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Dependent children and aged parents: funding education and social security in an aging economy

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Abstract

In the last few decades in the United States birth rates have declined and longevity has risen while productivity growth has slowed. Given such changes, the increasing burden of funding programs for the elderly is likely to shift resources away from the young and toward the elderly. This paper uses an overlapping generations framework to examine the effects of tax policies on an aging economy. We find that if the quality of the education system is sufficiently high then raising the education tax rate and subsequently lowering the social security tax rate enhances growth and welfare.

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1. Introduction

The demographic profile of the United States is undergoing profound change. Birth rates are falling and longevity is increasing. As a result the elderly are projected

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to comprise an increasing proportion of the population. This has led to an increasing focus on issues relevant to the welfare of the elderly, such as social security. Meeting the demands of an aging population may, at the same time, reduce resources allocated to the young, such as education expenditures.

In this paper we extend Pecchenino and Utendorf (1999) to examine the interconnections between funding for programs benefiting the elderly, represented by social security, and funding for programs benefiting the young, represented by public education. We utilize a Diamond (1965) style overlapping generations model to analyze possible intergenerational linkages. In our model, growth, along the transition or balanced-growth paths, is endogenously fueled by individuals' investments in both physical capital, to fund their retirements, and human capital, to fund their children's education, and by the government's investment in human capital via public education expenditures. Individuals face uncertainty over their longevity. All old agents receive social security benefits, which are funded in a pay-as-you-go manner. We examine how policies aimed at a specific target group, e.g. the elderly or the young, affect current and future welfare of the economy as a whole.

Our model is similar in construct to Kaganovich and Zilcha (1999), which also examines the effects of the public funding of social security and education on economic growth. They, as we, find that shifting tax revenues from social security benefits to education can be welfare improving. We, however, take the constraints of the social security system (that benefits are determined as a replacement rate on wages, so benefits determine taxes) explicitly into account in our analysis. In addition, we assume that the government, effectively, faces two budget constraints: a social security constraint and an education constraint, rather than the unified constraint with the explicit tradeoff (more for social security implies less for education) assumed by Kaganovich and Zilcha. Further, our model incorporates uncertainty over the length of life as well as population growth, allowing us to analyze the demographic transition, an important issue absent from their analysis. [2]

The connection between social security and education is also central to a model sketched in Mulligan and Sala-i-Martin (1999). In this model social security is an explicit return when old on investments made in the human capital of the young and is a formalization of the observation found in Pogue and Sgontz (1977) and Becker and Murphy (1988) that social security is a dividend paid to the old for investing in the human capital of the current workers when they were young. Our model does not make this political linkage since in practice social security is a federal program while education is by and large a local program.

Our model differs from many models of social security (see, for example, Diamond (1977), Imrohoroglu et al. (1995) among others) in that these models

[2] See Kaganovich and Zilcha (1999) for an extensive review of the literature on the interactions between education and social security.