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Non-Parametric Risk Capital Estimation of One-Year Pricing Risk for Enterprise Risk Management in General Insurance

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The American Property and Casualty insurance industry is moving towards embracing the value added to business by Enterprise Risk Management. The currently proposed Own Risk and Solvency Assessment, ORSA, framework offers insurers a principals-based approach in identification and quantification of risk, but leaves the specifics of methodology for calculating risk capital open-ended.

This paper offers an estimate of Pricing Risk for general insurance risk capital based on a firm's historical loss behavior as well as current performance. First, the theory and motivation for the ideas are outlined. Then a practical methodology is presented along with comparisons to alternative means of calculating risk capital, including rating agencies' methods. A numerical example is presented to demonstrate the theory in action. Finally, applications of this work to a Dynamic Financial Analysis model to satisfy solvency requirements are presented.