MODELING OPERATIONAL RISK INCORPORATING REPUTATION RISK: AN INTEGRATED ANALYSIS FOR FINANCIAL FIRMS
Christian Eckert, Nadine Gatzert

Key words: Operational risk; reputation risk; Solvency II; Basel III; loss distribution approach; Value at Risk

Purpose of your paper: It has been shown in the empirical literature that operational losses of financial firms can cause severe reputational losses, which, however, are typically not taken into account when assessing operational risk. The aim of this paper is to fill this gap by assessing the consequences of operational risk for a financial firm including reputational losses. Toward this end, we extend current operational risk models by incorporating reputation losses. We propose three different models for reputation risk: a simple deterministic approach, a stochastic model using distributional assumptions, and by taking into account a firm’s ability to deal with reputation events. Our results emphasize that reputational losses can by far exceed the original operational loss and that neglecting reputational losses may lead to a severe underestimation of certain operational risk types and especially fraud events.

Synopsis: Operational risks can have severe consequences especially for financial firms (Cummins et al., 2006) and the magnitude of several large operational loss events in the past strongly emphasizes the need for an adequate measurement and management of operational risks. In addition, in the financial industry, reputational losses are most often caused by operational loss events, especially in case of fraud (see, e.g., Perry and de Fontnouvelle, 2005; Cummins et al., 2006; Gillet et al., 2010; Fiordelisi et al., 2014), implying that an analysis of operational risks should also include a comprehensive assessment of reputation risk for financial firms. Thus, the aim of this paper is to conduct a holistic assessment of operational risks by means of a model that does not only take into account the pure operational loss, but additionally accounts for potentially resulting reputational losses, which to the best of our knowledge has not been done so far. The model and the numerical analysis are intended to offer first insight into the relation between operational losses and reputational losses by calibrating the model consistently based on results from the empirical literature. We further discuss limitations of the presented approach and point out the need for future research in regard to reputation risk.

A large part of the literature is concerned with the modeling of operational risk, including for instance McNeil et al. (2005), Chavez-Demoulin et al. (2006), Chaudhury (2010), and Brechmann et al. (2014), while Gatzert and Kolb (2013) study operational risk from an enterprise perspective under Solvency II with focus on the insurance industry. Another part of the literature empirically analyzes operational loss data. While most of these studies examine empirical data from the banking sector (see, e.g., de Fontnouvelle et al., 2003; Dutta and Perry, 2006), Hess (2011) also investigates operational loss data for insurance companies.

In addition, a further and still rather new strand of the literature empirically examines the impact of operational risk events on reputational losses based on event studies by examining stock market value reactions that exceed the pure operational loss. While some papers focus on the banking industry (Perry and de Fontnouvelle, 2005; Fiordelisi et al., 2013, 2014), others also include the insurance industry (Cummins et al., 2006; Cannas et al., 2009) or consider the financial (services) industry in general (Gillet et al., 2010; Biell and Muller, 2013). Most authors thereby find significant negative stock market reactions to operational losses that exceed the announced operational loss size, thus indicating substantial reputational losses, and most find that these losses are especially
pronounced for (internal) fraud events. The consideration of reputational losses arising from operational risk events is thus of high relevance.

In general, the potential impact of a bad reputation on the financial situation of the company can be fatal (see Kamiya et al., 2013), and reputation is even more important in the financial industry, especially for banks and insurers, whose activities are based on trust; reputation is a key asset and therefore an adequate management of reputational risk is vital (see Fiordelisi et al., 2014). Reputation risk is becoming increasingly important for firms especially against the background of the increasing prominence of social media and the internet, where particularly bad news spread faster. Finally, reputation risk is also of high relevance in the context of Solvency II and Basel III, the new regulatory frameworks for European insurance companies and global banks, where all relevant risks must be adequately addressed qualitatively and quantitatively in a holistic and comprehensive way. In this context, while for operational losses different types of insurance policies are available for different event types, reputational risk insurance as a stand-alone product has only recently been introduced (see Gatzert et al., 2013).

Overall, the literature so far has thus studied various aspects of operational and reputational risk, but the models for operational risk generally do not take into account the resulting reputational losses. Therefore, the aim of this paper is to extend current models for operational risk by incorporating resulting reputational losses as observed in the empirical literature for financial firms. We thereby propose three different ways of adding reputation risk, including a simple deterministic approach, a stochastic model using distributional assumptions, and by integrating a probability of a reputation loss that reflects a firm’s ability to deal with reputation events (e.g., crisis communication). In a numerical analysis, we calibrate the model based on consistent empirical data, which allows a comprehensive assessment of the impact of operational and reputational risk. We thereby also study the impact of firm characteristics (market capitalization and total assets) by integrating a scaling approach (based on Dahen and Dionne, 2010) in the operational and reputational risk model.

Accounting for reputation risk is of high relevance as it represents a risk of risks and should thus be taken into account when assessing underlying risks such as operational risks that may result in reputational losses. While we use a simplified approach, the model allows a more holistic analysis of previous empirical results that have only been provided separately for operational and reputational losses and it offers first insight regarding the “true” impact of operational risks for financial firms. The extended model thereby allows a more precise analysis of operational risks and the relevance of individual risk types, which is vital for risk management decisions and to ensure an adequate allocation of resources for preventive measures, for instance.

Our results based on input parameters from the empirical literature for the banking industry emphasize that reputational losses can by far exceed the original operational losses. In addition, taking into account reputational losses considerably affects the distribution of total losses among different operational risk event types. For instance, internal and external fraud events become the most relevant event types in terms of total losses among all seven event types, which only becomes transparent when considering the consequences of operational risks in an integrated way. These results also imply that risk management should place special emphasis on these event types and implement effective measures to reduce their likelihood and impact. An additional analysis including a potential reduction of the likelihood for reputational damage shows that in the present setting, the event type “clients, products & business practices” exhibits the strongest sensitivity and thus a great potential for the effectiveness of preventive measures.

The analysis follows the empirical literature by approximating reputational losses with market value losses, which requires a stock company and is thus restrictive. Moreover, it is not entirely clear in which timeframe market value losses should be considered. Market value losses could be temporary
and the market value could recover, caused by an initial overestimation of operational loss size by investors or because corporate reputation improves again. Further research would be helpful to investigate the market value of an announcing firm in larger timeframes. The proposed approaches to incorporate reputation risk into an operational risk assessment represent first steps by making use of the mean reputation loss (which is helpful for first insight due to the generally small database) or by assuming a distribution for reputational losses to illustrate the impact of stochasticity, which, however, requires further empirical analyses.

Despite these limitations, our findings with focus on the banking industry strongly emphasize that neglecting potential reputational losses may lead to a severe underestimation of operational risk in general and of specific event types in particular (e.g., internal fraud and external fraud) and that an operational and reputation risk management is vital for financial firms, which are particularly exposed to reputation risk. A risk assessment that does not take into account all possible consequences can thus lead to a possible inadequate allocation of resources in enterprise risk management and to a potential underestimation of the relevance of preventive measures regarding operational risk.

References


