

# A quantitative theory of social security without commitment <sup>☆</sup>

Xavier Mateos-Planas <sup>\*</sup>

*Economics Division, School of Social Sciences, University of Southampton, UK*

Received 4 February 2006; received in revised form 18 March 2007; accepted 23 May 2007

Available online 26 July 2007

---

## Abstract

This paper investigates the determination of social security within a general equilibrium, overlapping-generations model where agents live for many periods, and replacement rates are determined through voting in each period by forward looking agents. The distinctive feature is the study of Markov equilibrium policy outcomes which do not rest on a commitment mechanism. Versions of the model are calibrated to the US economic, policy, and demographic conditions. Even in the absence of commitment, the policy preferences of tax-paying working-age voters sustain a positive level of retirement benefits. This follows because the current choices about social security will have, at the time when the current voters will retire, a positive impact on the political support for social security and on the returns to savings. On the other hand, the projected decline in the U.S. population growth rate causes the replacement rate and the tax rate to decline. This quantitative response without commitment differs from that in the case when policies are committed at time zero.

© 2007 Elsevier B.V. All rights reserved.

*JEL classification:* E1; E6; H2; H3

*Keywords:* Markov policies; Population ageing; Social security

---

## 1. Introduction

Unfunded social security systems can be found in virtually all major developed economies. The size of social security remains large, with estimated average replacement rates near 40% in the U.S., and well in excess of 70% in some European countries. The anticipated demographic ageing in the U.S. and, specially, in Europe questions the viability of these pension schemes though.<sup>1</sup>

This paper's main objective is to further our understanding into why unfunded social security exists. Since the political support for public pensions can shift at any time, a challenge is to explain why they are sustained by voters who are too young to directly reap their benefits. Most literature has evaded this question by building on some form of commitment or reputation mechanism so that young voters are in effect voting on their own future pensions. In

---

<sup>☆</sup> Funding from the ESRC through grant RES-000-22-0047 is gratefully acknowledged. Thanks for comments of A. Erosa, M. Faig, L. Fuster, and seminar participants at the University of Toronto 2005, Universitat Autònoma Barcelona 2005, Universitat Pompeu Fabra 2005, SUNY at Stony Brook 2005, UCL-IRES at Louvain-la-Neuve 2005, the Econometric Society World Congress 2005 in London, and the University of Durham 2006.

<sup>\*</sup> Economics Division, School of Social Sciences, University of Southampton, SO17 1BJ, UK. Tel.: +44 2380 595669.

*E-mail address:* fxmp@soton.ac.uk.

<sup>1</sup> The current ratio of the 65-and-over population to the 20-to-64 population is 0.21, up sharply from 0.14 a half-century ago. The Social Security Administration projects that this ratio will rise to 0.35 in 2030 and 0.43 by 2080. For Europe, according to Eurostat's baseline demographic projections, the old-age dependency ratio (60-and-over to 20–59 population), currently averaging 0.37, is expected to rise substantially up to 0.51 in 2020 and nearly double to 0.72 by 2050, with Spain, Italy and Ireland facing the most severe pressures.

contrast, the present paper tackles the question head on by focusing on the plausibly realistic situation where political decisions on pensions are made periodically and unrestricted by past commitments. Therefore young voters today understand that their pensions will be determined in future elections. Social security transfers are self-enforced and, in this sense, arise and be maintained naturally.<sup>2</sup> A second objective is to begin exploring how changes in the age structure of the population will influence the social security system. I will study the quantitative implications of a fall in the population growth rate, with and without commitment.

The analysis is based on the properties of the preferences over policies held by voters in different age groups. These policy preferences will be characterised within the framework of a general equilibrium overlapping-generations model where agents live for many periods. More specifically, the economy is represented by the standard neoclassical model of capital accumulation, with households who make rational decisions on savings and labour supply, and a government that implements fiscal policy. There is a pay-as-you-go social security system which is funded by a flat tax rate on labour income. The system's benefits and the labour tax reflect the aggregation of these tax preferences through a political process. This investigation will focus on a majority voting setting for this process whereby the preferences of a specific age group dictate the policy choices. One distinctive characteristic of this paper is that the Markov politico-economic equilibrium introduced by [Krusell et al. \(1997\)](#) is adapted to study social security. Hence households vote sequentially over time taking into account the consequences of current policy choices for future policy choices, given the current state of the economy and policies. For comparison purposes, I also study the alternative assumption made in existing literature that there is a commitment (or reputation) mechanism in place and voters behave as though voting effectively takes place once and for all at time zero.

Economic and fiscal policy outcomes are determined endogenously as a fixed point of the equilibrium mapping for a linear-quadratic approximation of the economy. Attention is restricted to steady-state equilibria. The model is first calibrated with exogenous social security policies to U.S. observations on values of economic variables, the average social security replacement rate, and the population growth rate. On this numerical benchmark, two main exercises are conducted. The first and central exercise seeks calibrating the model to match endogenous policy outcomes under the assumption of sequential voting without commitment. The second exercise analyses, on the calibrated setup, the effects on social security of a shift in the population growth rate consistent with predicted trends for the US over the coming decades. For comparison purposes, these experiments are also carried out under the assumption of time-zero voting with commitment.

The main finding is that positive social security pensions can emerge in an efficient economy even in the absence of any form of commitment to future pensions. More specifically, with a young politically decisive group, voting without commitment can match a realistic level of social security. This is true although the pivotal agent does not reap direct gains from the pension benefits she supports. The explanation is that the current social security transfers will have a positive influence on future social security benefits and the returns to savings. The effect on the rate of return is standard and follows from the negative consequences of the transfers system on aggregate savings (i.e., the crowding out effect). The effect on future policies is less standard and has two sources. The first is that today's political support to a rise in social security taxes increases the savings of the young generations who will consequently be left with a higher level of assets in the future when they will become the middle aged influential voter. At that time, it will be in their interest to sustain social security as a way to bolster the return to capital in their retirement age. The second source is that the fall in aggregate capital that today's social security brings about will reduce the wage rate and thus the direct cost of social-security taxation for the future working-age voters. Each of these two channels renders the idea that voting is strategic in a dynamic sense: You vote today so as to influence future voter's choices. Naturally, there is no room for this type of mechanism when there is commitment to future policies.<sup>3</sup>

Regarding the other issue dealt with in this paper, the predicted reduction in population growth affects the size of social security. There is a negative general equilibrium macroeconomic effect as it bears on factor prices and the perceived costs and benefits to the transfers system. The lower population growth causes social security to decline. The quantitative response appears to be somehow sharper under the non-commitment assumption distinctive of the present paper than under the commitment case characteristic of previous works. Nonetheless, this outcome must be interpreted with some caution since the two situations may not be directly comparable.

The main contribution of this paper is the analysis of social security without commitment in a general equilibrium model with fully rational agents and a considerably rich demographic structure. A body of quantitative research, in

<sup>2</sup> Here I am borrowing some of the language in [Esteban and Sakovics \(1993\)](#). [Krusell and Ríos-Rull \(2003\)](#) are also of the view that the absence of commitment is a fair representation of actual policy-making.

<sup>3</sup> With commitment, it is as if today's voters do directly determine the future policy.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات