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Growth and parental preference for education in China

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ABSTRACT

This study explores the implications of education preference in an innovation-driven growth model that features an interaction between endogenous technological progress and human capital accumulation. Parents invest in children's education partly due to the preference for their children to be educated. We consider a preference parameter that measures the degree of this cultural preference for education. We find that a society such as China in which parents place a high value on education accumulates more human capital, which is conducive to innovation, but the larger education investment also crowds out resources for R&D. As a result, a stronger cultural preference for education has an inverted-U effect on long-run growth. We also derive a closed-form solution for the transitional path of the equilibrium growth rate from any initial state and find that a strengthening of education preference causes an initial negative effect on growth. Finally, we consider a number of extensions to the benchmark model.

1. Introduction

It is well known that the Chinese society places a very high value on education. In China's Song Dynasty, Emperor Zhenzong (968-1022) wrote his famous *Urge to Study Poem* in which an often quoted verse is "in books one finds golden mansions and maidens as beautiful as jade." Also in the Song Dynasty, a poet, Wang Zhu, wrote in his famous *Child Prodigy Poem*, "all pursuits are of low value; only studying the books is high." This emphasis on education can be traced back to Confucianism, which emphasizes the importance of education. Studying the origins of this strong cultural preference for education in China, Kipnis (2011) notes that education "invokes a system of prestige in which those with educational accomplishments are marked as superior to the non-educated." Even in the case of Chinese families in the US, this cultural preference for education still exerts influences on parents' involvement in children's education. For example, from their survey data, Chen and Uttal (1988) find that Chinese parents have higher expectations on their children's academic achievement and spend more time working with children on their homework than American parents. Furthermore, Chen and Uttal (1988) argue that these different behaviors can be explained by differences in cultural values.[1] However, is a strong parental preference for education necessarily good for the economy? A BBC News article[2] discusses the costs of this "education fever" in China

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[1] See also Huang and Gove (2012) for a discussion of Confucianism's influence on the Chinese culture and educational practice of Chinese families in the United States.

[2] "Asia's Parents Suffering 'Education Fever'". BBC News, 22 October 2013.

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as well as South Korea, which also shares the Confucian values, and reports that in South Korea, "the government believes 'education obsession' is damaging society".

In this study, we use a growth-theoretic framework to explore the macroeconomic implications of parental preference for education. The growth-theoretic framework is an innovation-driven growth model that features an interaction between endogenous technological progress and human capital accumulation. Parents invest in their children's human capital due to the subjective utility that they derive from their children's education. We consider a preference parameter that measures the degree of this parental preference for education. We find that a society such as China in which parents place a high value on education accumulates more human capital, which is conducive to innovation, but the larger education investment also crowds out resources for R&D investment. As a result, a stronger parental preference for education has an inverted-U effect on the steady-state equilibrium growth rate due to the presence of both positive and negative effects.

We also analytically derive the complete transitional path of the equilibrium growth rate from any initial state when the degree of parental preference for education increases. We find that an increase in the degree of education preference has an initial negative effect on the equilibrium growth rate due to the crowding-out effect of education investment on R&D investment. However, as the level of human capital increases, the equilibrium growth rate also increases due to the positive effect of human capital on innovation. When we compare between two steady states, we find that the new steady-state equilibrium growth rate may be higher or lower than the initial steady-state equilibrium growth rate, depending on the relative magnitude of the negative crowding-out effect of education investment and the positive effect of human capital on innovation and growth.

Furthermore, we consider a number of extensions to the benchmark model by allowing for a pecuniary transfer from parents to children and public investment in education. We find that our result of an inverted-U effect of education preference on growth is robust to these extensions. Therefore, in all versions of the model, a strong parental preference for education indeed has a certain "damaging" effect on the society by exerting a negative effect (in addition to the usual positive effect) on the growth rate of the economy. The underlying assumption behind this negative effect is that parents investing more of their time in their children's education carries an opportunity cost that crowds out other productive activities. For example, a recent SCMP News article[3] describes a growing trend of educated parents in China quitting their careers to educate their children.

This study contributes to the literature on R&D-driven innovation and economic growth.[4] Early studies in this literature do not consider human capital accumulation. More recent studies, such as Eicher (1996), Zeng (1997), Zeng (2003), Strulik (2005), Strulik (2007), Strulik et al. (2013), Chu et al. (2013), Hashimoto and Tabata (2016) and Prettner and Strulik (2016), explore human capital accumulation and its interaction with endogenous technological progress in the R&D-based growth model. However, these studies either do not explore the effects of parental preference for education or they find an unambiguously positive effect of education preference on growth. Taking into account the negative crowding-out effect of education, we find that a stronger parental preference for education has a negative effect on the transitional growth rate and an inverted-U effect on the long-run growth rate.

The rest of this study is organized as follows. Section 2 presents the benchmark model. Section 3 explores the implications of parental preference for education. Section 4 considers a number of extensions. The final section concludes.

2. The benchmark model

We consider a discrete-time version of the seminal R&D-based growth model in Romer (1990). We extend the Romer model by considering a simple structure of overlapping generations and human capital accumulation. Each individual is endowed with one unit of time to be allocated between leisure, work and the education of her child.[5] We follow previous studies[6] to assume that individuals derive utility from their children's education. Furthermore, they supply labor that is embodied with human capital to earn a wage income. For simplicity, we follow previous studies to assume that individuals only consume goods when they are old. In this case, they save all of their wage income when they are young and consume their asset income when they are old.

2.1. Individuals

In each generation, there is a unit continuum of individuals. An individual who works at time t has the following utility function indexed by a superscript t:

$$U^t = u(l_t, C_{t+1}, H_{t+1}) = \eta \ln l_t + \ln C_{t+1} + \gamma \ln H_{t+1}. \tag{1}$$

[3] "Home Freer: Chinese Mothers Quit Jobs to Care for the Kids". South China Morning Post, 9 November 2015.

[4] See Romer (1990), Segerstrom et al. (1990), Grossman and Helpman (1991) and Aghion and Howitt (1992) for seminal studies in this literature.

[5] In this study, we do not consider endogenous fertility; see for example Chu et al. (2013), Strulik et al. (2013), Prettner and Strulik (2016) and Hashimoto and Tabata (2016) for an analysis of human capital accumulation and endogenous fertility in the R&D-based growth model. In the case of China, the number of children was not freely chosen by most parents due to the one-child policy, which has been recently changed to a two-child policy.

[6] See for example Glomm and Ravikumar (1992) and Futagami and Yanagihara (2008). In this literature on parental investment in human capital and economic growth, studies focus on human capital accumulation as the sole engine of economic growth. The present study complements these studies by exploring parental investment in human capital as well as its interaction with endogenous technological progress.