The Market Impact of Operational Risk Events in the Energy Sector

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1. Introduction

In the last two decades, advances in science and technology have had a radical impact upon companies and the environment in which they operate. On the one hand, these advances have improved firms' processes and systems, allowing companies to become more efficient, and opened up new markets and opportunities, thus creating new revenue streams and increasing shareholder value. On the other hand, these advances have inadvertently increased the complexity of business operations, whilst creating new risks and/or increasing existing exposures. As a result, and despite the adoption and development of more optimized risk management systems, firms are increasingly exposed to heavy losses caused by emerging risks. Among these, operational risk has attracted renewed attention, in terms of identification, financing, and management, mainly due to its proven potential to inflict heavy, long-tail damages. Affected companies span most sectors and industries, from financials, to technology and industrials, among others. Examples include the Yahoo! data breach in 2013-14, the biggest in history, where 3 billion user accounts were compromised costing Yahoo! over $350 million, and the LIBOR fixing scandal, costing involved financial institutions an estimated $9 billion in total fines, among others.

Similarly, the energy sector has been no stranger to operational losses, experiencing a marked increase in the number of operational risk events and the volume of losses. Examples such as the BP Deepwater Horizon oil spill that polluted the Gulf of Mexico in 2010, and the nuclear disaster in Japan in 2011, highlight the economic impact that an operational risk event can have on the energy industry. Given the energy sector's sizeable imprint on the global economic map, losses of announcing firms often impact several non-announcing firms across the supply chain, peers/competitors and, ultimately, the broader economy. As such, examining operational risk events and their impact on energy firms, their peers, and the broader sector, economy is of paramount importance.

2. Research gap and motivation

Despite the growing importance of operational risk, there has only been minor progress in quantifying the effects operational losses in the energy sector. First, the majority of prior empirical contributions emphasize on operational risk events in the financial sector. Specifically, some studies examine return and spillover effects of operational risk events in the banking industry (Slovin et al., 1992; Docking et al., 1997), the insurance industry (Fenn and Cole, 1994; Cowan and Power, 2001; Jonsson et al., 2009), and the financial industry (Brewer and Jackson, 2002; Fiordelisi et al., 2012) reporting significant return and/or spillover effects. A relatively small stream of research focuses on other industries (Lang and Stulz, 1992; Xu et al., 2006; Freedman et al., 2012), excluding the energy sector. Second, although there is a limited number of contributions examining operational losses in the energy sector (Scholtens and Boersen, 2011; Sovacool et al., 2015), these are confined to quantifying the effects of energy accidents, thus failing to capture the broader spectrum of operational risk types as identified in Basel II[1].

[1]Basel II defines operational risk as that arising from the environment, people, systems, and processes in/through which a company operates, and further breaks it down into strategic, legal and environmental, internal and external fraud, damage to physical assets, employment practices and workplace safety, clients, products, and business practice, business disruption and systems failures, and execution, delivery, and process management.

3. Data and Methodology

An event study methodology using the SUR approach will be employed in order to estimate the risk and return effects on announcing and non-announcing firms on and around different types of operational loss announcements. Subsequently, a cross-section analysis will be employed to gauge the impact of qualitative and quantitative factors on the magnitude and direction of these effects.

The dataset comprises an international sample of large operational risk events in the energy. The data are hand collected and information to be sourced – from various news sources and company filings – includes, but will not limited to, descriptive information

about the operational loss event, such as the type/size of loss, the date of the occurrence/announcement, country of incident, and company name, among others. Financial databases will be used to match operational loss events with qualitative data and financials of announcing and non-announcing firms in the energy sector and beyond.

Operational losses data are obtained from the SAS Operational Risk Global Data database. We have an initial sample of 38.000 events, including various business lines such as retail banking, insurance, health insurance, manufacturing, commercial banking, trading, sales, mining, utility etc. We form a unique database according to the following criteria. First of all, we separated the operational risk events related to mining and utility categories. We collected a dataset of 3.058 events. Secondly, we searched for the exact date of each of the above events and at the same time we registered the identifier of each firm. At the end of the selection procedure, after cleaning the data, our sample comprises of 551 operational risk events. We perform, also, extensive searches on Bloomberg news to verify the dates and identify potential confounding events.

4. Conclusions

This study aims to fill this gap in the literature by exploring the effects of a large sample of operational risk events on the risk-return profiles of announcing and non-announcing firms in the energy sector and beyond. The research seeks to establish the presence of intra- and inter-sector spillover effects in risk and return and to determine the nature of these as competitive vs. contagion.

To the best of our knowledge, this will be the first study to examine the entire spectrum of operational risk event types/losses and spillovers in the energy sector. The study's contribution is threefold. First, to the best of our knowledge, this will be the first study to systematically analyze the impact of different types of operational loss events on announcing firms in the energy sector. Second, the study will offer novel results concerning the potential spillover effects of such losses to non-announcing firms across the energy supply chain as well as to other important business sectors. Third, it will offer new insights relating to the determinants of the direction and magnitude of risk-return effects and spillovers. Taken together, the results not only aim to inform

academic research on the subject, but also help the wider audience of energy related professionals, ranging from company managers, risk management professionals and investors, to regulators, and other participants, successfully navigate their institutions, investments, and/or policies, respectively.