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Growth and social security: the role of human capital

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Abstract

This paper studies the growth and efficiency effects of pay-as-you-go financed social security when human capital is the engine of growth. Employing a variant of the Lucas model [Lucas, R.E., 1988. On the mechanics of economic development. Journal of Monetary Economics 22, 3–42.] with overlapping generations, it is shown that a properly designed, unfunded social security system leads to higher output growth than a fully funded one. Furthermore, the economy with an unfunded social security is efficient, while the other one is not. These results stand in sharp contrast to those obtained in models where the reason for economic growth is physical capital accumulation. © 2000 Elsevier Science B.V. All rights reserved.

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1. Introduction

Various authors have shown that unfunded social security stunts economic growth in Romer (1986)-type endogenous growth models (e.g. see, Saint-Paul, 1992; Wiedmer, 1996). The economic mechanism behind this result is straightfor-

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ward. Unfunded social security discourages individuals from saving privately for old age, without compensating for this via forced public savings. As economic growth is positively related to the aggregate capital stock and hence, total savings, an economy with unfunded social security exhibits slower growth. A corollary of this statement is that the introduction of a pay-as-you-go pension system cannot lead to a Pareto-improvement as the decline in growth rates harms future generations.

Economic growth need not, however, be due solely to physical capital accumulation as in Romer (1986). There is another strand of literature pioneered by Lucas (1988) that identifies human capital accumulation as the engine of growth. Once the effects of human capital are taken into account, the relation between social security and growth can appear in a completely different light. Employing a variant of the Lucas (1988) model with overlapping generations, we show that a properly designed, unfunded social security system leads to higher output growth than a fully funded one. Moreover, a competitive economy with such an unfunded social security system is efficient, whereas an economy without any or with a fully funded social security system is not.

The reason for the inefficiency is the following. In Lucas (1988), growth is driven by the ability of human capital per worker to increase without bound, but since in an overlapping generations model individual human capital depreciates fully with retirement, any accumulation of human capital over time requires that succeeding generations inherit some part of the human capital stock of their ancestors. This implies a positive effect of actual investment in human capital on the productivity of future generations. This positive effect is, however, disregarded by every single individual, since it only has a negligible impact on the average human capital stock that is transferred to succeeding generations. In contrast, an unfunded social security program in which the size of the transfers to a particular old individual is properly tied to his human capital, renders the competitive allocation efficient by providing socially optimal incentives to invest in human capital. We show that this can be accomplished by a pension formula that displays some stylized features of the German pension system. The higher human capital investment under this scheme translates into faster output growth.

The plan of the paper is as follows. Section 2 presents the economy without or with a fully funded pension scheme and establishes its inefficiency. In Section 3, an unfunded social security system is introduced and its impact on efficiency and growth is derived. Section 4 concludes.

2. Laissez-faire and efficient allocations

The economy to be studied is a variant of the Diamond (1965) overlapping generations model, where the engine of growth is of the Lucas (1988)-type