

ABSTRACTS

Workshop on Developments in Pension Design and Investment Modelling

WEDNESDAY

Jennifer Alonso Garcia

Title:

Assessing Public Pensions Using Risk Measures: Pay-As-You-Go versus Mixed Schemes

Abstract:

Pay-as-you-go (PAYG) pension systems are heavily affected by demographic risks. To mitigate the financial burden, mixed pension schemes that combine elements of funding and PAYG have been proposed. In this paper, we introduce a mixed scheme framework designed for a shrinking working-age population under a defined benefit scheme. We evaluate its performance using non-life risk measures such as the one-year ruin probability and the Value at Risk of the accumulated deficits over time. We also examine the implications of guaranteeing a return of zero on the investments within the funding component. Furthermore, we explore the creation of a buffer fund that invests part of the capital in the financial markets, thereby alleviating the financial pressures of the PAYG part. Our findings indicate that, while the proposed mixed framework does not hedge against demographic risk, it enhances the financial health of the system and delays the need for pension reforms as a result. This is joint work with María del Carmen Boado-Penas (Heriot-Watt University) and Julia Eisenberg (TU Wien).

Pierre Devolder

Title:

Optimal Design and fairness of mixed PAYG and fully funded pensions schemes

Abstract:

In many countries, traditional collective state pension schemes were mainly organized on a PAYG basis with limited compulsory fully funded solutions. Aging put a pressure on these PAYG schemes, motivating on the one hand deep reform of first pillars and on the other hand development of occupational pension plans. In this presentation, we will first present various challenges when changing the PAYG level, in order to improve simultaneously sustainability, inter and intra generational fairness. In particular, the importance of taking into account socio economic disparities in terms of life expectancy

will be addressed. In a second part we will analyze possible connectivity between PAYG and fully funded pensions within a mixed philosophy in order to safeguard pension adequacy.

Torsten Kleinow

Title:

Optimal benefits, taxation, and asset allocation for a PAYG system with reserve fund under equity, longevity, and unemployment risks

Abstract:

We develop a model to optimally control a PAYG pension system with a reserve fund under equity, longevity, and unemployment risks. We investigate the effect of these stochastic factors on the optimized taxation, benefits, and asset allocation, and compare PAYG systems with and without a reserve fund in terms of expected utility and optimal policies. The reserve fund improves outcomes for both the retired and working population, even when a reserve fund needs to be established and capitalized to a target level. This indicates that incorporating a reserve fund benefits stakeholders while keeping the pension system design largely intact.

Kris Boudt

Title:

Main findings of a strategic basic research project on improving pillar II and III in Belgium

Abstract:

We have studied pillar II and III solutions in Belgium under a strategic basic research project in collaboration with a number of stakeholders. The goal of this presentation is to summarize the main findings and challenges of the research.

Ann Verlinden

Title:

The Promise of a Guarantee in the Belgian Second Pillar: Protection or Constraint?

Abstract:

This presentation explores the dual nature of the legal minimum return guarantee in Belgium's second-pillar pension system. While the guarantee fosters trust and stability, it also imposes constraints on investment flexibility and return potential. Drawing on

recent data and case studies from industry-wide pension funds, the session examines how guarantees shape investment strategies, risk-sharing mechanisms, and long-term benefit outcomes. The analysis highlights the trade-offs between protection and performance, and argues for a balanced approach that safeguards members while enabling adequate retirement income through controlled risk-taking.

Cédric Bruyninckx

Title:

Transparency and Pension Tracking in Belgium: Legal Framework, Sigedis and Pension Projections

Abstract:

Belgium has emerged as a global frontrunner in pension tracking, transparency, and information provision, thanks to recent legislative developments and the expanded role of Sigedis. This presentation will explore the evolution and current implementation of the Belgian Transparency Act, highlighting how it enhances access to supplementary pension information. Special attention will be given to the development of the Belgian Pension Tracking System and Sigedis' role in consolidating and communicating pension data. As a *capita selecta*, the presentation will delve deeper into the Royal Decree on Pension Projections, focusing on the standardized financial and actuarial assumptions required for calculating mandatory pension projections.

Artemis Panagiotopoulou

Title:

Exploring the practical application of optimal asset allocation frameworks within the fiduciary management of Greek public pension funds.

Abstract:

Grounded in real-world experience managing over €1 billion in institutional assets, the presentation highlights how theoretical models—such as risk budgeting, scenario analysis, and long-term strategic allocation techniques—are translated into effective portfolio decisions. Special focus will be placed on integrating macroeconomic outlooks with quantitative asset allocation tools, defining portfolio structure under regulatory constraints, and selecting investment managers within a defined optimization framework. The discussion also touches on behavioral and governance challenges that arise in aligning model-driven strategies with real-world stakeholder expectations.

John Armstrong

Title:

Collective Pensions in the UK

Abstract:

The first collective defined contribution pension scheme in the UK was launched in October 2024. This talk will look critically at the design of this scheme and compare its effectiveness with an alternative approach designed around a simpler tontine structure. I will argue that the collective pension designs currently allowed for in UK legislation are overcomplex introducing significant and unnecessary risks which reduce economic efficiency. Simple designs can achieve close to optimal performance while being easy for scheme members to understand.

Carole Bernard

Title:

Addressing Adverse Selection in Tontines and Long-term Care

Abstract:

We propose a novel tontine design to mitigate adverse selection. The first tontine we consider is a standard survivor fund, where participants split the pool equally at maturity. It is not attractive to people with health issues. We then introduce a long-term care (LTC) allocation, making it more attractive to high-mortality-risk individuals. We propose two designs of tontines that lead to a separation of the risks and thus removing the need of underwriting and revealing private information about health. Our model reduces adverse selection in tontines and in long-term care insurance while cutting administrative costs. Theoretical and numerical analyses support the effectiveness of the proposed design. This is joint work with Mohammad Abou Daya (Vrije Universiteit Brussel).

THURSDAY

Larry Kotlikoff

Title:

Economics-Based Personal Financial Planning

Abstract:

Economists have spent a century developing the equations of personal finance -- equations that govern optimal household saving, investment, insurance, housing, retirement, pension, tax, bequests, etc. The fathers of personal finance theory include Irving Fisher, John von Neumann, Oskar Morgenstern, Harry Markowitz, William Sharpe, James Tobin, Menachim Yarri, Paul Samuelson, and Robert Merton. Unfortunately, the work of this pantheon of financial scientists is nowhere to be seen in the conventional financial advice delivered every day by financial institutions and advisors to households around the world. Worse, what is delivered, namely conventional financial advice -- is at complete odds with economic theory. This is no accident. Conventional financial planning comprises a well honed bait and switch designed to gather AUM -- assets under management -- on which one can charge a fee. Jointly solving the equations of finance is no minor task. But MaxiFi Planner -- the culmination of 32 years of advanced economics computational engineering -- delivers economics-based financial planning, solving the entire panoply of personal financial equations inside a second.

George Simeonidis

Title:

Public Pensions and Implicit Debt: An Investigation for EU Member States

Abstract:

Implicit pension debt is attracting increasing attention worldwide as a driver of fiscal dynamics, operating in parallel to the (explicit) National Debt. A prudent examination of a state's fiscal prospects should ideally encompass both, with due attention paid to the special features of each kind of debt. The reports of the EU Ageing working group, produced and published every three years are used to derive estimates of the stock of outstanding implicit pension debt from flows of projected deficits. This can be performed for all European member states and derives conclusions on the evolution of pension debt and its correlation to the external debt. The presentation concludes that producing comparable estimates of IPD should become an important input in EU policy discussion.

Tom Pohlschmidt

Title:

Sustainability-Linked Debt, Capital Structure, and Endogenous Default

Abstract:

In a dynamic structural framework incorporating sustainability-linked bonds (SLBs) and carbon tax/subsidy mechanisms, we examine perpetual debt financing under sustainability targets. SLBs function like conventional bonds but carry additional obligations if sustainability targets are unmet. Our analysis shows that SLBs reduce sensitivity to changes in default policy, thereby stabilizing debt dynamics. These effects collectively bolster firm value. Moreover, SLB financing can reduce a firm's Weighted Average Cost of Capital (WACC). Our findings highlight the potential for SLBs to align environmental objectives with improved financial outcomes for firms.

Konstantinos Nikolaou

Title:

Greek Pension Funds - non compulsory case: Past/Present. Future?

Abstract:

This talk reviews the evolution of the Greek social security system, the rise of IORPs in Greece, and their diversity across Europe. It highlights the impact of Law 5078/2023 on Greek IORPs and offers a brief outlook on their future role in the Pension system.

Panos Tsakloglou

Title:

Auxiliary pension reform in Greece

Abstract:

Like most developed countries, Greece is currently experiencing rapid population ageing. This has adverse effects on social insurance that, until recently, was exclusively distributive, in both of its components (main and auxiliary pensions). In 2021 a reform was introduced that is gradually transforming the auxiliary pillar of the system from a distributive to a fully-funded one. The paper provides an overview of the pension landscape in Greece, outlines the main components of the reform and attempts to provide estimates of its impact on growth, employment, fiscal revenues, public debt and future pension income of young workers affected by the reform.