# An Empirical Investigation of Business and Operational Risk Disclosures

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## Abstract

This paper examines attributes of non-financial risk disclosures by US manufacturing companies during the financial crises. We focus on business and operational risk disclosures to distinguish between risks generally outside and within the firms' internal control. Main findings show that in terms of disclosure, volume business risk disclosures far outweigh operational risk disclosures for each year. Risk disclosures on risk factors, on negative news, in qualitative and in forward-looking terms are most prevalent. We find an almost stable pattern of non-financial risk disclosures during the financial crisis, and that both types of non-financial disclosure are not entirely driven by the same factors. Our findings suggest that non-financial risk disclosures and particularly operational risk disclosures may not entirely meet the users' expectations. Results have implications for regulation and future research.

**Keywords:** accounting regulations, business risk, content analysis, operational risk, risk disclosure

## Introduction

Recently and following the first turbulent years of the 21st century culminating in the worst financial crisis since the great depression, risk management and risk disclosure by business companies in all sectors of the economy have gained growing interest in regulation and practice, internationally (Dobler, Lajili, & Zéghal, 2011; Elzahar & Hussainey, 2012). While a considerable body of literature reflects detailed academic work on risk management particularly in the financial sector, there is still little research on corporate risk disclosure and management in companies in the non-financial sector. Relevant and reliable risk disclosures are expected to lower the information asymmetry between managers and outsiders by providing users of financial statements with information on the risks a company faces and on how these risks are managed (Jorgensen & Kirschenheiter, 2003; Dobler, 2008). Thus, risk information disclosed covers a broad set of disclosures on risk factors and means of risk management varying in scope, location, nature, type, and time frame (Lajili & Zéghal, 2005a; Linsley & Shrives, 2006).

In this paper, we focus on operational and business risks as disclosed by listed manufacturing companies in the United States (US) and cover a four-year period from 2006 to 2009. The objectives of this paper are threefold:

(1) Examine how US firms report on non-financial risk categories and capture any differences between the volume and nature of business and operational risk disclosure.
(2) Document any changes in the volume and nature of disclosures of business and operational risks before and after the last financial crisis.
(3) Assess the nature of the association between the volume of operational and business risk disclosures with firm size, firm risk, performance and corporate governance variables.

The paper proceeds as follows: First, we briefly review the risk disclosure regulations in the US and the emerging risk disclosure and management literature in the accounting field. Second, we formulate our research hypotheses and present our research methodology. We report the research results and discuss our findings in a subsequent section and conclude the paper with a summary, limitations, implications and suggestions for future research.

## Regulatory Framework and Prior Studies

### Risk Disclosure Regulations in the US

The US has an extensive and quite detailed risk disclosure regulation particularly with regards to financial risks and market risks in general. There are two main regulatory bodies that oversee risk disclosure in the US. These are the Financial Accounting Standards Board (FASB) and the exchange listing regulator, i.e., the Securities and Exchange Commission (SEC). Listed companies have to provide risk disclosure in several sections of their annual 10-K filings to the SEC. Table 1 summarizes the major risk disclosures required by US Generally Accepted Accounting Principles (US GAAP) and SEC regulations.

Table 1: Major risk disclosure requirements in Form 10-K

| | |
|---|---|
| ***Item 1A*** | **Risk Factors**<br>discussion of most significant risk factors (Item 503(c) of Regulation S-K) |
| ***Item 7*** | **Management's Discussion and Analysis**<br>▪ description of trends or uncertainties likely to affect liquidity and the entity's approach to them (Item 303(a)(1), FRR 36); of trends affecting capital resources (Item 303(a)(2)(ii)); of credit, liquidity and market risk related to off-balance sheet arrangements (Item 303(a)(4)(i)(B))<br>▪ description of trends or uncertainties with potentially material impact on sales, revenue, or income (Item 303(a)(3)(ii), FRR 36)<br>▪ discussion of off-balance sheet arrangements with potentially material impact on the entity and related trends or uncertainties (Item 303(a)(4)(i), FRR 36) |
| ***Item 7A*** | **Quantitative and Qualitative Disclosures About Market Risk**<br>▪ qualitative description of primary market risk exposures, its management and changes therein<br>▪ quantitative tabular, sensitivity analysis or VaR disclosures, including methods used, their limitations and summarized data (Item 305, FRR 48) |
| ***Item 8*** | **Financial Statements**<br>note disclosures under US GAAP, particularly on<br>▪ loss and gain contingencies (SFAS 5)<br>▪ estimation uncertainties (SFAS 5, SOP 94-6)<br>▪ risk concentrations apart from financial instruments (SFAS 131, SOP 94-6)<br>▪ risk and risk management in the context of financial instruments (SFAS 105, 114, 118, 119, 130 133, 150) |

We note a focus on market and financial risks and on the use of financial instruments in the US GAAP. Business or operational risks are particularly covered by mandatory disclosures on contingencies, concentrations, and dependency on major customers (SFAS 5, SOP 94, and SFAS 131). US GAAP are quite specific and detailed. They provide guidance on how to report on the market risks a company is facing while attempting to give an overview of the company's risk profile. Market and financial risk disclosures usually appear as notes to the financial statements. Further discussion is located in other sections of 10-K filings.

The SEC regulations frame the risk disclosure requirements with the aim to protect investors and financial information outside users. In that sense, they focus on material changes and impact disclosure and mandate the description of trends or uncertainties likely to affect liquidity and a company's approach to them (Item 303), i.e. how a company is managing these risks and uncertainties (Dobler, 2005).

More recently, SEC regulations included forward-looking risk information with options on how to report on market risk disclosures (FRR 48) and a discussion and assessment of the effectiveness of internal control over financial reporting (Item 308) following the Sarbanes-Oxley Act (SOX) related governance regulations (SOX, 2002).

In summary, risk disclosure regulations in the US offer a suitable and comprehensive framework for companies to disclose their most important risks. US listed companies can disclose information about their risk profile in a broad sense both quantitatively and qualitatively in the notes to the financial statements and/or in other sections of their 10-K filings.

**Prior risk disclosure research**

In the last few years, risk management and risk disclosure studies have gained increasing global interest (Beasley & Salterio, 2001; Linsmeier et al., 2002; Thornton & Welker, 2004; Lajili & Zéghal, 2005a, 2005b; Linsley & Shrives, 2006; Woods, Kajüter, & Linsley, 2007; Dobler, 2008; Amran, Bin, & Hassan, 2009; Dobler, Lajili, & Zéghal, 2011; Elzahar & Hussainey, 2012; Greco, 2012).

Risk disclosure is an emerging research field that draws from finance, accounting, information economics and other related fields. There are various enterprise risk management frameworks, e.g. provided by the Committee of Sponsoring organizations of the Tradeway Commission, the SOX (2002) and Basel Accords. These frameworks, their amendments and ongoing work have largely contributed to the emergence of more risk information in listed firms' annual reports (Woods, Kajüter, & Linsley, 2007). Moreover, accounting and financial scandals certainly impose a sense of urgency and a need to regulate and further improve the transparency with regards to corporate risk management and related governance issues.

Briefly, most risk disclosure studies document large variations in both mandatory and voluntary risk disclosures. They document a focus on financial risks and find only little quantitative and forward-looking information disclosed. Sometimes disclosures seem to be vague or are even "boiler-plate" type disclosures (Lajili & Zéghal, 2005a; Linsley & Shrives, 2006). Furthermore, there seem to be no universal agreement among the scholars, regulators and corporate managers as to the appropriate definitions and categorizations of risks. The variety of risk categories and definitions may be caused by the different risk disclosure frameworks available as well as the regulatory structure as discussed above.

To contribute to existing evidence, we refer to the US setting where risk disclosure studies have been rare to date. Within this setting, we focus on two types of risks: business and operational risks. Notably, there is a research gap in operational risk disclosure in non-financial firms. Yet, this category proved particularly critical in the financial crisis of 2008. It is, thus,

worth conducting research in non-financial risk disclosure by US companies during that interesting period. We attempt to contribute to the literature by conducting a fine-grained content and a regression analysis of business and operational risk disclosures by listed manufacturing firms in the US.

## Research Hypotheses and Methodology

### Hypotheses

In pursuing our research objectives mentioned above, we first develop our hypotheses and differentiate between business risk and operational risk following prior risk disclosure research (Lajili & Zéghal, 2005a, 2005b; Linsley & Shrives, 2006) and regulatory definitions of operational risk.

In general, operational risk refers to potential losses caused by internal firm-specific factors and assets such as information systems, processes, personnel and other related resources (Lopez, 2002). Technical failures and the loss of key employees are examples of operational risks (Lajili & Zéghal, 2005a). In contrast, business risks are defined as potential losses from external industry-wide and economy-wide factors (usually outside the control of the firm). Examples of business risks include the market and competitive structure underlying the firm's business, government regulations, economy-wide and firm-specific financial risks, and political or geo-political developments (Damodaran, 2008; Cabedo & Tirado, 2004). By including other-than operational risk factors in our definition of business risks, we ensure that only firm-specific asset-related operational risk is captured in our disclosure indicators.

Our research hypotheses are as follows:

**H1.** The volume, location, nature, type and time frame of business and operational risk disclosures do not differ.

**H2.** The intensity and nature of business and operational risk disclosures increased during and immediately after the financial crisis of 2008.

**H3.** Total business and operational risk disclosures are positively related to firm size, firm risk, profitability and corporate governance indicators.

Hypothesis (H1) is based on the premise that firms are equally exposed to both firm and asset-specific (i.e., operational) and industry or economy-wide (i.e., business) risks. Therefore disclosures associated with these risks should not differ, at least conceptually, in terms of volume, location, type and time frame (Lajili & Zéghal, 2005a, Dobler, Lajili & Zéghal, 2011). Furthermore, accounting and exchange regulations as presented in the previous section do not mandate specific rules on how to report on these two types of risks offering more discretion to firms on what, where and how such disclosures are presented.

Hypothesis (H2) follows from the expectation that during and immediately following the financial crisis of 2008, firm exposure to both operational and business risks increased significantly and consequently, we would expect more information in terms of intensity and content to be disclosed during that time period. The market turbulence in both product and capital markets during that time period put further pressure on companies to cope and manage more efficiently their business and operational risks and tested their resilience. Also, public scrutiny and shareholder activism demanding more transparency in firm communication with outside users are expected to lead to better and more relevant disclosure during the time period surrounding the financial crisis.

Finally, hypothesis (H3) extends prior risk disclosure studies and extant disclosure theory literature (for example, Dobler, 2008; Dobler, Lajili, & Zéghal, 2011) and implies that all

independent variables are positively associated with risk disclosure volume. It further validates the value-relevance and consistency between firm risk disclosures and the risk proxies publicly available in capital markets (e.g., systematic risk and financial leverage among others). Prior risk disclosure also documents a positive and significant relationship between firm size and effective corporate governance indicators such as board structure (for example Lajili & Zéghal, 2005b).

## Methodology

The research methodology employed in this paper includes both content and regression analyses. Following prior risk disclosure research, we use content analysis to code the information disclosed (i.e., risk sentences) by US companies in their 10-K filings (Milne & Adler, 1999; Lajili & Zéghal, 2005a, 2005b; Linsley & Shrives, 2006; Dobler, Lajili, & Zéghal, 2011). We then use regression analysis to examine various associations between the volume of risk disclosures and the firms' publicly available attributes, i.e. firm size, risk, performance and board-related governance attributes.

Our coding instrument is based on recent regulation, prior empirical evidence and a pretest of five sample reports. As presented in Table 2, risk information disclosed is coded along six dimensions referring to category, location, nature of reference, quantification, impact and time frame.

Table 2: Coding instrument

| Coding dimension | Coding categories |
|---|---|
| **Risk category** | ▪ Business risk<br>▪ Operational risk |
| **Location of risk disclosures** | ▪ Risk factors (*Item 1A*)<br>▪ Management's discussion and analysis (*Item 7*)<br>▪ Market risk disclosures (*Item 7A*)<br>▪ Notes to financial statements (*NFS*) |
| **Nature of reference to risk** | ▪ Risk source (*RS*)<br>▪ Risk consequence (*RC*)<br>▪ Risk management (*RM*) |
| **Type of information – Quantification** | ▪ Qualitative information (*QL*)<br>▪ Quantitative information (*QT*) |
| **Type of information – Impact** | ▪ Favorable information (*F*)<br>▪ Unfavorable information (*U*)<br>▪ Neutral information (*N*) |
| **Time frame** | ▪ Past (*P*)<br>▪ Present or non time-specific (*PNTS*)<br>▪ Forward-looking (*FW*) |

The unit of analysis is "sentences". The instrument, thus, captures the quantity or volume but not necessarily the quality of business and operational risk disclosures. Table 3 shows the variety of risk sources coded in the respective risk categories. The examples indicate that non-financial risk disclosures cover a large set of sources even within one industry.

Table 3: Exemplary sources of operational and business risk

| Business risk | Operational risk |
|---|---|
| ▪ Business strategy and innovation | ▪ Accidents and natural disasters |
| ▪ Commodity prices | ▪ Business interruption |
| ▪ Competitiveness, loss of market share | ▪ Distribution |
| ▪ Concentrations | ▪ Fraud and Error |
| ▪ Credit failure | ▪ Inaccurate reporting |
| ▪ Currency | ▪ Inefficient operations |
| ▪ Equity | ▪ Logistics (insufficient resources) |
| ▪ Economic conditions | ▪ Personnel (human error, labor disputes, loss of/recruiting key employees) |
| ▪ Interest rate | ▪ Production, and production technology (technical failure, apart from environmental incidents) |
| ▪ International operations | ▪ Supply chain |
| ▪ Liquidity | |
| ▪ Location (including political risk) | |
| ▪ Mergers and acquisitions | |
| ▪ Product mix | |
| ▪ Protection of trademarks/intellectual property | |
| ▪ Regulations | |
| ▪ Reputation | |

To investigate the determinants of business and operational risk disclosure volume, we run a set of multiple regressions. We employ the following independent variables:

- *SIZE*: firm size as measured by the logarithm of total assets;
- *BETA*: beta factor as a proxy of systematic risk;
- *LEVERAGE*: leverage as measured by the ratio of total debt to total assets as a proxy for financial risk;
- *M/B-RATIO*: market-to-book ratio of equity as a further proxy of firm risk;
- *GP-MARGIN*: gross profit margin as a proxy for firm profitability;
- *ROA* or *ROE*: return on assets or return on equity, respectively, as further proxies for financial performance;
- *BOARD_SIZE* or *BOARD_INDEP*: number of directors in the board or number of independent directors in the board, respectively, as corporate governance variables.

We choose to investigate the US manufacturing sector (2-digit SIC codes 31 to 33) of the S&P 500 for our study and investigate the 10-K filings between 2006 and 2009. Single-sector studies are common and even warranted in our context (Tufano, 1996). This focus will allow us to compare among relatively homogeneous firms and will help us focus more on the differences in firm-specific factors which are fundamentally related to operational risks. The US manufacturing sector offers an interesting case. This is particularly true during the time period of our study in which significant changes shook firms in this sector and exposed them to more business pressures and challenges, domestically and internationally.

Our final research sample covers 30 listed firms for which 10-K filings are available for 2006 to 2009. This results in 120 observations. As shown in Table 4, sample firms show a large variability in terms of size, risk, performance and corporate governance attributes.

Table 4: Sample characteristics

| | Mean | St. dev. | Minimum | Maximum |
|---|---|---|---|---|
| **Total assets [US$ 1,000]** | 46,409.14 | 151,708.7 | 100 | 795,337 |
| **BETA** | 1.31 | 1.55 | –1.41 | 6.05 |
| **LEVERAGE** | 0.615 | 0.433 | 0.036 | 4.166 |
| **M/B-RATIO [%]** | 3.907 | 11.987 | –18.95 | 89.98 |
| **GP-MARGIN [%]** | 35.017 | 13.876 | 3.41 | 66.65 |
| **ROA [%]** | 0.078 | 24.849 | –18.96 | 27.27 |
| **ROE [%]** | 7.251 | 66.324 | –356.42 | 349.13 |
| **BOARD_SIZE** | 9.28 | 2.708 | 5.00 | 16.00 |
| **BOARD_INDEP** | 7.433 | 2.911 | 1.00 | 14.00 |

## Research results

### Characteristics and development of operational and business risk disclosures

Addressing our hypotheses H1 and H2, Table 5 shows statistics on business and operational risk disclosures of our sample firms between 2006 and 2009.

Across the board, t-tests indicate that business risk disclosures far outweigh operational risk disclosures in terms of disclosure volume. As a notable exception, operational risk disclosures dominate in the notes to financial statements (as opposed to other sections of 10-K filings). Results hold true for each sample year. They contradict hypothesis H1 and largely indicate a focus on business risk disclosures. The fact that business risks dominate in terms of disclosure volume could be explained by the fact that accounting regulations currently put more emphasis on financial and market-based risks and far less on operational and thus firm-specific risks. This is in line with finance theory and the traditional risk-return framework that only market or systematic risks matter in a diversified portfolio (e.g., Damodaran, 2008).

Table 5: Content analysis results and comparative statistics

| | **Business risk disclosures** (Z statistic)[a] | **Operational risk disclosures** (Z statistic)[a] | **Mean difference significance test**[b] |
|---|---|---|---|
| **Total risk disclosures** | | | |
| ***Total*** – Mean<br>St. dev. | 114.59 (–1.028)<br>66.39 | 27.09 (–0.907)<br>22.41 | 16.73*** |
| **Location of risk disclosure** | | | |
| ***Item 1A*** – Mean<br>St. dev. | 98.19 (–1.173)<br>61.34 | 26.63 (–0.877)<br>22.32 | 15.12*** |
| ***Item 7*** – Mean<br>St. dev. | 1.97 (–1.550)<br>6.08 | 0.01 (–0.820)<br>0.12 | 3.51*** |
| ***Item 7A*** – Mean<br>St. dev. | 14.40 (–0.077)<br>14.36 | 0.11 (–0.263)<br>0.59 | 10.89*** |
| ***NFS*** – Mean<br>St. dev. | 0.03 (–1.732)*<br>0.36 | 0.35 (–1.682)*<br>1.48 | –2.25** |

Table 5: Content analysis results and comparative statistics (continued)

| | **Business risk disclosures** (Z statistic)[a] | **Operational risk disclosures** (Z statistic)[a] | **Mean difference significance test**[b] |
|---|---|---|---|
| **Nature of reference to risk** | | | |
| *RS* – Mean<br>St. dev. | 77.15 (–1.076)<br>48.14 | 18.65 (–0.920)<br>77.15 | 15.28*** |
| **Nature of reference to risk** | | | |
| *RS* – Mean<br>St. dev. | 77.15 (–1.076)<br>48.14 | 18.65 (–0.920)<br>77.15 | 15.28*** |
| **Nature of reference to risk** | | | |
| ***RC* –** Mean<br>St. dev. | 23.7 (–1.234)<br>16.81 | 6.96 (–0.596)<br>6.03 | 12.64*** |
| ***RM* –** Mean<br>St. dev. | 13.74 (–0.853)<br>10.28 | 1.48 (–0.653)<br>2.03 | 13.28*** |
| **Type of information – Quantification** | | | |
| ***QL*–** Mean<br>St. dev. | 104.10 (–1.015)<br>61.12 | 26.04 (–0.953)<br>21.32 | 16.34*** |
| ***QT*–** Mean<br>St. dev. | 10.50 (–0.525)<br>9.59 | 1.05 (–0.787)<br>2.02 | 10.71*** |
| **Type of information – Impact** | | | |
| ***F*–** Mean<br>St. dev. | 12.95 (–2.398)**<br>10.11 | 1.51 (–0.404)<br>1.93 | 12.57*** |
| ***U*–** Mean<br>St. dev. | 100.85 (–1.425)<br>63.65 | 25.54 (–0.874)<br>21.21 | 14.99*** |
| ***N*–** Mean<br>St. dev. | 0.80 (–1.338)<br>1.48 | 0.04 (–1.313)<br>0.20 | 5.55*** |
| **Time frame** | | | |
| ***P* –** Mean<br>St. dev. | 8.35 (–0.623)<br>9.35 | 1.71 (–1.063)<br>5.8 | 7.22*** |
| ***PNTS* –** Mean<br>St. dev. | 2.44 (–3.258)***<br>3.43 | 0.89 (–1.557)<br>1.98 | 5.12*** |
| ***FW* –** Mean<br>St. dev. | 103.8 (–1.173)<br>62.24 | 24.49 (–0.653)<br>20.09 | 15.98*** |

***Notes:*** ****, **, * Indicate significance at the 1%, 5%, and 10% level, respectively;* [a] *Non-parametric signed rank tests for changes in disclosure variables, specifically between 2009 (post financial crisis year) and previous years in the study (2006,2007, and 2008);* [b] *T-test significance test for the mean differences. Variables are defined in Table 2.*

Going into more detail, we find a consistent pattern across the other coding dimensions. As shown in Table 5, both operational and business risk disclosures are most prevalent:

- in Section 1A on Risk Factors (as compared to other Sections) of 10-K filings required by the SEC)
- on risk sources (as compared to their potential impact upon the firm and the firm's response by means of risk management
- in qualitative terms (as compared to quantitative risk disclosures)

- on potential unfavourable impacts upon firms (as compared to favourable ones)
- on forward-looking issues (as compared to backward-looking ones).

Overall, firms seem to disclose very little about how they manage business and operational risks. Apart from disclosure regulation, this could be due to either difficulties encountered in identifying, assessing, controlling and monitoring these types of risk, or simply due to the fact that most of this information is discretionary, proprietary and, thus, voluntary to a large extent. The prevalence of unfavorable risk disclosure can be related to disclosure regulation and the economic environment. Data availability and disclosure incentives can also explain why firms are largely reluctant to disclose more quantitative and risk management information throughout the time span examined (Dobler, 2008). In sum, our results are inconsistent with hypothesis H1.

With regards to research hypothesis H2, Table 5 indicates only few changes in the average risk disclosure volume from 2006 to 2008, compared to 2009. This seems to indicate a rather consistent risk disclosure behavior of sample firms even throughout the financial crises. Yet, the volume of both operational and business risk disclosures in the notes to financial statements decreases significantly.

Results indicate that the decrease in business risk disclosures particularly depends on decreasing volume of favourable and non time specific risk disclosures. This could be related to managerial fears of being scrutinized by law, shareholders or further stakeholders. However, the major finding indicates that firms somehow chose to stick to the “status-quo”. This leads us to conclude that hypothesis H2 should be rejected.

**Determinants of operational and business risk disclosures**

In order to investigate hypothesis H3, we regress operational risk and business risk disclosure volume (separately and jointly) on proxies for firm size, risk, performance, and board structure. Regressions are first run for both types of risk disclosures separately. Operational risk disclosure volume is expected to be linked to performance as measured by the return on assets (*ROA*). Business risk disclosure volume is expected to be rather associated with return on equity (*ROE*) as a broader proxy for firm performance. In an additional regression model, we aggregate operational and business risk disclosures.

Given that some of the independent variables are correlated with one another, we run different panel data regression models. Missing values for some independent variables reduce the number of observations valid for our regression analysis. Table 6 presents the results of a set of two regressions for each dependent variable.

Results show that explanatory variables for business and operational variables differ in significance and even in sign. Interestingly, firm size (*SIZE*) as measured by the logarithm of total assets is not positively associated with the volume of business risk disclosure. This is partly inconsistent with the “size-effect” usually observed in disclosure studies. While a possible explanation could relate to limited variation of the proxy, the result holds true when using the logarithm of market capitalization or the logarithm of revenues.

Concerning our risk proxies, coefficients on *BETA* and market-to-book ratio (*M/B-RATIO*) differ in sign and significance between the types of risk disclosure considered. While positive across the board as expected, the coefficients on *LEVERAGE* are only significant for business risk and total risk disclosures. This is largely consistent with Dobler, Lajili, & Zéghal (2011) who argue that risky firms tend to have more risk disclosure in the US setting thereby contradicting a concealing motive observed in other countries.

Table 6: Regression results

| | **Business disclosures** *Coefficient (t-statistic)* | | **Operational disclosures** *Coefficient (t-statistic)* | | **Total business & operational disclosures** *Coefficient (t-statistic)* | |
|---|---|---|---|---|---|---|
| ***Intercept*** | 113.57 (3.58)*** | 94.25 (2.79)** | 64.83 (6.45)*** | 55.31 (5.55)*** | 226.05 (7.38)*** | 176.06 (5.19)*** |
| ***SIZE*** | –0.27 (–0.06) | –6.31 (–1.31) | 1.16 (0.85) | 2.90 (2.44)** | 14.68 (2.93)** | –1.47 (–0.29) |
| ***BETA*** | 3.72 (0.68) | 3.95 (0.84) | –1.76 (–2.07)** | –1.13 (–1.19) | –3.77 (–0.79) | –0.66 (–0.16) |
| ***LEVERAGE*** | 151.97 (3.47)*** | 150.99 (3.88)*** | 3.84 (1.08) | 14.36 (1.40) | 26.06 (2.30)** | 86.07 (2.61)** |
| ***M/B-RATIO*** | –0.91 (–2.52)** | –1.003 (–2.83)** | 0.17 (1.24) | 0.15 (1.20) | –0.03 (–0.09) | –0.21 (–0.60) |
| ***GP_MARGIN*** | 0.76 (1.12) | 0.84 (1.15) | –0.11 (–0.73) | –0.15 (–0.92) | 0.04 (0.08) | 0.02 (0.04) |
| ***ROA*** | | | 0.16 (2.28)** | 0.19 (3.00)** | 0.45 (2.03)** | 0.55 (2.61)** |
| ***ROE*** | –0.08 (–0.72) | –0.05 (–0.44) | | | | |
| ***BOARDS_SIZE*** | –12.40 (–2.89)** | | –4.69 (–3.06)** | | –22.66 (–4.45)*** | |
| ***BOARD_INDEP*** | | –7.21 (–1.70)* | | –1.16 (–1.16) | | –10.44 (–2.21)** |
| **N** | 60 | 60 | 66 | 65 | 66 | 65 |
| **$R^2$** | 0.30 | 0.29 | 0.33 | 0.28 | 0.28 | 0.27 |
| **F-statistic** | 5.25*** | 5.22*** | 5.72*** | 5.17*** | 7.09*** | 5.03*** |

***Notes:*** ****, **, * Indicate significance at the 1%, 5%, and 10% level, respectively. Independent variables are defined in the section "Methodology".*

Performance seems to be rather positively related to risk disclosure volume. Particularly, *ROA* is significantly and positively related to the volume of operational and total risk disclosures. This result is particularly interesting in the sense that it could imply that operational risk disclosures, despite their scarcity relative to business risk disclosures, are potentially value-relevant and, thus, helpful to users of financial reports. This could ultimately have important implications on policy and regulatory efforts in the future.

Corporate governance variables largely follow a consistent pattern. We find that board size (*BOARD_SIZE*) and to a lesser extent board independence (*BOARD_INDEP*) seem to be negatively related to disclosure volume on both types of risk. Most particularly, the result on board independence is surprising. Less independent boards usually are expected to work closely with their capital and product suppliers (e.g., major shareholders, creditors, suppliers) and, thus, may need less disclosure of risk information to outside users. This result could be related to the fact that some companies in our sample were already in a critical business and financial situation (e.g., in the automotive sector) and, thus, several board members on these companies were not "really" independent. Overall, our findings suggest that corporate governance influences business and operational risk disclosure and should be considered in future risk disclosure studies.

In sum, our regression results only partly support hypothesis H3.Particularly, they suggest that the volume of business and operational risk disclosures, respectively, is not entirely driven by the same factors.

## Conclusions

This study sheds some light on how US manufacturing firms dealt with risks in the period leading up to the worst financial crisis since the depression of the 1920s. It reveals a general willingness to provide relevant firm-specific risk information to outside users. In turn, it indicates that non-financial risk disclosures provided in 10-K filings of US manufacturing companies may fall short on the users' expectations. Our main findings could be summarized as follows:

(1) In terms of volume, business risk disclosures far outweigh operational risk disclosure in almost all categories considered. This implies a dominance of risks largely beyond the firm's control and some reluctance to inform about certain risks most specific to a particular firm's operations. Consistently, risk disclosures outside the financial statements, on risk sources, on unfavourable impacts, in qualitative and in forward-looking terms are most prevalent.
(2) The financial crisis only partly affects the volume of business and operational risk disclosure. This suggests that firms somehow stick to their risk disclosure "status quo" and are not able or not willing to enhance non-financial risk disclosure volume in economically difficult settings. Consistent with disclosure theory, this implies not to overestimate the use of risk disclosures.
(3) Business and operational risk disclosures seem to be driven by partly different factors. We find differences in concerning firm size and firm risk. Both types of risk seem to be associated with profitability and corporate governance. This particularly indicates that the "size effect" could be less prevalent than expected while issues of corporate governance deserve particular attention in analyzing risk disclosure.

Limitations to the current study include the use of volume of disclosure to capture risk reporting which is just a first necessary step to assess disclosure behavior. It usually fails to assess the quality of such disclosure. Further, our research sample is limited to one sector and one country. Particularly, cross-country investigations like Dobler, Lajili, & Zéghal (2011) could help to assess how firms respond to financial crises in terms of risk disclosure in different regulatory settings. Also, future prescriptive research could examine in more depth how companies should report operational risks to help national and international regulators offer more guidance in reporting these important risks and how firms are coping with them. Given the complexity of the risks companies are increasingly facing, an integrated and more systematic approach to overall risk information disclosure including a comprehensive and more operational definition of all possible risk categories, may be warranted in the future. This could offer more transparency and minimize ambiguity on how managers are dealing with these emerging risks and potentially lower agency costs and information asymmetries between management, shareholders and other stakeholders, thus helping to improve business decision making, internationally

International business implications of the current study include the role of risk information disclosure in guiding investment decisions by global investors. For example, if operational risk disclosures prove to be value-relevant and thus useful for allocating capital

resources around the world, we would expect companies that outperform their global counterparts in terms of operational risk disclosure and management to command higher equity values and easier access to capital markets (i.e., lower overall cost of capital). Future accounting standards and exchange regulators could encourage more transparency and provide further guidance in terms of how to disclose business risks and operational risks for both financial and non-financial public companies (International Accounting Standards Boards, 2010). Finally, the role of corporate boards and their impact on how much and how risk information is communicated to the firms' stakeholders is worthy of future research attention. In this context, international comparisons and insights are likely to be warranted in the course of international accounting harmonization.

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English Abstract

# An Empirical Investigation of Business and Operational Risk Disclosures

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**Abstract**

This paper examines attributes of non-financial risk disclosures by US manufacturing companies during the financial crises. We focus on business and operational risk disclosures to distinguish between risks generally outside and within the firms' internal control. Main findings show that in terms of disclosure, volume business risk disclosures far outweigh operational risk disclosures for each year. Risk disclosures on risk factors, on negative news, in qualitative and in forward-looking terms are most prevalent. We find an almost stable pattern of non-financial risk disclosures during the financial crisis, and that both types of non-financial disclosure are not entirely driven by the same factors. Our findings suggest that non-financial risk disclosures and particularly operational risk disclosures may not entirely meet the users' expectations. Results have implications for regulation and future research.

**Keywords:** accounting regulations, business risk, content analysis, operational risk, risk disclosure

French Abstract*

An Empirical Investigation of Business and Operational Risk Disclosures

# Etude empirique sur la divulgation des risques d'affaires et opérationnels

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**Résumé**

Le présent document examine les caractéristiques de la divulgation des risques non-financiers par les sociétés manufacturières américaines pendant les crises financières. Nous nous concentrons sur la divulgation des risques d'affaires et des risques opérationnels, tout en distinguant entre les risques extérieurs et internes à l'entreprise. Les principaux résultats montrent qu'en matière de divulgation, les informations sur les risques des volumes d'affaires dépassent de loin les informations sur les risques opérationnels. Les informations sur des facteurs de risque, des nouvelles négatives, en termes qualitatifs et en termes prospectifs sont les plus répandues. Nous trouvons un schéma presque stable de divulgation des risques non-financiers durant des crises financières, et que les deux types d'informations non-financières ne sont pas entièrement guidés par les mêmes facteurs. Nos résultats suggèrent que la divulgation des risques non-financiers, dont les risques opérationnels, pourrait ne pas entièrement satisfaire les attentes des utilisateurs. Nos résultats ont des implications pour la réglementation et la recherche à venir.

**Mots-clés**: règles comptables, risques de l'entreprise, analyse de contenu, risque opérationnel, divulgation des risques

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German Abstract*

An Empirical Investigation of Business and Operational Risk Disclosures

# Eine empirische Untersuchung der Risikoberichterstattung für operationelle Risiken und Geschäftsrisiken

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**Abstract**

Diese Untersuchung analysiert die Attribute der nicht-finanziellen Risikoberichterstattung von US-Industrieunternehmen während der Finanzkrise. Der Fokus liegt dabei auf den Geschäftsrisiken und den operationellen Risiken, um zwischen allgemeinen externen Risiken und Risiken innerhalb des Internen Kontrollsystems zu unterscheiden. Die zentralen Ergebnisse zeigen, dass hinsichtlich der Berichtserstattung der Umfang zur Berichterstattung über Geschäftsrisiken den Umfang der veröffentlichten operationellen Risiken bei weitem übersteigt. Die Risikoberichterstattung zu Risikofaktoren und zu negativen Nachrichten ist sowohl in qualitativer Form als auch in der zukunftsorientierten Darstellung weit verbreitet. Wir haben ein annähernd eindeutiges Muster der nicht-finanziellen Risikoberichterstattung innerhalb der Finanzkrise gefunden, wobei beide Typen der Berichterstattung nicht vollumfänglich durch die gleichen Einflussfaktoren getrieben werden. Unsere Ergebnisse suggerieren, dass die nicht-finanzielle Risikoberichterstattung und teilweise die operationelle Risikoberichterstattung nicht vollständig die Erwartungen der Adressaten erfüllen. Die Ergebnisse haben Einfluss auf die Regulierung und die zukünftige Forschung.

**Keywords:** Bilanzierungsvorschriften, Geschäftsrisiko, Inhaltsanalyse, Operationelles Risiko, Risikoberichterstattung

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Spanish Abstract*

An Empirical Investigation of Business and Operational Risk Disclosures

# Una investigación Empírica sobre la Divulgación del Riesgo Comercial y Operacional

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**Resumen**

Este artículo examina los atributos de la divulgación de riesgos no financieros por parte de las empresas manufactureras de Estados Unidos durante las crisis financieras. Nos centramos en la divulgación del riesgo comercial y operacional para distinguir los riesgos externos, que se encuentran fuera del control de la compañía, de los riesgos internos, que sí se encuentran bajo su control. Los principales resultados muestran que, en términos de divulgación, en las empresas grandes, el riesgo comercial supera con creces el riesgo operativo para cada año. La divulgación del riesgo sobre factores de riesgo y sobre noticias negativas en términos cualitativos y con visión de futuro son más prevalentes. Encontramos un patrón casi constante de divulgación del riesgo no financiero durante la crisis financiera. También que ambos tipos de divulgación no financiera no son impulsados enteramente por los mismos factores. Nuestros resultados sugieren que la divulgación de los riesgos no financieros y, particularmente, la divulgación del riesgo operacional puede no satisfacer enteramente las expectativas de los usuarios. Los resultados tienen implicaciones para la regulación y la investigación futura.

**Palabras clave:** normativa contable, riesgo comercial, análisis de contenido, riesgo operacional, divulgación del riesgo

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Arabic Abstract*

An Empirical Investigation of Business and Operational Risk Disclosures

# دراسة ميدانية عن الافصاح للمخاطر التشغيلية و مخاطر الأعمال

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**ملخص**

هذه الورقة تبحث صفات الافصاح عن المخاطر الغير مالية من قبل الشركات الصناعية في الولايات المتحدة الأميركية خلال الأزمات العالمية. تركز هذه الدراسة على الافصاح عن المخاطر التشغيلية و مخاطر الأعمال, لتمكن من التميز بين المخاطر العامة خارج الشركة و المخاطر الداخلية التي تكون تحت سيطرة الشركة. اظهرت أبرز نتائج هذه الدراسة أنه بالنسبة لعملية الافصاح فان الكشف عن حجم مخاطر الاعمال تفوق بكثير الكشف عن المخاطر التشغيلية سنويا. الافصاحات عن المخاطر تكون عن عوامل الخطر, الاخبار السلبية, و الامور النوعية و المستقبلية تعد الأكثر انتشارا. لقد وجدنا نمطا ثابتا لعملية الكشف عن المخاطر الغير مالية خلال الأزمة الاقتصادية, بالاضافة الى أن كلا النوعين (من الافصاح الغير مالي) لا تتم بسبب العامل نفسه. اظهرت هذه الدراسة أن الافصاحات عن المخاطر الغير مالية و تحديدا المخاطر التشغيلية قد لا تتوافق مع توقعات العملاء. تحتوي النتائج على تطبيقات للابحاث القانونية و المستقبلية.

**الكلمات الدالة:** القوانين المحاسبية، مخاطر الاعمال، تحليل المحتوى، المخاطر التشغيلية، الافصاح / كشف المخاطر

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Italian versio*
Un'investigazione empirica sulla comunicazione di rischi operativi e di gestione

# Un'investigazione empirica sulla comunicazione di rischi operativi e di gestione

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**Abstract**

Questo documento esamina gli le dinamiche della comunicazione di richi non finanziari riguardanti produttori degli Stati Uniti durante crisi finanziarie. Ci concentriamo sulla comunicazione di rischi operativi e di gestione per distinguere fra rischi che sono esterni o interni rispetto alle capacità di controllo interno da parte aziendale. I risultati principali mostrano che per quanto riguarda la comunicazione, la comunicazione di rischi di gestione e di gran lunga quella riguardante gli aspetti operativi di ogni anno. La comunicazione di fattori di risco, o notizie negative riguardo ad impatti sfavorevoli , su aspetti qualitativi e proiettati avanti nel tempo, sono quelli più prevalenti. Troviamo quasi uno schema stabile riguardante gli aspetti di comunicazione dei rischi non finanziari durante una crisi finanziaria, e che entrambe le tipologie di comunicazione su rischi finanziari e non finanziari non sono interamente guidati dagli stessi fattori. Le nostre ricerche suggeriscono che la comunicazione di rischi non finanziari e in particolare rischi operativi non deve incontrare completamente le aspettative dell'utente. I risultati hanno implicazioni per regole e ricerca futura.

**Keywords:** regole della ragioneria, rischi gestionali, analisi dei contenuti, rischi operativi, comunicazione dei rischi

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