

An Analysis of the Market Price of Cat Bonds

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Abstract

Existing models of the market price of cat bonds are often overly exotic or too simplistic; we intend to offer a model that is grounded in theory yet also tractable. We also intend for our analysis of cat bond pricing to shed light on broader issues relating to the theory of risk pricing. By analyzing several years of cat bond prices “when issued”, we describe the market clearing issuance price of cat bonds as a linear function of expected loss, with parameters that vary by peril and zone. The results provide a compact form of describing market prices of cat bonds and thus provide a framework for measuring differences in prices across various perils and zones; the results also allow us to measure changes in the price function over time. The results also suggest an overarching theory of risk pricing, in which price depends on two factors: the first factor is the required rate of return on downside risk capital in a portfolio context, and the second factor is the uncertainty of the estimate of the expected loss.

Keywords: Cat bonds; Insurance Linked Securities (ILS); market price of risk; reinsurance