An Empirical Map of Enterprise Risk Space for Life Insurers: Implications for ERM

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Abstract

In this paper we use accounting data of the life insurance industry in 2003 to examine the empirical relationship between the spectrum of enterprise risks and the spectrum of enterprise risk management (ERM) tools of this industry. We find asset and product risk management tools appropriately interrelated with asset and product risks, but little matching interrelationship between operational risks and tools despite significant deployment of variables to proxy such risks and tools. Following earlier work (Baranoff and Sager, 2006), we design maps of risk and ERM tool space by extracting over 150 risk variables and over 70 ERM variables from insurer annual statements. We group the risk variables into clusters of thematically related risks through cluster analysis to determine the groups and through factor analysis to identify the themes. We similarly group the ERM tools. We interpret the risk clusters as a map of risk space and the ERM tool clusters as a map of tool space. We then ascertain the relationship between risks and risk-mitigating tools by canonical correlation of the most important factors of each space. Theoretical conventional wisdom expects that risk space should be organized into asset, product and operational risk categories with significant cross-category overlap generated by financial risk and the risk of asset/liability matching (ALM). The organization of tool space is expected to mirror the hypothetical organization of risk space, since insurers deploy the tools to mitigate the risks. Our results show that in the ERM tools, the health and life ALM tools are present and mitigate both asset and product risks. Noticeable by its absence is a role for operational risks (except in one factor) or tools. We provide visual mapping of Risks-ERM interrelationships of insurers. Insurers can place themselves in any of these relational maps or aspire to use them as benchmark tools.