

# Can education policy raise fertility in lowest-low fertility countries? A comparison of East Asia and Southern Europe

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## **Extended abstract**

There is mixed evidence regarding the effectiveness of pro-natalist policies in developed countries (McDonald 2007), particularly in lowest-low fertility countries (including Japan, Singapore, South Korea and Taiwan in East Asia, and Italy, Spain and Portugal in Europe). Since demographic transitions were generally completed much earlier in Europe, East Asian policy responses to the problem of low fertility rates have been influenced by the European experience, even though it is unclear that this experience is relevant in the cultural, economic and social context of East Asia. In this paper, we identify a cause of low fertility that differs substantially between East Asia and Southern Europe and model the mechanisms through which fertility is affected. Specifically, we argue that differences between higher education systems in East Asia and Southern Europe lead to different incentives for investing in children's education. We present some evidence to support the theoretical basis for our model and provide some analytical results. Finally, we identify policy solutions consistent with our model and compare their effectiveness in East Asia and Southern Europe.

As noted above, our analysis focuses on differences between higher education systems in East Asia and Southern Europe, which affect incentives for investing in children's education. In particular, we look at university admissions policies, which are subject to varying levels of government control depending on whether the institution is public or private. While there is substantial within-region variation, universities in East Asia are generally allowed to follow more restrictive admissions policies. Our analysis is based on data from the 2005-2007 REFLEX country study, which surveyed around 2,000 university graduates from each country, including Japan, Italy and Spain. The study provides information about not only respondents' first and current jobs but also the names of the educational institutions attended. We match these institutions to their performance in various rankings, including the influential 2005 QS World University Rankings, the 2009 QS Asian University Rankings and national media rankings.

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Our analysis suggests that the labor market returns to university rank are higher and more persistent across different university rankings in Japan than in Italy and Spain. Controlling for age, gender, university major, work experience and work hours and taking into account selection from labor participation and non-reporting of wages, we find that the top two deciles of respondents by university ranking in all three countries generally receive higher starting wages as well as higher wages five years after graduation. However, the effects are much larger and more consistently statistically significant in the case of Japan, especially for the top decile, implying increasing returns to university rank in Japan. The top decile of Japanese respondents are also the only group to report significant non-pecuniary returns from university rank in the form of greater perceived job security five years after graduation, although we find no effects for job satisfaction and social status in any of the countries. The evidence suggests that how Japanese graduates perform during university is much less predictive of future labor market outcomes than where they went to school, while the reverse is true for Spanish graduates. To check that the labor returns in Japan are not due solely to positive student selection, we control for parental education and show that selection accounts for a small fraction of our results. Finally, we consider institutions' strength in the discipline chosen by the student rather than by overall university rankings and find slightly stronger evidence for significant labor markets to university rank in Italy, although the evidence continues to be much stronger for Japan in terms of both estimated coefficients and statistical significance.

Next, we make use of the detailed job search data collected by the REFLEX study to investigate the causal pathways through which university rank might translate to higher labor market returns in Japan. First, 26% of Japanese respondents (compared to 15% in Italy and 16% in Spain) obtained their first jobs through their university's connections to employers, which are likely to be more valuable in prestigious universities. Second, graduation and hiring seasons are far more coordinated in Japan, with 99.6% of respondents graduating in March and 82% starting their first job in April, whereas no such pattern surfaces for Southern Europe. This high level of coordination means that Japanese firms hire fresh graduates based on available signals of productivity, which is unlikely to be based solely on university major since only 41% of Japanese respondents' first jobs are related to their discipline (compared to 75% in Italy and 68% in Spain). Third, Japanese graduates are much less likely to report using skills and knowledge

acquired in university in their first and current jobs, and are much more likely to receive formal and informal on-the-job training.

Our empirical findings, along with other quantitative studies on the importance of university rank to labor market outcomes in Japan (van der Velden, van de Loo and Meng 2007) and South Korea (Lee and Brinton 1996), have strong economic and sociological implications for how higher education systems affect incentives for investing in children's education and fertility choices. The implications can be explicitly illustrated in two distinct ways. First, we note that the slope of child quality costs in the Beckerian quantity-quality model is likely to be flatter when returns to university rank (or, more generally, education) are higher. Furthermore, if there are increasing returns to university rank, then the marginal cost of child quality is declining (or rising at a slower rate if there are diminishing returns to scale) rather than linear. The resulting equilibrium is one with lower quantity or fertility; moreover, the lower relative cost of child quality further raises the cost of having more children, resulting in more substitution of quantity for quality if parents are egalitarian (Becker and Lewis 1973). Our second approach takes into account the impact of age on the production of labor market outcomes. We set out a simple coproduction model in which parents and children both contribute monetary and time resources to developing the child's future labor market outcomes, where parental contributions decline while children's contributions increase with child's age. If the child's university rank is more predictive of future labor market outcomes than their performance during university (in other words, labor market conditions are more similar to those in Japan than in Spain), then more familial resources would be devoted to getting the child into a prestigious university, raising the proportion of contributions from parents and the resources spent on child quality.

Finally, we explore a set of "reverse one-child policy" options for addressing the link between lowest-low fertility and education policy. The policies range from legally requiring public universities to favor admission of applicants from larger families to providing funding incentives for universities which do so. We use our above models to analyze the impact on fertility and to compare the policies' effectiveness to existing policies such as per-child subsidies. Apart from their low fiscal requirements, "reverse one-child policies" can also be justified from a social equity viewpoint, since larger families tend to be low income.

## References

- Becker, Gary S. and H. Gregg Lewis. 1973. "On the Interaction between Quantity and Quality of Children." *Journal of Political Economy* 81(2 Part 2): S279-S288.
- Lee, Sunhwa and Mary C. Brinton. 1996. "Elite Education and Social Capital: The Case of South Korea." *Sociology of Education* 69(3): 177-192.
- McDonald, Peter. 2007. "Low Fertility and Policy." *Ageing Horizons* 7: 22-27.
- Van der Velden, Rolf, Peet van de Loo and Christoph Meng. 2007. "University and College Differences in the Returns to Education in Japan and the Netherlands." In J. Allen et al. (eds), *Competencies, Higher Education and Career in Japan and the Netherlands*: 77-95.