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Household borrowing constraints, fertility dynamics, and economic growth

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Abstract

In this article we provide a model of growth with endogenous fertility in which multiple steady states derive from the modelling of household liquidity constraints. We put forward an innovative approach to the finance of higher education by assuming that youths can borrow because their parents guarantee the loan repayment with their income. Young individuals can renege on their debt and lenders provide them credit only up to an amount which is commensurate to a collateral provided to children by their families. Parents care about children's education and choose a collateral which depends positively on family income and negatively on family size. A stable trap of low-development is characterized by high-fertility rates and low investment in human capital. On the other hand, in economies with a sufficiently low starting rate of fertility borrowing constraints gradually vanish and the process of growth reaches a steady state characterized by the optimality of fertility and schooling choices. Government subsidies to education may reduce population growth and promote human capital investment if fertility at steady states is lower than thresholds.

JEL classification: O41; O15; J13

Keywords: Development; Population; Borrowing constraints; Education subsidies

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1. Introduction

An important tradition in the theoretical and applied analyses of economic development concentrates on the rate of population growth and human capital. Fertility and education are economic and demographic phenomena deeply rooted in the family's organization and behavior. From this point of view the seminal articles by Neher (1971); Razin and Ben-Zion (1975); Barro and Becker (1989) provide co-ordinates for the analysis of economic growth with endogenous fertility.[1] The recent literature has focused on two important issues: conditions under which an economy can experience a demographic transition (e.g., Galor and Weil, 2000; Hansen and Prescott, 2002; Lucas, 2002); causes of persistence of differences in the levels and growth rates of per capita income across countries. While models of the first strand of the literature focus on the endogenous mechanisms which can be responsible for the process of progressive reduction in fertility and economic development, models of non-convergent economic growth produce multiple steady states where poverty traps are characterized by high growth rates of population and low technical progress, and the opposite features describe growth equilibria.

In this article we provide a model of economic growth with endogenous fertility in which household borrowing is constrained and this market imperfection produces multiple equilibria in the growth rate of the economy. The existing literature on endogenous fertility and poverty traps relies on different causes of non-convergence in economic growth. Becker et al. (1990) obtain multiple equilibria through the assumption that rates of return on investment in human capital do not decline with the level of human capital. This assumption combined with the quantity–quality of children trade-off brings about dynamics of fertility and education that drive the economy either toward a Malthusian steady state, where fertility is high and investment in human capital is null, or to the state of a growing economy where parents have few children who acquire high education. A non-convexity in the technology of human capital production is also the cause of multiple equilibria in Tamura (1996) and Morand (1999). A different approach to non-ergodic growth is that of Kelemli-Ozcan (2002) who demonstrates that if mortality declines with the growth of per capita income, a Malthusian steady state, with high mortality and low income, can be locally stable and can co-exist with a steady state characterizing economic growth.

In all such models human capital is the engine of economic growth and the family is deeply involved in the decision concerning investment in human capital. The prevailing scheme in the literature is represented by parents who can borrow on perfect capital markets and finance their children's education by bequests. Such a modelling strategy does not account for the variety of linkages among family members active in real economies and does not consider the joint involvement of children and parents in financing education.

[1] Recent reviews of the literature on endogenous population and economic growth are Ehrlich and Lui (1997) and Nerlove and Raut (1997).