

# Educational Differences in Motherhood Penalty on Wage Trajectories in Japan

日本における賃金の軌跡に対する母親ペナルティの学歴差

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Studies have suggested that higher educational attainment may protect women from the wage decline following childbirth. The significant wage decline for women following childbirth is referred to as the motherhood wage penalty (Budig & England, 2001; England et al., 2016; Gangl & Ziefle, 2009), which has been argued to be the most important contributor to the gender wage gap (Blau and Kahn 2017; Cortés and Pan 2023). The consequences of motherhood vary according to women's characteristics (Deming, 2022; Evertsson et al., 2023; Gough & Noonan, 2013). Among them, higher levels of education are associated with the smaller wage penalty (Amuedo-Dorantes & Kimmel, 2005; Anderson et al., 2002, 2003; Doren, 2019; Pal & Waldfogel, 2016; Taniguchi, 1999). How the motherhood wage penalty depends on women's educational attainment has important implications not only for labor market inequality; Household inequality is also amplified by the contribution of highly educated women's wage labor (Esping-Andersen, 2009). The "diverging destinies" thesis also argues that inequality in family life has increased among women with different levels of educational attainment (McLanahan, 2004).

Does the smaller motherhood penalty for highly educated women hold outside the Western contexts? Studies have shown that the magnitude of the motherhood penalty (Aisenbrey et al., 2010; Gangl & Ziefle, 2009) and the educational differences in women's labor market outcomes also vary across institutional contexts (Evertsson et al., 2009; Pettit & Hook, 2009; Steiber et al., 2016). However, most of the evidence on the motherhood wage penalty, especially on the educational differences, is concentrated in North American and European countries (Cukrowska-Torzewska & Matysiak, 2020; de Linde Leonard & Stanley, 2020).

In this paper, I examine how the impact of having a child on women's hourly wages varies by their educational attainment in Japan. Japan has a unique feature that may reduce educational differences in the motherhood wage penalty. The gendered work and family arrangements discourage labor force attachment among highly educated women (Brinton & Lee, 2016). A recent review concludes that, contrary to the "diverging destinies", educational differences in mothers' employment participations have not increased (Raymo et al., 2023). Meanwhile, a recent study shows that highly educated mothers increase their employment rates

and become continuously employed in recent years, suggesting that the impact of motherhood on wages may depend on their educational attainment (Mugiyama, 2024). While studies have shown the significant motherhood wage penalty in Japan (Hsu, 2021; Kawaguchi, 2008; Takeuchi, 2018), little is known about the educational differences.

Furthermore, I disentangle the source of the motherhood wage penalty for each educational group by introducing the loss of work experience. Most women in Japan leave the labor force when they have a child and interrupt their employment careers (National Institute of Population and Social Security Research, 2023), which delays their skill accumulation. The negative impact of lagged experience on wage growth will be amplified by labor market characteristics such as skill development within employers (Busemeyer, 2009; Estévez-Abe, 2012) and seniority-based wages (Abegglen & Stalk, 1985; Koike, 1996). I examine the extent to which the loss of work experience accounts for the motherhood wage penalty and how the contribution varies by women’s educational attainment relative to other potentially relevant work- and family-related mediators: employment status, spouse’s income, and domestic work.

Applying event study models with fixed effects to the data derived from a nationally representative panel survey, the Japanese Panel Survey of Consumers, 1993–2021, the results show that the negative effect of motherhood on logged hourly wages increases over the years and becomes particularly significant six years after the first birth (see Figure 1). The magnitude of the motherhood wage penalty does not vary across education levels. Including loss of work experience in the models significantly reduces the estimated penalty, especially for the more educated, reflecting their higher returns to experience. The contribution is largest among relevant mediating factors. The results suggest that, despite being more likely to be continuously employed, more educated women suffer a significant wage penalty after childbirth.

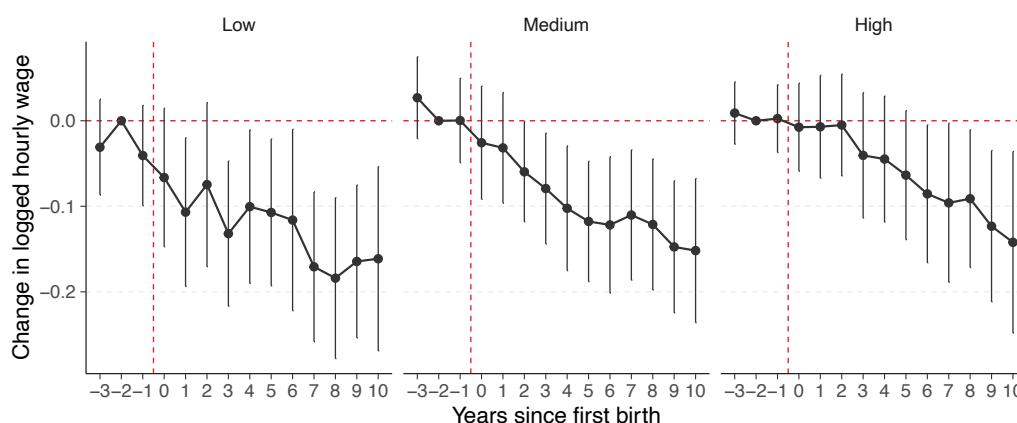


Figure 1. The effect of first birth on women’s logged hourly wages by educational attainment. *Notes.* Coefficients and the 95% confidence intervals are shown. The estimated models include individual-fixed effects, year-fixed effects, and age-fixed effects.