

The logical sustainability of the pension system

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SUMMARY

Introduction

Logical sustainability of pension systems with realistic hypotheses respect to the demographic aspect

Definitions

A - What is the logical sustainability of pension systems

B – How pension system demography can be represented

Sustainability indicators and conditions

A – Model structure and formalization of evolution equations of assets and pension liability

B – Necessary and sufficient condition of sustainability

C – Further conditions of pension system sustainability

Introduction

This paper analyzes the issue of pension system sustainability in a logical mathematical key with great relevance to the rules of the demographic aspects. A mathematical formalization of a defined contribution pension scheme in a partially funded framework is given. In this framework a demographic representation of pension system collectivity, not based on fictitious assumptions but founded on actual reality, is used.

Logical and mathematical conditions of sustainability, which are deduced by evolution equations of differential type, are given to control the pension system

The **logical sustainability of the pension system** (Angrisani, 2008) is the sustainability founded on a logical mathematical model which formalizes the pension system state and defines certain rules (**by means of control variables**) to control its stability. This means to define sustainability indicators (derived by mathematical relationships) on which control variables and mechanisms can be activated.

Demographic Trends

The demographic structure of population strongly influences the management of the pension system.

In the last decades demographic trends observed in some countries of western area point out a pension system situation that can not be managed over time according to a pure PAY AS YOU GO financial scheme.

So a management model of different type is necessary to obtain the sustainability objective for a pension system.