Risk Fact or Fiction: The Information Content of Risk Factor Disclosures

Maclean Gaulin

Thesis: Doctor of Philosophy
Accounting, Jones Graduate School of Business
Rice University, Houston, Texas (March 2017)

RICE UNIVERSITY

Risk Fact or Fiction: The Information Content of Risk Factor Disclosures

by

Maclean Gaulin

A Thesis Submitted
in Partial Fulfillment of the
Requirements for the Degree

Doctor of Philosophy

Approved, Thesis Committee:

K. Ramesh, Chair
Herbert S. Autrey Professor of Accounting

Brian Akins
Assistant Professor of Accounting

Brian Rountree
Associate Professor of Accounting

Robin Sickles
Reginald Henry Hargrove Chair of Economics

Shiva Sivaramakrishnan
Henry Gardiner Symonds Professor of Accounting

Houston, Texas

March, 2017

ABSTRACT

Risk Fact or Fiction: The Information Content of Risk Factor Disclosures

by

Maclean Gaulin

Paper Abstract

Acknowledgments

I am honored to have completed my PhD dissertation under the mentoring and tutelage of Dr. K. Ramesh.

Contents

Illustrations

Tables

— Chapter 1 —
Introduction

Do managers disclose *risk factors* consistent with the regulatory requirement to warn of *future adverse outcomes*? Yes.

— Chapter 2 —
Risk Factor Disclosure Information Content

This dissertation studies the information content of mandatory risk factor disclosures filed in annual reports by public firms in the United States.

2.1 Hypothesis Development

The requirement to disclose risk factors is set forth in Item 503(c) of Regulation S-K:

> **§229.503 (Item 503) (c) Risk factors**. Where appropriate, provide under the caption "Risk Factors" a discussion of the most significant factors that make the offering speculative or risky. This discussion must be concise and organized logically. Do not present risks that could apply to any issuer or any offering. Explain how the risk affects the issuer or the securities being offered. Set forth each risk factor under a subcaption that adequately describes the risk.

2.2 Sample Construction and Data Collection

Risk Factor disclosures have been required in annual and quarterly disclosures under Item 1A since the SEC regulation took effect in 2005.

The average firm in my sample has 29.5 risk factors, and adds 3.7 new risks and removes 2.5 obsolete risks per year. I find that younger firms (below the median firm age of 13 years) disclose 34.4 risk factors on average, and identify 4.4 new factors per year and remove 3.2 factors. Older firms (above median age) disclose significantly fewer risk factors, only 25.8, and identify new factors and remove old factors at significantly lower rates as well (3.4 and 2.2, respectively). This potentially suggests life cycle

Table 2.1: Summary Stats

Table 2.1 reports the summary statistics for the variables used in the regressions as defined in Appendix A.

	Mean	Std. Dev	Min	25%	50%	75%	Max	N
$Log(Assets)_t$	6.70	2.01	2.12	5.34	6.74	8.05	11.56	26,547
$Log(Market\ Equity)_t$	6.33	1.96	1.84	4.99	6.35	7.70	10.56	26,537
$Book-to-Market_t$	0.73	0.90	-0.71	0.31	0.58	0.96	4.60	26,518
$Sales/AT_t$	0.90	0.85	0.00	0.26	0.70	1.27	4.04	26,536
$Beta_{t-1}$	1.04	0.54	-0.10	0.69	1.05	1.40	2.31	26,547
Indicator and Negative Outome Variables								
$Negative\ NI_{t+1}$	0.31	0.46	0	0	0	1	1	22,026
$Sec.\ Litigation_{t-1}$	0.02	0.14	0	0	0	0	1	26,546
$Lawsuit\ Intensity_{t-1}$	0.19	0.44	0	0	0	0	2.08	26,547
$RF\ Comment_{t-1}$	0.07	0.25	0	0	0	0	1	26,224
$Comment\ (Any)_{t-1}$	0.53	0.50	0	0	1	1	1	26,223
Textual Variables								
$\#\ Risk\ Factors_t$	29.52	14.05	6	19	27	37	69	26,547
$\#\ New\ RF_t$	3.67	5.03	0	1	2	5	25	26,547
$\#\ Dropped\ RF_t$	2.45	3.73	0	0	1	3	21	26,547
$\Delta\#\ RF_t$	1.22	4.56	-11	0	1	2	18	26,547

effects in risk factor disclosures, with older, more established, and less volatile firms disclosing fewer risks and experiencing less risk 'turnover.' However, when looking at the change in word count of the risk factors between these two groups, there is no significant difference.[1] This suggests that the time series evolution of risk factors may capture some underlying economic differences that a word count approach does not. A graphical depiction of this trend is presented in Figure 2.1.

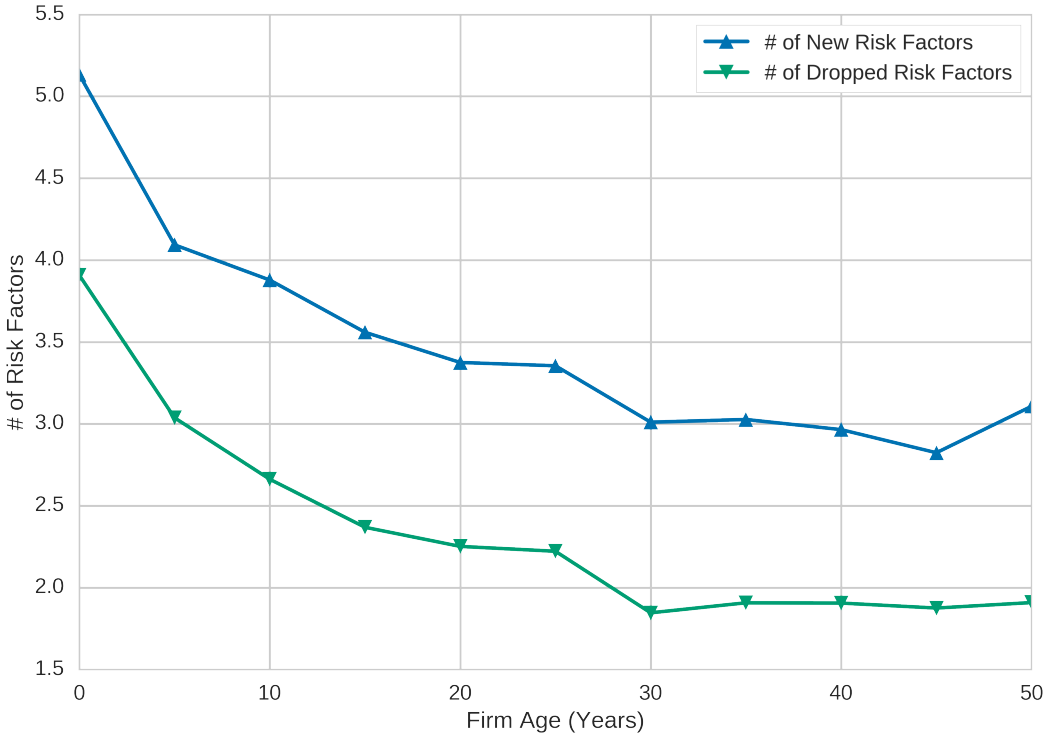
2.3 Results

QED.

[1]The change in word counts are 135.5 and 136.4 for young and old firms respectively (t-stat = -0.16). The t-stat for difference in new, dropped, and total risk factors are all significant at <0.001 level.

Figure 2.1: New and Removed Risk Factors Over Firm Age

Figure 2.1 plots the average number of new and removed risk factors over the age of the firm. The datapoints represent averages over five year periods. The sample comprises firm-years with a non-missing risk factor section in the previous year.



2.3.1 Alternative Specifications

QED again.

— Chapter 3 —
Conclusion

So say we all.

Bibliography

Francis, Jennifer, Donna Philbrick, and Katherine Schipper, 1994, Shareholder Litigation and Corporate Disclosures, *Journal of Accounting Research* 32, 137–164.

— Appendix A —
Variable Descriptions

The following table defines the variables used in this paper. Variable names and calculations provided in brackets correspond to source database. For the regressions presented in the tables, the continuous variables are winsorized at the 1st and 99th percentiles.

Variable	**Description**
Assets	Total assets $\{AT\}$
Market Equity	Market value of equity at fiscal year end. $\{CSHPRI * PRCC\_F\}$
Net Income/AT	Net income to lagged assets. $\{NI_t/AT_{t-1}\}$
Operating Inc./AT	Operating income (after depreciation) to lagged assets. $\{OIADP_t/AT_{t-1}\}$
Sales Growth	Ratio of change in sales to lagged assets. $\{(SALE_t - SALE_{t-1})/AT_{t-1}\}$
Sales / AT	Sales to lagged assets. $\{SALE_t/AT_{t-1}\}$
Book Equity	Book value of equity. $\{(TEQ_t \vert AT_t - LT_t) + TXDITC_t - PSTK_t\}$
Book-to-Market	Book to market. $\{\text{Book Equity}_t/\text{Market Equity}_t\}$
Leverage	Leverage $\{(DLTT_t + DLC_t)/AT_t\}$
Tangibility	Tangibility $\{PPENT_t/AT_t\}$
Turnover	Ratio of average daily volume (CRSP) to outstanding shares at fiscal year end (Compustat).
Beta	Market loading from CAPM model of daily returns on value weighted index, for all available days in the fiscal year. $\{RET = \alpha + \beta \cdot VWRETD + \epsilon\}$
Excess Returns	Cumulative excess daily returns during fiscal year. $\{(\prod RET - VWRETD + 1) - 1\}$
Excess Ret. Std.	Standard deviation of daily excess returns. $\{Std.\ Dev(RET - VWRETD)\}$
Min. Excess Ret.	Minimum daily excess return during fiscal year. $\{Min(RET - VWRETD)\}$
Excess Ret. Skew	Skewness of daily excess returns. $\{Skew(RET - VWRETD)\}$
$\text{CAR}_{+3\ day}$	Cumulative abnormal return spanning three business days starting on the filing date of the annual report, using a Fama-French Carhart factor model. Data from Kenneth French's website. $\{RET = MKTRF + SMB + HML + UMD + MOM + \epsilon\}$

Continued on next page...

...continued from previous page.

Variable	**Description**
$\text{CAR}_{+3\ months}$	Cumulative abnormal return spanning 60 business days starting on the filing date of the annual report, using a Fama-French Carhart factor model. Data from Kenneth French's website. $\{RET = MKTRF + SMB + HML + UMD + MOM + \epsilon\}$
$\text{Bid-Ask Spread}_{+1\ year}$	Average daily bid ask spread at closing for 240 business days starting on the filing date of the annual report, as percentage of average bid and ask. $\{200 * (ASK - BID)/(ASK + BID)\}$
Negative NI	Indicator variable equal to 1 if next year's net income is negative. $\{NI_{t+1} < 0\}$
Negative Op. Inc.	Indicator variable equal to 1 if next year's operating income is negative $\{OIADP_{t+1} < 0\}$
Sales Decline	Indicator variable equal to 1 if next year's sales are lower than the current year's sales by 10% or 10 million dollars, whichever is larger. $\{SALE_{t+1} - SALE_t < -10\% * max(100, SALE_t)\}$
Security Litigation	Indicator variable equal to 1 if a securities litigation is filed in the subsequent year.
Lawsuit Intensity	Natural log of number of litigation events found in CapitalIQ Key Developments database in a given fiscal year.
RF Comment	Indicator variable equal to 1 if an SEC comment letter is received in a given fiscal year that references risk factors.
Comment (Any)	Indicator variable equal to 1 if any SEC comment letter is received in a given fiscal year, including those with a reference to risk factors.
FPS Industry	Indicator variable equal to 1 if the firm has an SIC code in one of the high litigation risk industries defined in Francis, Philbrick, and Schipper (1994).
# Risk Factors	Total number of risk factors disclosed under Item 1A of an annual report.
# New RF	Number of new risk factors which were not present in the previous year's annual report.
# Dropped RF	Number of risk factors which were in the previous year's annual report, but are no longer included in the present year.
# Kept RF	Number of risk factors which were in the previous year's annual report and persist in the current annual report.
# of Words	Total number of words in Item 1A of an annual report (excluding stop words).
# of Sentences	Total number of sentences in Item 1A of an annual report.
# of Specific Words	Total number of words identified by the Stanford Named Entity Recognition algorithm as being in categories: Location, Person, Organization
# of Numerics	Total number of numbers in Item 1A of an annual report.
# of Words/RF	Ratio of the total number of words to the total number of risk factors in Item 1A of an annual report (excluding stop words).

Continued on next page...

...continued from previous page.

Variable	**Description**
Specificity	Ratio of the total number of specific words to the total number of risk factors in Item 1A of an annual report (excluding stop words).
Numeric Intensity	Ratio of the total number of numbers to the total number of risk factors in Item 1A of an annual report (excluding stop words).
FOG Index	Gunning Fog score for the text in Item 1A of an annual report (excluding stop words). Calculated as $\left\{0.4\left(\frac{\#\ of\ words}{\#\ of\ sentences}+100\frac{\#\ of\ complex\ words}{\#\ of\ words}\right)\right\}$

— Appendix B —
Risk Factor Extraction

To derive an initial list of filings, I extract the gvkey and historical CIKs from the Compustat annual file, starting from 89,687 firm years. I then merge the non-missing CIKs from Compustat with the EDGAR filings index file provided by the SEC.[1] I filter the index files to include only form 10-Ks, excluding amended 10-K/As, leaving 67,648 filings from 9,632 firms. Form 10-KSB is also included, but are no longer filed after 2009.

[1]Located, for example, at ftp.sec.gov/edgar/full-index/2005/QTR1/master.idx. Downloaded using script from github.com/gaulinmp/pyedgar