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Social security reform with impure intergenerational altruism

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ABSTRACT

This paper studies the long-run aggregate and welfare effects of eliminating Social Security in a quantitative dynamic general equilibrium life-cycle model where parents and their children are linked by voluntary and accidental bequests. Social Security in this model with impure altruism has a smaller effect on capital accumulation than in a pure life-cycle model, a bigger effect than in a model with two-sided altruism. The welfare gain of eliminating Social Security system under impure altruism is smaller than that in a pure life-cycle model, and bigger than that in a model with two-sided altruism.

1. Introduction

There is considerable evidence supporting the hypothesis that bequest motives are important both for aggregate capital accumulation and to better match the individual's saving profiles over the life cycle (see, among others, Kotlikoff and Summers, 1981; Gale and Scholz, 1994; De Nardi, 2004). Using a structural model with a survey instrument, Ameriks et al. (2011) find strong support for warm-glow bequest motives. Lockwood (2010) also finds strong support for bequest motives from the patterns of wealth and long-term care insurance holdings. Lockwood (2012) shows that bequest motives play a central role in explaining the lack of demand for annuities. Despite this mounting amount of empirical evidence, not only is there a lot of uncertainty on how to best model bequest motives, but much of the literature on Social Security reform abstracts from voluntary bequest motives altogether.[1] This abstraction has the potential of leading to a biased conclusion regarding, for example, the effects of reforming or eliminating Social Security. On the other extreme, analysis of Social Security that allows for altruism uses two-sided pure altruism models which, as shown in this paper, fail to generate skewed wealth inequality.[2] This paper adds to the literature by quantitatively assessing whether impure warm-glow

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[1] Contributors to this literature include, among others, Feldstein (1985), Auerbach and Kotlikoff (1987), Hubbard and Judd (1987), Imrohoroglu et al. (1995, 1999), Huggett and Ventura (1999), Storesletten et al. (1999), Conesa and Krueger (1999), Krueger and Kubler (2006), Nishiyama and Smetters (2007), Pries (2007), Rojas and Urrutia (2008), Andolfatto and Gervais (2008), and Chen (2010).

[2] Papers that examine the effect of Social Security under two-sided altruism include, among others, Laitner (1988), Altig and Davis (1993), Fuster (1999), and Fuster et al. (2003, 2007).

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bequest motives and intergenerational links in a life-cycle model are important for understanding the long-run effects of Social Security on aggregate allocations and on the distribution of welfare across households.

This paper uses a life-cycle model with two additional basic forces, bequests and human capital transmission, which can generate a highly concentrated wealth distribution and a realistic relationship between lifetime earnings and wealth at retirement (De Nardi, 2004; Yang, 2012). In this model, agents care about the total bequests left to their children, but not about the consumption of their children. Facing uninsurable labor income risk, uncertain lifetimes and a borrowing constraint, households save to self-insure against labor earning shocks and life-span risk, for retirement, and possibly to leave bequests to their children. Pay-as-you-go (PAYG) Social Security provides insurance against income risk and lifespan risk. The benchmark model with impure bequest motives differs from pure life-cycle models and two-sided altruism models in several dimensions. In a pure life-cycle model without bequest motives, individuals save during middle age when they receive high income and dissave after retirement in order to maintain smoothed consumption. In the life-cycle model with impure bequest motives, in addition to life-cycle saving and precautionary saving motives, individuals save to leave bequests. In a two-sided altruism model, households care about their predecessors, descendants as well as themselves, and thus use bequests and inter vivos transfers to smooth consumption within the dynasty. The need to saving for retirement is substantially reduced since retirees' children provide financial support to them. In addition, through bequests and inter vivos transfers, households are better able to insure against income and mortality risks.

I compare the steady state with Social Security to one in which the replacement rate is zero. The results indicate that there are significant differences in how Social Security reform affects individuals under different assumptions of bequest motives. The main findings can be summarized as follows. In the benchmark model, the steady-state values of aggregate consumption, output, and capital are higher after the elimination of Social Security system. An unfunded Social Security system crowds out only 37% of the capital stock, less than the amount of 44% in pure life-cycle models, regardless of whether accidental bequests are inherited by the descendent of the deceased, or are evenly distributed among agents of the same age group. This is because, in the benchmark model, old individuals might save for bequest motives and respond less to the elimination of Social Security. However, the effect of Social Security on aggregate saving is much bigger than that in a model with two-sided altruism. In a model with two-sided altruism, the transfer induced by Social Security is partially undone by altruistic intergenerational transfers, thus Social Security has a small impact on saving, and the aggregate wealth increases only by 10.7%. In the benchmark model with one-sided impure altruism, many households do not receive transfers and there is less insurance across generations. Therefore Social Security has a bigger crowding-out effect on the capital stock.

The model with intergenerational links of bequests and human capital can generate more wealth inequality than the models without a bequest motive and the model with two-sided altruism. A redistributive Social Security system always leads to higher wealth dispersion in all models: Households with lower Social Security earnings has a higher replacement rate, which reduces wealth holding at the bottom of the distribution relatively more. If Social Security wealth is added, wealth inequality is higher after the reform, indicating that poor households receive more Social Security benefits than what they would save on their own after the elimination. Abolishing Social Security decreases consumption inequality in the life-cycle models. This can be explained by the fact that the reduction of taxes and the increase of wage rate enables borrowing-constrained poor households to increase consumption while does not affect rich households who save for retirement. However, eliminating Social Security increases consumption inequality in the two-sided altruism model. This is because, Social Security benefit is fixed income and provides an insurance against labor income risk for children who live with their retired parents.

I then look at the overall long-run welfare effect of abolishing Social Security for an unborn agent in the economy. The welfare gain of eliminating Social Security system under impure altruism (22% in equivalent consumption) is smaller than that in pure life-cycle models (24%) mainly due to a smaller increase in aggregate consumption after the elimination. The welfare gain in the benchmark model is much bigger than that in a model with two-sided altruism (-1.3%). In the benchmark model, households have one-sided impure altruism which does not provide much insurance across generations. Besides, the crowding-out effect of Social Security in the benchmark model is bigger. Therefore, as in the vast majority of the life-cycle models, the large negative effect of Social Security on capital accumulation and on consumption smoothing leads to an important reduction in the steady-state welfare.

This paper contributes to the literature that studies the effect of Social Security in a life-cycle framework with intergenerational transfers of bequests or bequest motives. Abel (1985, 1986) focuses on a fully funded Social Security system and abstracts from idiosyncratic income shocks. De Nardi et al. (1999) study the effect of demographics on Social Security in an environment with voluntary bequest motives, abstracting from intergenerational transfers of bequests. Michel and Pestieau (1998) and Caballe and Fuster (2003) focus on the effects of Social Security system on the distribution of altruistic transfers.

The paper is organized as follows. In Sections 2 and 3, I present the benchmark model and the model with two-sided altruism, respectively. The calibration of the model is presented in Section 4. In Section 5, I show the quantitative implications of eliminating Social Security in the benchmark model, in pure life-cycle models without altruism, and in a two-sided altruism model. Brief concluding remarks are provided in Section 6.

2. The benchmark model

The economy is a discrete-time overlapping generations world with an infinitely lived government. There are idiosyncratic earnings shocks which are uninsurable: The only financial instrument is a one-period bond. Households cannot engage in