# Optimal retirement decisions with labor: a calculus of variations approach

Cody Hyndman

Concordia University

We consider optimal annuitization, or voluntary retirement, decisions for an individual who derives utility from consumption and leisure in the framework of utility maximization. The optimal investment portfolio decisions, labor participation rates, consumption rates, and timing of annuitization and full retirement are explored. We consider different stochastic models of the underlying risk factors and subject to state and control constraints. We employ a calculus of variations approach to conjugate duality to characterize the solution in terms of solutions of backward stochastic differential equations.

In Special Session 61 on Recent Advances in Mathematical Finance and Related Fields at the Mathematical Congress of the Americas 2025.

MCA 2025 internal code: SS61-T05