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Journal of The Japanese and International Economies

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Childcare availability, household structure, and maternal employment[☆]



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ARTICLE INFO

Article history:

Received 12 September 2014

Revised 12 February 2015

Available online 4 September 2015

Keywords:

Childcare

Female labor supply

Maternal employment

Nuclear family

Three-generation family

ABSTRACT

Asai, Yukiko, Kambayashi, Ryo, and Yamaguchi, Shintaro—Childcare availability, household structure, and maternal employment

We estimate the causal effects of childcare availability on the maternal employment rate using prefecture panel data constructed from the Japanese quinquennial census 1990–2010. We depart from previous papers on Japan by controlling for prefecture fixed effects, without which the estimates can be severely biased upward. Contrary to popular belief, childcare availability is *uncorrelated* with maternal employment when prefecture fixed effects are controlled. Evidence suggests that this is because households shift from using informal childcare provided by grandparents to the accredited childcare service, as more and more households do not live with grandparents. If this change of the household structure did not occur, the growth of childcare availability would have increased the maternal employment rate by two percentage points, which accounts for about 30% of the growth in the maternal employment rate from 1990 to 2010. *J. Japanese Int. Economies* **38** (2015) 172–192. Institute of Social Science, University of Tokyo, Japan;

[☆] The authors thank the support from Joint Usage and Research Center, Institute of Economic Research, Hitotsubashi University. Asai acknowledges the use of the data from Japanese Panel Survey of Consumers conducted by the Institute for Research on Household Economics.

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1. Introduction

Maternal employment hinges on quality, affordability, and availability of childcare. In countries where the childcare market is regulated and heavily subsidized, high quality and affordable childcare service is provided, but the supply often falls short of the demand. Expecting that supporting working mothers raise the low fertility rate, the Japanese government has implemented a series of pro-family policies, including an expansion of capacity of accredited childcare centers since early 1990s. In this paper, we estimate the causal effects of childcare availability on the maternal employment using the prefecture panel data from the Japanese quinquennial census 1990–2010.

Even though mother's employment is a prerequisite for enrollment in an accredited childcare center in Japan, whether childcare availability significantly increases maternal employment is not immediately obvious. If working mothers substitute the accredited childcare service for an informal childcare arrangement such as the one provided by grandparents, the maternal employment rate will remain unchanged. Indeed, [Fitzpatrick \(2010\)](#) and [Havnes and Mogstad \(2011\)](#) find that an expansion of childcare services did not raise the maternal employment rate in the U.S. and Norway, respectively, because the new childcare mostly crowded out informal childcare arrangements.

Most previous studies on Japan that estimate the effect of childcare availability on female labor market outcomes rely on the cross-sectional variation between prefectures.^{1,2} Examples include, but are not limited to, [Shigeno and Ookusa \(1999\)](#), [Higuchi et al. \(2007\)](#), [Unayama \(2011\)](#), [Abe \(2013\)](#). While the reported positive correlation is suggestive, it may not necessarily imply the causal effect of childcare availability on the female labor market outcomes. Maternal labor supply is affected not only by childcare availability, but also by the local industry structure, economic conditions, commuting time, traditional family values, and preference for women working. Because traditional family values and preference for women working are unobserved and hard to control for, the observed positive correlation between childcare availability and maternal employment may be driven by the unobserved characteristics, rather than indicating a causal relationship.

This paper departs from the previous studies on Japan's childcare employment effects by controlling for unobserved prefecture fixed effects. Using the ratio of childcare capacity to population of children under 6 as a proxy for childcare availability, we regress the maternal employment rate on the childcare availability index along with year and prefecture dummy variables as well as other observed household and prefecture characteristics. Because the prefecture fixed effects are controlled, the causal effect of childcare availability is identified by within-prefecture variation in the growth of childcare availability. This approach provides more credible evidence for the causal effects than the previous approach that relies on the cross-sectional variations alone. Our approach is essentially the difference-in-differences estimator, which is adopted by [Berlinski and Galiani \(2007\)](#), [Baker et al. \(2008\)](#), [Lefebvre and Merrigan \(2008\)](#), [Havnes and Mogstad \(2011\)](#), and [Nollenberger and Rodriguez-Planas \(forthcoming\)](#).³

¹ A similar approach is also taken by [Brilli et al. \(2013\)](#) for the study on Italy.

² An exception is [Lee and Lee \(2014\)](#). Using aggregate data at the country level on childcare availability, the female labor force participation rate, and the fertility rate from 1971 to 2009, they try to establish Granger-causality using a time-series econometrics technique. Our identification strategy is very different from [Lee and Lee \(2014\)](#) in that we use variations in the growth of childcare availability across prefectures. Moreover, [Lee and Lee \(2014\)](#) do not include the household structure or the nuclear household share in their VAR model. Our analysis shows that the household structure strongly affects the maternal employment rate and has changed over time significantly. Omitting this variable in the VAR model might affect their estimation results.

³ An alternative approach to avoid an endogeneity bias is based on the Regression Discontinuity Designs. [Gelbach \(2002\)](#), [Fitzpatrick \(2010\)](#), and [Goux and Maurin \(2010\)](#) exploit an age-dependent eligibility rule for childcare enrollment and identify the causal effect.

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