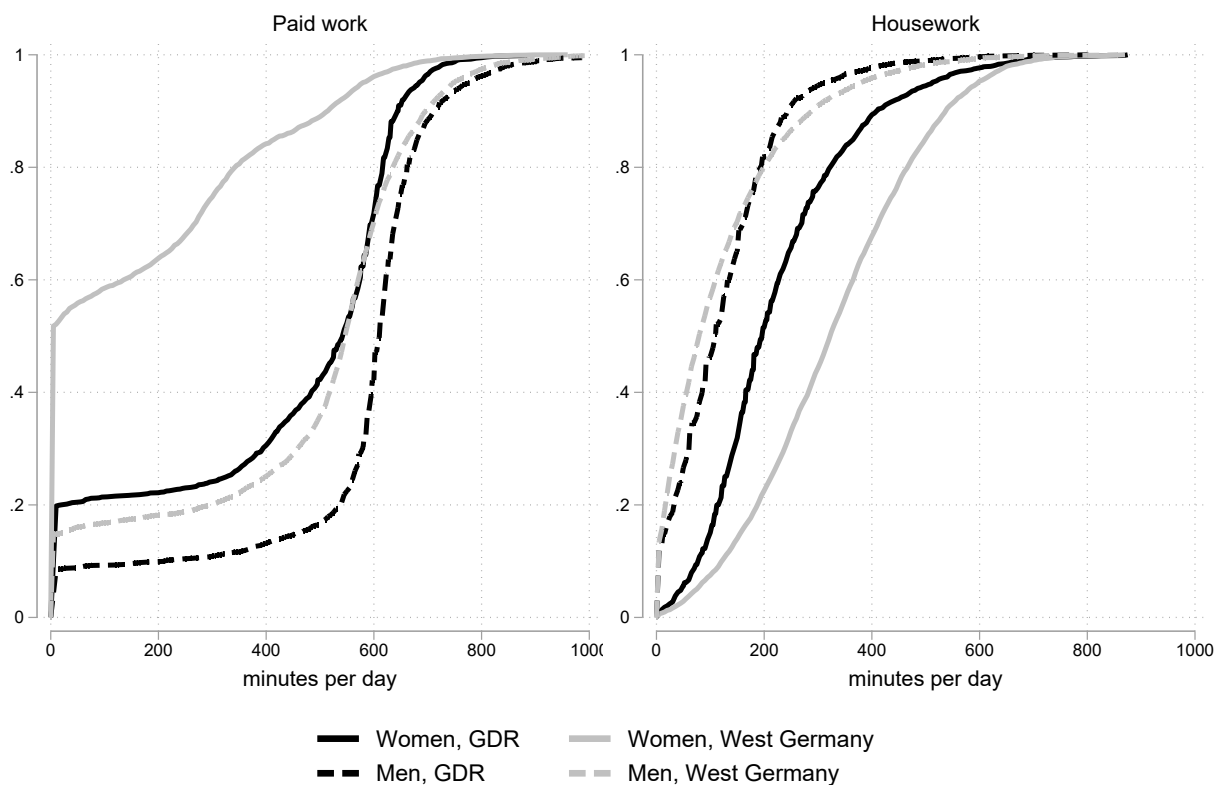
$$\rho_{f,1} = \rho_{m,2} = 0, \beta = \underline{w} = 1 - K, \gamma_2 = 1, \gamma_1 = \bar{w} = \rho_{f,2} = \rho_{m,1} = 2;$$

note that also this example applies, *a fortiori*, to the characterisation for the generalised model in Theorem 1.

B Appendix: Further Figures and Tables

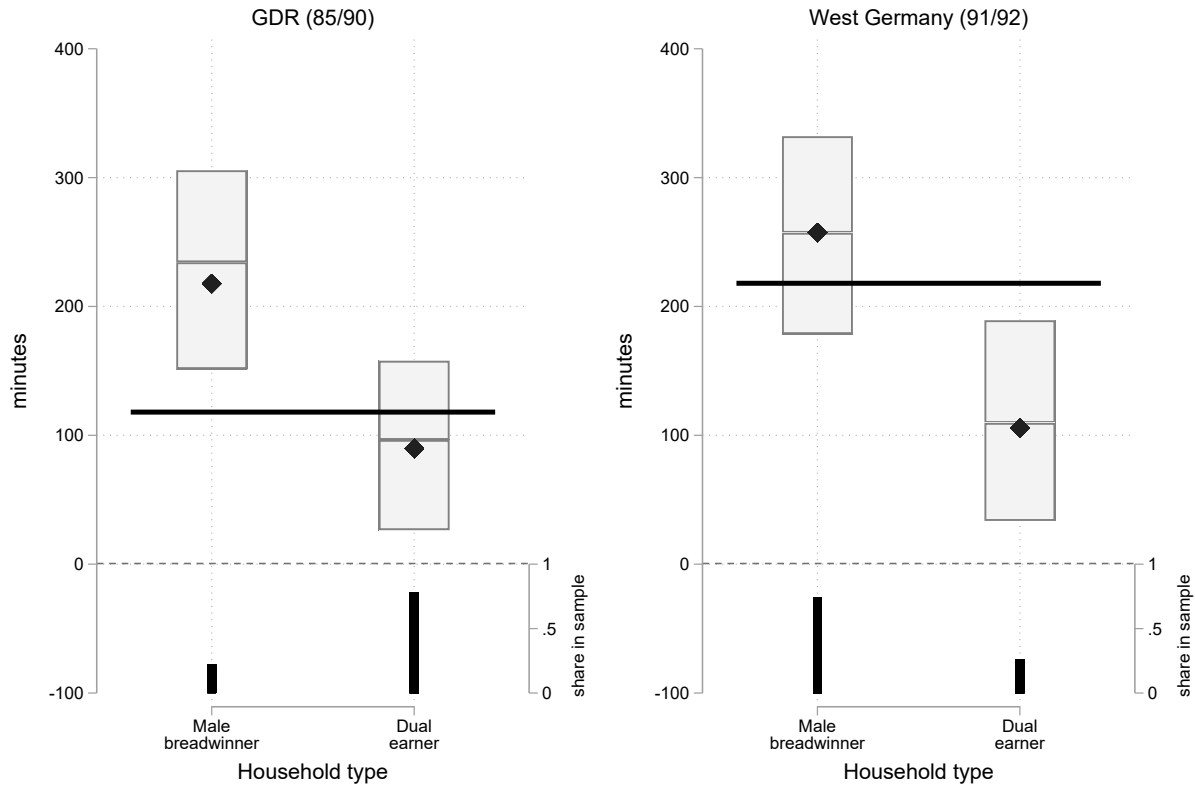
B.1 Figures

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



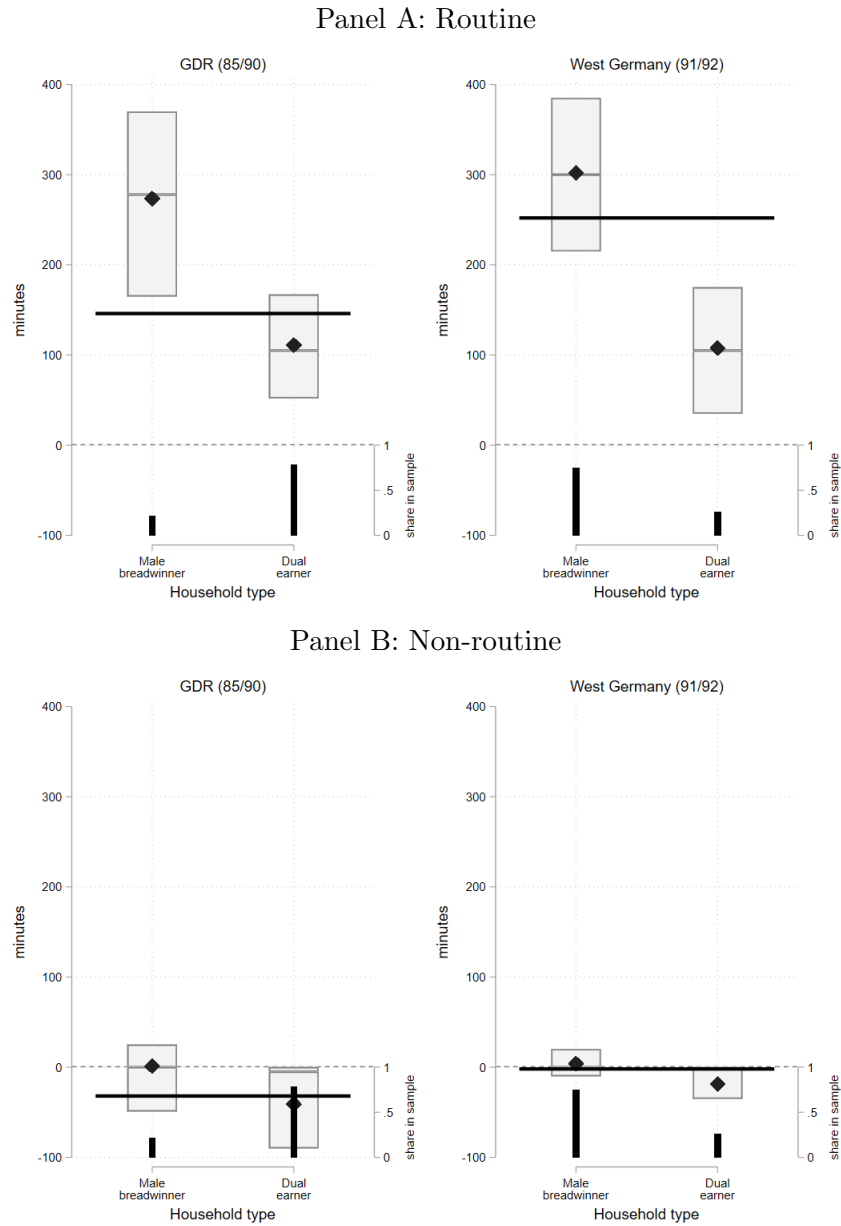
Note: The figure plots cumulative density functions of paid work and housework among women and men. Functions are plotted with solids lines for women and dashed lines for men. GDR and West Germany are distinguished by the shading of the lines. Source: GDR time budget study (1985/90) and German Time-Use survey (1991/92)

Figure A.2: Female-male gap in housework by household type, including weekends



Notes: Figure plots female-male gap in housework in minutes per day, including weekends, by household type for the GDR and West Germany. 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 the 25th, 50th, and 75th percentiles of the distribution. The solid horizontal lines denote the sample averages. Source: GDR time budget study (1985/90) and German Time-Use Survey (1991/92)

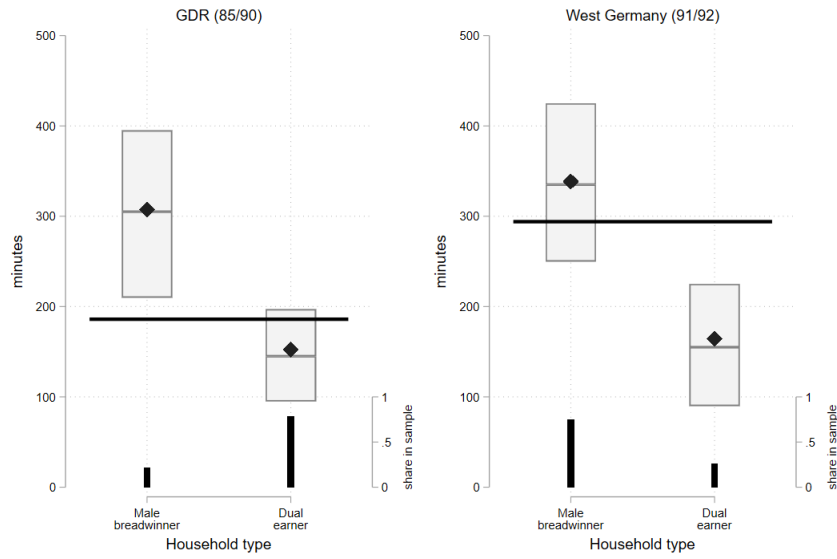
Figure A.3: Female-male gap in routine and non-routine housework by household type



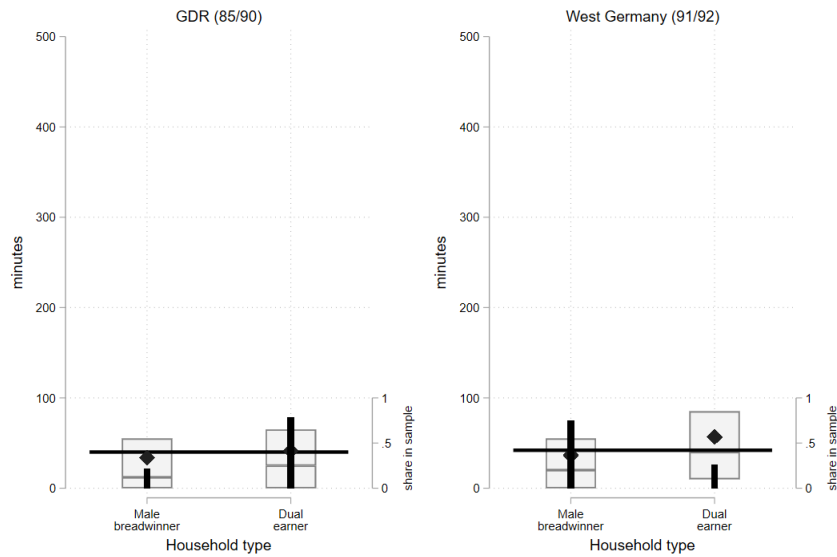
Notes: Figure plots the female-male gap in routine and non-routine housework in minutes per weekday by household type for the GDR and West Germany. Diamonds indicate the mean values, range plots show the 25th, 50th, and 75th percentiles of the distribution. Source: GDR time budget study (1985/90) and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

Figure A.4: Routine housework in minutes by household type

Panel A: Women



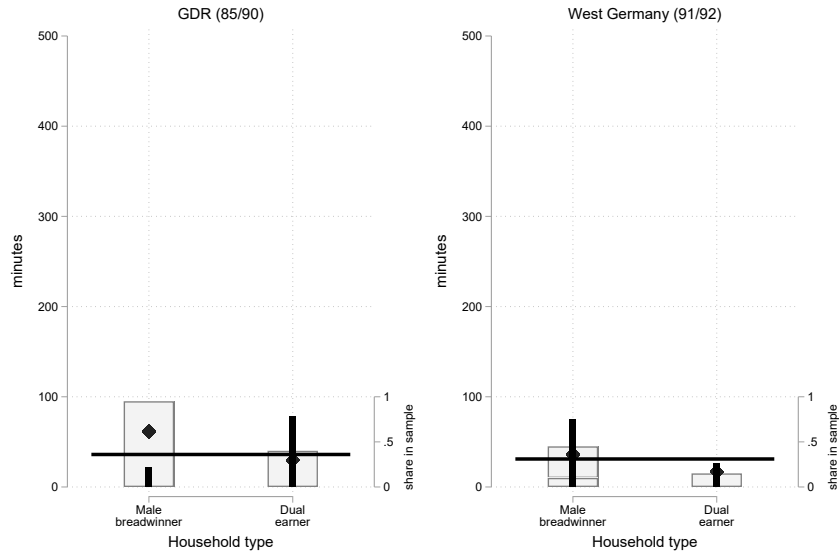
Panel B: Men



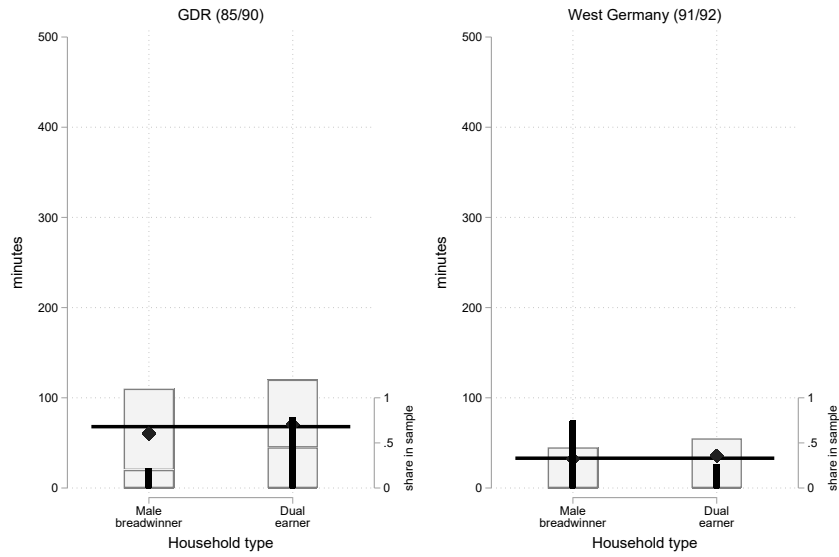
Notes: Figure plots routine housework in minutes per weekday by household type for the GDR and West Germany. Diamonds indicate the mean values, range plots show the 25th, 50th, and 75th percentiles of the distribution. The solid horizontal lines denote the sample averages. Source: GDR time budget study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

Figure A.5: Non-routine housework in minutes by household type

Panel A: Women

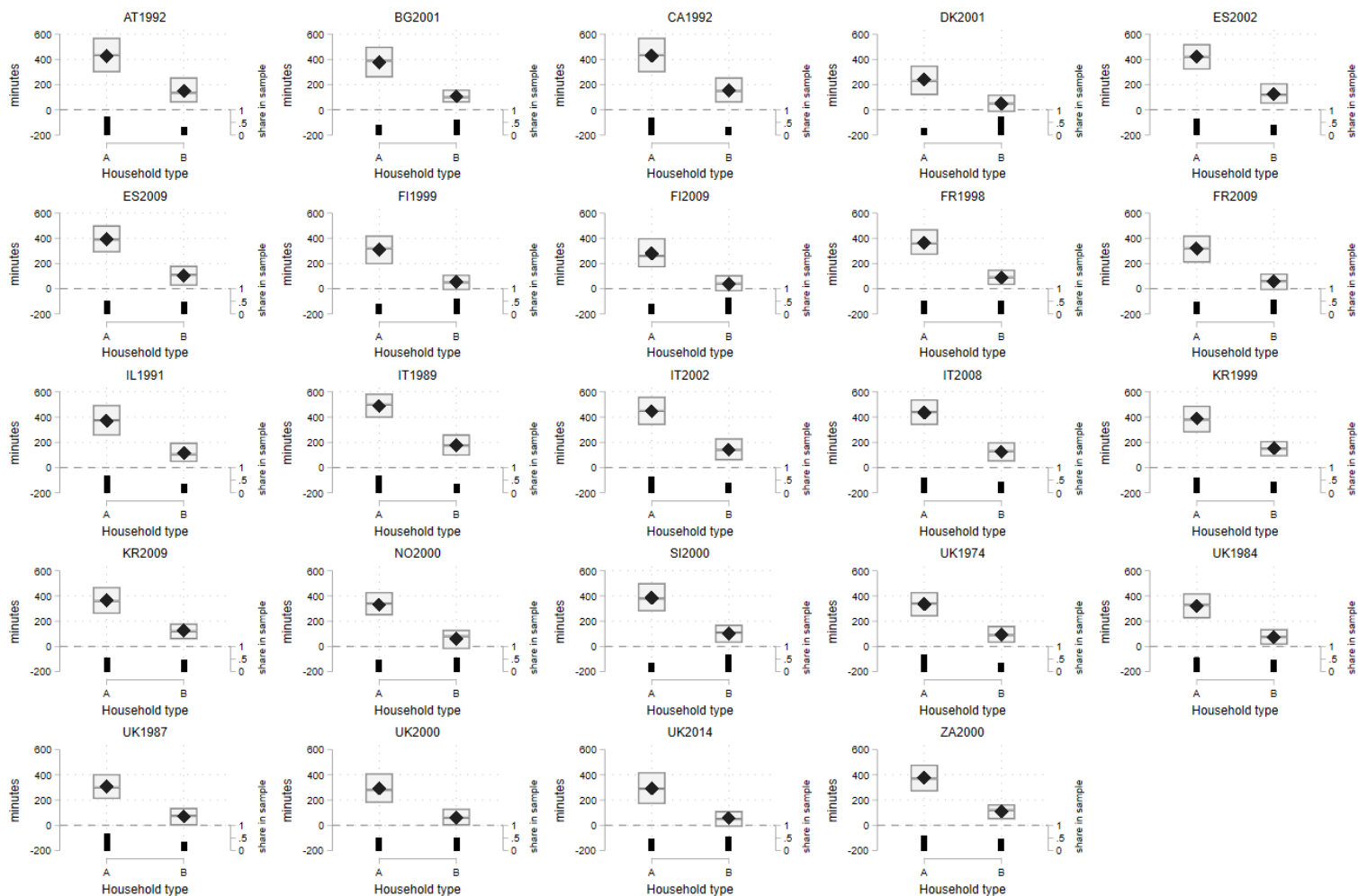


Panel B: Men



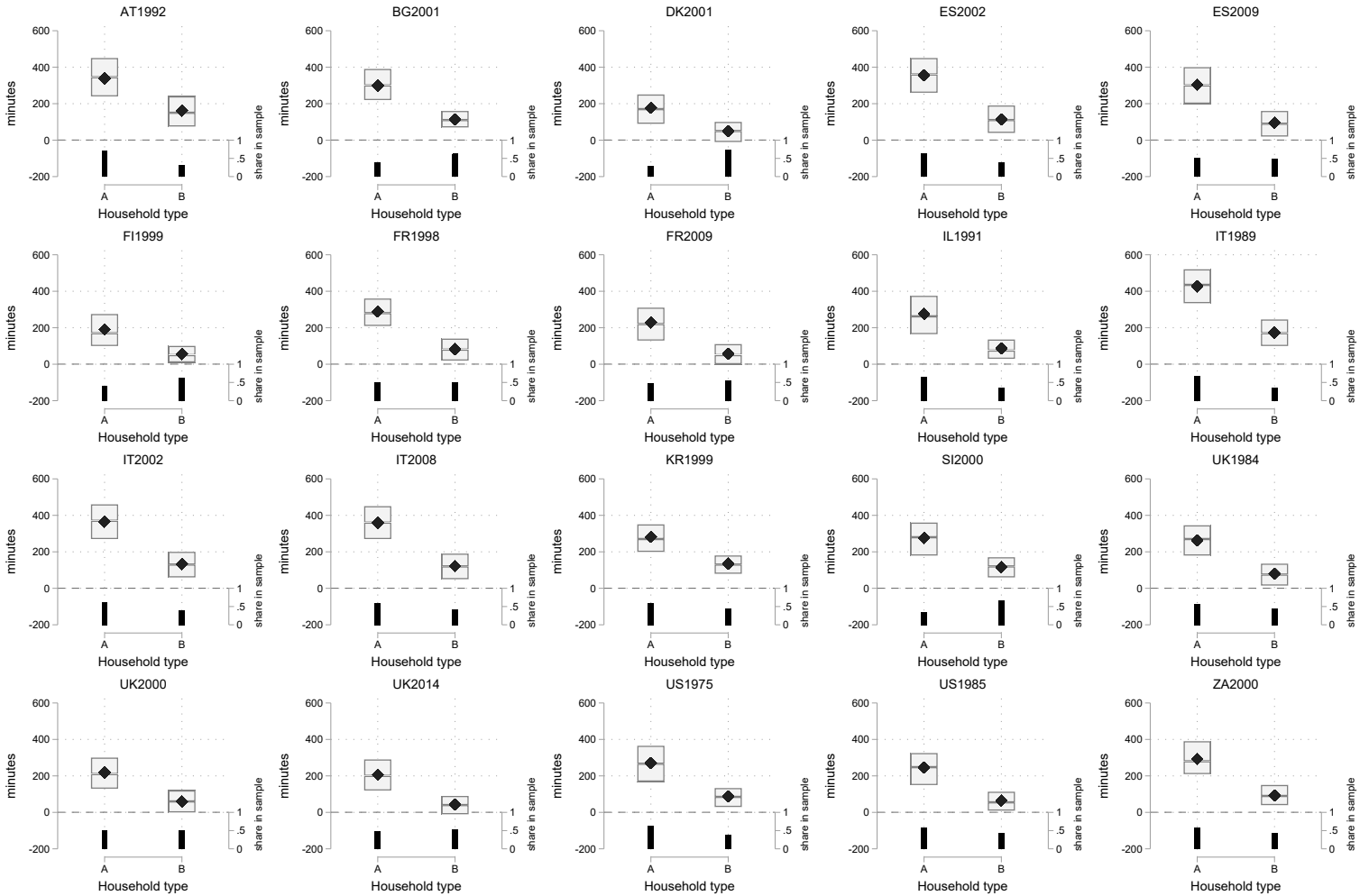
Notes: Figure plots non-routine housework in minutes per weekday by household type for the GDR and West Germany. Diamonds indicate the mean values, range plots show the 25th, 50th, and 75th percentiles of the distribution. The solid horizontal lines denote the sample averages. Source: GDR time budget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

Figure A.6: Female-male gap in housework by household type across countries



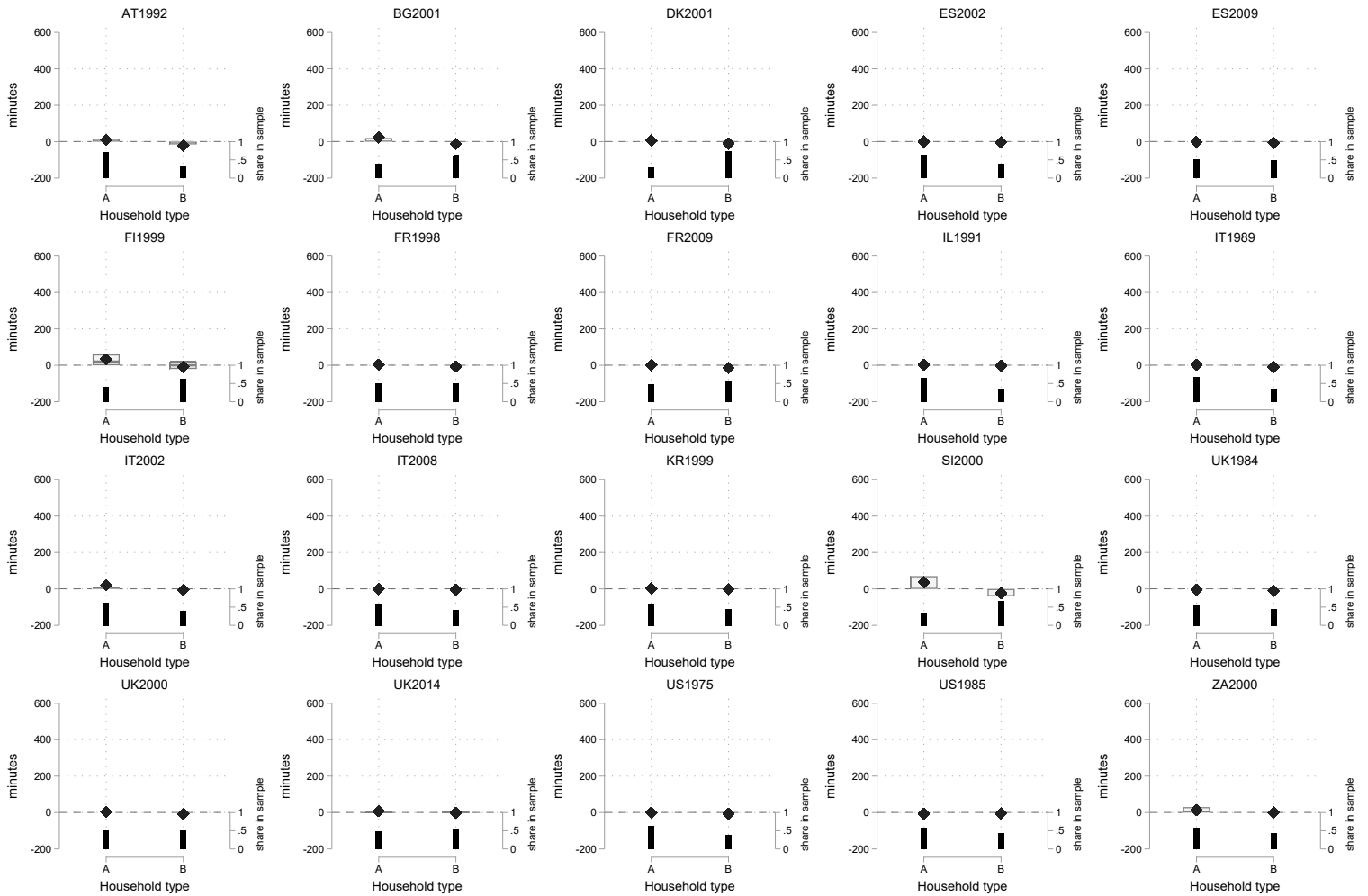
Notes: Figure plots female-male gap in housework by household type for all countries from the MTUS conducted on a household level. Household type A are male breadwinner households and type B are dual-earner households (female share of paid work of 0–35% and 35.1–65%, respectively). Diamonds indicate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

Figure A.7: Female-male gap in routine housework by household type across countries



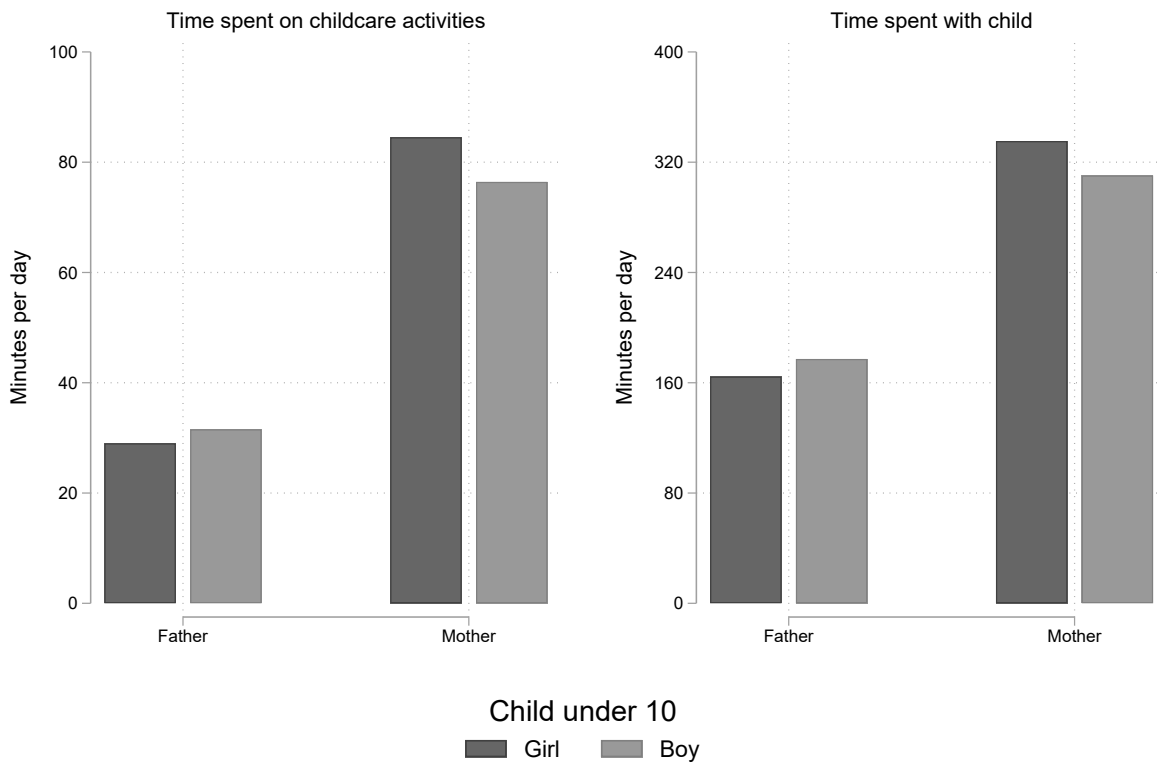
Notes: Figure plots female-male gap in housework by household type for all countries from the MTUS conducted on a household level. Household type A are male breadwinner households and type B are dual-earner households (female share of paid work of 0–35% and 35.1–65%, respectively). Diamonds indicate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

Figure A.8: Female-male gap in non-routine housework by household type across countries



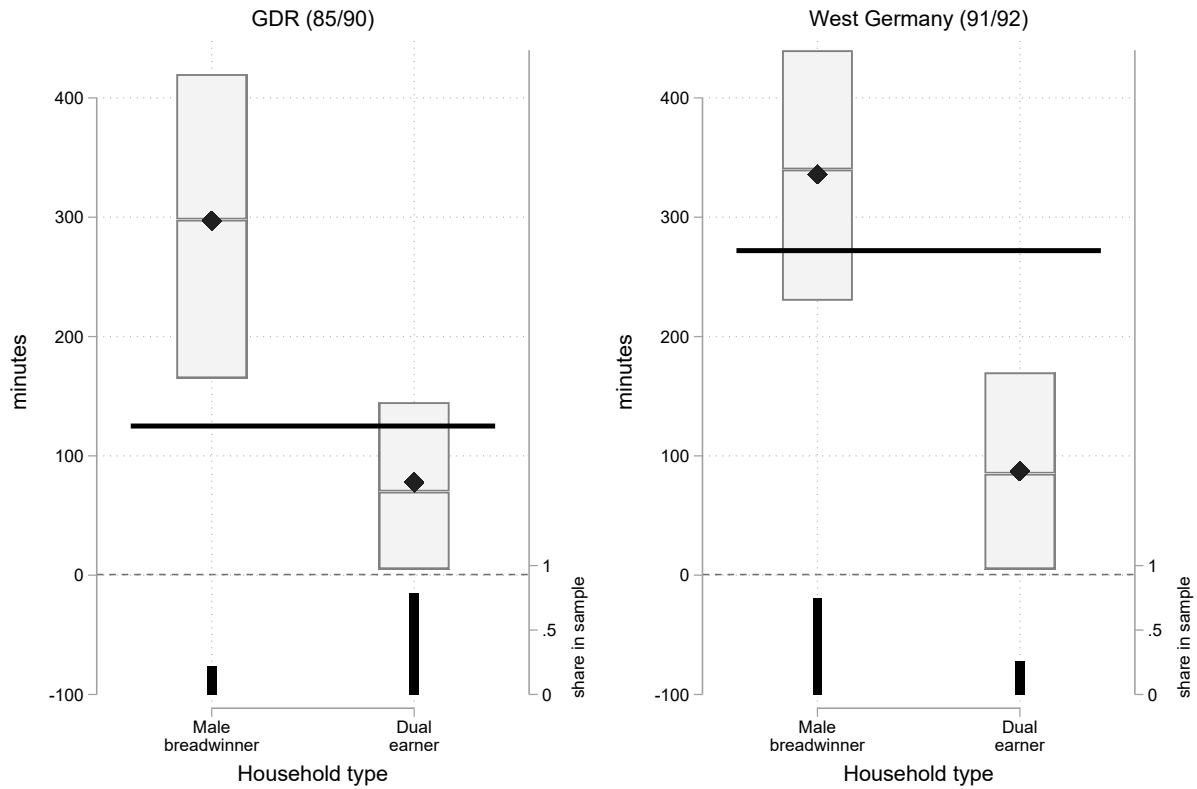
Notes: Figure plots female-male gap in housework by household type for all countries from the MTUS conducted on a household level. Household type A are male breadwinner households and type B are dual-earner households (female share of paid work of 0–35% and 35.1–65%, respectively). Diamonds indicate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

Figure A.9: Childcare of parents by sex of child



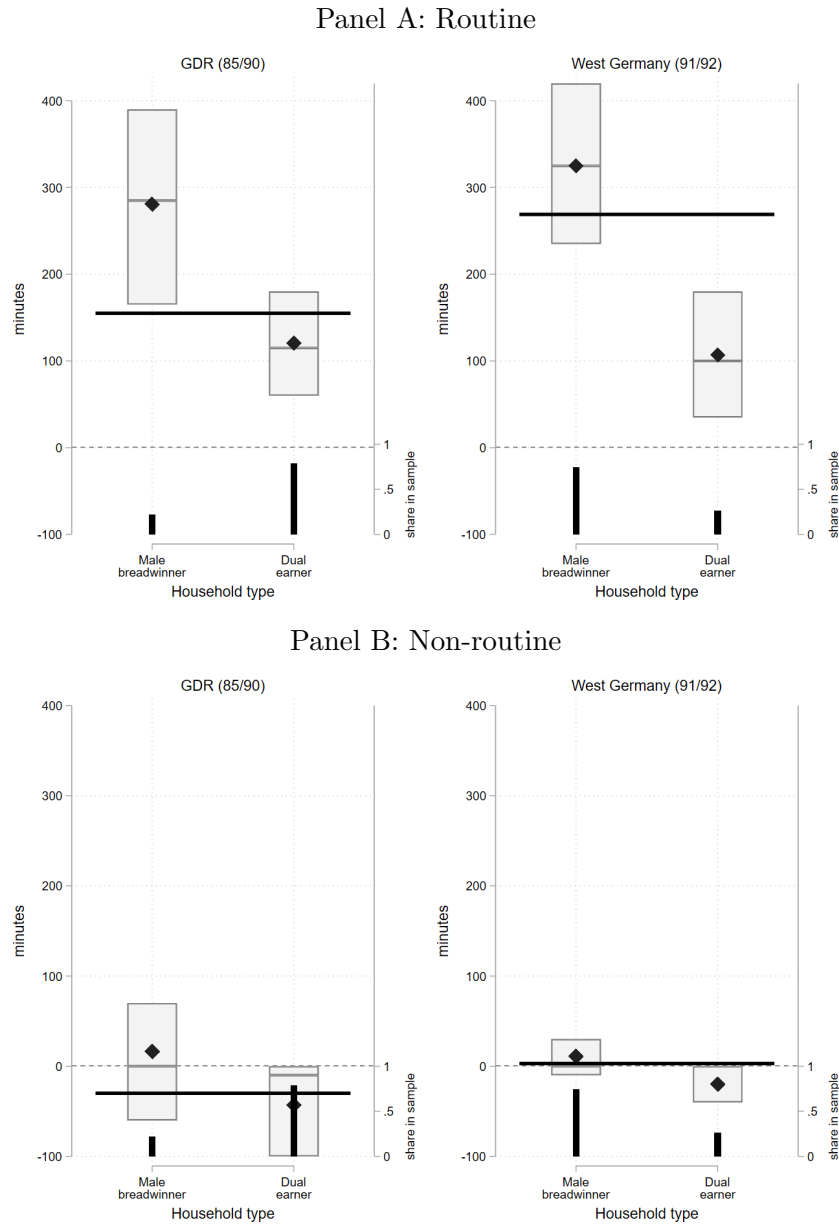
Notes: The sample is restricted to households with exactly one child under the age of 10 years.
Source: German Time-Use Survey (1991/92)

Figure A.10: Female-male gap in housework by household type – no children



Notes: Figure plots female-male gap in housework by household type for the GDR and West Germany among households without children under 10. 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 the 25th, 50th, and 75th percentiles of the distribution. The solid horizontal lines denote the sample averages. Source: GDR time budget study (1985/90) and German Time-Use Survey (1991/92)

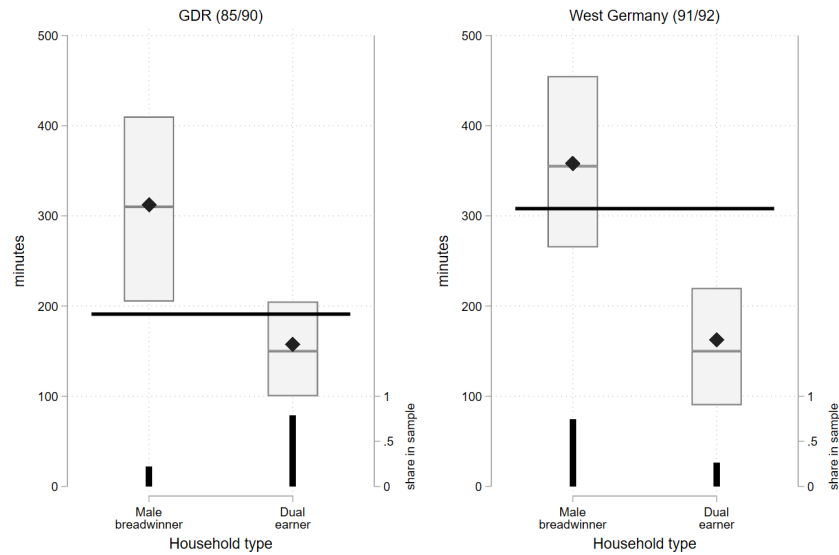
Figure A.11: Female-male gap in routine and non-routine housework in households with no children by household type



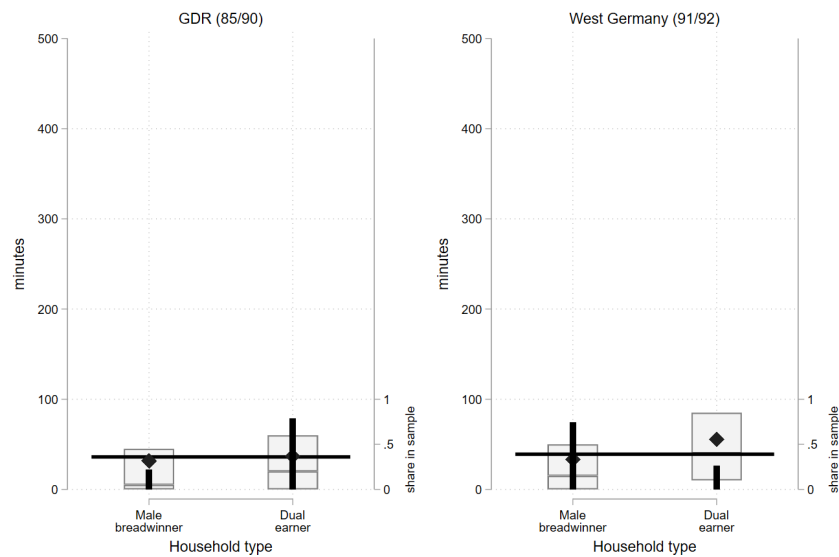
Notes: Figure plots the female-male gap in routine and non-routine housework in minutes per weekday by household type for the GDR and West Germany among households without children under 10. Diamonds indicate the mean values, range plots show the 25th, 50th, and 75th percentiles of the distribution. Source: GDR time budget study (1985/90) and German Time-Use Survey (1991/92)

Figure A.12: Routine housework in minutes in households with no children by household type

Panel A: Women



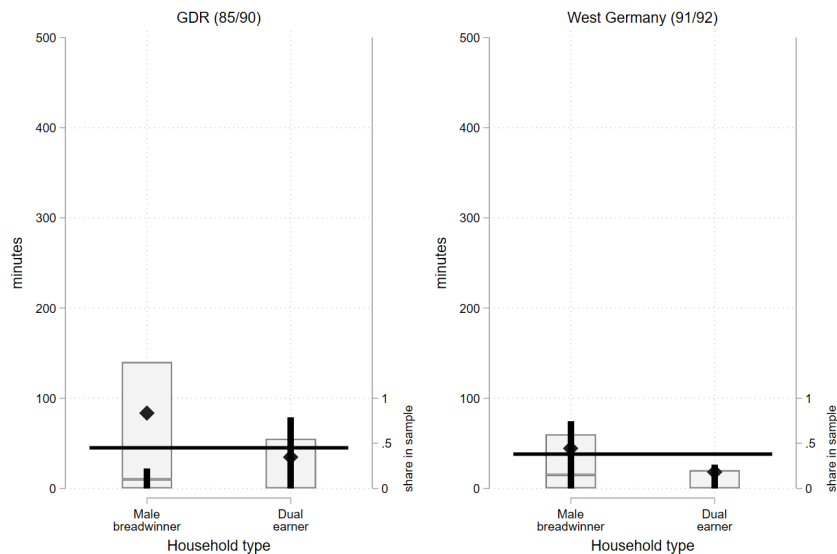
Panel B: Men



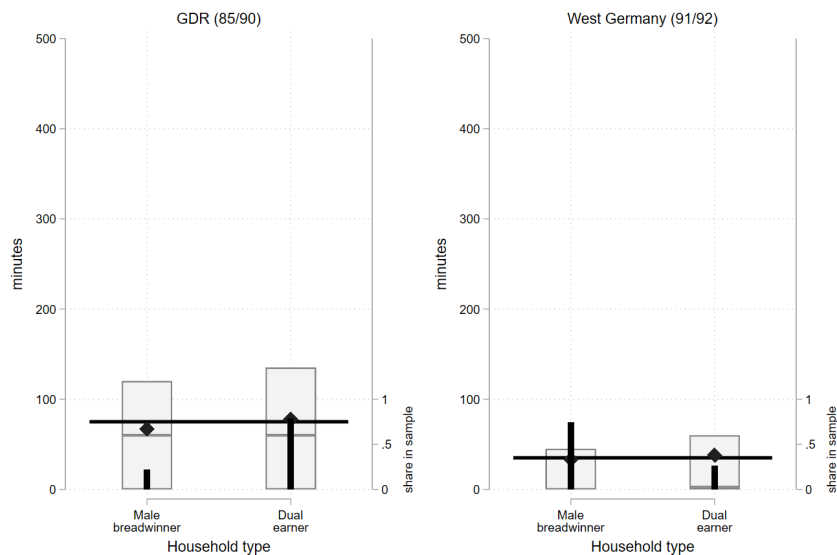
Notes: Figure plots routine housework in minutes per weekday by household type for the GDR and West Germany among households without children under 10. Diamonds indicate the mean values, range plots show the 25th, 50th, and 75th percentiles of the distribution. The solid horizontal lines denote the sample averages. Source: GDR time budget study (1985/90) and German Time-Use Survey (1991/92)

Figure A.13: Non-routine housework in minutes in households with no children by household type

Panel A: Women



Panel B: Men



Notes: Figure plots non-routine housework in minutes per weekday by household type for the GDR and West Germany among households without children under 10. Diamonds indicate the mean values, range plots show the 25th, 50th, and 75th percentiles of the distribution. The solid horizontal lines denote the sample averages. Source: GDR time budget study (1985/90) and German Time-Use Survey (1991/92)

B.2 Tables

Table A.1: Time-use data – detailed activities (minutes per weekday)

	GDR (85/90)		West Germany (91/92)	
	Women	Men	Women	Men
<i>Paid work</i>	429.27	556.55	157.64	467.21
Working	364.00	471.86	131.10	403.14
Work-related (breaks, travel time etc.)	64.09	82.20	17.90	57.45
School / studies	1.19	2.49	8.64	6.63
<i>Housework</i>	223.78	121.89	325.55	116.53
Cooking	59.50	13.07	106.92	17.24
Cleaning	79.41	9.44	119.26	10.59
Fixing and building things	14.76	29.43	8.29	32.41
Shopping	37.76	19.40	32.16	11.99
Gardening	21.71	43.19	23.86	20.67
Other housework	10.64	7.36	35.05	23.62
<i>Care for others</i>	45.14	13.15	77.63	22.99
Childcare	41.59	11.80	59.10	16.91
Care for adults	3.55	1.35	5.38	1.63
<i>Leisure</i>	157.98	194.18	229.91	221.28
Cultural activities	16.00	21.57	7.71	7.04
Sports (active and passive)	12.32	13.07	21.32	22.06
Media consumption	90.38	120.23	111.95	129.31
Social contacts	24.35	22.79	74.88	50.17
Other leisure	24.78	24.10	14.04	12.71
Observations	2328	2328	4707	4707

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

Table A.2: Women's time allocation to housework – education gap

	GDR		West Germany	
	(1)	(2)	(3)	(4)
<i>All housework</i>				
High education	-20.831*** (6.023)	-18.008** (6.025)	-51.793*** (5.489)	-40.033*** (5.283)
<i>Routine housework</i>				
High education	-15.765** (5.102)	-15.306** (5.099)	-41.630*** (5.033)	-33.643*** (4.841)
Control variables	-	Y	-	Y
Observations	2,327	2,327	4,707	4,707

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