

Research Reports and Articles: Use of Option Pricing Techniques for Insurance Liabilities (and Assets)

For the IASB/FASB Joint Board
Educational Session
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Option Pricing Research Papers

- Classic option pricing articles
- Selected insurance related option pricing articles
- General option pricing articles

Classic option pricing research papers – still referenced frequently today

- *The Pricing of Options and Corporate Liabilities*, Fischer Black and Myron Scholes, 1972
 - Black-Scholes option valuation methodology– basis for much continuing research.
- *Option Pricing: A Simplified approach*, John Cox, Stephen Ross, and Mark Rubinstein, 1979
 - Basis for lattice based approach to measuring options
 - Will become Black Scholes' continuous formula with by using an infinite number of infinitesimally short time periods

Newer research

Deflators Demystified, a 2007 report by Milliman

Deflators are a tool used primarily to achieve market-consistent valuations of assets and liabilities. More specifically, a deflator can be considered as a stochastic discount function through which a set of realistic scenarios may be used in order to produce a *market-consistent (or risk-neutral) valuation*.

Recent insurance research

- Sart, *Fair Valuation of Universal Life Policies via a Replicating Portfolio*, 2010
- Gatzert, *Implicit Options in Life Insurance: An Overview*, 2009
- Daul and Vidal, *Replication of insurance Liabilities*, 2009
- Gatzert and Schmeiser, *Assessing the Risk Potential of Premium Payment Options in Participating Life Insurance Contracts*, 2008

Other Research

- Milevsky, Promislow, and Young, *Killing the Law of Large Numbers: Mortality Risk Premiums and the Sharpe Ratio*, 2006
- Ulm, *The Effect of the Real Option to Transfer on the Value of Guaranteed Minimum Death Benefits (GMDBs)*, 2006
- O'Brien, *Asset Pricing of Insurance Loss Liabilities: Some Examples*, 2004

Other Research

- Shaun Wang, *A Universal Framework for Pricing Financial and Insurance Risks*, 2002 (developer of the Wang Transform)
- Jensen, Jorgensen, and Grosen, *A Finite Difference Approach to the Valuation of Path Dependent Life Insurance Liabilities*, 2001
- Reisman, *Valuation of Life Insurance Contracts with Surrender Options*, 2000

Other Research

- Großen and Jørgensen, *Fair Value of Life Insurance Liabilities: The Impact of Interest Rate Guarantees, Surrender Options, and Bonus Policies*, 1999
- Jung and Ramezani, *Insurance and Reinsurance Contracts as Complex Derivatives: Application to Multiple Peril Policies*, 1999
- Smith, *The Life Insurance Policy as an Options Package*, 1982