Gender inequalities in married couples' earnings trajectories: A comparison of the United States and Germany

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Background and research questions

Since the 1970s, women have made substantial progress in their educational attainment across Europe and the United States. Nevertheless, women's and men's labour market earnings levels and prospects are persistently unequal to the disadvantage of women. Partnership formation and particularly parenthood continue to be associated with substantial gender inequalities within the private sphere (England, 2010; Gonalons-Pons, Schwartz, & Musick, 2021). These inequalities tend to decrease women's labour market attachment and their earnings while their male partner's careers and career progressions often remain unaffected or even benefit from family transitions. In addition, mating preferences result in couples with older men that have more labour market tenure and thus earnings than their female partners already at the start of the partnership. Women in cohabiting or married different-sex partnerships earn approximately 20 to 40 per cent of couples' income (Bianchi, Casper, & Peltola, 1999; Dotti Sani, 2015; Haupt & Strauß, 2022; Stier & Mandel, 2009). Overall, smaller intra-couple income gaps were found in more gender-egalitarian contexts and more significant gaps in more conservative contexts, highlighting the relevance of contextual factors (Bianchi et al., 1999; Dotti Sani, 2015; Stier & Mandel, 2009). Because a woman's earnings share increases with employment and work hours, dual-earner couples' income disparities are substantially smaller compared to male-breadwinner or 1.5-earner couples (Dieckhoff, Gash, Mertens, & Romeu Gordo, 2020). Nevertheless, even women in dual-earner couples commonly earn less than their male partners (Bianchi et al., 1999; Stier & Mandel, 2009). This can have severe consequences for each spouse's subjective and economic well-being during the marriage and in case of marital separation. The link between separation and gender pension gaps and women's higher risk of old age poverty is, for instance, well-documented (Ebbinghaus, Nelson, & Nieuwenhuis 2019; Frericks, Knijn, & Maier, 2009; Orloff, 1993).

Despite our substantial understanding of average earnings inequalities for spouses across Europe and the United States, previous studies have three main shortcomings. *First*, previous research rarely used a longitudinal approach to understand how spouses' earnings and, subsequently, their intra-couple earnings inequalities develop over the course of the relationship. If there are large fluctuations across the duration of a relationship, average point-in-time estimates give inaccurate representations that might over or understate typical actual earnings inequalities between husbands and wives at different stages of the relationship. To this end, it is also relevant to focus not only on intra-couple gaps but additionally consider overall earnings levels. *Second*, previous research overwhelmingly focused on differences in average earnings of spouses. However, inequalities in spouses' earnings may develop substantially differently between sub-groups of couples. For instance, initial intra-couple gaps could narrow down over time as women's earnings increase while men's plateau. Similarly, it might be possible that initial earnings inequalities may widen over the duration of marriage as women reduce working hours and receive lower earnings than their male partners. Identifying and describing sub-groups of gender inequalities in spouses' earnings trajectories is particularly relevant to understanding the complexity of such inequalities, including their underlying drivers. This can inform discussions about the individual and societal implications of these inequalities. *Third*, we know little about how the temporal dynamics of spouses' earnings inequalities vary across institutional contexts. A thorough understanding of cross-country differences is, however, important to inform research debates on the mechanisms that drive such inequalities and derive policy implications.

The present **study aims** to address these shortcomings by using group-based multi-trajectory models (GBMTM) to *identify, compare, and describe diverse patterns of gender inequalities in married couples' earnings trajectories over the first six years of marriage in Germany and the United States*. As such, we *focus on identifying overlapping as well as unique groups within the two contexts and understanding the factors associated with group memberships*. Our analytical approach allows us to simultaneously consider both spouses' earnings trajectories as well as trajectories of women's share of couples' total earnings to identify and describe latent patterns of inequalities in married couples' earnings trajectories at different levels of household earnings.

Specifically, we address **three research questions**:

I. *What patterns of couple's earnings trajectories can be identified in the United States and Germany, focusing simultaneously on both spouses' earnings and women's earnings share?*
II. *How do the identified patterns overlap and differ between the United States and Germany in terms of their overall shape and prevalence?*
III. *What socioeconomic and demographic characteristics are associated with the different patterns in each country?*

Data and Method

Dataset and sample: The study uses nationally representative, high-quality panel data from the US Panel Study of Income Dynamics (PSID) and the German Socio-Economic Panel Study (SOEP). Both surveys cover a wide range of topics, including information on health, income, family dynamics, or life satisfaction, and interview the same households and their members over time to allow analyses of how their lives change and evolve. In addition to data from the individual surveys, we rely on harmonised measures provided through the Cross-National Equivalent File (CNEF).

We select never-married partners who enter their first marriage during their panel participation and who stay married for at least six years. Thus, couples who separate before their sixth marital year or who drop out of the survey before are excluded. We apply a multi-actor perspective using wives as the reference spouses and linking husbands' information. We exclude couples with missing earnings information in more than three years. In total, our final sample for Germany consists of 1,685 couples. At this point, we are in the process of adding the US data, which will be completed for a full cross-country analysis prior to the European Population Conference 2024. Hence, the final sample numbers for the US are not available yet.

Methodological approach: The analysis proceeds in two steps. First, we use group-based multi-trajectory models (GBMTM) (Nagin et al. 2016) to identify latent groups of couples following similar trajectories across three main measures: wife's earnings, husband's earnings and women's earnings share. GBMTM simultaneously considers the three measures when defining the trajectory groups. By identifying these latent groups, we aim to gain a comprehensive understanding of the complex dynamics underlying gender inequalities in married spouses' earnings in the first six years of marriage. Second, we identify socioeconomic and demographic characteristics associated with group membership with multinomial logistic regressions using the groups as dependent variables and baseline predictors, as well as time-varying covariates.

GBMTM measures: The groups are based on three measures that are simultaneously considered: wives' annual earnings, husbands' annual earnings, and wives' earnings shares of the couple's total annual earnings. Wives' and husbands' earnings measures are adjusted for inflation, top-coded and log-transformed. Shares are calculated after the earnings are adjusted for inflation and top-coded.

Baseline predictors and time-varying covariates: Baseline characteristics refer to the start of marriage and include a categorical indicator for the marriage cohort (1984-1995 [Ref.], 1996-2005, 2006-2016),

a dummy indicator for whether either partner has a migration background, categorical indicators for differences between partners in their age (same age [Ref.], wife older, husband older), employment status (neither partner in full-time work [Ref.], her in but not him, him in but not her, neither), and educational attainment (neither with a post-secondary degree [Ref.], him with a degree but her without, her with a degree but him without, both with a degree), and a dummy indicator for the presence and number of children at the start of the marriage. For Germany, we additionally include a dummy indicator for whether spouses live in an Eastern German federal state.

Additionally, we will generate a range of time-varying variables reflecting family and labour market dynamics of spouses during the first six years of the marriage. These will include, for instance, an indicator of whether spouses became parents or how many months they worked in full- or part-time work. This way, we can understand to what extent each trajectory group is affected by work-family dynamics.

Preliminary results

Figure 1 shows the GBMTM model for Germany. Each trajectory group of couples is defined by the combined trajectories of the three outcomes, (i.e., wives' earnings, husbands' earnings, and the wives' share of the couples' total earnings). After a model selection process based on Bayesian information criterion and parsimony, we deem a six-group solution as the preferred model. The groups differ in both the initial differences in earnings and the development of husbands' and wives' earnings during the marriage. Group 1 (10.5%) is the classic **male breadwinner model** with persistently low earnings and earnings shares for wives over the first six years of marriage, while the husbands' earnings remain stable and high over time. Group 2 (14.8%) resembles an **emerging male breadwinner model** as we find a constantly high earnings trajectory for the husband and a sharp declining trajectory for the wife, which reduces women's earnings share from about 40 to zero per cent over the course of the first six years. Group 3 (29.8%), the second largest group in our model, represents a **1.5-earner model** where both the wives' and husbands' earnings are relatively stable, and the wives' earnings share ranges from around 25 per cent at the start of the marriage to 20 per cent in later years. Group 4 (3.6%) corresponds to an **emerging specialisation model** where husbands' earnings increase strongly, while wives' earnings decline resulting in an earnings share drop from around 95 to 30 per cent. Group 5 (39.1%) exemplifies a **dual-earner model in which both spouses have high earnings** and the share of wives' earnings is around 40 per cent at the start of the marriage with slightly decreasing shares over time. Group 6 (2.2%) is a **female breadwinner model** with wives who have rather stable medium earnings trajectories, while their husbands' earnings trajectories are strongly decreasing, leading to an increase in the wife's share in earnings from 46 to 85 per cent over time.

In the next step, we explore how group membership is associated with some of our baseline and time-varying measures. Prior to EPC we will run multinomial logit regressions to formally identify baseline predictors of trajectory group memberships and analyse how time-varying factors over the course of the marriage are associated with the group membership. Our current preliminary results for Germany show that living in an Eastern or Western federal state at baseline is not associated with the probability of group membership. If either spouse has a migration background, the probability of being in the stable 1.5-earner couple group (Group 3) or the dual-earner couple group (Group 5) compared to Group 1 is lower. Interestingly the marriage cohort is not associated with group membership. Considering our time-varying variables, the average number of children over the first six years in marriage is the highest in Groups 3 and 4, and the lowest in Groups 5 and 6.

Next steps

Prior to EPC, we will elaborate our theoretical framework, refine our analysis, conduct multinomial logit regressions to identify the association of various factors with group memberships, and, most importantly, include the analyses and results for the United States using PSID data. While some

trajectory groups may be found in both the United States and Germany, we also expect to find groups that are unique for one of the two contexts. Group differences could be driven by relevant contextual variation regarding family demography, labour market structure, and welfare state policies. For instance, the US labour market is overall less stratified by gender, while Germany is characterised by overall higher wage compression. Germany also provides more generous parental leave options that have been shown to prolong German mothers' labour market re-entry. Additionally, tax incentives and social norms encourage part-time rather than full-time work amongst German mothers who return to the labour market. Assortative mating is overall stronger in the United States than in Germany. Considering these contextual differences, we may expect to find more groups for Germany characterised by declining women's earnings and earnings shares over the course of the marriage compared to the United States. Additionally, we may expect more US couples to follow trajectories that are characterised by equal or close to equal earnings with a share of around 50 per cent, both at high and low levels of earnings. Furthermore, we will explore whether baseline factors differently predict group membership and whether time-varying factors are differently associated with the groups across the two contexts.

Figure 1. Group-based multi-trajectory model for Germany