



TITLE: The Drivers and Value of Enterprise Risk Management: Evidence from ERM Ratings

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Purpose of your paper:

In the course of recent regulatory developments, holistic enterprise-wide risk management (ERM) frameworks have become increasingly relevant for insurance companies. The aim of this paper is to contribute to the literature by analyzing determinants (firm characteristics) as well as the impact of ERM on the shareholder value of European insurers using the Standard & Poor's ERM rating to identify ERM activities. This has not been done so far, even though it is of high relevance against the background of the introduction of Solvency II, which requires a holistic approach to risk management. Results show a significant positive impact of ERM on firm value for the case of European insurers. In particular, we find that insurers with a high quality risk management (RM) system exhibit a Tobin's Q that on average is about 6.5% higher than for insurers with less high quality RM after controlling for covariates and endogeneity bias.

Synopsis:

In the course of the recent regulatory development in the aftermath of the financial crisis, e.g. the introduction of Solvency II in 2016, holistic enterprise-wide risk management (ERM) frameworks have become increasingly relevant for insurance companies (see, e.g., Beasley, Clune, and Hermanson, 2005; McShane, Nair, and Rustambekov, 2011). Solvency II requires an integrated, enterprise-wide perspective on a firm's entire risk portfolio in contrast to traditional silo-based risk management approaches, and the risk management system has to be consistent with the company's overall business strategy (see, e.g., Gatzert and Wesker, 2012). Moreover, rating agencies such as Standard & Poor's or A.M. Best emphasize the importance of a holistic risk management and have started to consider specific ERM rating categories to evaluate the financial strength as well as the creditworthiness of insurance companies (see, e.g., S&P, 2013a; Berry-Stoelzle and Xu, 2016). While ERM activities are highly relevant for insurers to comply with Solvency II requirements (especially Pillar 2), the implementation of an ERM system should also contribute to enhancing shareholder value according to the theoretical and empirical literature, e.g. by supporting the board and senior management with necessary risk management information, by increasing capital efficiency, and by better exploiting natural hedges within the company (see, e.g., Beasley, Pagach, and Warr, 2008; Gatzert and Martin, 2015).

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In the literature, several empirical papers study the determinants and value of ERM. Besides describing the stage of the ERM implementation (see, e.g., Altuntas, Berry-Stoelzle, and Hoyt, 2011; Yazid et al. 2011), several empirical papers focus on determinants of ERM implementation (see, e.g., Liebenberg and Hoyt, 2003; Beasley et al., 2005; Hoyt and Liebenberg, 2011; Pagach and Warr, 2011; Farrell and Gallagher, 2015; Lechner and Gatzert, 2016). Another strand of the literature concerns the impact of an ERM implementation on a firm's shareholder value (see, e.g., Hoyt and Liebenberg, 2011; Beasley et al., 2008; McShane et al., 2011; Lin et al., 2012; Baxter et al., 2013; Li et al., 2014; Farrell and Gallagher, 2015; Lechner and Gatzert, 2016). Most of these empirical studies show that ERM can indeed contribute to increasing shareholder value. However, since the conclusions are typically based on data sets that focus on specific markets or industries, a generalization of results for European insurance companies is difficult due to differences in regulation such as Solvency II. In addition, most of the empirical studies use a keyword search in annual reports regarding the existence of a Chief Risk Officer (CRO) or a risk management committee as a proxy to determine whether an ERM system is implemented or not (see, e.g., Liebenberg and Hoyt, 2003; Pagach and Warr, 2011; Lechner and Gatzert, 2016). Farrell and Gallagher (2015) further use a survey approach referred to as the Risk Maturity Model by the Risk and Insurance Management Society. While they account for endogeneity problems, their approach is based on self-reported assessments of executives in risk management, which are subject to personal judgements. An objective way to proxy ERM activities is given by the Standard & Poor's ERM rating introduced in 2005 (see S&P, 2005). McShane et al. (2011) apply this rating approach for the first time. However, their focus is limited to one year only and they refrain from addressing the problem of endogeneity in their U.S. data set.

Hence, the aim of this paper is to contribute to the literature by analyzing the impact of ERM on the shareholder value of European insurance companies using the Standard & Poor's ERM rating to identify the insurers' ERM activities. This has not been done so far and is also of high relevance against the background of the introduction of Solvency II in Europe or the recently introduced new U.S. regulation requirements (e.g. Own Risk and Solvency Assessment), which necessitate a holistic approach to risk management. Our analysis is thus intended to provide insight regarding the value of ERM with specific focus on European insurance companies, where we also study the determinants for implementing an ERM system (firm characteristics). By making use of Standard & Poor's ERM rating, we are also able to overcome potential limitations regarding the determination of ERM.

Our data set consists of a sample of European insurance companies for the time period from 2009 to 2015 and is based on the Thomson Reuter's database. We focus on publicly-traded insurers in order to be able to calculate Tobin's Q as a market-based measure of firm value, which is consistent with the literature. We first use logistic regression analyses to study the determinants of an ERM implementation, focusing on company size, financial leverage, capital opacity, financial slack and variation of the monthly returns of firms. To measure the impact of ERM on firm value, we follow Hoyt and Liebenberg (2011) and apply a full maximum-likelihood treatment effects model in a two-equation system to control for the endogeneity bias of ERM activities. The problem of endogeneity may thereby arise due to the fact that there are factors that have an impact on the decision to implement ERM and on the firm value at the same time. In a first equation (ERM Equation), the indicator variable ERM is regressed on various factors, while in a second equation (Q Equation), firm value is modeled as a function of ERM and covariates. The treatment effects approach thus allows us to model these two equations simultaneously in order to avoid the problem of endogeneity.

Our results show that ERM activities can imply a significant positive impact on insurers' Tobin's Q (after controlling for covariates and endogeneity bias), which on average is about 6.5% higher for firms with a high quality RM (and thus ERM) system. In addition, with respect to firm characteristics as



determinants for an ERM implementation, we find that company size has a significant positive impact, while financial leverage and the variation of the monthly stock returns are significantly negative related with ERM implementations.

Overall, ERM thus not only helps fulfilling Solvency II risk management requirements, but it can also contribute to generating significant value for insurance companies.

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