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Indeterminacy, intergenerational redistribution, endogenous longevity and human capital accumulation

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Abstract

This paper sets up an OLG economy with endogenous life expectancy to study how fiscal policy that redistributes between generations can open the door to sunspot equilibria. Agents invest independently in their own human capital, produce and consume output, and receive a pension upon retirement. The model produces an expectations coordination problem that can explain significant differences in growth paths followed by otherwise identical countries. In particular, we show that our economy may be characterized by local indeterminacy of dynamic equilibria, and hence feature fluctuations which are driven by extrinsic uncertainty.
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1. Introduction

Recent years have seen an extensive research on the possibility of indeterminate equilibria in dynamic general equilibrium models.[1] This literature is motivated by the difficulties in explaining differences in growth in different countries and accounting for various empirically observed growth paths by means of the usual economic fundamentals (see, for instance, Levine and Renelt, 1992; Benhabib and Gali, 1995).

Indeterminacy of equilibria can be either global or local. The first kind corresponds to multiple balanced growth paths (BGPs hereafter), while the second kind refers to the existence of a continuum of transition paths leading to a given BGP and a possibility of existence of sunspot equilibria. Multiplicity of equilibrium paths can explain why otherwise similar countries may be characterized by different per capita incomes and/or different growth rates.

In general, it has been shown that indeterminacy is the consequence of non-decreasing returns to capital, monopolistic competition or some forms of production externalities that generate non-decreasing returns at the social level – that is, of what may generate persistent growth in the first place. Here, instead, we focus on the role of *intergenerational redistribution* in opening the door to sunspot equilibria, when agents invest independently in their human capital and *longevity is increasing with aggregate human capital*.[2]

We show that intergenerational transfers may distort human capital accumulation for any given rationally anticipated longevity, and thereby affect actual longevity. If investment in human capital is indeed responsive to the tax particulars, then intergenerational transfers generate indeterminate equilibria, and in particular local indeterminacy. This implies that self-fulfilling beliefs of economic agents or sunspots determine the equilibrium path, since the initial human capital investment is freely chosen. So, when longevity is increasing with the average level of human capital, our economy can feature endogenous business cycles – i.e. business cycles which are driven by extrinsic as opposed to intrinsic uncertainty – due to the external effects of intergenerational redistribution.

As in any endogenous growth model, government policies can generate differences in the growth paths followed by otherwise similar economies. Nevertheless, our work highlights that identical economies, even with the same pension particulars (like the pension rate and the choice between funded or pay-as-you-go pensions), may feature different growth patterns and different income taxes even in the absence of shocks to its fundamentals.

Our paper differs from other accounts of fiscal policy and indeterminacies in economic growth in that here tax revenues do not provide an external effect through financing public consumption goods and infrastructure like, for instance, Cazzavillan (1996) and Park and Philippopoulos (2004). In addition, in our model labour supply is inelastic, and thereby income taxation does not affect the social returns to

[1] See Benhabib and Farmer (1999) for a survey.

[2] A number of studies have found human capital and its various proxies to have important impacts on adult health and longevity. For an extensive survey of the literature see Sickles and Taubman (1997).

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