

SEMINARIO ALEATORIO 457

OPTIMAL CASH TRANSFERS AND MICROINSURANCE TO REDUCE SOCIAL PROTECTION COSTS

RESUMEN:

Design and implementation of appropriate social protection strategies is one of the main targets of the United Nation's Sustainable Development Goal (SDG) 1: No Poverty. Cash transfer (CT) programmes are considered one of the main social protection strategies and an instrument for achieving SDG 1. Targeting consists of establishing eligibility criteria for beneficiaries of CT programmes. In low-income countries, where resources are limited, proper targeting of CTs is essential for an efficient use of resources. Given the growing importance of microinsurance as a complementary tool to social protection strategies, this study examines its role as a supplement to CT programmes. In this article, we adopt the piecewise-deterministic Markov process introduced in Kovacevic and Pflug (2011) to model the capital of a household, which when exposed to proportional capital losses (in contrast to the classical Cramér-Lundberg model) can push them into the poverty area. Striving for cost-effective CT programmes, we optimise the expected discounted cost of keeping the household's capital above the poverty line by means of injection of capital (as a direct capital transfer). Using dynamic programming techniques, we derive the Hamilton-Jacobi-Bellman (HJB) equation associated with the optimal control problem of determining the amount of capital to inject over time. We show that this equation admits a viscosity solution that can be approximated numerically. Moreover, in certain special cases, we obtain closed-form expressions for the solution. Numerical examples show that there is an optimal level of injection above the poverty threshold, suggesting that efficient use of resources is achieved when CTs are preventive rather than reactive, since injecting capital into households when their capital levels are above the poverty line is less costly than to do so only when it falls below the threshold. This is a joint work with Pablo Azcue, Corina Constantinescu and Nora Muler.

References: [1] Kovacevic, R. M. and G. C. Pflug (2011). Does Insurance Help to Escape the Poverty Trap? — A Ruin Theoretic Approach. *Journal of Risk and Insurance* 78 (4), 1003–1027.

Presentado por



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José Miguel Flores-Contró holds a PhD in Actuarial Science from the Université de Lausanne (Switzerland), a Master's degree in Intelligent Interactive Systems (Computer Science) from Universitat Pompeu Fabra (Spain), and a Bachelor's degree in Actuarial Science from Universidad Nacional Autónoma de México (Mexico). After completing his undergraduate studies, José worked as a P&G actuarial analyst at a leading actuarial consulting firm in Mexico City. Following his doctoral work, he worked for an actuarial consulting firm in Switzerland. His research interests lie at the intersection of inclusive insurance, ruin theory, and development economics. José is currently working as a postdoctoral researcher at the Institute of Statistics, Biostatistics and Actuarial Sciences (ISBA) of the Université catholique de Louvain (UCLouvain) in Belgium, where his research focuses on risk sharing and risk transfer within the context of inclusive insurance.

Besides professional interests, José is a keen runner, a reading enthusiast and aspires to become a football coach.

Detalles del evento:

Fecha: Jueves 4 de junio, 2026

Hora: 13:00 (Hora Centro de México)

Ubicación: salón 109

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