The Battle for Balance: How German Couples' Time Division Across Various Life Spheres Shapes Childbirth Transitions

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Introduction

The demographic landscape of post-industrial Europe is centrally characterized by delayed childbirth transitions and sub-replacement fertility rates, a hallmark of the Second Demographic Transition (SDT). Meanwhile, women's and men's roles in both public and private spheres have shifted remarkably, moving away from the traditional "male breadwinner" model toward a more egalitarian "dual earner /dual carer" model, where women's participation in paid labor force has increased significantly and men's involvement in unpaid domestic work and childcare has risen modestly. In such contexts, studying the relationship between gender (in)equality and fertility has become an eminent part of modern demographic research (Esping-Andersen & Billari, 2015; Goldscheider et al., 2015).

A prominent topic in fertility research is to investigate how people's childbirth intentions or behaviors are constrained by their time budget (DiPrete et al., 2003), in which finite time resources are allocated across competing life spheres, including paid employment, unpaid childcare and housework, or other discretionary non-work activities such as leisure time. At the individual level, people tend to postpone childbirth transitions when time demands from other life spheres are in conflict with child-related time demands, such as the conflict between paid work and childcare time (Balbo et al., 2013). At the couple level, failing to achieve a satisfactory time arrangement between partners, particularly following the highly demanding parenthood transition, may cause the sense of unfairness and negatively influence couples' subsequent parity progression (Cheng & Hsu, 2020; Okun & Raz-Yurovich, 2019).

The current study supplements and goes beyond previous research on the relationship between gender division of labor and fertility by considering the multidimensionality of time use among heterosexual couples. While previous research mostly focused on the fertility influences of couples' (un)equal time division in their paid work or unpaid housework, our study further

considers couples' time division in other private spheres, such as childcare time, errands time, time for repair work, and leisure time. Using longitudinal, couple dyadic data from German Socioeconomic Panel Study (SOEP), we perform survival analysis for different-sex couples' parity progression from first to second childbirth. Overall, our findings highlight the importance of considering the gender division of time across multiple life spheres to better contextualize the influences of gender (in)equality on fertility behaviors.

Methods

We address our research questions using Cox hazard model at the couples' level, taking advantage of birth calendars and yearly panel design of the German SOEP across three decades, from 1990 to 2020. The household framework of SOEP allows to measure information for both partners and combine them into couple-level measures. We restrict our sample to cohabiting different-sex couples with one child born between 1990 and 2017 where at least one partner is employed and none of the partners are: younger than 18 years old, in education, retired, unable to work, or employed in the agricultural sector.

Our outcome is the transition to a second parity, which is measured on mothers of one child using SOEP's fertility calendar. This approach accounts for right-censoring, enabling variation in follow-up time and appropriately handling cases where the event does not occur within the study window. Our main explanatory variables are within-couple gender differences in time spent on different activities across six dimensions: paid work, housework, childcare, running errands, repairs and leisure to build six couple-level variables, one for each dimension. We measure the difference in workday daily hours spent in each dimension between the mother and her partner, collected between 6 and 12 months after the first child was born. Partners' time differences take positive values when the mother spends more hours that her partner in a specific dimension, and negative values when the opposite is true. To account for potential confounding, we adjust our models for the following control variables: maternal age at first birth (5-years categories); decade (90s, 00s, and 10s); marital status (dummy); mother's tertiary education (dummy); partner's tertiary education (dummy); family income (year-region deciles); migration status (native, 1st gen, 2nd or higher gen).

After sample selection and the exclusion of missing values in any of the covariates, our final sample is composed by 2,514 couples (subjects) and 109,918 person-months, or, equivalently, 9,160 person-years. To estimate the hazards of second parity transition we run six Cox proportional-hazards models, one for each dimension of time-use difference between partners,

allowing us to account for right censoring of mothers' second birth transitions (Box-Steffensmeier & Jones, 2004; Cox, 1972). Moreover, Cox proportional-hazard models do not assume a specific form of baseline hazards as a function of time, $h_0(t)$, which is a necessary feature in our framework, since baseline hazards between birth transitions have a non-linear functional form (Friedman, 1982). We test the proportionality of hazards across our main explanatory variables using Schoenfeld residuals, finding no strong evidence against it (Kalbfleisch & Prentice, 2002; Schoenfeld, 1982).

Further methodological improvement will involve employing dominance analysis to address the relative contribution of each dimension of time to explaining transitions to second, and third, births (Budescu, 1993).

Preliminary results

Figure 1 presents the estimated coefficients of the association between the gender differences in time spent in each dimension and second-parity transitions. First, we find that a decrease of one hour in the difference in time spent daily in paid work decreases second-birth hazards by 1.1 percent ($HR = 0.989,\ p = 0.103$). That is, an increase in mothers' time in paid work or, equivalently, a decrease in their partners' time in paid work is negatively associated with second birth transitions. Yet, the estimate is not statistically significant. Second, an increase of one hour in the divide in the time spent in housework increases the hazard of by 2.9 percent ($HRs = 1.029,\ p = 0.54$). In other words, couples where mothers increasingly spend more time in housework than their male partners are positively associated with second-birth transitions. The same holds when looking at the gender difference in time spent in childcare and running errands, where the marginal increase in second-birth hazards is around 1.1 percent ($HR = 1.011,\ p = 0.018$) and 3.5 percent ($HR = 1.035, p = 0.112$), respectively. At last, we find that both the differences in hours spent in repairs or in leisure are not linearly associated with second-birth transitions (respectively, $HR = 0.997, p = 0.890$, and $HR = 1.004,\ p = 0.848$). Yet, a supplementary analysis (not shown) shows that there might be an inverse U shape relationship between second birth transition and couples' division of leisure time, where the highest hazard of second birth is observed among couples sharing equal leisure time.

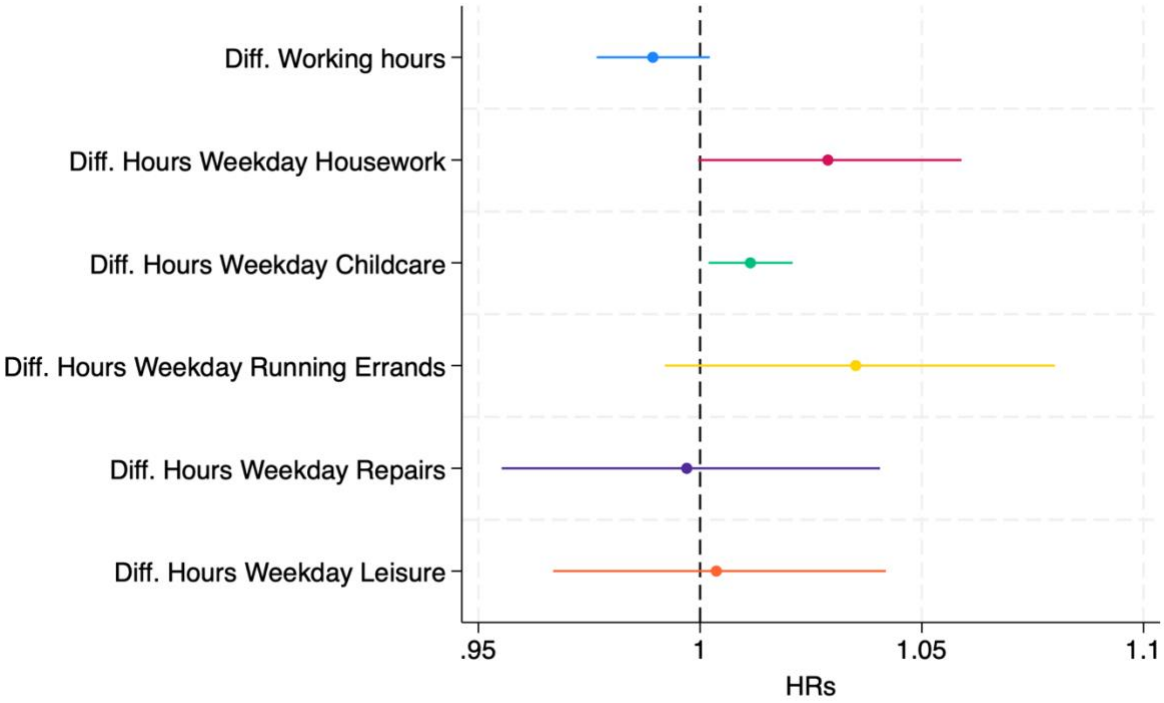

Figure 1. Hazard ratios of having a Second child for each time-use dimension adjusting for maternal age at first birth, decade, marital status, mother's tertiary education, partner's tertiary education, family income, and migration status. Estimates from six Cox proportional hazard models and 95% CIs.

In summary, our results show that the more time women spend on paid work than their male partners, the lower the hazards of second birth transition. On the other hand, when women spend more time than men in private spheres including housework, childcare, and errands, their hazards of second birth transition become significantly higher. Finally, we do not find a linear relationship between second birth transition and couples' gender division in repairing or leisure time, although an inverse U-shaped relationship is detected in supplementary analysis.

For the next step, we plan to investigate cross-cohort changes in these associations throughout the past three decades in Germany. Because work-family policies and the underlying mandates to support gender equality and work-family balance are changing over time in Germany (Bergemann & Riphahn, 2010; Zoch & Heyne, 2023), we expect that the distributions of gender division of time across multiple spheres as well as their impacts on parity progression may also change over time. Further analyses in this direction will broaden our understanding about how macro-level policy factors are interacting with micro-level gender division to shape people's fertility decisions.

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