

Agent-Based Model to Analyze the Role of Women's Education on Fertility: The Case of Korea

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Abstract. Education has long been recognized as a crucial factor influencing women's childbearing patterns. The rapid decline in fertility and marked improvements in women's educational attainment over the last several decades, South Korea represents an ideal case for studying this dynamic association. It is very well known that fertility has been steadily declined to a remarkably lower level in Korea. The aim of the paper is to explain the pattern of fertility transitions by level of education and the contribution of the changes in women's educational attainment to the fertility decline during the fertility transition. We propose a model applying both micro-simulation and agent-based model (ABM) to investigate the women's education influence by using agent's education and its feedback on fertility transition. Our model applies event history analysis while using empirical micro data from 1970 to 2010. Our method appears to be a good approximation in describing the fertility decision based on women's various education levels. Our results show that women acquiring education have the lowest probability to become mother. Women having higher education have the maximum probability toward fertility transition than the low level education.

Keywords: Total fertility rate, education level, trend and agent-based model, micro-simulation, macro-simulation

1 Introduction

Educational change is related with a number of economic and social changes that can change the link between education and childbearing. As a result, although rising education generally leads to falling birth rates, the importance of educational trends varies. Women's education is usually associated with lower fertility at both the population and the individual levels [1], [2]. However, the empirical relationship between changes in educational levels and changes in fertility rates at the population level is more cumbersome. The impact of educational change likely depends on the starting levels of education and fertility, as well as other contextual factors. Despite the theoretical importance of education as a contributing factor in the fertility transition, there have been relatively few longitudinal studies on education and fertility. In this article, we are using census data from South Korea to analyze

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