Research in Economics 70 (2016) 110–121

Contents lists available at ScienceDirect

Research in Economics

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

On the optimal linkage of social security benefits to payroll taxes

Firouz Gahvari [a], Randy Beach [b]

[a] Department of Economics, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA
[b] Department of Economics and Finance, East Tennessee State University, Johnson City, TN 37614, USA

ARTICLE INFO

Article history:
Received 22 November 2015
Accepted 13 December 2015
Available online 21 December 2015

Keywords:
Social security
Pay-as-you-go
Benefit formula
Optimal linkage
Labor supply

ABSTRACT

This paper employs a three period overlapping generations' model to investigate (i) the labor supply effects of the linkage between the benefits of a *pay-as-you-go* social security program and the payroll taxes that finance them and (ii) the nature of the optimal linkage. The main result of the paper is that, for a given *statuary* tax rate, the weights that must be placed on earnings of different periods (in benefit calculation) depend on population and productivity growth rates only. This result implies that the optimal *net* tax rates are not uniform over the life cycle unless the economy is on its steady state golden rule path. Moreover, if the economy is on the golden rule path, the optimal net tax rates are not only uniform but also zero. The paper also demonstrates that, if preferences are additively separable, as more weight is placed on earnings when young labor supply by the young increases while labor supply by the middle-aged decreases.

© 2015 University of Venice. Published by Elsevier Ltd. All rights reserved.

1. Introduction

In the pay-as-you-go social security systems of the US and elsewhere, benefits are usually linked to the recipients' payroll tax payments through a benefit formula. Many studies treat payroll taxes just like other income taxes on labor when studying their effects on labor supply and savings or when calculating the deadweight loss of taxation. Yet this treatment is problematic in that the direct link between the tax payments and benefits is, in part, at an *individual* level and well-understood. This type of linkage is very different from, say, income tax payments wherein the benefits one may receive from the government in return, in terms of public goods or welfare payments, are linked to the tax revenues only at an *aggregate* economy-wide level through the government's budget constraint. Which is precisely why individuals treat both the income tax rates they face and government goods as fixed and independent of each other. This is of course not to say that the aggregate relationship between payroll taxes and benefits is not present in a pay-as-you-go-system. They are and to some extent embedded in the benefit formula.[1] However, what is relevant is that the individual link is there to be noticed by rational taxpayers.

To be sure, many economists have long recognized the link between payroll taxes and social security benefits. See, among others, Browning (1975, 1985), Blinder et al. (1980), Burkhauser and Turner (1985), Feldstein and Samwick (1992), Diamond and Gruber (1999), Liebman et al. (2009) and Liebman and Luttmer (2011). These papers correctly point out that if taxpayers perceive this link, they will not consider the *statuary* tax rate to be the *effective* (or *net*) tax rate. In calculating the effective

[1] Through a "replacement factor".

http://dx.doi.org/10.1016/j.rie.2015.12.002
1090-9443/© 2015 University of Venice. Published by Elsevier Ltd. All rights reserved.

tax rates they face over their life cycles, taxpayers will adjust the legislated rate to take account of the benefits they receive. Some calculate the effective tax rate,[2] while others provide empirical and experimental evidence for taxpayers taking the benefit linkage into account.[3] Kaplow (2015), while recognizing the problem, argues that one might "rationalize" the ignoring of the link on the basis of myopia.[4]

These studies also recognize, quite correctly of course, that because tax contributions of different periods are treated equally for the purpose of calculating social security benefits, while the legislated rate remains constant over time, effective tax rates decline with age. (This follows because the benefit received for a dollar paid in tax will be discounted to a greater extent, and will thus have a smaller present value, the earlier it is paid). However, none of these papers examines the question of the optimal linkage of payroll taxes and social security benefits. Nor do they model the impact of changing the benefit formula on labor supply. These two issues are what the current paper focuses on.

To address these questions, we employ a three-period overlapping generations' model à la Samuelson (1958) and Diamond (1965) *focusing on steady-states alone*. We derive the optimal weights assigned to the contributions of different periods and show that they are in general non-uniform. Interestingly, one would want to assign a higher weight to the earnings of earlier years than later years in the benefit formula as long as net population-plus-productivity growth rate (the "productivity augmented" generalization of Samuelson's biological rate of interest) is positive. This reduces the net payroll tax rates of earlier years. Nevertheless, one still wants the net tax rates to decline with age as long as net population-plus-productivity growth rate exceeds the rate of return on capital. Consequently, the optimal net tax rates over time are zero if and only if the economy is on its *golden rule* path. Regarding the labor supply responses, we prove that one can in fact increase the young's labor supply (who are more numerous in the economy) by assigning higher weights to the earlier period contributions in calculating social security benefits.

Our findings point out to a costless reform of the social security system. Admittedly, this constitutes a limited reform that does not touch upon the many substantial issues confronting the system.[5] Yet, this will be a simple reform at essentially no cost.[6] And it is crucially important to realize that social security reform cannot succeed without convincing the public that the reform will not harm the basic tenet of the program. Nor can a reform succeed if it does not adequately address the entitlement sensibilities of the public. It is natural that the program's history and the recipients' or would-be recipients' contributions to it would lead to formation of such feelings.

2. The model

The model is a three-period version of the standard overlapping generations' model of Samuelson (1958) and Diamond (1965) in the steady state. There are many (identical) persons in each generation. Individuals work in the first two periods of their lives (when young and middle-aged) and retire in the last (when old). Consumption in the last period is provided from savings of the first two periods plus social security retirement benefits. Each person derives utility from consuming a consumption good, c, in all periods of his life, and leisure, ℓ, in the first two periods. The utility function is assumed to be strictly quasi-concave and twice differentiable in all its arguments. It is represented by

$$u = u(c_1, \ell_1, c_2, \ell_2, c_3), \tag{1}$$

where subscripts denote periods.

Each person is endowed with one unit of leisure each period. The population grows at the constant rate of n. The economy is in a steady state with a productivity growth (Harrod-neutral) at the constant rate of g. The (gross of tax) wage of the current young, w, and interest rate, r, are assumed to be determined exogenously (rather than endogenously through a neoclassical production function). One can justify this assumption by an appeal to the international mobility of factors. It helps prevent one to get sidetracked into a discussion of "short term" versus "long term" equilibria (as in Hu, 1979), and as to what may happen to the welfare of individuals on the transitional path to a new steady state.[7] These issues are not germane

[2] Computing effective marginal tax rates for a cross-section of workers in the US in 1983, Burkhauser and Turner (1985) find that the social security tax has in fact been a subsidy for all cohorts except those under 25. Browning (1985) computes an effective tax in much the same manner as Burkhauser and Turner. However, he discounts future benefits at a higher rate, thus reporting higher effective tax rates than the ones reported by Burkhauser and Turner (1985).

Feldstein and Samwick (1992) provide a more elaborate and detailed formulation for such calculations.

[3] Liebman et al. (2009) provide empirical evidence and Liebman and Luttmer (2011) provide experimental evidence.

[4] Diamond and Gruber (1999) note that most of the literature focuses on effects of the level of Social Security Wealth ignoring the effect of the marginal Social Security benefit rate.

[5] We touch on some of the pertinent issues in our "Concluding remarks".

[6] If taxpayers are not rational and completely ignore the linkage, the reform will have no impact. So it either enhances the efficiency of the system or at the extreme will have no impact!

[7] Of course, one can just simply ignore the transitional issues and focus on steady-state welfare maximization as many in the literature do; see Samuelson (1975). One can also justify the steady-state welfare maximization criterion by postulating a social welfare function defined over (undiscounted) average utilities of all future generations. A criterion that poses some interesting philosophical questions in terms of the inclusion of the utility of unborn children, using average versus sum of utilities, and the extent to which the utilities of future generations should be discounted.

Download English Version:

https://daneshyari.com/en/article/984530

Download Persian Version:

https://daneshyari.com/article/984530

Daneshyari.com