

Unpacking the Source of Changes in the Motherhood Wage Penalty Following First Birth in Japan

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Introduction and Background

Women experience a wage decline after having a child, a phenomenon known as motherhood wage penalty (Budig & England, 2001; Gangl & Ziefle, 2009). Studies have identified various supply-side and demand-side factors contribute to the motherhood wage penalty (Cukrowska-Torzewska & Matysiak, 2020). More recently, studies have shifted their focus to wage trajectories following motherhood over time (Hsu, 2021; Kahn et al., 2014; Kleven et al., 2019), moving beyond static comparisons between mothers and non-mothers.

Despite extensive research, the factors contributing to changes in the motherhood wage penalty over time after childbirth remain underexplored. Theories suggest that the underlying factors of the motherhood wage penalty may change over time. While these theoretical insights on changing wage penalty (or premium) have been explored in research on the long-term effects of marriage (Cheng, 2016) or of childbirth on occupational status (Abendroth et al., 2014), limited attention has been made in the study of the motherhood wage penalty.

This paper examines what factors account for the changes over time in the effect of having a child on women's wages following childbirth in Japan. After estimating the motherhood penalties on wage trajectories over ten years after the first birth, I examine three potential sources to account for the trajectories: Human capital depreciation, changes in job characteristics, and changes in work effort, extending the theoretical scope of the previous studies to the dynamic aspects. In addition, I investigate educational differences in the motherhood penalty on wage trajectories and its sources as a potential heterogeneity among mothers. This analysis contributes to the growing interest in the “diverging destinies” (McLanahan, 2004) in Japan and other East Asia (Raymo et al., 2023) by examining whether highly educated women are more protected from the wage penalty.

Method

The data comes from the 1993–2021 Japanese Panel Study of Consumers. The sample consists of women who had their first birth during the survey periods and who did not have their first birth during the survey periods. I selected employed respondents for analyzing wages. The resulting sample contains 18,294 observations from 1,948 respondents.

I use event-study models with fixed-effects, which predict logged hourly wage for individual i at year t as follows: $\log Y_{it} = \sum_{j \in \{-4, -3, -1, 0, \dots, 10, 11\}} \alpha_j D_{itj} + \beta_1 Age_{it} + \beta_2 Age_{it}^2 + u_i + \tau_t + e_{it}$, where D_{itj} indicates dummy variables indicating years from first birth, covering from four years before to eleven or more years after first birth. Two years from first birth is reference category. For those who did not have a child during the survey period, all dummy variables take zero. After estimating the total effect of first birth on wages, I controlled for mediating factors (i.e., years of nonemployment, employment status and occupation, marital status, spouse's income, and domestic work hours) to account for the motherhood penalty on wage trajectories.

Results and discussion

The results reveal that human capital depreciation, measured by years of nonemployment, plays the largest role in explaining the increasing wage penalty after the first birth. Changes in job characteristics and work effort also explain changes in the wage penalty, but their contributions are smaller than those of human capital depreciation. Moreover, the results are largely consistent across levels of education, except for the differential contribution of changes in work effort.

Overall, the results suggest that, despite generous family policies, labor market characteristics in Japan emphasizing firm-specific skills and on-the-job training have exacerbated the long-term motherhood wage penalty, potentially contributing to the gender wage gap, maternal economic insecurity, and low fertility.

Key words: Motherhood wage penalty, human capital depreciation, event study