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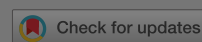
# Downside Risk Management of a Defined Benefit Plan Considering Longevity Basis Risk

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Pages 68-86 | Published online: 14 Feb 2014

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# Notes

Normal contribution or service cost,  $C$ , is the cost of additional benefits earned by employees for their service each year, which depends on salary levels, employee turnover and mortality. However, the ultimate cost is usually uncertain. To measure this cost, in practice, pension firms often first estimate their future pension obligations using actuarial assumptions and then attribute these obligations to service years to derive an annual service cost (Competition Commission [2007](#)). In our example, we calculate future pension obligations based on the retirement benefit  $B$  and then determine the optimal annual normal contribution  $C$  with our proposed model.

Available at <http://www.mortality.org> or <http://www.humanmortality.de> (data downloaded on November 22, 2011).

Withdrawals from DB pension plans are often not permitted, or if permitted are subject to excise taxes. As a robustness check, we resolve our optimization problems with and without hedging at a higher withdrawal penalty factor of  $\psi_2=0.5$  that equals the prevailing excise tax rate in the United States. Overall, the results confirm the findings based on the withdrawal penalty factor of  $\psi_2=0.2$  shown in this article. To conserve space, w



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Scenario generation and stochastic programming models for asset liability management

Source: European Journal of Operational Research

The Blind Side: Managing Downside Risk in Corporate Defined-Benefit Plans

Source: The Journal of Portfolio Management

Stochastic investment returns and contribution rate risk in a defined benefit pension scheme

Source: Insurance Mathematics and Economics

Efficient Gain and Loss Amortization and Optimal Funding in Pension Plans

Source: North American Actuarial Journal

Optimal investment decisions with a liability: The case of defined benefit pension plans

Source: Insurance Mathematics and Economics

Pension funding incorporating downside risks

Source: Insurance Mathematics and Economics

Living with Mortality: Longevity Bonds and Other Mortality-Linked Securities

Source: British Actuarial Journal

Mortality Regimes and Pricing

Source: North American Actuarial Journal

Optimal risk management in defined benefit stochastic pension funds

Source: Insurance Mathematics and Economics

Managing Capital Market and Longevity Risks in a Defined Benefit Pension Plan

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Mortality Portfolio Risk Management

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Stochastic pension fund control in the presence of Poisson jumps

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Asset/Liability Management for Pension Funds Using CVaR Constraints

Source: The Journal of Risk Finance

Coherent mortality forecasts for a group of populations: An extension of the lee-carter method

Source: Demography

Longevity Advances in High-Income Countries, 1955–96

Source: Population and Development Review

Pricing Mortality Securities With Correlated Mortality Indexes

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Portfolio Risk Management with CVaR-Like Constraints

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Securitization of catastrophe mortality risks

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Optimal pension funding dynamics over infinite control horizon when stochastic rates of return are stationary

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Securitization, structuring and pricing of longevity risk

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