

2nd PBSS Colloquium
21-23 May 2007
Helsinki, Finland

Topic D. Projection Methods for Pension and Social Security Financing

Valuation of intergenerational transfers within funded collective pension schemes

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This paper applies contingent claim analysis to value pension contracts for real-life collective pension plans with intergenerational risk sharing and offering DB-like benefits. We rewrite the balance sheet of such a pension fund as an aggregate of embedded generational options. This implies that a pension fund is a zero-sum game in value terms, so any policy change inevitably leads to value transfers between generations. We explore intergenerational value transfers that may arise from a plan redesign or from changes in funding policy and risk sharing rules. We develop a stochastic framework which accounts for time-varying investment opportunities and computes the embedded generational options. Changes in the values of the generational options enable us to evaluate the impact of policy modifications in the pension contract with respect to intergenerational transfers and redistribution. We find that a switch to a less risky asset mix is beneficial to elderly members at the expense of younger members who lose value. A reallocation of risk bearing from a plan with flexible contributions and fixed benefits to a plan with fixed contributions and flexible benefits leads to value redistribution from older plan members to younger ones.