Structural Change and Economic Dynamics 30 (2014) 132–147

Contents lists available at ScienceDirect

Structural Change and Economic Dynamics

journal homepage: www.elsevier.com/locate/sced

On gender and growth: The role of intergenerational health externalities and women's occupational constraints☆

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ARTICLE INFO

Article history:
Received June 2013
Received in revised form February 2014
Accepted May 2014
Available online 26 June 2014

JEL classification:
I18
J16
J22
O41

Keywords:
Gender inequality
Public capital
Endogenous growth
Multiple equilibria

ABSTRACT

This paper studies the growth effects of externalities associated with intergenerational health transmission, health persistence, and access to infrastructure (or lack thereof), which affects women's occupational choices. Following a brief review of the evidence on these issues, a gender-based overlapping generations (OLG) model of endogenous growth that captures these interactions is presented and its properties characterized. The endogeneity of mothers' rearing time and rearing costs implies that improved access to infrastructure has in general an ambiguous effect on growth. Numerical experiments, based on a calibrated version of the model for low-income countries, show that it is possible for higher investment in infrastructure to actually reduce the steady-state growth rate. The possibility of multiple equilibria induced by an endogenous survival rate is also discussed, and so is the role of public policy in that context.

1. Introduction

The role of women in promoting growth and development continues to occupy center stage in policy debates. As documented in a number of studies, gender inequality (in terms of access to education, health, formal sector employment, and income) remains a significant constraint to growth in many countries.[1] On the one hand, the gender gap in educational attainment has gradually narrowed or even moved in favor of women in some regions; and in many individual countries the gender gap in primary school enrollment has almost disappeared. According to the United Nations (2010) for instance, in 2007 over 95 girls for every 100 boys of primary school age were in school in developing countries, compared with 91 in 1999. In a study of four decades of birth cohorts covering the period 1940–1980 for Latin America and Caribbean, Duryea et al. (2007) found that the gender gap in educational attainment has moved in favor of females at an average pace of 0.27 years of schooling per decade. On the other, however, in Sub-Saharan Africa 54 percent of girls still do not complete even a primary school education (Herz and Sperling, 2004; UNICEF, 2005). In addition, progress toward gender equality in secondary schooling has been slower, and in some regions gaps are widening (see United Nations, 2010; World Bank, 2010a).

☆ We would like to thank Mayra Buvinic, Daniela Gressani, two anonymous referees and participants at various seminars for helpful comments on a preliminary version, and Baris Alpaslan for research assistance. We bear sole responsibility for the views expressed in this paper.

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[1] See Blackden and Bhanu (1999), Blackden et al. (2006), Blackden and Wodon (2006), Morrison et al. (2007), and Momsen (2009). Some of the recent evidence is further discussed in subsequent sections.

http://dx.doi.org/10.1016/j.strueco.2014.05.002
0954-349X/

This paper focuses on two aspects of the debate on the role of women in growth and development: the role of inter- and intra-generational health externalities (namely, how mothers affect their children's health, and how health in childhood affects health in adulthood) and constraints on women's time allocation—particularly lack of access to infrastructure—and how, in turn, policy-induced changes in such allocation affect growth.[2] In line with the above evidence, much research on gender and growth in developing countries has focused on women's differential access to education, formal sector employment, assets, production technology, health care, and social institutions, as well as on how the relationship between gender and growth is mediated by women's labor force participation, productivity, and earnings. However, the transmission of health from mothers to children, coupled with the general issue of health persistence from childhood to adulthood (which is not gender specific), and the role of women's access (or lack thereof) to basic infrastructure services, has not been the subject of much formal analysis. We integrate all of these issues in a three-period, gender-based overlapping generations (OLG) model of endogenous growth, and use the resulting framework to address the role of public policy.

In a nutshell, there are two key findings in the paper. First, policies aimed at promoting an increase in access to infrastructure may have important benefits for women (in addition to other positive effects on growth), including a reallocation of mothers' time toward market activity. However, the endogeneity of mothers' rearing time and child rearing costs implies that it is also possible that this policy may lead to a reduction in women's time devoted to child care, which may be detrimental to the health of their children—with persistent effects in their adult life and possibly adverse effects on growth. Numerical simulations show that there are plausible scenarios under which this may occur. Second, we show that, when the survival rate from adulthood to old age is endogenously related to health status, multiple equilibria may emerge. Whether the economy converges to a stable equilibrium with positive growth or to a stagnating equilibrium depends on initial conditions. An increase in investment on infrastructure may put the economy on a convergent path to the stable equilibrium, but this strategy may entail risks if adverse effects on women's time allocated to child rearing are large. In that sense, our results add a note of caution to Big Push theories, which advocate large increases in infrastructure investment as a way to boost economic growth rates in poor countries.

The remainder of the paper proceeds as follows. Section 2 begins with a review of the evidence on the intergenerational transmission of health, and the persistence of health between childhood and adulthood. It continues with an overview of the evidence on women's time use, with particular emphasis on how inadequate access to infrastructure constrains time allocation and market work. Section 3 presents the analytical framework. The equilibrium solution of the model, in terms of women's time allocation and long-run growth, is discussed in Section 4. The effects of a budget-neutral reallocation of government spending toward infrastructure investment are studied analytically in Section 5. Section 6 calibrates the model using data for low-income countries and evaluates numerically the conditions under which an increase in public investment may lead, counterintuitively, to a negative net effect on the steady-state growth rate of output. In Section 7 life expectancy is endogenized and the possibility of multiple equilibria is discussed. The role of public policy in this context is also analyzed. The last section provides a brief summary and some concluding remarks.

2. Background

This section begins with a brief review of the evidence on health externalities. It continues with an overview of the evidence on how access to core infrastructure services (or lack thereof) constrains women's ability to allocate time to market and nonmarket activities.

2.1. Health externalities

The transmission of health can be both intergenerational (or vertical), because mothers affect their children's health, and intragenerational (or horizontal) because health in childhood may affect health in adulthood. We consider both channels of transmission in turn.

2.1.1. Intergenerational health externalities

There is much evidence that a mother's health—which may itself depend on her level of education—affects directly the health of her children. In addition, to the extent that health in childhood affects health in adulthood, a mother's health today may determine the health of future mothers and their earning ability.

2.1.1.1. Mothers' health status and child development. It is now well documented that children of inadequately nourished mothers are likely to suffer systematic negative effects, even before they are born.[3] These effects include low birth weight, stunted growth, susceptibility to disease, and intellectual impairment. This may be due either to nutritional reasons (insufficient nutrition to the fetus) or physiological factors (the growth potential of a fetus may be constrained in a stunted woman). Moreover, the potential damage to low-birth weight babies from being born undernourished is compounded when they remain undernourished during infancy and early childhood. A malnourished or anemic mother may be unable to produce the quality or the quantity of breast milk needed to

[2] Lazear (1983) provides one of the first systematic discussions of the concept of intergenerational externalities. A key point of his contribution was to draw attention to the negative externalities that may result when parents underinvest in themselves (both in terms of education and health) because they fail to consider spillover benefits to their children.

[3] Evidence that a mother's poor health affects the health of their children *in utero* includes Lim et al. (2002), Field et al. (2009), Ampaabeng and Tan (2013), and Lin and Liu (2014). *A contrario* evidence that low life expectancy for mothers may adversely affect their daughters' health and education prospects is provided by Jayachandran and Lleras-Muney (2009).