Fathers' and mothers' longitudinal employment patterns around first birth in Germany: A Group Based Multi Trajectory Modeling approach

Lili Vargha[1,2]

[1]Humboldt Universität zu Berlin, [2]Hungarian Demographic Research Institute

lili.vargha@hu-berlin.de

Abstract

The aim of this paper is to analyze the employment patterns of first-time parents both before and after the birth of the first child in Germany from a parental dyad perspective. Using the innovative Group Based Multi Trajectory Modeling approach (Nagin et al 2016) applied to the German SOEP panel data on monthly employment spells, I explore the typical trajectories of how men and women jointly combine and sequence full-time and part-time employment surrounding first births. My focus spans the year preceding the birth and extends up to six years thereafter, enabling me to identify the typical developmental trajectories of employment surrounding first births in Germany between 1990 and 2014. After identifying the distinctive parental employment trajectories, I use multinomial logistic regressions and analyze how the probability of trajectory group membership vary as a function of important baseline characteristics of the parental dyad and birth. First, I analyze how parental age, education, baseline employment and income are related to parental employment trajectories and also assess if being socialized in East or West Germany is associated with group membership. Secondly, I examine how typical employment patterns have evolved over time, and differentiate the periods before and after 2007, when the German Parental Leave Reform (Elterngeld reform) was introduced. Furthermore, I explore how time varying covariates, such as the birth of a second child and the dissolution of parental partnership effects parental employment trajectories. Even though it is explorative-descriptive in nature, the paper analyzes how later birth schedules, changing educational composition of couples, relative economic resources within and between the couples as well as different institutional settings are associated with different employment and reproductive trajectories of parents from a dynamic dyadic perspective.

Introduction

The birth of the first child imposes a great change on the life of couples and couple dynamics: children vastly increase the demand for care in the household with newborns having the highest care demands (Vargha et al. 2017). How do German parents divide paid work around the birth of their first child from a longitudinal dyad perspective? Do the majority of couples still specialize in paid and unpaid work (Stier et al. 2001)? Is the 1.5 earner family pattern, where mothers opt for part-time work, is a longer-term pattern or mothers shift to full-time work, once their child is somewhat older (Langner 2015) or if they are in need of resources (O'Reilly and Bothfeld 2002)? How did parental employment patterns evolved over time after major labour market reforms and the German Parental Leave Reform (Elterngeld reform, 2007) including the daddy months were introduced after which fathers were more involved in caring for small children (Bünning 2015)? If there are parents who do not specialize, which parental characteristics are associated with this (education, the age of the parents, being socialized in East or West Germany)? Moreover, how do evolving family dynamics, such as the dissolution of the parental partnership or the birth of a second child effects parental employment trajectories?

According to Becker (1965) and the economic theory of the family, parents specialize in paid and unpaid work, since this is the most efficient way to maximize household utility. Oppenheimer argues, however, that the level of specialization also depends on the households' economic resources and economic vulnerability.

Couples with higher economic vulnerability will be less likely to specialize, because they are need of resources. O'Reilly and Bothfeld (2002) found that Western German women were less likely to transit to full-time employment from part-time employment if the income of the household was higher. On the other hand, according to the relative resources theory (Blood and Wolfe 1960; Kulic and Dotti Sani 2020), the inequality within the couple (which can be based on income, education, but also on age) also puts the partners in a better or worse position when they negotiate how much care work they do and how much they focus on their career. Moreover, the division of labour does not only depend on relative economic resources of the couples, but also on norms and institutions. For example, the division of labour depends how much mothers' labour force participation is accepted and encouraged, how much public childcare is available, how policies such as joint taxation and the health care coverage of married partners push for specialization. Mothers socialized in East Germany have a higher probability to transit back to full-time employment after a shorter parental leave than mothers socialized in West Germany (Putz 2019, Vargha et al. 2023). After the German Parental Leave Reform (Elterngeld reform, 2007) and a shift of Germany from a conservative welfare regime to a more egalitarian gender regime, shorter maternal leaves, higher uptake of the daddy months and a higher involvement of fathers in caretaking was found (Bünning 2015).

The joint decision of the couples whether to opt for full specialization in a longer term or for other arrangements probably depends on a lot of factors. While quite many studies focus on German mothers' or caretakers' employment, they mostly focus on employment transitions (Elrich 2023), or on West Germany (Langner 2015, Kuhhirt 2012, Blossfeld, Drobnic, Rohwer 2001, O'Reilly and Bothfeld 2002). Using monthly data on parents' employment surrounding first births, I follow and exploratory-descriptive approach and aim to analyze the division of paid labour from a dynamic longitudinal as well as a joint dyadic perspective.

Analytical strategy

In order to understand how parents divide paid work surrounding first birth, I identify the typical employment patterns of first-time parents from a dyad perspective surrounding first births using the German SOEP data and explain which baseline (not endogenous) characteristics are associated with group memberships. I also try to model how time varying covariates such as the birth of a second child and the dissolution of parental partnership effects parental employment trajectories.

Using Group Based Multi Trajectory Modeling (GBMTM) (Nagin et al. 2016) I identify latent groups of joint maternal and paternal employment trajectories and analyze how parental employment trajectories evolve jointly. GBMTM is designed to explicitly model multiple typical trajectories across a large population. It is an exploratory method that uses maximum likelihood estimation to jointly estimate the trajectory shapes and sample sizes for a predetermined number of clusters/groups. In this paper I model four binary dependent variables jointly: part-time employed/not part-time employed of the mother (1) and the father (2); full-time employed/not full-time employed if the mother (3) and the father (4) on a monthly basis one year prior to birth and to six years after. All together I have trajectories spanning 84 months (7 years * 12). I identify heterosexual parents based on the ID of their child. First births between 1990 and 2014 are taken into account for N=1665 parents, where the maximum of missing monthly variables is 35 and twin births at first births are excluded.

Focusing on monthly employment spells around birth makes it possible to see the real dynamics of sharing paid work surrounding first births among couples. Unfortunately, there is no monthly data on unpaid domestic and care work. We can only assume, that a higher burden of unpaid work is beard by the parent who does not work or part-time employed. The advantage of using monthly employment spells also comes with disadvantages. The definition of part-time and full-time employment is according to the contractual hours and not how many hours parents work for pay.

Using GBMTM has several advantages. First, it is a more dynamic approach than using event history analysis and it also enables using a dyadic perspective. The application of GBMTM instead of multichannel sequence analysis or sequence analysis using extended alphabet has several advantages: 1. GBMTM can handle missing data and estimate models assuming that missing cases are at random. There is also the possibility to test whether panel attrition has an effect on the results of the model 2. GBMTM takes into account the representativeness of group membership and do not consider the trajectory groups as fixed characteristics that can result in biased estimations. 3. GBMTM also can handle time varying covariates in the models, such as the birth of a second child.

Results

After a model selection process based on Bayesian information criterion and parsimony, the emergence of six distinct joint employment trajectories of parents is revealed. On Figure 1 the six columns represent the different groups. In each panel the black line is for the predicted line and the points in colour are the actual probabilities of being full-time/part-time employed of the fathers and the mothers in the sample.

The groups differ in the initial probability of the mothers and fathers being full-time or part-time employed before first birth and show the development of the employment trajectories with birth happening in the 12th month and employment trajectories followed till the 6th year after first birth (month 84). The first group (G1: 6.3%, 95% CI [5.1, 7.5]) is characterized by emerging specialization, where the mothers have a low probability of full-time employment before birth and do not work after birth, while the fathers have a growing probability of being full-time employed over the 7-year window. The second group (G2: 24.5%, 95% CI [22.4, 26.6]) is a group of full specialization, where the fathers work full-time during the whole period, while the mothers leave their full-time work and only have a low probability of part-time work at the end of the observation period. The third group (G3: 16.2%, 95% CI [14.4, 18]), represents a dual-earner model, where the father is full-time employed over the whole observation period and the mother goes back to full-time employment after taking a break after first birth. The fourth group is the largest one: G4: 40.2%, 95% CI [37.8, 42.6]). It is the , emerging 1.5 earner group, where fathers are full-time employed during the 7 years, and mothers opt for part-time employment after being full-time employed before birth. The fifth group is the smallest one: G5: 4.1%, 95% CI [3.1, 5.1], where the mothers go back to full-time employment after taking a break after first birth, while the fathers have an increasing probability of being part-time employed and a decreasing probability of being full-time employed. In the sixth group (G6: 8.8%, 95% CI [7.4, 10.2] mothers opt for part-time employment after being full-time employed before birth, and the fathers are employed with a higher probability of full-time, but also a lower probability of part-time employment during the observation period, meaning that they have some shorter periods of part-time employment.

There are also other important findings of the model: The majority of women worked full-time 1 year before birth, and transited to part-time employment only after giving birth. According to descriptive statistics, the average number of children 3 years and 6 years after the birth of the first child is higher in the first two groups, and lower in the other groups. It is the lowest in the third dual-earner group, where the father is full-time employed over the whole observation period and the mother goes back to full-time employment after taking a break with the first child. Maternal age at first birth on average is the lowest (23.4) in the first, emerging specialization group and the highest in the fourth, emerging 1.5 earner group (29.6). Paternal age on average is also the lowest in the first group (25.7) and the highest in the fourth, emerging 1.5 earner group (32.2).

After identifying these distinctive parental employment trajectories, I will use multinomial logistic regressions and analyze how the probability of trajectory group membership vary as a function of important baseline characteristics of the parental dyad and birth. The approach takes into account the representativeness of group membership and do not consider the trajectory groups as fixed characteristics that can result in biased estimations.

The main baseline predictors are age and the age difference between parents, being socialized in West/East Germany, parental education and educational pairing from a dyad perspective as well as baseline employment and income between and within. I will also explore if the patterns are associated with the birth cohort (when the first birth took place), differentiating between births before and after 2007. Moreover, I also analyze how time varying covariates, such as the birth of a second child or the dissolution of parental partnership effects parental employment trajectories.

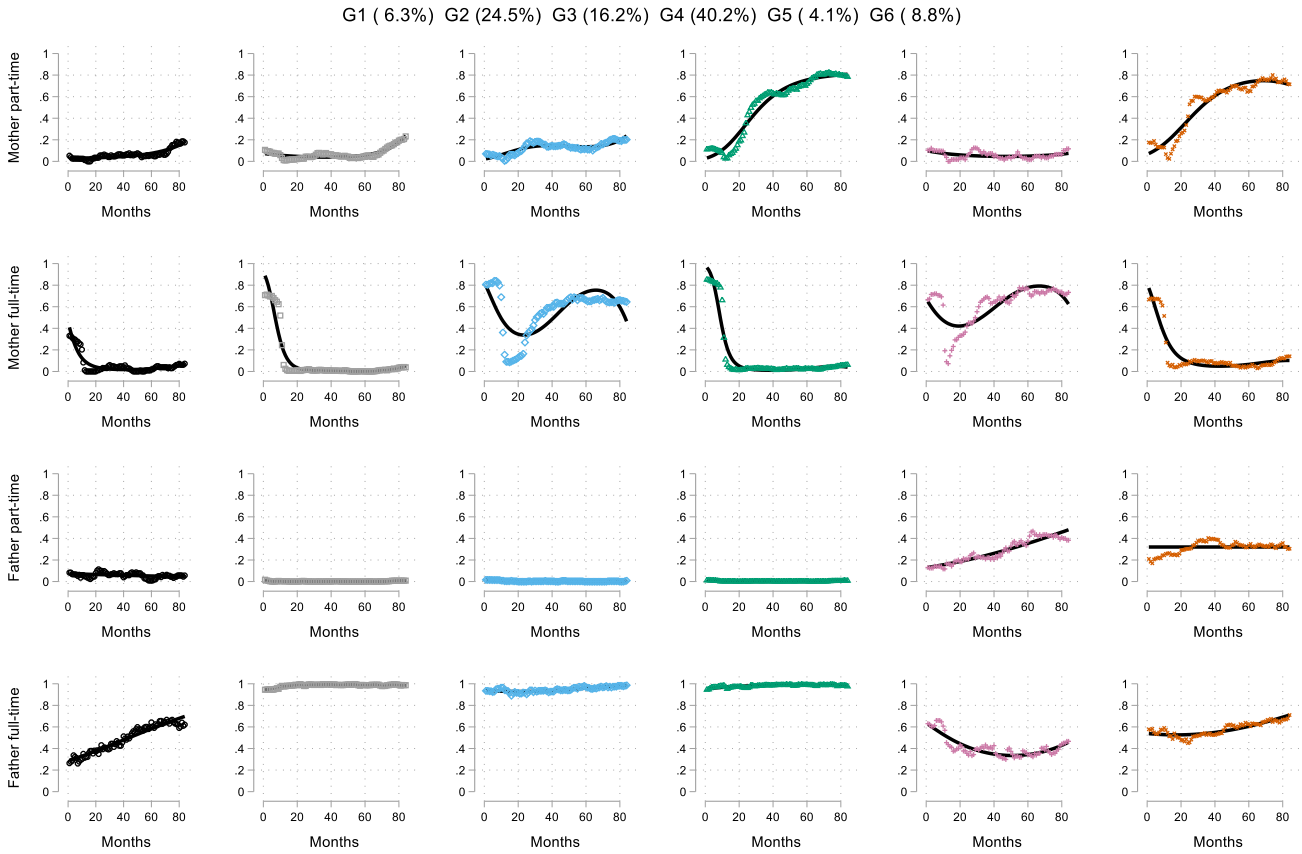

Figure 1: Group Based Multi Trajectory Model for first time parents: Probability of the mothers and fathers being full-time and part-time employed one year before first birth and 6 years after. The black lines are the predicted lines for the different outcome in each of the groups and the points in colour are the actual proportions in the sample. Source: SOEP v37 (1990-2020, first births 1990-2014, N=1665)