SYNOPSIS

TITLE: Pricing Cyber Security Insurance using Copulas

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Key words: Cyber-Security, Cyber-Insurance, Pricing framework, Copula, Data, Risk management

Purpose of your paper: Present a model to price cyber-security.

Synopsis:
Recently, the cyber-crime has been increasing and costing businesses enormous amounts of money. Just today (February 21), Wall Street Journal reported that Verizon has knocked out $350 million off their previous deal because of breaches at Yahoo. Businesses are looking to insurance companies to cover such losses. For insurance companies, pricing cyber-risk poses several challenges.

First is the estimation and modeling the losses. We will use Copula methodology to model joint multivariate risks. We will build on the framework for pricing the risk articulated in Herath and Herath (2007), and Mukhopadhyay, et. al. (2006). Herath and Herath use Gumbel Copula to model the risks while Mukhopadhyay uses Gaussian Copula. We will investigate using different distributions and Copulas that we believe more accurately represent the data.

The second challenge is obtaining sufficient historical data to determine the copula. For the specific insurance exposure discussed in the paper, actual virus data was available, and we use the same data. However, for other exposures, data may not be readily available. We discuss possible strategies for obtaining a variety of data based on risk management practices from other types of insurance.

Note: If you are not presenting a paper for this Colloquium, please include as much detail as possible in your Synopsis (maximum three pages) to enable delegates to prepare for your session.