Journal of Public Economics 96 (2012) 615–634

Contents lists available at SciVerse ScienceDirect

Journal of Public Economics

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

Consumption, retirement and social security: Evaluating the efficiency of reform that encourages longer careers

John Laitner, Dan Silverman *

University of Michigan, 611 Tappan Ave., Lorch 238, Ann Arbor, MI 48109, United States

ARTICLE INFO

Article history:
Received 22 July 2008
Received in revised form 13 February 2012
Accepted 13 February 2012
Available online 10 March 2012

Keywords:
Life-cycle consumption and labor supply
Age-dependent taxation
Social Security reform

ABSTRACT

This paper proposes and analyzes a Social Security reform in which individuals no longer face the OASI payroll tax after, say, age 54 or a career of 34 years, and their subsequent earnings have no bearing on their benefits. We first estimate parameters of a life-cycle model. Our specification includes non-separable preferences and possible disability. It predicts a consumption–expenditure change at retirement. We use the magnitude of the expenditure change, together with households' retirement-age decisions, to identify key structural parameters. The estimated magnitude of the change in consumption–expenditure depends importantly on the treatment of consumption by adult children of the household. Simulations indicate that the reform could increase retirement ages one year or more, equivalent variations could average more than $4000 per household, and income tax revenues per household could increase by more than $14,000.

1. Introduction

As the U.S. population ages and the moment approaches when Social Security benefit outlays will exceed payroll tax receipts, discussions of Social Security reform naturally focus on the system's solvency. Renewed concern about the Federal deficit has drawn still more attention to Social Security's assets and liabilities. This paper argues that issues of efficiency deserve greater attention as well. The current Social Security rules may generate or exacerbate labor–supply distortions; these distortions may contribute substantially to the system's social cost; and demographic trends may augment their importance. This paper proposes and evaluates a simple Social Security reform aimed at alleviating distortions to private retirement decisions that the current system may create.

The proposed reform would establish a long vesting period (say, 34–40 years of contributions). After vesting, a worker would no longer face the old-age and survivors insurance (OASI) payroll tax, his benefits schedule as a function of retirement age would be fixed, and he would not face any "earnings test." In fact, we would maintain the existing benefit formula, but base it only on earnings prior to the vesting age. Individuals who continue to work after vesting would thus receive a 10.6% payroll tax reduction. To maintain revenue neutrality within the system, there would be a small increase in the payroll tax during the vesting period.[1]

Following the tradition of Auerbach and Kotlikoff (1987) and others, we evaluate this reform in the context of a certainty equivalent life-cycle model. In contrast with that tradition, we estimate the parameters of the model using microeconomic data on earnings, consumption, and retirement. We employ what we think is a novel estimation strategy to recover key structural parameters. The strategy uses both panel data from the Health and Retirement Study (HRS) and pseudo panel consumption expenditure data from the Consumer Expenditure Survey (CEX). Simulations of the estimated model indicate that the proposed reform could raise retirement ages by more than a year, on average; equivalent variations from the reform could average $4000 per household (2005 dollars, present value age 50) or more; and, society's additional income tax revenues could average more than $14,000 per household.

The logic of the proposed reform echoes a literature on age-dependent taxation that points to efficiency gains from using age to target lower tax rates at households with higher elasticities of labor supply.[2] Intuitively, the reform aims to eliminate the substitution effects of Social Security taxes late in life, when labor supply is especially elastic, while leaving other potential distortions of the system unchanged.

To see better how efficiency gains can arise, it helps to know that a standard assumption of our model implies that the income and substitution effects of Social Security taxes offset one another on average. Social Security benefits also generate an income effect, which leads to earlier retirement, and a substitution effect, which leads to later retirement. In the case of benefits, the income effect tends to dominate; the substitution effect is slight because the

* Corresponding author. Tel.: +1 734 764 2447; fax: +1 734 764 2769.
E-mail address: dansilv@umich.edu (D. Silverman).

[1] Similar reforms have been proposed elsewhere. See, for example, Goda et al. (2009) and Burtless and Quinn (2002). This paper is, as far as we know, the first to evaluate the effects of this reform with a model with estimated parameters — see below. A related literature, including Hubbard and Judd (1987), and Hurst and Willen (2007) examines social security reforms that exempt the *young* from payroll taxes. These reforms target the inefficiencies that come from liquidity constraints that affect the young.

[2] See, for example, Kremer (2002), Erosa and Gervais (2002), Lozachmeur (2006), and Weinzierl (2011). Banks and Diamond (2010), provide a summary.

0047-2727/$ – see front matter © 2012 Elsevier B.V. All rights reserved.
doi:10.1016/j.jpubeco.2012.02.005

present value of benefits is quite insensitive to marginal earnings for households with long work histories. On balance, therefore, the existing Social Security system tends to promote earlier retirement.

Our proposed reform eliminates the payroll tax late in careers — but before most households' optimal retirement age — canceling, for many, the tax's adverse substitution effect on work incentives. Although the positive substitution effect from the present system's benefit formula will be eliminated at the same time, its magnitude is smaller. Income effects from both taxes and benefits remain unchanged. On net, we hope to reduce work disincentives from the current Social Security system, taking advantage of the relatively high elasticity of labor supply at the age of retirement to attain significant efficiency improvements.

To quantify the effects of our reform, this paper develops a life-cycle model in which households choose their retirement age as well as their lifetime consumption/saving profile, jobs require full-time work, and retirement is permanent. The benefit to a household of later retirement is greater lifetime earnings; the cost is forgone leisure — and, more generally, lost time at home. A household derives a flow of services from its consumption expenditure and time at home. The service flow, in turn, yields utility through a conventional, concave utility function. Although our baseline model ignores health considerations, we present a second formulation with an insurable chance of disability.

The model is simple. It abstracts, among other factors, from uninsured income risk, uncertain longevity, and liquidity constraints. A benefit of simplicity is that the model offers analytic insights. One of these insights is the prediction of a discontinuous change in expenditure at a household's retirement, a change attributable to the abrupt increase in leisure and the intratemporal complementarity of expenditure and leisure.[3] A number of empirical studies have described a drop in household consumption expenditure at the time of retirement (Banks et al. (1998), Bernheim et al. (2001), Hurd and Rohwedder (2003, 2005), Haider and Stephens (forthcoming), Aguiar and Hurst (2005), Blau (2006), and others). Our analysis shows how to use the magnitude of the drop, which this paper measures from CEX data, as well as age of retirement, measured from the HRS, to identify the model's key parameters in a simple way.[4]

We simulate our estimated model and find potentially substantial behavioral and welfare consequences from reform. We find, for example, that stopping the Social Security OASI payroll tax after a vesting period of 34 years of contributions could lead households to postpone their retirement by a year and a half or more, on average. We calculate that consumers, on average, would pay as much as $4000 (2005 dollars, in present value at age 50) to participate in the post-reform system. When we account for the social gain from income taxes on longer careers, the total social benefit could increase to more than $18–20,000 per household.

Certain assumptions of our model — such as jobs requiring full-time work, the permanence of retirement, the absence or insurability of many forms of risk, and a lack of liquidity constraints — likely amplify the behavioral consequences and efficiency gains from reform.[5] However, we believe that the estimated magnitudes of the gains in our model indicate that this paper's reform is worth further consideration.

This paper joins a large literature aimed at evaluating the effects of Social Security on labor supply. See Feldstein and Liebman (2002) for a review. By applying an explicit life-cycle model, we differ from much of this literature, which seeks reduced form estimates. Implementing a structural model allows us to evaluate the life-cycle effects on retirement and consumption of counterfactual reforms. By estimating the parameters of a fully-specified model, our paper also joins a smaller literature that provides structural estimates of life-cycle models of retirement (see, for example, Gustman and Steinmeier (1986), Rust and Phelan (1997), Bound et al. (2005), French (2005), and van der Klaauw and Wolpin (2005)). Our work is distinguished from this literature by its emphasis on a particular reform and by its use of both earnings and consumption data. Our estimation differs from many recent structural models of retirement in its certainty equivalent approach. Policy simulations, however, often employ such a framework, and we believe that it provides a rich yet tractable formulation — permitting analytic as well as numerical insights.

The organization of this paper is as follows. Section 2 describes our basic model and its formulation with stochastic disability. Section 3 discusses our pseudo-panel data on consumption expenditure, our HRS data on lifetime earnings and retirement ages, and our parameter estimates. Section 4 discusses how the model's parameters are identified, and details our estimation strategy. Section 5 qualitatively and quantitatively analyzes the Social Security reform outlined above. Section 6 concludes.

2. The model

In this section we present the details of our basic model, and provide a sketch of how it generalizes to accommodate uncertain disability. Details of the more general model can be found in Appendix A.

2.1. Basic model

In our model, each household maximizes utility subject to a lifetime budget constraint. We focus on married couples and assume unitary decision-making for each household and no divorce. At a household's inception, both spouses learn their earning power — that is, the lifetime profile of their wage rates. At that time, the wife sets her lifetime labor force participation schedule, and the household chooses fertility and family structure paths. We treat these plans as predetermined when households make their remaining household consumption and labor force decisions. The real interest rate is a constant r; and life spans are certain.[6] We assume that men either work full-time in the labor market or not at all.[7] At the husband's retirement age R_i, both spouses

[3] This non-separability may be interpreted as deriving either from tastes or from the production technology of consumption, including home production. See Section 2.1.

[4] See Section 4, below, for further discussion of identification and a comparison with alternative modeling strategies. We first described our identification strategy in Laitner and Silverman (2005). Hall (2006) develops a related method for estimating the curvature of the utility function. In a similar vein, Chetty (2006) shows how to estimate risk aversion, in part, from the change in consumption associated with a random change in labor supply.

[5] If, for example, we allowed adjustments to labor supply during the vesting period, reactions to the small increase in the payroll tax early in life would counteract efficiency gains from removing the tax late in life. Similarly, raising payroll taxes on the young would exacerbate inefficiencies that derive from liquidity constraints that we do not model.

[6] Some papers assume households face earnings' uncertainty (e.g., Hubbard et al. (1994), Gourinchas and Parker (2002), Scholz et al. (2006)); some assume households learn about their earning abilities (e.g., Guvenen (2007)); and some assume a nonstochastic, representative lifetime profile (e.g., Auerbach and Kotlikoff (1987)). We assume idiosyncratically different lifetime profiles, but no uncertainty about them on the part of households. We view this certainty-equivalent approach as a natural one for an initial evaluation of the proposed reform. If the reform does not generate substantial behavioral or welfare gains in the absence of uncertainty, it is unlikely that adding uncertainty will enhance the gains. In addition, allowing uncertainty would result in much less analytic tractability, a feature of the model that both clarifies identification and reveals the mechanisms behind the behavioral effects of reform. We return to the consequences of these modeling choices in Section 4, when we discuss identification.

[7] See, for example, Rust and Phelan (1997, p.786), Hurd (1996). An indivisible workday is consistent with the fact that U.S. data show little trend in male work hours or participation rates after 1940, except for a tendency toward earlier retirement 1940–80 — e.g., Pencavel (1986), Blundell and MaCurdy (1999), and Burkhauser et al. (1999).