

Hedging Catastrophic Risks In the Property Insurance Industry

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Recent catastrophes have prompted insurers, regulators, legislators, mortgage bankers, academics, and other policy makers to question the ability of the property insurance industry to manage catastrophic risks. Because major catastrophes are rare and generate large losses, they are not adequately managed by traditional actuarial methods. An alternative to improve catastrophic risk management is proposed.

Insurance premiums are invested with the objective of providing the highest rate of return available, while simultaneously providing a high probability that liabilities to policy holders will be met. When catastrophic losses arise, insurance portfolios may be inadequate to meet the claims.

This dissertation proposes a strategy to hedge catastrophic losses. By hedging, the property insurance industry can increase the probability that their investment portfolios can absorb the losses from a catastrophe. This strategy involves construction related investments that benefit from the increased demand for these services and products following a catastrophe. These investments are referred to as catastrophe sensitive investments.

An insurance firm is modeled to investigate asset allocations between conventional bond assets and catastrophe sensitive investments. Policyholders' surplus is examined under several economic scenarios relevant to catastrophic risks. Catastrophe sensitive investments improve the policyholders' surplus account outcomes in catastrophic states of nature for most scenarios examined. Barriers to implementing the strategy presented by current regulations and practices are also discussed.

Keywords: property insurance, catastrophe, hedge, risk management, investments, solvency, risk based capital, asset liability management, asset allocation, portfolio management, stocks, bonds, catastrophe sensitive investments