



# Parametric pension reform with higher retirement ages: A computational investigation of alternatives for a pay-as-you-go-based pension system<sup>☆</sup>

Serdar Sayan\*, Arzdar Kiraci

*Department of Economics, Bilkent University, 06533 Ankara, Turkey*

Accepted 12 June 2000

---

## Abstract

This paper discusses parametric reform options to control losses generated by a publicly managed pay-as-you-go (PAYG) pension system under alternative deficit reduction (reform) strategies involving changes in contribution and replacement rates and statutory retirement ages. Two different problems corresponding to different pension reform strategies are considered using computational techniques. The techniques are illustrated through exercises employing data for the financially troubled pension system in Turkey. © 2001 Elsevier Science B.V. All rights reserved.

*JEL classification:* C61; C63; H55; J26; J11

*Keywords:* Pension reform; Computational methods; Solution algorithms

---

---

<sup>☆</sup>The authors would like to thank seminar participants at Bilkent University Economics Department and colleagues attending the Fifth International Conference of the Society for Computational Economics in Boston for useful comments and discussions. Comments by two anonymous referees were extremely helpful and are greatly appreciated but the responsibility of any errors and omissions that might have remained belongs to the authors.

\* Corresponding author. Tel.: +90-312-290-2071; fax: +90-312-266-5140.

*E-mail address:* sayan@bilkent.edu.tr (S. Sayan).

## 1. Introduction

Publicly managed pension systems providing old-age or pension insurance coverage, face financial difficulties in many countries across the world. Most of these systems are run as pay-as-you-go (PAYG) schemes requiring pension payments to current retirees to be financed out of contributions collected from currently active workers and their employers. The primary reason these systems face financial difficulties is the increasing ratio of retirees to workers (the dependency ratio), most typically caused by the natural aging of population. Following from increasing life expectancies and declining fertility rates over time, population aging is essentially a demographic phenomenon and cannot be controlled by pension authorities or policy makers. Unless the resulting increases in dependency ratios can somehow be checked, pension balances will continue to deteriorate, eventually causing sizable deficits.<sup>1</sup> Avoiding such deficits requires controlling dependency ratios through changes in statutory entitlement ages (or minimum retirement ages) and/or adjustments in the values of contribution and replacement rates.<sup>2</sup>

A parametric pension policy reform, as it is sometimes called (Chand and Jaeger, 1996), involves changing the existing values of pension program parameters within politically and demographically acceptable limits so as to prevent the size of pension deficit from exceeding tolerable levels determined by governments. Such a reform may involve once-and-for-all as well as gradual changes in the values of contribution and replacement rates. However, the statutory retirement age is typically increased gradually through a predetermined time path. Regardless of the way they are introduced, new parameter values are expected to be compatible with the targeted level of deficit and to allow for demographically realistic contribution and retirement periods. Because the new parameters would be picked by policy makers, the political feasibility of reform would also require avoiding configurations which might radically undermine the living standards of working and retiree populations.<sup>3</sup> So, for policy makers to make

---

<sup>1</sup> High dependency ratios have already begun to challenge the financial sustainability of publicly run pension schemes in many countries (particularly, members of the OECD) forcing policy makers to take measures to curb the growth in pension deficits (Kohl and O'Brien, 1998).

<sup>2</sup> Contribution rates are payroll tax rates by which contributions (or old-age insurance premiums) are collected, and replacement rates are those that tie pension payments to wages/salaries earned prior to retirement.

<sup>3</sup> The availability of configurations might further be restricted by additional constraints and different priorities assigned to various outcomes of reform. Within this context, the timing of reform relative to election cycles and the implied distribution of the burden between the working young and retired elderly may be important considerations for policy makers in deciding whether or not a proposed configuration should be legislated. This issue has been considered in an earlier version of this paper presented at the Fifth International Conference of the Society for Computational

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