BANKRUPTCY AS A CORPORATE STRATEGY:
IMPLICATIONS FOR TURNOVER IN THE TOP MANAGEMENT TEAM
AND BOARD OF DIRECTORS

by

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A Dissertation

Submitted to the University at Albany, State University of New York

In Partial Fulfillment of

The Requirements for the Degree of

Doctor of Philosophy

School of Business

Organizational Studies

2010

UMI Number: 3432535

UMI®

Dissertation Publishing

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ABSTRACT

This paper examines Chapter 11 bankruptcy as a corporate strategy, segregating filings for corporate reorganization in the U.S. from 1998 through 2007 into those due to financial distress (FDB) and those believed to be for risk-management purposes (RMB). Twenty-seven RMB and 199 FDB firms were compared to each other, and to 226 matched non-bankrupt firms. Altman's Z-score clearly differed between the RMB and FDB firms, suggesting that the two are separate constructs financially as well as legally. A subset of 81 firms (the 27 RMB matched to 27 non-bankrupt and 27 FDB) were studied for turnover among the members of the top management team, the board chair, and the members of the board. With the exception of the board chair, FDB firms exhibited materially higher turnover in these positions than their RMB counterparts. These results support FDB and RMB as separate constructs with dissimilar antecedents and outcomes, and suggest that executives and board members involved with RMB filings do not experience the adverse career consequences that follow an FDB filing.

ACKNOWLEDGEMENTS

Completing a dissertation requires the help and support of many dedicated people. First, I would like to acknowledge Dr. Raymond Van Ness, whose gentle persuasion, confidence, and assistance have been instrumental in my success. It is a privilege to have him as my dissertation chair, but even more so to consider him a mentor, colleague, and friend. I would also like to thank the other members of my dissertation committee. Dr. Gregory Tully has been extraordinarily helpful, and an encouraging presence through this project. Again, I am fortunate to have him as a mentor, colleague, and friend. Dr. Cecilia Falbe and Dr. Charles Seifert challenged me with a wonderful balance of demanding rigor and support. I am grateful to Dr. Susan Kochanowski for her editorial assistance. Finally, words cannot convey the appreciation I have for my amazing daughter, Stephanie, and the other members of my family and friends who offered both unfailing support and faith in my abilities throughout the dissertation process.

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BANKRUPTCY AS A CORPORATE STRATEGY: IMPLICATIONS FOR TURNOVER IN THE TOP MANAGEMENT TEAM AND BOARD OF DIRECTORS

At the end of every seven years you must cancel debts. This is how it is to be done: Every creditor shall cancel the loan he has made to his fellow Israelite. He shall not require payment from his fellow Israelite or brother, because the Lord's time for canceling debts has been proclaimed. ~ Deuteronomy 15:1-2 (New International Version)

"...the reason why firms succeed or fail is perhaps the central question in strategy." ~ Porter (1991, p.5)

CHAPTER 1: Introduction

In light of the economic conditions of 2008/2010, and bankruptcy filings of huge firms such as General Motors (June 1, 2009), Lehman Brothers (September 15, 2008), and Circuit City (November 11, 2008), it is unsurprising that there is an upsurge of interest in bankruptcy and in the number of bankruptcy filings. Since the implementation of the 1978 Bankruptcy Reform Act, which enabled companies to file for Chapter 11 "reorganization" rather than total Chapter 7 liquidation in bankruptcy, legal scholars have asserted that a number of firms have misused the Chapter 11 option to accomplish long-term risk management goals rather than to address imminent financial disaster. This study is among the first to consider the financial differences between these two types of Chapter 11 filings. Additionally, this study investigates the implications for turnover among the top management team and board of directors of a risk-management Chapter 11 filing.

1.1 Significance of bankruptcy

The Federal Judiciary released data that indicate that bankruptcy filings hit a record high in 2009 of 1,473,675, an increase of nearly 32 percent compared to 2008, which, in turn, was 31 percent higher than 2007. The number of bankruptcy filings has

more than doubled since 2006. Of course, not all of those bankruptcies involved business debts. The vast majority are non-business debts. However, there were 60,837 filings involving business debts in 2009, up 40 percent from 2008, and more than twice as many as in 2007. Business Chapter 11 bankruptcy filings, which involve reorganization rather than Chapter 7 liquidation (see Chapter 2 of this paper), rose nearly 240 percent from 2007 to 2009. (www.uscourts.gov; Redmond, 2009). There is evidence that these numbers may be dramatically understated due to measurement and classification errors, and that the correct number of business filings could be raised ten-fold (Lawless and Warren, 2005).

The number of business failures was high in the 1930s in the aftermath of the 1929 stock market crash and consequent Great Depression, and peaked again in 1992 and 2005 (Dun & Bradstreet Business Failure Record, 1994; Redmond, 2009). Those spikes are far outstripped by the record number of filings in 2009.

While the full economic impact of these failures is immeasurable, with global as well as national and local implications, there are other ramifications as well. Lack of faith in the economic system and/or the government, self-esteem and other personal impacts, and the consequences of loss of jobs or assets on entire families cannot begin to be ascertained. Because of these ramifications, the motivating factors leading to bankruptcy filing merit careful study.

1.2 "Strategic" bankruptcy

Given the enormous and varied consequences of a corporate bankruptcy, it seems incongruous that firms would file for bankruptcy protection when not in financial

distress. However, as will be explained in Chapters 2 and 3, there are a number of instances in which corporations submitted Chapter 11 filings as a strategy for managing risks rather than to address immediate financial distress. Among other things, firms may use this tactic to escape a variety of tort liabilities, as exemplified by the 1982 Johns Manville Corporation bankruptcy limiting asbestos liability (see section 3.4) and the 1985 bankruptcy filing of A. H. Robins ameliorating liability for damaged caused by the Dalkon Shield intra-uterine birth control device (section 3.5). Filing for Chapter 11 bankruptcy protection has also been used to eliminate or alter contracts, to obtain governmental financial assistance, or to obtain protection from outside forces. Whether bankruptcy for risk management purposes is ethical or responsible is beyond the scope of this paper, but it appears to be a real occurrence with widespread impact.

This risk-management bankruptcy tactic is often referred to as "strategic" bankruptcy, a term believed to have been coined by Delaney (1989) which has entered popular usage. This nomenclature is imprecise, however, because all voluntary bankruptcies represent a strategy of one kind or another. Likewise, an alternative term used in the literature to describe bankruptcies for risk management purposes rather than financial distress is "non-financial bankruptcy" (*Bankruptcy Yearbook and Almanac*, 1999), which also has some level of popular usage. As with "strategic" bankruptcy, "non-financial" is also an imprecise term – the bankruptcy proceedings certainly have a financial component, whether it is to resolve imminent financial distress or long-term financial risk. For the purposes of this research, bankruptcies believed to be intended as a risk management strategy will be referred to as risk-

management bankruptcies (RMB), and those believed to be related to immediate financial problems will be referred to as financial-distress bankruptcies (FDB).

1.3 Objectives of the study

Most of the work done on risk-management bankruptcy (RMB) has appeared in the law literature and involved description of particular instances or cases of firms filing for Chapter 11 protection for strategic business reasons. There has been relatively little study of the elements that differentiate RMB from traditional financial-distress bankruptcies (FDB), and the particular consequences or correlates of RMB. Additionally, as described in Chapter 4 and Appendix D, bankruptcy prediction models have a limited ability to discriminate between failing and non-failing firms, perhaps because the data do not partition-out the RMB from other business failures. There is a dearth of quantitative research into the phenomenon of bankruptcy as a risk management strategy.

The main research objectives for this study are:

1) To examine whether publicly-traded companies filing for Chapter 11 bankruptcy protection for risk-management reasons differ from similar companies filing for Chapter 11 bankruptcy protection for financial-distress reasons in terms of turnover of the top management team members (CEO, CFO, and COO),

2) To examine whether publicly-traded companies filing for Chapter 11 bankruptcy protection for risk-management reasons differ from similar companies filing for Chapter 11 bankruptcy protection for financial-

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distress reasons in terms of turnover of the membership of the Board of Directors or the position of Chairperson of the Board, and

3) To examine whether publicly-traded companies filing for Chapter 11 bankruptcy protection for risk-management reasons differ from similar companies filing for Chapter 11 bankruptcy protection for financial-distress reasons in terms of major financial performance indicators before the bankruptcy filing.

Additionally, while it is generally presumed that bankrupt firms differ from non-bankrupt firms on these same three criteria, this research will extend the comparisons noted above to non-bankrupt firms as well. The classification of bankruptcy filings into RMB or FDB will reflect three widely-accepted and commonly-cited bankruptcy database categorizations as described in Sections 1.4.2 and 7.1.

1.4 Research methodology

A pool of 226 large, publicly-traded firms that filed for Chapter 11 bankruptcy protection between 1998 and 2007, and which had emerged from bankruptcy by 2008, formed the sample of interest for this study. Of these, 27 firms were classified by the bankruptcy databases noted above on the basis of legal analysis of their Chapter 11 filing documents as risk-management bankruptcies. These 27 firms are listed in Appendix A. The remaining 199 bankruptcies, listed in Appendix B, were considered to have filed for Chapter 11 protection for traditional financial distress reasons. An additional 226 firms not involved in bankruptcy proceedings during the relevant time frame were selected for comparative purposes, matching as much as possible the

Chapter 11 bankruptcies in both Standard Industry Code (SIC) and year of filing (Appendix B). Therefore, a total of 452 large, publicly-traded firms were included in this study – 27 RMB, 199 FDB, and 226 matched non-bankrupt firms.

1.4.1 Hypotheses.

A number of hypotheses were developed and tested, as detailed in Chapter 6. These hypotheses fall into several clusters. The first group of hypotheses relates to firm financial condition in the third and second year prior to the year of bankruptcy filing, and suggest that firms in FDB will be in more tenuous financial condition than firms in RMB or firms not involved in bankruptcy proceedings. The Altman's Z-score (numerical) and Altman's Z-score (categorical) are used as the measures of financial condition.

The second cluster of hypotheses address turnover among the top management team (CEO, CFO, and COO), suggesting that firms in FDB will have higher turnover than firms in RMB or non-bankrupt firms. The third grouping includes hypotheses regarding turnover on the board of directors, including the position of Chairperson of the Board. As with the top management team hypotheses, it is suggested that firms in FDB will manifest a higher turnover rate than firms in RMB or firms not involved in bankruptcy proceedings.

Likewise, each of these three clusters includes hypotheses that firms in RMB will differ from non-bankrupt firms. Consistent with the expectation of bankruptcy law, it is hypothesized that RMB firms will have poorer financial performance than non-bankrupt firms in the third and second year prior to bankruptcy filing. Similarly, if executives in RMB firms experience the negative career consequences typically

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related to a bankruptcy filing, turnover in the RMB firms should be higher than in non-bankrupt firms.

1.4.2   Identification of the sample and data sources.

Several sources were used to develop the master list of firms filing for Chapter 11 protection during the time period of this study (filings from 1998 through 2007), as described in Section 7.1. The Bankruptcy Research Database was generously shared by Professor Lynn M. LoPucki of UCLA Law School and Harvard Law School. The annual Bankruptcy Yearbook and Almanac produced by New Generation Research was a second source used to generate the master list. Finally, the Bankruptcy Data Project at Harvard University facilitated access to data through the Automatic Access to Court Electronic Records (AACER) system. From these widely-used sources the pool of 226 publicly-traded firms filing for Chapter 11 bankruptcy protection used in this study was developed.

While there was some need to consult other sources, as described in Chapter 7, Form 10-K and Def 14A, which are mandatorily filed with the Securities and Exchange Commission (SEC), were the primary sources for information about the composition of the top management team and the board of directors for the firms. Form 10-K and the Thomson One Banker database were sources of financial data for the firms. Top management team and board of directors information was gathered for the two years preceding the bankruptcy filing, the year of filing, and three years following the filing. Financial information was gathered for the same time frame plus an additional third year preceding the filing to facilitate appropriate analysis of

financial variables.

1.4.3 Dependent and independent variables.

The primary independent variable used in this study is the categorization of a firm as a financial-distress bankruptcy, a risk-management bankruptcy, or not bankrupt for the period relevant to the study. Turnover among the members of the top management team and the board of directors were dependent variables. Turnover within the top management team was measured by the number of personnel changes for each position including the Chairperson of the Board of Directors. Turnover of the other members of the board was measured as a percentage of members leaving the board. Financial condition dependent variables included Altman's Z-score (raw score) and Altman's Z-score (categorical).

1.5 Empirical results and conclusions

For both measures of financial condition, FDB firms demonstrated statistically-significant ($p < .001$) poorer financial condition than RMB firms. These results support treating the construct of Chapter 11 bankruptcy as comprising two separate constructs – bankruptcy filings due to immediate financial distress and filings as part of a longer-term risk management strategy. These results are the first empirical financial support for the widely-presumed classification in the law literature of Chapter 11 firms into these two categories as described in Section 1.2. Consistent with all bankruptcy modeling, for both measures of financial condition, FDB firms exhibited poorer financial condition than firms not involved in bankruptcy proceedings ($p < .000$). However, there were mixed results in discriminating between the RMB and non-bankrupt firms. These mixed results, combined with the

significantly better financial condition exhibited by RMB firms compared to FDB firms, suggests that corporations in financial-distress bankruptcy and risk-management bankruptcy should be segregated from one another. Separating RMB from FDB may reduce the noise in any analysis or modeling of bankruptcy and to enhance the predictive power of bankruptcy models. Perhaps rather than the widely-accepted dichotomy of bankrupt/non-bankrupt, consideration should be given to a trichotomy of FDB/RMB/non-bankrupt.

Consistent with expectations, firms in FDB demonstrated materially greater turnover than either RMB or non-bankrupt firms. This was true for the positions of CEO, CFO, COO, and for the members of the Board of Directors. For the position of board chair, FDB and RMB firms did not manifest a statistically-significant difference, though there was a clear difference between the FDB and non-bankrupt firms. Similar hypotheses stating that there would be greater turnover in RMB firms than in non-bankrupt firms were generally not supported. These findings on turnover strongly suggest that executives and board members of a firm that files for Chapter 11 protection as a risk management strategy are not penalized for their involvement with in a bankruptcy proceeding. In contrast, people in similar positions in firms filing for Chapter 11 protection as a result of financial distress seem to be penalized for any role they may have played in failing to prevent financial problems.

1.6 Contributions to the literature

For two decades, legal scholars have maintained that Chapter 11 bankruptcies have been used as a business strategy to accomplish a corporate goal in a manner distinct from traditional bankruptcies involving firms in dire financial condition. This

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study is the first to provide evidence that there are financial differences between FDB and RMB firms, offering valuable support to these being distinct constructs financially as well as legally.

Second, because risk management bankruptcies have been used as a business strategy to accomplish a long-term corporate goal, an understanding of corporate behavior in insolvency is enhanced by partitioning Chapter 11 bankruptcy filings into RMB and FDB categories. In particular, turnover at the top levels of the organization suggests that members of the top management team and board of directors may experience negative career consequences as a result of their involvement in a bankruptcy filing for traditional financial distress reasons, while people holding similar offices for firms in RMB are not removed from those positions.

Finally, the statistically-significant differences in measures of financial condition suggest the partitioning of bankruptcies into RMB and FDB may improve the performance of a variety of bankruptcy prediction models based on accounting measures of performance.

1.7 Limitations of the study

As with any study, there are limitations and problems that must be recognized. One important limitation is the small sample size available. Since there were only 27 publicly-traded firms categorized as RMB, this did limit the power of statistical tests.

A second limitation, which is inherent in any archival research, is that only a coarse-grained approach is possible. This study looked at annual information, which does not allow a fine-grained analysis of day-to-day changes. Similarly, a lack of

"insider" information, which may have better illuminated reasons for turnover, may have resulted in misinterpretation of the publicly-available data.

The time periods of observation were selected by this researcher. As a result, longer-term trends and patterns may have been truncated and unobserved. Results for the ten-year time period from 1998 through 2007 may not be generalizeable to other time periods, particularly if there are changes in the relevant accounting rules and/or bankruptcy laws.

Finally, this study is clearly limited to large, publicly-traded firms in the United States. Since bankruptcy law differs from country to country, there is no expectation that these results would be mirrored under other circumstances.

CHAPTER 2: Bankruptcy

A limited discussion of bankruptcy law is important to clarify the concept of bankruptcy for risk management purposes. Bankruptcy, as generally understood, is intended for firms that are in financial distress, particularly those that are insolvent. Were that the case, RMB would not be a reasonable construct. However, as will be explained here, United States law permits bankruptcy filing even when the firm remains solvent.

2.1 A Brief History of Bankruptcy Law

Nearly as long as there has been the concept of debt, or owing money, goods, or services to another, there has been the concept of bankruptcy. In ancient Greece, if a man owed a debt he could not pay, he and his entire family and all their servants became "debt slaves" until their physical labor enabled the creditor to recoup his losses (Westerman, 1955). Mosaic Law, expressed in the Torah, requires cancellation of debts between Israelites every seven years (Deuteronomy 15: 1-2). The fourteenth-century Egyptian historian al-Maqrizi documented that the twelfth-century Yassa (law) of Genghis Khan contained a provision that anyone who went bankrupt three times was subject to the death penalty (Walker, 2002).

Treiman (1938) traced the origins of legal bankruptcy back to the statutes of Italian city-states in the Roman Empire, where it was referred to as *banca rupta* (broken bench) after the medieval custom of breaking the workbench of a tradesman or banker who failed to return the property of his creditors. This tradition was instrumental in the development of British bankruptcy statutes, which date back to the sixteenth century, and, consequently, to the formation of early colonial law in the

future United States. The British tradition almost invariably resulted in continued desperate financial straits, imprisonment, and community ostracism for the debtor, sometimes including permanent bodily injury as a sign of the conviction (Charles Dickens' father ended up in a debtor's prison, and the horrors of bankruptcy are emphasized in his novels *Little Dorritt* (original 1857) and *Dombey and Son* (original 1848)). In contrast, the colonies adopted a patchwork of bankruptcy rules which frequently included some debtor-friendly provisos such as permitting the retention of certain exempt assets (Hall, Clark, Eli, Grossman, and Hull, 2002).

While the United States Constitution, Section 8, Article I, empowered the federal Congress "to establish . . . uniform Laws on the subject of bankruptcies throughout the United States," the actual execution of this power has been inconsistent at best. The first federal bankruptcy statute was passed in 1800 (2 Stat. 19), and repealed in 1803. The next attempt, in 1841 (5 Stat. 440), lasted until 1843, and the third attempt lasted from 1867 until 1878 (14 Stat. 517) (Jackson, 1986). During the vast interim periods, there were no uniform bankruptcy rules, and a hodge-podge of state and territory insolvency rules left both debtors and creditors confused and disgruntled. Finally, with the passage of The Bankruptcy Act of 1898 (30 Stat. 544), the country had a "permanent" bankruptcy statute. The impetus for this was the recognition of the growing "credit economy" of the Industrial Revolution (Hall et al., 2002, p. 55). The 1898 Act focused almost entirely on business liquidations, but for the first time included some provisions for the rehabilitation of businesses in financial distress. It was only with the Chandler Act of 1938 (52 Stat. 883), which introduced Chapter X and Chapter XI bankruptcies, that formal corporate reorganization was

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added to existing bankruptcy laws (*U.S. Code,* 2009; Warren, 1935). For the first time, bankruptcy became an instrument of survival rather than only an instrument of death.

The most significant change to insolvency legislation occurred when Congress passed the 1978 Bankruptcy Reform Act (standard legal convention refers to this as "the Code", with the earlier 1898 and 1938 laws referred to as "the Act"), one element of which was to replace Chapter X and XI provisions with Chapter 11 bankruptcy laws. This Chapter 11 provision reflected concerns that complete liquidations destroyed valuable firm assets, and imposed substantial costs on a number of corporate stakeholders including investors, employees, suppliers, customers, and the community in which the firm operated. For the first time, companies that were still financially solvent could take advantage of legal bankruptcy as a turnaround strategy (Rose-Green and Dawkins, 2002). In 1984, Congress attempted to address weaknesses in the 1978 Act with the Bankruptcy Amendments and Federal Judgeship Act. Since then, the Code has been amended several times, primarily to resolve administrative and procedural issues, and attempts at sweeping reforms have failed.

2.2 Insolvency as an Element of Bankruptcy

2.2.1 Insolvency in the bankruptcy sense.

Prior to 1978, bankruptcy was only available to financially insolvent companies. As defined by Jackson (1986, 197), "insolvency in the bankruptcy sense" is a status where the debtor is not expected to be able to generate enough liquid assets to pay all of its obligations in time, whether or not there are enough assets to pay off

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the bills immediately due. This is comparable, though not identical, to the concept of "economic distress", in which a firm is unviable, with questionable value as a going concern (Wruck, 1990), or "balance-sheet insolvency," where net assets is a negative number (commonly used in the U.K.). However, the Bankruptcy Code (§101 (29)) defines insolvency slightly, but materially, differently, as the status that exists when *assets at fair valuation* are not expected to be able to meet *liabilities at fair valuation*. This "fair value" approach results in two definitional difficulties.

The first difficulty is that fair value is, fundamentally, an estimate of what something is worth, and is, therefore, highly capricious. The Financial Accounting Standards Board, which is the body responsible for setting Generally Accepted Accounting Principles (GAAP) in the U.S., has defined fair value using the concept of "exchange price" – that is, "the price in an orderly transaction between market participants to sell the asset or transfer the liability…[in] the most advantageous market for the asset or liability" (SFAS No. 157, 2008, 2). The International Accounting Standards Board, which has established International Accounting Standards adopted by more than 100 countries including the European Union and Canada, and under consideration in the U.S., defines fair value as "the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction" (IAS 39, 2007, 1). Dramatic intra-day fluctuations in the price of a stock exemplify the ambiguity in this exchange-based definition of fair value. Consequently, the "insolvency in the bankruptcy sense" line drawn by the Bankruptcy Code is indefinite and subject to interpretation.

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A second difficulty with the "insolvency in the bankruptcy sense" approach is that the measurement of fair value for assets and liabilities presumes an orderly, or even advantageous, market for the exchange transaction. However, if a firm is teetering on the brink of bankruptcy, it is clearly advantageous to the creditors to seek to exercise their rights over a firm's assets. Due to this scramble for assets, the insolvent firm may, and probably will, be forced to sell large numbers of assets in a "fire sale" environment, which would violate the orderly market assumptions. The disorder may escalate rapidly, resulting in chaotic distortions of the firm's actual financial condition.

2.2.2 Insolvency in the equity sense.

Given these problems with defining insolvency in the "bankruptcy sense," a different kind of case exists in which a bankruptcy proceeding is considered appropriate – "insolvency in the equity sense," also known as "insolvency in the cash flow sense" (Jackson, 1986, p. 198). Under these circumstances, the debtor faces a *liquidity crisis*, finding itself unable to pay its debts as they mature, even though the fair value of assets exceeds that of liabilities. While, superficially, this appears to be quite distinct, and is often explained-away as merely a temporary deficiency in available cash, insolvency in the equity sense is often an indicator of more substantial imminent financial distress. Clearly, this cash flow difficulty points to an underlying inability to borrow against the firm's assets in order to pay its immediate debts. Creditors should be concerned that the company actually is insolvent in the bankruptcy sense.

2.2.3 Bankruptcy in the early 1970s.

Prior to the Bankruptcy Reform Act of 1978 bankruptcy was limited to cases of insolvency, so bankruptcy was treated as a last resort. In the time between World War II and 1970, U.S. corporate bankruptcies were uncommon, if not rare, with about 2,000 per year occurring in the early 1950s, growing to about 20,000 per year by 1969 (Sloane, 1970). Even with this 1000-percent growth over 20 years, bankruptcy was viewed primarily as a sign of managerial failure rather than a reflection of the economic conditions (Tavakolian, 1995). In 1970, the Penn Central Transportation Co. collapsed, resulting in the largest bankruptcy in U.S. corporate history at that time. The cause was attributed to "a lethal combination of politics, tight money, [and] mismanagement" ("The Biggest Bankruptcy Ever", 1970). Penn Central was found to lack leadership, strategy, and a competitive product (Daughen and Binzen, 1999).

A second massive bankruptcy to hit the shaky economy of the 1970s was that of W.T. Grant, one of the nation's largest retailers and, at the time, the second biggest company to have ever entered bankruptcy. Grant's woes were attributed to hyper-expansion, ineffective planning, and fraud on the part of three key executives ("Grant Goes Under", 1975), though it was also considered a "dinosaur" buried under an overwhelming amount of fixed assets (Platt, 1985). The collapse of these two corporate giants provided much of the impetus for the development and implementation of the Bankruptcy Reform Act of 1978.

2.3 Bankruptcy without insolvency

The terms of the 1978 Bankruptcy Reform Act were designed to let a company in financial distress have some relief that could facilitate a return to a profitable status while still protecting the rights of creditors. "Chapter 11" bankruptcy made it possible for a solvent company to take advantage of this legal maneuver as part of its strategy for survival, allowing it to continue operations, pay employees, purchase materials, and produce a return for its stockholders, while restructuring its financial position and pulling-back from the brink of collapse. To facilitate this rescue, following a Chapter 11 filing, the bankruptcy court issues an automatic stay freezing the firm's assets and offering temporary relief from collection attempts, lawsuits, and foreclosures while the distressed company focuses on its operations. Management then has 120 days to submit a plan for reorganization which must be modified until either the required number of creditors accepts the plan or the court determines that the plan is feasible and acceptable and forces it on the creditors.

These less-stringent criteria for bankruptcy, coupled with increasing acceptance of bankruptcy by the business world (Barr, 1992), resulted in a dramatic increase in the number of businesses filing for bankruptcy. During the five-year period from 1975 through 1979, when the "old" bankruptcy laws were in effect, the number of businesses filing bankruptcy averaged 31,510 per year (Scott, 1984). In the subsequent five years, 1980 through 1984, the average number of business filings was 57,512 per year (American Bankruptcy Institute, 2008), an increase of 83 percent. This change happened rather abruptly, with a remarkable jump from 29,500 in 1979 to 43,694 the following year (Scott, 1984; American Bankruptcy Institute, 2008). Due to

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a wide variety of reporting differences, it is difficult to determine exactly how many of these increased filings were directly related to Chapter 11 as a new option, but evidence exists that a substantial number of the increased filings were for reorganization (Chapter 11) rather than a Chapter 7 liquidation (Tavakolian, 1995). Nor was this dramatic 1979/1980 increase in bankruptcy filings limited to small and/or privately-held firms. Bradley and Rosenzweig (1992), analyzing data from the Administrative Office of the U.S. Courts, documented a statistically-significant post-Act increase in bankruptcy filings by firms listed on the New York and American Stock Exchanges. Lawless and Warren (2005) claim that even this large increase may be substantially understated, with data collection and classification errors understating business bankruptcies by more than a quarter of a million per year. It should be noted that a Chapter 11 petition is a rare event for a NYSE or AMEX firm, since only slightly more than an average of 16 such firms filed in each year from 1980 to 1989, less than one percent of the listed firms.

2.4 The aftermath of Chapter 11

Conceptually, a Chapter 11 bankruptcy filing is intended to protect firm assets from creditors while management focuses on debt restructuring and reorganization of the firm's operations. People didn't stop shopping at Bloomingdale's just because its parent company Allied/Federated declared Chapter 11. Resorts International casino continued to entertain guests and gamers despite filing for reorganization. General Motors continued to build cars and trucks, and even to design new ones. If these firms had only the option of Chapter 7 liquidation, they would have been permanently shut down due to cash-flow problems. Not only is Chapter 11 a better option than

liquidation under some circumstances, it is considered a viable alternative to private debt restructuring in that it will give the financially-distressed firm the advantage of eliminating foreclosure as a weapon wielded by the creditors, as well as slowing down the financial freefall enabling management to regain control (Anderson, 1990).

Not every Chapter 11 reorganization filing is successful. Originally conceived as offering short-term "breathing room," data indicate that, on average, firms in Chapter 11 stay there for nineteen months, and some are there for years (When firms go bust, 1992). Even more disquieting, many of these moribund firms ultimately end up in Chapter 7 liquidation (disparagingly referred to as a "Chapter 18" bankruptcy – 11 plus 7). A study of 806 publicly-traded companies that filed for reorganization between 1979 and 1988 found that more than 80 percent did not survive intact. Of the 197 that did emerge from Chapter 11, nearly half were again "in the red" within two years, and more than one-quarter re-filed for Chapter 11 protection (Hotchkiss, 1995). Similarly, LoPucki and Whitford (1993) found that one-third of the 36 largest companies to emerge from Chapter 11 by 1988 subsequently re-entered Chapter 11. (This double-Chapter 11 is frequently called Chapter 22, and a few firms have crossed the threshold to Chapter 33). Gilson (1993) also found a high rate of re-filing for reorganization by financially distressed firms.

CHAPTER 3: Bankruptcy as a Risk-Management Strategy

Multiple researchers (e.g. Mayhew, 1975; Zemans, 1982 & 1983) have observed that laws and the legal process are often invoked to achieve goals that were never really intended by legislators. As explained in this chapter, Chapter 11 of the Bankruptcy Code may be a prime example of the "Law of Unintended Consequences."

3.1 Recognition of the strategic importance of Chapter 11

Browning (1984) and Miller (1984) were among the first to hint at the use of Chapter 11 as a management strategy, documenting bankruptcy as a means of evading labor contracts by companies such as Wilson Foods and Continental Airlines. The popular press began to notice a pattern of solvent companies filing for reorganization, and criticized management for choosing bankruptcy to avoid corporate responsibilities (Thompson et al., 1987). Brown, W. (1988) called this "creative bankruptcy," and *The Economist* noted it was abuse of a good law (Good Law Abuse, 1983). Bianco (1985) explained how the threat of Chapter 11 was used to strong-arm creditors into securities swaps in the junk bond market. Vartan (1986) described the Mutual Qualified Income Fund and Mutual Shares Fund, whose clearly-defined purpose is to invest in firms in Chapter 11, most of which would fit the "creative bankruptcy" pattern. Delaney (1989) was among the first to conceptualize "strategic bankruptcy." In a subsequent book, he noted that it is a "political device" and "another weapon in the corporate arsenal" (Delaney, 1992, p. 3). Shrader and Hickman (1993) and Tavakolian (1995) also suggested early-on that economically viable firms may choose to file Chapter 11 reorganization petitions for strategic reasons. To clarify, for the purposes of this paper,

as explained in Chapter 1, firms fitting into Delaney's "strategic bankruptcy" category will be referred to as risk-management bankruptcy (RMB).

3.2 Defining risk-management bankruptcy

In order to identify a bankruptcy for risk-management purposes, an empirical definition is needed. This was provided by Foster (1986, p.533), who summarized the correspondence between financial distress and bankruptcy, as follows:

	Not Financially-distressed	Financially-distressed
Non-bankrupt	I	II
Bankrupt	III	IV

Firms in either Category I or Category IV are appropriately categorized, and the distinction between them is quite clear – they are not financially-distressed and have not declared bankruptcy, or they are in financially-distress and have actually filed for bankruptcy protection. These Category IV firms fit the definition of FDB – Financial Distress Bankruptcy – for the purposes of this paper. Firms falling in Category II are financially-distressed, but have not (or not yet) declared bankruptcy. They may be expecting to resolve their liquidity problems through a private workout or troubled debt restructuring, may be seeking a merger partner, or may simply believe (rationally or not) that their financial condition is temporary and that bankruptcy is only one of several viable alternatives. It is the firms in Category III that fit the criteria of a risk-management bankruptcy (RMB), as long as a Chapter 11 filing rather than Chapter 7 was made, which is probable due to the lack of financial distress. These are

companies who voluntarily entered bankruptcy even though not at the brink of financial disaster, most likely as a strategic choice to achieve a specific objective.

3.3 Objectives of risk-management bankruptcy

A number of corporations are believed to have used Chapter 11 bankruptcies as a strategy to attain a critical management objective that they would have been unable to achieve in a timely manner outside the bankruptcy process. Delaney (1992) delineated a number of reasons solvent firms may choose bankruptcy, as follows (p. 161):

- To forestall lawsuits, forcing a compensation system in place of a tort system

- To eliminate union contracts

- To reduce a court award in a corporate takeover battle

- To force the government to take over responsibility for a pension plan or health care coverage promised to retirees

- To avoid cleaning up a toxic waste site

- To alter a bargaining relationship, or

- For revenge against a competitor.

New Generation Research, publisher of the Bankruptcy Yearbook & Almanac, refers to risk-management bankruptcy as "non-financial bankruptcy", and lists firms using this tactic in eight different categories (1999):

- Asbestos liabilities

- Labor relations

- Regulatory/nuclear problems

- Other litigation/contract problems

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- Patent lawsuits

- Pension disputes

- Personal injury lawsuits

- Alleged accounting improprieties

While there is considerable overlap among the two lists, they are not identical. In particular, consideration of accounting improprieties as "non-financial" is clearly an addition to the list. In the following sections, examples will be given of bankruptcy filings fitting each of the categories.

3.4 Asbestos-related risk-management bankruptcies

First and foremost among asbestos-related RMBs is that of Johns-Manville on August 26, 1982. At that time, this firm had more than $2.25 billion in assets, operated in the black, and was considered by most analysts to be in sound financial condition. In 1981, their sales topped the $2 billion mark for the first time (Brodeur, 1985), and they still received an A3 long-term debt rating from Moody's Investor Services (*Moody's Industrial Manual, 1982)*. As will be explained below, it is widely believed that the Johns-Manville bankruptcy declaration and subsequent corporate reorganization were intended to insulate the firm from asbestos-related lawsuits *that had not yet occurred*. Since the lawsuits had not occurred and the amount was deemed not estimable, they were not subject to accrual as a liability on the financial statements. Johns-Manville managed the financial risk of both current and future lawsuits by taking pre-emptive action to shift assets to the "new" Manville Corporation, while shifting liabilities to a relatively-small trust fund.

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Founded in the 1860s by H.W. Johns, and purchased in 1925 by Charles Manville, this firm made its fortune from asbestos. Asbestos is a family of naturally-occurring "fibrous silicate minerals mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength" (U.S. Environmental Protection Agency, 2008). Inexpensive, strong and flexible, asbestos was used in a myriad of products, including a wide variety of fire-protection garments, automobile brake linings, fire-resistant draperies and tiles, shingles, insulation, and paper and cement products. However, asbestos filaments are easily inhaled into the lungs, resulting in deadly asbestosis, lung cancer, and mesothelioma. Johns-Manville claimed they did not know of the danger until 1964, when a study found that even very small amounts of asbestos were correlated with lung cancer, that it also enhances the carcinogenic effect of other substances, and that more than 100,000 U.S. workers and their family members would die of asbestos-related diseases within the century (Selikoff and Lee, 1978). Critics have argued in court that Johns-Manville knew, or should have known, about the danger decades before.

The first lawsuit attributed to asbestos products was filed against Johns-Manville in 1966. The trickle turned into a torrent, and, in 1982, averaged 3 lawsuits per hour, every business day, until more than 16,500 lawsuits were pending against the corporation (Delaney, 1992). Despite this, the firm remained highly profitable. Johns-Manville was still listed at number 166 of the Fortune 500 list (www.Fortune.com), and continued to be included in the 30 companies of the Dow Jones Industrial Average (*Dow Jones Weighs Change in List,* 1982; Pierce, 1982). However, Coopers & Lybrand, Johns-Manville's auditor, qualified the firm's 1981

annual report, citing a footnote that acknowledged the potential liability from asbestos lawsuits, but exempting the firm from accruing a monetary reserve for the liability since the future losses were not deemed estimable (Johns-Manville Corporation 1981 Annual Report). Since the loss amounts were not estimable, there was no requirement for monetary accrual of a contingent liability under the Financial Accounting Standards Board Statement No. 5 *Accounting for Contingencies*.

On August 26, 1982, Johns-Manville filed for bankruptcy protection under Chapter 11, claiming that an estimated liability of about $2 billion for future asbestos lawsuits left it with no other choice (that liability was rather conveniently suddenly deemed estimable). That $2 billion estimation was made to facilitate the bankruptcy filing, but even Johns-Manville seemed to acknowledge it with a wink. The very next day after the bankruptcy filing the company took a full-page advertisement in *The New York Times,* the *Washington Post*, and several other major newspapers declaring "Nothing is wrong with our business" (Delaney, 1992, p. 62), a rather odd statement for a firm that just filed Chapter 11. Indeed, many commentators did ask how an apparently financially-sound company could file for bankruptcy protection (Vermeulen and Berman, 1982). Nevertheless, all asbestos lawsuits were immediately stayed, pending reorganization (Brodeur, 1985). Ultimately, the reorganization plan that was approved split the company into two parts. The first, newly-named Manville Corporation, would retain most of the assets and continue the operations of the business. The second, Manville Personal Injury Settlement Trust, would be funded initially with assets of approximately $1 billion and another $1 billion in future contributions from Manville's profits, and would be saddled with all the liabilities to

current and future asbestos victims. The commercial creditors received full payments of the amounts owed, but stockholders lost about eighty percent of the value of their investments (*Johns-Manville Corporation*, 2004). The greatest financial risk was transferred to the most vulnerable and under-organized group – the asbestos victims – who were left to count on the profitability of the new Manville Corporation for the next three decades.

The Johns-Manville/Manville Corporation case, while the first asbestos-related risk-management bankruptcy, surely was not the last. Joseph Stiglitz (the 2001 Nobel Prize winner in economic sciences), Orszag, and Orszag (2002) estimated that at least 61 corporations had filed for Chapter 11 reorganization as a result of asbestos liabilities by mid-2002. These included other huge corporations such as Owens-Corning (on October 5, 2000, www.occlaims.org) and W.R. Grace (on April 2, 2001, www.graceclaims.com). The number of filings had accelerated dramatically, with 15 firms filing in the first six months of 2002, more than in any 5-year period prior to 1999. Stiglitz, Orszag, and Orszag (2002) also found that the number of asbestos-victim claims skyrocketed. "In 1999, the Manville Trust had 32,500 new claims filed against it. New claims rose to approximately 59,200 in 2000 and 91,000 in 2001" (p. 6). Keeping in mind the original estimate of 100,000 asbestos-related claims total (Selikoff and Lee, 1978), and that fact that asbestos-related diseases have a long latency period, it is obvious that all original estimates of the personal and financial impact of the Johns-Manville bankruptcy were understated. Indeed, there have been a number of failed attempts to pass a federal bill, most recently one sponsored by Senator Arlen Spector in 2006. In the process of considering legislation, a number of

reports were made to the Senate indicating that dozens of companies have sought bankruptcy protection simply to manage asbestos-related legal risks (Labaton, 2006).

3.5 Other tort litigation risk-management bankruptcies

While asbestos-related strategic bankruptcies are among the most frequently cited by critics of the practice, quite a few otherwise-solvent firms have filed for protection under Chapter 11 as a strategy to reduce the impact of other mass tort claims. Roe (1984, p. 847) suggests this as a risk management strategy – a way to manage "massive but uncertain liability of a firm" by limiting liability to a finite value and to avoid "the haphazard timing and scope of liability as tort trials proceed."

A large number of these tort-driven bankruptcies derive from lawsuits over pharmaceuticals and/or other medical products. A.H. Robins, maker of the Dalkon Shield intrauterine device for birth control, beset by thousands of claims by women for product failure, uterine sepsis, miscarriages, and death, filed for Chapter 11 protection in August, 1985. Company officials claimed the firm was "otherwise financially healthy" and called the bankruptcy "preemptive" (Diamond, 1985). Indeed, Robins reported assets of $309 million in their 1984 annual report. In May, 1995, Dow Corning Corporation filed for reorganization after being overwhelmed by injury claims by hundreds of thousands of women who used their silicone breast implants (Feder, 1995). Twin Laboratories Incorporated (Twinlabs) filed for Chapter 11 protection in 2003, citing a deluge of lawsuits claiming damages such as stroke, seizure, and pulmonary hypertension from the herbal supplement ephedra (*Twinlabs files for bankruptcy…*). In 2001, Sulzer Medica threatened to file Chapter 11 bankruptcy to halt lawsuits related to faulty hip replacements if their proposed $780

million settlement was rejected by class action litigants (Akre et al., 2000; *Sulzer threatens bankruptcy*, 2001). Most recently Leiner Health Products, Inc., filed for Chapter 11 protection in March, 2008, following an FDA citation for violation of "good manufacturing processes" that prompted a massive recall of its entire over-the-counter range of products. It is widely believed that this filing was a pre-emption of mass tort litigation (Chang, 2008).

Not all mass tort issues ending up with Chapter 11 bankruptcy involved health care. In July, 1991, Piper Aircraft Corporation petitioned for protection. At the time, it certainly did not look like a bankrupt company, with $70 million in assets set against only $30 million in liabilities, and a backlog of orders worth more than $100 million. However, Piper cited more than twenty pending plane crash lawsuits as the reason for the filing (*Piper Aircraft blames…*, 1991). Four years later, Piper emerged from Chapter 11 as New Piper Aircraft Inc., having set aside $16 million in a trust for future crash claims related to planes already in use, with the judge noting that this judgment eliminated "substantial doubt and chaos" (Wilson, 1995). The lapse of time during which Piper enjoyed the protection of the bankruptcy court benefited the firm in another way. During 1994, a federal law was passed limiting the window of exposure for small (fewer than 20 passengers) plane crash litigation to eighteen years (the General Aviation Revitalization Act, P.L. 103-298), rather than the open-ended product liability time frame that Piper was so concerned about (Cohen and Brooks, 2005).

One of the most important developments in the Piper Aircraft strategic bankruptcy is that, unlike cases involving exposure to asbestos or pharmaceuticals in

which the claimants had already come in contact with the substance that would eventually cause their injury, there was no identifiable class of future victims for Piper. The judgment in Piper limited *future* claims on *future* plane crashes – a quintessential example of risk management.

3.6 Bankruptcy to alter or eliminate labor contracts

The seminal case was Shopmen's Local Union No. 455 v. Kevin Steel Products, Inc. (1975), which predated the 1978 Code, but which established that a company in bankruptcy was a legal entity distinct from the non-bankrupt version of the company and was, therefore, not bound by the labor contract of the original firm. Shortly thereafter was Brotherhood of Railway, Airline & Steamship Clerks v. REA Express, Inc. (1975), followed by *In re Alan Wood Steel* (1978), both of which help set the standards for rejection of labor contracts by firms in bankruptcy. The critical case that set the stage for the strategic use of bankruptcy in labor disputes came only a few years after the passage of the Code, with NLRB v. Bildisco & Bildisco (1984), with the Supreme Court loosening the standards for rejecting labor contracts to one of "business judgment", and noting that union members must make sacrifices just like any other claimants in a Chapter 11 case (Miller, 1984). The counsel for the union called this decision "the single greatest threat to collective bargaining since the passage of the Wagner Act" (Browning, 1984, p. 60).

On September 24, 1983, Continental Airlines filed for Chapter 11 bankruptcy protection, suspending all its domestic flights and laying-off most of its employees (Murphy, 1986). With debts of more than $650 million, and a steady stream of net losses including $84 million that year-to-date alone, the airline clearly was

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experiencing some financial difficulty. However, in the filing the claim was made that its labor contracts forced it to employ "hundreds more pilots and flight attendants than it needs" and that "high labor costs were a critical part of the difference between very substantial losses and reasonable profits" (*Continental Air to keep 4,200 on job*, 1983). A mere two days later, Continental officials announced that nearly one-third of the laid-off workers would be rehired, though Frank Lorenzo, the carrier's chairman and CEO, noted that "the terms on which we will be offering employment will be vastly different from those in effect prior to the filing of the bankruptcy petition. We must operate with marketplace labor costs." Both the unions and market analysts believed the bankruptcy filing was intended to "bust" the unions, negating their labor contracts and extracting major concessions (*Continental Air to keep 4,200 on job*, 1983), though those claims were not upheld in court.

Only a month later, in testimony before the United States Congress, William Scheri of the Machinists and Aerospace Workers Union, called Lorenzo "the number one union buster in the United States," and cited the fact that both TWA and Eastern Air Lines were both threatening bankruptcy as part of their collective bargaining negotiations" (*Unions denounce bankruptcy threats*, 1983). The immediate effect was considerable. Not only TWA and Eastern, but Delta Airlines, Hawaii Airlines, Capitol Air, Frontier Airlines, and others spiced-up labor negotiations that year with threats of bankruptcy (Neilson, 1984). The tactic seemed to work. Less than a year later, Continental had a quarterly profit of $10.4 million (*Continental Air in the black*, 1984), and it emerged from bankruptcy in 1986 (*Continental Airlines*, 1986).

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Though the Continental Airlines bankruptcy was attention-getting and on a grand scale, airlines were not the only firms to discover this tactic to pressure unions to renegotiate collective bargaining agreements. In April, 1985, Wheeling-Pittsburgh Steel Corporation filed a petition for Chapter 11 bankruptcy, forcing a renegotiation with the United Steelworkers (Roberts, 1987). Oklahoma-based Wilson Foods filed for bankruptcy in 1983 under Chapter 11, even though its own lawyer noted that the pork-packing firm "was clearly solvent" at the time of filing, with net assets of $67 million at the time. Wilson argued that it was better to abrogate union contracts and sharply reduce the wages for union workers than to eliminate the 9,000 jobs that were at stake (Brownstein, 1983). In *In re Southern Electronics Co, Inc.* (1982), a manufacturer of small electronic components was able to ignore the seniority provisions of their labor contract by filing Chapter 11 in April, 1982. Reserve Roofing Florida (1982) and Yellow Limousine Service, Inc. (1982) were able to obtain similar concessions (Bordewieck and Countryman, 1983), as was Salt Creek Freightways (1985). At least one quasi-governmental corporation, The San Jose (CA) Unified School District, filed for Chapter 11 protection in order to cancel the salary provisions of their labor contracts (Hardy, 1983).

The pattern of using Chapter 11 as leverage in union negotiations continues. Delphi Corporation, the nations' largest auto parts supplier, filed for bankruptcy October 8, 2005, in order to pressure the UAW into "some restructuring of its collective bargaining agreements" (Delphi files for bankruptcy, 2005). In fact, the company explained that the "reorganization is well-financed, well-planned, and well-organized" (Gapper, 2005). It was a well-scripted challenge to organized labor. In the

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words of *Financial Times* reporter John Gapper (2005), "Organised labour, meet organised capital." In June, 2008, the city of Vallejo, California, declared Chapter 11 and asked the court to break its union contracts, including those with firefighters and police (Mendel, 2008). In 2004, Horizon Natural Resources filed Chapter 11 to terminate its contracts with the United Mine Workers of America (Dao, 2004). Georgetown Steel of South Carolina requested relief from most of the provisions of its collective bargaining agreement when it filed for bankruptcy in 2003 (Wilson, 2003a), which was approved less than a month later (Wilson, 2003b). It seems that the airlines are perennially in this situation, with ATA, Aloha Airgroup, Continental, Frontier, Northwest, TWA, United, and many others filing (again) for Chapter 11 protection from labor contracts in the first decade of the twenty-first century.

There are some instances where the courts did not automatically favor the debtors looking for relief. In *In re Fiber Glass Industries*, (1985), the court decided to preserve a collective bargaining agreement since the employer was able to reorganize without modifying the union contract (Roberts, 1987). More recently, the judge in the Mesaba Airlines bankruptcy ruled in favor of the union and ordered the two sides to "keep talking" (Horwich, 2006). That bankruptcy action ended when Mesaba was acquired by Northwest Airlines (which, itself, was already in Chapter 11 bankruptcy requesting its own union concessions). In the vast majority of cases, though, the courts have permitted the debtors to abrogate labor contracts.

3.7 Bankruptcy to alter or eliminate pension obligations

Pensions and other benefit plans are a relatively-new phenomenon in employment relations. Prior to World War II, very few private companies offered

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pensions, health care, or other benefits to their employees. However, during the war two things created an initiative for firms to begin providing these benefits. First, corporate income tax rates spiked to fund the war effort, so there was an incentive for firms to spend money to reduce their taxable income. Second, there was a dramatic shortage in qualified employees. Since the federal government froze wages during the war, benefits became an excellent recruiting tool as they were exempt from the restrictions. With the financial boom following the war, labor unions began demanding and receiving pensions, health care, and other benefit programs. By the mid-1960s, nearly half of the private sector employees and 70% of government employees were covered by pension and benefit plans. (Sass, 1997)

It wasn't long before things began to sour. Sensational, lurid stories of union officials and insurance company employees who misused or stole funds swept the nation. Questionable practices, such as long requirements for "vesting" for pensions, instigated Congress to pass the Welfare and Pension Plans Disclosure Act of 1958. But it was the Studebaker Corporation bankruptcy in 1963 that really alarmed people – workers under 60 received between zero and 15% of their expected pension benefits no matter how long they had been with the company (President's Committee…, 1965). Ultimately, this lead to the Employee Retirement Income Security Act (ERISA) of 1974 (Gordon, 1984), the Pension Protection Act of 2006 (120 Stat. 780) (Fact Sheet: The Pension Protection Act…, 2006), and a number of other state and federal laws enacted to protect workers who depended on private retirement plans. These did not prove to be a panacea, as the dramatic impact of the Enron bankruptcy exemplifies. In the Enron 401(k) retirement plan, more than 62% of the assets were

invested in Enron stock, which was worth $80 per share in January, 2001, and only 70 cents per share in January, 2002, effectively wiping out the pensions of more than 19,000 employees (Purcell, 2002).

Historically, the literature addressing the problems in private sector pensions has assumed that the firms in question, who promised to pay these pensions, actually have a desire to fulfill that promise (see, for instance, FitzPatrick and Chu, 2007). In reality, pensions are a form of deferred compensation (Ippolito, 1985), particularly when they are designed as "defined benefit" plans (those in which the company is guaranteeing a certain payment in the future rather than a specific contribution today). As such, there is something of an incentive to abdicate the pension promise rather than paying it, particularly as a large cohort approaches retirement age. While the vast majority of companies have switched from "defined benefit" to "defined contribution" plans, reducing the buildup of additional future risk, those firms already obligated under old defined benefit plans are facing the risk of an undefined amount of future financial obligation. Retirees, and their spouses, are living considerably longer than anticipated only a few decades ago, and the original dollar amounts in defined benefits pension plans are likely to be inadequate. Compounding this problem are wages today that are much higher than they were 30 or 40 years ago when the covered employee may have started on the job, and defined benefit plans reflect recent earnings rather than wages in earlier years. "Backloading," in which the accounting cost to the firm of the "Accrued Benefit Obligation" (ABO) increases dramatically as a worker nears retirement (Gustman and Steinmeier, 1995), can create serious problems for the firm. On average, firms have about seven employees generating income for each retiree

receiving benefits. By the time the entire "baby boom" cohort has retired, the number of working employees will have dropped to 2.7 for each retiree (Penner, 1989). This is similar to the difficulties faced by the U.S. Social Security Program. Currently, Social Security is taking in more money than it pays out, but that is expected to reverse in 2017, and the funds are projected to be exhausted by 2041 (*Current Social Security System is Unstable…,* 2008).

Clearly, companies benefit from having pension plans. They are critical to the recruitment and retention of quality employees, and can serve as performance incentives and increase commitment to the organization. However, paying out enormous amounts of money to retirees is clearly not profit-maximizing behavior. Firms cannot simply terminate the pension plan, as that will not remove existing financial obligations and may even generate hostility that leads to counter-productive workplace behaviors such as retaliation, abuse of sick leave, and shirking of duties. For a firm with an onerous pension obligation, particularly heavily-unionized mature industries such as the airline, steel, and automobile industries, RMB can be an ideal solution to the problem (Rochelle, 2005). By declaring bankruptcy, and abrogating burdensome pension obligations, firms can strategically manage the risk of future benefits to current and future retirees.

The first firm to use risk-management bankruptcy to circumvent pension liabilities was LTV Corporation, a Dallas-based steel company (Orr, 1998). For years the LTV pension plan had not met the funding requirements of ERISA. Rather than meeting its funding obligations, they chose to pay the fines and divert the rest of the money into dividends to the shareholders. In 1986, the firm filed for Chapter 11

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bankruptcy, and the federal Pension Benefit Guarantee Corporation (PBGC) took over the firm's pension liabilities. At the time, one of its pension plans owed retirees two million dollars per month, but only had $7,700 in the account (Kilborn, 1986). In 1991, a U.S. District Court in New York ruled that LTV did not have to continue funding pension plans for certain subsidiaries (*Court upholds LTV on pensions, 1991)*, during the same month in which LTV reported year-to-date profits of nearly $83 million (*LTV Corp. reports earnings…*, 1991). Remarkably, the shifting of LTV pension obligations to the PBGC resulted in the insolvency of the PGBC, from which it did not recover until 1996 (Clark, 1991).

Other companies using risk-management bankruptcy to avoid pension and other benefits obligations followed, including Geneva Steel Holdings Corporation in 2002 (Geneva Steel Holdings Corp. SEC Form 8K, September 2002), Bethlehem Steel Corporation in 2001 (Isidore, 2001), Weirton Steel (Boselovic, 2003), a flurry of automakers, and a blizzard of airlines. In fact, in the early twenty-first century this occurred so frequently as to earn the sobriquet "pension dumping" (Hawthorne, 2008).

3.8 Bankruptcy to frustrate other obligations

In 1987, J.S. Bainbridge, the Assistant Attorney General of Maryland, observed "…when a solvent company files for bankruptcy many laymen are likely to suspect that the company is merely dodging its obligations" (Bainbridge, 1987). This comment was instigated by the declaration of bankruptcy by Texaco Inc. on April 12, 1987 (Bhandari and Weiss, 1996), a process that began in 1984 when Texaco ostensibly purchased Getty Oil Company. A challenge to that purchase was made by Pennzoil, who argued that Texaco illegally interfered with a contract for Pennzoil to

purchase Getty. Pennzoil pursued this accusation in court, eventually winning $10.53 billion, the largest settlement ever awarded in the United States (*Companies*, 1987) and more than four times the total amount of money Pennzoil made in 75 years doing business (Ramaswami and Moeller, 1990). Soon after this award was made, and while the decision was still in appeal, Texaco entered Chapter 11 bankruptcy to seek protection from that judgment (Cutler and Summers, 1988), apparently hoping it would force Pennzoil into settling for less than the awarded damages in a "bet-your-company" tactic (Texaco counsel Richard Miller quoted in Bainbridge, 1987, p. 111). During 1986, the year before the bankruptcy filing, Texaco had an after-tax profit of $725 million (Company News, 1988), and ended 1986 with net assets of more than $3 billion (Stevenson, 1987), so the company was clearly not teetering on the brink of bankruptcy prior to this legal decision.

In an article on the Texaco filing, it was observed in *Business Week* that "under current bankruptcy law, bankruptcy doesn't necessarily mean broke" (Moskowitz and Ivey, 1987). However, filing for bankruptcy immediately granted Texaco relief from having to either pay Pennzoil the judgment or post the *supersedeas* bond that would otherwise be required. After a good deal of public legal wrangling, Pennzoil agreed to settle for $3 billion – considerably less than the initial award, but still eleven times greater than any court ever sustained on appeal (Delaney, 1992), and the company emerged from bankruptcy in April, 1988. Humorously, the settlement had to be wired to Pennzoil in chunks, as the computer system at the Federal Reserve was limited to $999,999,999.99. This strategic bankruptcy bought time for the company to pursue legal appeals, allowed Texaco to temporarily cease paying interest on other debt,

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stopped any immediate seizure of assets, froze the interest accruing on the award, and enabled the firm to pressure Pennzoil into settling for a dramatically lesser amount.

A second RMB that was executed to frustrate an obligation was that of Smith International, Inc., in March, 1986. Smith, a supplier of products and services for the oil industry, had been sued for patent violations by Hughes Tool Co., one of their main competitors. Culminating a fifteen-year dispute, Smith had been ordered to pay Hughes $207 million in damages. Less than 24 hours after the judgment was issued, Smith petitioned for Chapter 11 protection, despite owning nearly $200 million in net assets. Not only did this maneuver prevent Hughes from collecting that judgment, analysts noted that this could be particularly harmful to Hughes, as the sanctuary of bankruptcy would give abundant time for Smith to strengthen ties with Japanese firms and increase Smith's competitive position. (Schlender, 1986). In July of the following year, Hughes agreed to settle for $95 million, less than half the original judgment (Applegate, 1987a). By the end of the year, Smith had emerged from bankruptcy. Only a few years later, Smith embarked on a spending spree that allowed it to purchase more than 45 firms over the next decade (company history at www.smith-intl.com). Today it is a highly-profitable member of the Fortune 500 (finance.yahoo.com).

The retail giant Kmart declared a risk-management bankruptcy on January 22, 2002. In its bankruptcy filing, Kmart indicated that it had assets of $17 billion, nearly $6 billion more than its liabilities, but indicated that competition and weak holiday sales instigated the request to reorganize (Reidy, 2002). However, quite a few analysts observed that the "real" reason for the Kmart filing was to get out of property leases

and to adjust the terms on other leases. In the filing documents, Kmart admitted that it would seek to terminate the leases on 350 stores. In addition, the firm had leases on 75 stores with Kimco at $10 per square foot, which exceeded the $6 market value and which it wanted to renegotiate. (D'innocenzo and Lee, 2002). Having successfully accomplished most of their goals, Kmart emerged from bankruptcy in 2003, and subsequently purchased Sears, Roebuck and Company, and is successfully operating as Sears Holdings Corporation (www.searsholdings.com).

Another use of bankruptcy to frustrate real estate-related debt is exemplified by the Chapter 11 filings of Sylmar Plaza, L.P., and Integrated Telecom Express Inc. In the Sylmar Plaza case, the Ninth Circuit Court of Appeals upheld the Chapter 11 reorganization, which was filed for the sole purpose of avoiding $1 million interest due on a mortgage loan (*In re Sylmar Plaza, LP,* (2003)). In the Sylmar case, the Ninth Circuit stated that "insolvency is not a prerequisite to a finding of good faith" (at 1074), though many lawyers and commentators found it "distasteful" that a commercial debtor could use bankruptcy as "a tool for the sole purpose of depriving its principal creditor of a contractually agreed-upon default rate while leaving the debtor solvent" (Murray, 2003, 48). In contrast, the Third U.S. Circuit Court of Appeals issued a decision that limits the use of "strategic" bankruptcy filings by solvent companies. In the case *In re Integrated Telecom Express Inc.* (2004), the court held that "a Chapter 11 petition filed by a solvent and financially healthy debtor, which had no intention of liquidating or reorganizing as a going concern…had not filed its bankruptcy petition in good faith" (at 123). In the Integrated case, the debtor attempted to reject a lease for real property by filing for Chapter 11 protection

(Politan, 2005). The question remains whether either of these decisions becomes the precedent for future decisions.

A ground-breaking RMB was that of Republic Health Corporation, a Dallas-based hospital management firm, who filed for bankruptcy in December 1989, only a few years after executing a botched leveraged buy-out that left it more than $644 million in debt. Only five months later, they emerged from Chapter 11 with their debt reduced to $378 million, and their annual interest payments slashed from $93 million to $40 million. (*Republic Health Leaves Chapter 11…*, 1990).

Yet another person using the risk-management bankruptcy tactic to renegotiate bond debt is the infamous Donald Trump. In 1988 he purchased a failing fledgling casino project in Atlantic City from Resorts International, investing more than $1 billion over the course of the next year into what became the Trump Taj Mahal. Much of that expenditure was financed with high-interest "junk" bonds, common at that time. In 1991, the Trump Taj Mahal filed for Chapter 11 bankruptcy, with $675 million in junk bond debt. Despite the New Jersey Casino Control Commission rule that states that a casino must be solvent in order to stay in business, the Taj Mahal continued due to a creative interpretation of that law. Trump convinced the Commission that, since Chapter 11 had been filed, the payments on the loans were no longer due, so the casino was solvent. Since the Taj Mahal owned the gaming licenses, the bond holders were "over a barrel" and quickly agreed to renegotiate the terms of the bonds to the benefit of the casino and Mr. Trump, with the Taj Mahal emerging from bankruptcy a mere 42 days later (Johnston, 2002; Barr, 1992). Closely partnered with Trump was Merv Griffin, who accomplished a similar Chapter 11

sleight-of-hand with the Resort's Hotel in Atlantic City in August, 1989 (www.fundinguniverse.com).

3.9 Risk-management bankruptcy to displace environmental liability

There are many different types of environmental obligations imposed by a variety of federal and state statutes. Essentially, they all stem from situations in which a corporation or other private party has created an environmental hazard such as contaminating water or property, polluting the air, or producing toxic materials. In such cases, there are usually four direct costs to the offending party: they must reimburse costs incurred by the government or other parties to respond to the situation, the cost to perform a clean-up or other amelioration, the cost of legal penalties, and the obligation to henceforth comply with environmental laws and regulations (Heidt, 1995). Critical to this is the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA, more commonly known as the "Superfund" Act), enacted in 1980 (42 U.S.C.A. §§ 9601-9675), which made the offender liable for clean-up of contamination either directly, or indirectly by repaying the government for the clean-up (www.epa.gov/superfund). However, these CERCLA clean-up orders have presented problems in bankruptcy court, and a number of firms have used Chapter 11 to obtain a discharge of that debt, essentially displacing the costs of the clean-up from the owners of the company in violation to the general taxpayer.

In 1985, the state of Ohio filed a claim against William Kovacs (doing business under a number of names), in order to get Kovacs to finance the clean-up of a hazardous waste disposal site (469 U.S. 274 (1985). The state had already seized the physical property, but was seeking money to complete the work. Kovacs filed for

bankruptcy, and the U.S. Supreme Court upheld a lower court decision that the clean-up cost commitment was discharged in bankruptcy (Witkin, 2004). A similar decision was reached in 1988 in United States v. Whizco, Inc. (841 F. 2d 147, 148 (6th Cir. 1988)), when the Department of Interior attempted to get the defendant to pay for the reclamation of an abandoned mine, and Whizco was able to have that debt discharged in bankruptcy (Heidt, 1995). Decisions such as these have led people to call bankruptcy "the last loophole for polluters" (Baker, 1993), and a number of companies have set-up wholly-owned subsidiaries that are thinly capitalized but that carry all the environmental liability which are designed for the refuge of bankruptcy (Aronovsky and Fuller, 1990; Bergmann, 2004). The only solution to this is for the court to "pierce the corporate veil" and allow action against the parent company, which has been done only in narrow circumstances (Bergmann, 2004).

More recently, the Chapter 11 bankruptcy of American Smelting and Refining Company (Asarco) has attracted media attention and drawn to the forefront the issue of strategic bankruptcy as a tactic to avoid environmental obligations. The Tucson-based Asarco was blamed for more than 90 sites in 22 states where the ground was contaminated with lead, arsenic, and cadmium (Millman, 2006),including at least 19 Superfund sites, and had an estimated liability of more than $1 billion to clean up the sites (*Toxic Waste Cleanup Getting Short Schrift…,* 2006). Following actions perceived as a corporate "shell game," shifting valuable assets to affiliated companies while the husk was left with the liabilities but no assets, that husk was then protected by Chapter 11 (Lawton and Oswald, 2008). Asarco emerged from bankruptcy in 2008, with the press noting that "[a]n unprecedented rise in copper prices, bankruptcy and

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dedicated managers have helped transform Tucson's Asarco LLC from a financial train wreck into a solid business with $1 billion in cash, no operating debt and a promising future" (Jarman, 2008).

An environmental dispute between US Airways/Piedmont Airlines and the Maryland Department of Environment (MDE) was also the object of a strategic bankruptcy. The Maryland Aviation Administration and MDE sought cleanup costs for contamination at a fuel storage and transfer station at Baltimore/Washington International Airport (BWI), filing proofs of claims of more than $23 million. Initially, US Airways filed for bankruptcy in 2002, ultimately negotiating a deferred settlement of these costs with the MDE (Lawton and Oswald, 2008). Having failed to pay that deferred settlement, US Airways again filed for relief under Chapter 11 in September, 2004, primarily to impact labor contracts and pension obligations, but also to seek release from these environmental cleanup obligations (Maynard, 2004). This was ultimately resolved in 2008, with the airline shedding about $11 million of the $23 million in cleanup costs, postponing payment for six years, and avoiding interest and penalties on that liability (Lawton and Oswald, 2008).

In 2007, W.R.Grace finally agreed to a $34 million settlement in bankruptcy for environmental cleanup at 32 Superfund sites involving pesticides, solvents, acids, caustics, cyanide, PCBs, petroleum, and other hazardous toxins. The company had filed for Chapter 11 protection in April, 2001, when these cleanup costs were anticipated at hundreds of millions of dollars (*Bankrupt W.R. Grace…*, 2007). In *In re APCO* (2007), claims exceeding $2 million for environmental cleanup were denied in

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bankruptcy. Similar Chapter 11 outcomes resolved from *In re FV Steel and Wire Co.* (2007) and *In re Methyl Tertiary Butyl Ether (MTBE) Products Liability Litigation* (2007) (Bowles, 2007).

The use of bankruptcy to avoid financial responsibility for environmental liabilities has not gone unnoticed. At the request of four senators, the Government Accountability Office (GAO) looked into this issue. In their report *Environmental Liabilities: EPA Should Do More to Ensure that Liable Parties Meet Their Cleanup Obligations* (2005), the GAO clearly chastised the EPA for being too lax in finding and fining polluters that hide behind Chapter 11. In that report, they noted that, of the 231,630 businesses that filed for bankruptcy between 1998 and 2003, information on unpaid environmental liabilities is only given for 136, an unrealistically-small number. The report chided the EPA to be more aggressive in pursuing payment for corporate environmental liabilities (Leone, 2005). A number of legal authors have offered suggestions on how to amend the Bankruptcy Code to plug these environmental liability loopholes (Bergmann, 2004; Gibson, 2000; Kishiyama, 2003; Resnick, 2000).

In the wake of the disastrous BP oil spill in the Gulf of Mexico, a number of politicians, commentators, and journalists have speculated that the oil company may file for bankruptcy protection in the United Kingdom, or may cut loose its BP America subsidiary and allow that entity to file Chapter 11. This has even led to jokes that BP stands for Bankruptcy Protection (Carson, 2010). It is noted that "In the U.S., unlike in most countries, you can file for bankruptcy even if you are perfectly solvent" (Baum, 2010). Kenneth Feinberg, who was appointed by the President Obama to administer

the $20 billion victim compensation fund that was strong-armed from the firm, stated a BP bankruptcy would be "a horror" and "a disaster" (interview by Neil Cavuto, 2010). The U.S. House Judiciary Chairman John Conyers has even introduced a bill aimed at preventing BP, and related parties such as Transocean Ltd., from seeking bankruptcy protection in the U.S. or the U.K. (Baum, 2010). Fundamental to this speculation is the debate whether BP would actually be financially insolvent, or if this would simply be a strategic move designed to limit their environmental liability and clean-up costs.

3.10 Bankruptcy for temporary protection from external forces

Of course, not every firm filing Chapter 11 does so to avoid contractual relationships or other obligations. Many file simply to retrench for temporary protection from external threats to their survival. While management strategies tend to emphasize the importance of growth, size, and profitability rather than low growth or even decline (Whetton, 1980), some organizations may actively select retrenchment strategies. The focus on retrenchment may be instigated by threats such as customers not paying for goods/services provided, scarce resources, increasing competition, or other factors contributing to higher levels of uncertainty (Aldrich, 1979; Aldrich, McKelvey, and Ulrich, 1984; Thompson, 1967). Flynn and Farid (1991) suggest that firms facing medium-to-high external environmental threats are likely to have reduced alternatives, such as the ability to obtain capital or vertically integrate, and one of the better remaining alternatives may be Chapter 11. They go on to suggest that the timing of the Chapter 11 declaration may be a critical factor in the ultimate survival or

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failure of the firm. This idea is challenged by Moulton and Thomas (1993), who argue that bankruptcy is a costly response to environmental threats, financial or otherwise, but acknowledge that small businesses and entrepreneurial ventures may have issues very different from the NYSE- and AMEX-listed firms they studied.

Given this external threat perspective, it could be argued that every intentional voluntary Chapter 11 filing is "strategic" to at least some extent. However, this paper will be limited to those bankruptcies that substantially fit the definition used by Browning (1984), Miller (1984), and Delaney (1992), with the common element that risk-management bankruptcies are generally invoked primarily to manage a the risk from a particular major problem such as a product liability claim or labor dispute.

3.11 Risk-management bankruptcy outside the United States

Since the 1978 Bankruptcy Code, including Chapter 11, is a law of the United States only, there is some question as to whether similar strategic bankruptcy occurs outside the country. Moerman and van der Laan (2007), investigating the bankruptcy of James Hardie Industries, Ltd., of Australia, found a similar pattern of avoiding long-tail liabilities for asbestos claims and considered it to qualify as "strategic" bankruptcy. While international bankruptcy law is beyond the scope of this paper, it is likely that any system allowing for reorganization to solve financial problems will create incentives unassociated with actually arriving at a solution, so risk-management bankruptcy is likely to occur in any country that has laws comparable to Chapter 11.

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CHAPTER 4: Bankruptcy Models

Why do companies fail? Of course, there are those that experience a single catastrophic event, such as fraud on an epic scale, a major hurricane or other natural disaster, or a significant product-tampering incident. However, evidence suggests that fewer than ten percent of business failures annually are related to some kind of catastrophe or calamity (Warren and Westbrook, 1998). Not surprisingly, the same survey found that most businesses fail due to business reasons, including loss of important clients, a poor location, high costs of doing business such as rent and insurance, new competition, and the like.   So what separates the firms who file for Chapter 11 reorganization from those who file for Chapter 7 liquidation or who struggle along doing nothing at all? There are both qualitative and empirical models. The former are generally descriptive, while the latter are usually designed for early prediction of bankruptcy. Appendix C provides a brief overview of both qualitative and empirical bankruptcy models.

While a study of bankruptcy modeling is beyond the scope of this dissertation, the two measures of financial condition used in this research stem from empirical bankruptcy models – Altman's Z-score (raw) and Altman's Z-score (categorical).

4.1 Univariate bankruptcy modeling

While bankruptcy prediction studies have varied in their objectives, they are primarily designed to predict bankruptcy early enough to help investors and other organizational stakeholders avoid substantial losses. Statistical bankruptcy models

are, by far, the most frequently used, included in 64 percent of 89 important empirical studies of bankruptcy prediction (Aziz and Dar, 2006). They generally focus on symptoms of failure, such as poor financial statement ratios and other indicators of poor performance, and the primary sources of information are reports generated by the companies in question.

Univariate bankruptcy modeling traditionally reflects financial statement analysis, focused on the interpretation of financial statement ratios. Each ratio is examined individually, with the presumption that they should differ between firms that are financially solid and those that are failing. Most studies use a paired sample technique, matching failing and non-failing firms over a specific period of time, including FitzPatrick (1932), Merwin (1942), and Beaver[1] (1966, 1968). Certain financial statement ratios discriminated among failed and non-failed firms, with return on assets, cash flow/debt, net income/total assets, total debt/total assets, working capital/total assets, and current ratio being the ones found to be most relevant (Morris, 1998). While univariate models are no longer commonly employed, they have been shown to have prediction accuracy of more than eighty percent (Aziz and Dar, 2006). No univariate measures will be used for this research, since they are subsumed by the multivariate measure, Altman's Z-score, described below.

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[1] Beaver (1966) was the first scholar to analyze accounting-based measures as bankruptcy indicators, employing measures still in use such as EBITDA, EBIT/total interest, and long-term debt/equity.

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4.2 Multivariate Modeling – Altman's Z-score

Univariate analysis such as Return on Assets, by definition, examines only one ratio at a time. Since any assessment of the health of a firm is likely to involve a number of dimensions, the univariate approach does not allow capture of any integrated effect of more than one dimension. Multiple Discriminant Analysis, allows the researcher to classify an observation (an organization) into one of several *a priori* groups (bankrupt and non-bankrupt) based on the individual characteristics of the observation, and is particularly useful when the dependent variable is qualitative (such as "bankrupt") (Aziz and Dar, 2006). The MDA model is a linear combination of the discriminatory variables such as financial ratios. The discriminant coefficients are applied to the actual data for an observation, and provide the basis for classification into one of the mutually-exclusive groups. MDA permits the analysis of the entire variable profile of a firm simultaneously rather than sequentially (Altman, 1968).

In a study of 66 manufacturing firms (33 failed and 33 non-failed) from 1946 through 1965, Altman (1968) developed the "Z-Score Model" combining five financial measures, including accounting and stock market variables, into a overall score of corporate financial health. Altman concluded that this model could accurately predict corporate health for between one and two years prior to failure. A number of other researchers used MDA to derive various business failure prediction models (including Deakin, 1972; Blum, 1974; Rose and Giroux, 1984). Altman's is, by far, the most commonly employed model in bankruptcy prediction, appearing in more than thirty percent of studies, and has demonstrated overall prediction accuracy of more

than 85 percent (Aziz and Dar, 2006). It has gained wide acceptance, and is used by auditors, loan evaluation databases, and courts in the United States (Eidleman, 1995).

For the purposes of this study, Altman's Z-score was used in two ways. First, the numerical Altman's Z-score was calculated for each firm, using the equation:

$$Z = 1.2T_1 + 1.4T_2 + 3.3T_3 + 0.6T_4 + .999T_5$$

The components of this equation are defined as:

T1 = Working Capital/Total Assets

T2 = Retained Earnings/Total Assets

T3 = Earnings Before Interest and Taxes/Total Assets

T4 = Market Value of Equity/Total Liabilities

T5 = Sales/Total Assets

Altman (1968, 2000) used this numerical value to predict the likelihood of bankruptcy. In particular, he used the score to categorize firms based on this "Altman's Z" as either "bankrupt" (Z<1.81), "uncertain" (1.81<Z<2.99), or "non-bankrupt" (Z>2.99) (the parallel terms "distressed," "uncertain," and "safe" are also used in some of Altman's writings). For each firm included in this study the numerical Altman's Z-score was calculated, and the results thereof were then used to classify firms according to Altman's categorization.

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4.3 Problems with bankruptcy modeling

In an ideal world, bankruptcy modeling would offer a way for investors, suppliers, employees, and other stakeholders to benefit from an early warning system regarding the financial health of a corporation. However, none of the widely-used models has a predictive accuracy of more than ninety percent. The difficulties the models have with predictive accuracy, including both the Type I and Type II errors, are addressed below.

4.3.1 Confounding by non-objective data.

In any study of firm financial performance or condition, including bankruptcy modeling, it is important to recognize that the majority of the data being used are generated by the firm in question. Financial statement information, on which most bankruptcy models depend, is produced by the management of the firm. Even the models that use market-based data such as stock prices are impacted by the fact that the market is reflecting, or influenced by, the financial statement information and other information generated by the firm in question. These data are confounded by the extent to which one or more pieces of information are subject to managerial manipulation through decisions regarding things such as the sale of assets, liquidation of inventories, or cuts in research and development expenditures (Venkatraman and Ramanujam, 1986). Even though financial statement information has the appearance of objective measurement, judgment of both management and auditors comes into play, and there is often more than one "correct" accounting rule that could be applied.

4.3.2 Limited ability to discriminate between failing and non-failing firms.

One of the primary weaknesses in any bankruptcy prediction model is the inability to clearly delineate between those firms that are in serious financial distress ("failing" or "bankrupt" firms) from those that are not in serious financial distress ("non-failing" or "non-bankrupt" firms). For instance, in Altman's Z-Score model (1968), firms which fell between 1.81 and 2.99 were described as in the "zone of ignorance" and susceptible to error in classification (above 2.99 was "non-bankrupt" and below 1.81 was "bankrupt"). Of the 66 firms included in Altman's study, ten had Z-scores in this gray area. In most studies, there is a substantial gray area when a bright line of demarcation would be far more useful.

However, as noted above, Altman's Z-score continues to have prediction accuracy of greater than eighty-five percent. As described in Appendix D, most newer and more sophisticated bankruptcy models also demonstrate prediction accuracy of between 80 and 89 percent. Type II errors, in which firms are classified as "bankrupt" or "likely to go bankrupt" when they do not, make up the majority of the prediction failure of most bankruptcy models, as described below.

4.3.3 Type I and Type II errors.

As with any other statistical model, two types of errors may be observed. Type I error occurs when firms classified (predicted) as financially healthy are actually failing or bankrupt or seriously financially-distressed. Type II error occurs when firms are classified as failing when they are actually non-failing. The Type I errors are of great significance to stakeholders. Employees of a firm, investors, customers, and

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creditors are unlikely to hitch their future financial and emotional health to a wagon driving off a cliff. If the firm is classified as financially healthy, when it is actually mortally-wounded, it is unlikely that measures will be taken in a timely manner to prevent further deterioration in the firm's financial situation. However, little research was found that was devoted to Type I error in bankruptcy prediction. This is a field to which future research should be devoted. Not only does Type I error risk investment principal, livelihoods, and enormous collection and legal fees, it places a risk on a community dependent on a firm in many ways.

Type II error in bankruptcy prediction has been the subject of much more study. Deakin (1977), in a follow-up to several prior studies, concluded that the number of firms classified as "failing" greatly exceeds the number that actually do fail, but did not pursue the reasons for these prediction errors. The financial consequences of misclassification include loss of sales, employee attrition, depressed stock prices, and other indicators of a crisis of confidence. Alarmingly, or amusingly, Deakin addressed these consequences of Type II error by simply recommending that the model only be used in situations where misclassification would not be costly. El-Zayaty (1986), further developed Deakin's (1977) study by applying Altman's (1968) Z-Score model to 1,225 manufacturing firms for the fiscal year ending in 1979. Of the 132 firms that were predicted by the model to fail, only four actually experienced business failure, a Type II error rate of 97 percent.

4.4 Conclusions about bankruptcy modeling and risk-management strategy

Bankruptcy prediction models have varied widely, with differing objectives, variables, time periods, and methodology. Early prediction of bankruptcy has important implications for investors, creditors, employees, and other stakeholders of at-risk firms. However, virtually all bankruptcy modeling is focused on whether or not a firm is likely to experience a severe financial crisis leading to insolvency. There is little or no research that indicates predictors of bankruptcy for risk-management purposes, nor is there research resulting in a model that discriminates *ex post facto* between "traditional" FDB Chapter 11 and RMB Chapter 11 filings. While it is important to stakeholders to be able to predict financial distress, it would also be very beneficial to bankruptcy scholars to be able to easily tease-out those firms that filed Chapter 11 for strategic purposes. While this is not a study of financial bankruptcy modeling, the ability to exclude strategically-bankrupt firms from empirical bankruptcy models should improve the validity and predictive strength of those models by removing cases which are "noise" rather than substance.

However, simply noting when firms have the greatest threat to survival is not the same as evaluating when they are most likely to file for bankruptcy protection under Chapter 11, nor is it the same as determining at which life-cycle stage they are most likely to file for reorganization as a risk-management strategy. Those have yet to be determined.

CHAPTER 5: Bankruptcy and Turnover

There appear to be no studies that consider the relationship between strategic risk management bankruptcy and turnover at the top, whether that of the top management team or the board of directors. There was a flurry of work in the late 1980s and 1990s relating board or management turnover to a variety of financial measures of performance (e.g. Hatfield , Worrell, Davidson, and Bland, 1999), some of which is useful to inform this study. But, as observed in Chapter Four, both accounting-related and market returns-based measures of performance fail to serve as ideal indicators of firm performance. There are, of course, notable studies that address turnover at the top (including Craig, Deaton, and Tollison, 1977; Frederickson, Hambrick, and Baumrin, 1988; Grusky, 1961; Salancik and Pfeffer, 1980). In particular, turnover of the CEO position is of considerable interest, but much of the work focuses on the consequences of turnover rather than the antecedents thereof (Barker, Patterson, and Mueller, 2001; Harrison, Torres, and Kukalis, 1988; Kesner and Dalton, 1994; Shen and Canella, 2002; Weiner and Mahoney, 1981), or on mergers and acquisitions as an antecedent to top management turnover (Krug, 2009; Krug and Shill, 2008; Walsh, 1988). A few studies examined non-financial measures of performance as related to subsequent involuntary management turnover (for instance, Audas, Dobson, and Goddard, 1999).

Top management, for the purpose of this study, is defined as the set of individuals holding the title of Chairperson of the Board, Chief Executive Officer, Chief Financial Officer, and Chief Operating Officer (or the equivalents thereof if determinable). Of course, not every corporation will have defined each of these

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positions, but people with reasonably-equivalent titles were included. A change in top management is defined as any change in the set of individuals holding these titles. Simply changing/exchanging titles within the group is not considered a top management change by some researchers, since there is evidence that many CEO changes are part of a normal succession process, with the Chairman/CEO passing the CEO title to the President while grooming him or her to ultimately move into the Chairman position (Vancil, 1987). However, for the purposes of this study, any change in the individual possessing a particular title is considered a change in that position, since the author considers it nearly impossible to distinguish planned succession from unplanned succession without possessing insider information. Similarly, a change in the board of directors is defined as any change in the set of individuals listed as members of the board in filings on corporate tax returns and with the Securities and Exchange Commission. By uniformly presuming that any change involves something other than planned succession, it is expected that the underlying rate of planned change will be equally ignored across the three categories of firms of interest in this study (RMB, FDB, and non-bankrupt).

Management and board member changes occur for a wide variety of reasons, many of which may have no relation to performance. People retire, become incapacitated, move on to better positions, have disagreements or policy differences, or simply lose interest and leave. Warner, Watts, and Wruck (1988) randomly sampled 269 publicly-traded firms that reported a change in top management between 1963 and 1978, and found ten different stated reasons for leaving (in addition to "no reason"), and many corporations cited more than one reason. In only one circumstance was the

reason given as "fired." Similarly, Weisbach (1988) sampled 367 NYSE firms between 1974 and 1983, and found thirteen stated reasons for CEO resignations in addition to "no reason." In only nine of the cases was performance mentioned, and none were publicized as firings.

Since forced departures are seldom described as "terminations" in press announcements, it is unlikely that any realistic assessment of the number of forced departures can be made. However, it is reasonable to assume that forced top management or board departures are more strongly correlated with poor performance than with good performance. If the assumption is made that the non-performance-related reasons for leaving either a management or board position are relatively uniform among corporations, any unusual increase in turnover at the top is likely to correlate with poor performance. This assumption is the foundation for most of the research on management and/or board turnover.

Organizational performance has often been suggested as the single most important dependent variable in organizational research (Dalton, Todor, Spendolini, Fielding, and Porter, 1980: Venkatraman and Ramanujam, 1986), but there is tremendous ambiguity in what constitutes performance. Dess and Robinson (1984) note the multidimensional and complex nature of performance. Bourgeois (1980, p. 235) calls performance a "quagmire of quantification and dimensionality," and Weiner and Mahoney (1981) cite the almost infinite number of performance indicators. However, Daily (1994, p. 263) states:

> Filing for bankruptcy protection provides an explicit case of formal organizational failure: consequently, bankruptcy offers what may be the definitive organizational performance indicator.

Daily proceeds to encourage research into firm failure as both interesting and important, particularly to the study of strategic leadership. It appears that few have heeded her call. Nor, as this author will demonstrate, is bankruptcy really a definitive measure of performance.

5.1 Financial distress and top management turnover

While prior research has demonstrated that the probability of forced dismissal of the top management team, particularly the CEO, increases when the financial performance of a firm is relatively low (e.g. Engel, Hayes, and Wang, 2003; Farrell and Whidbee, 2003, in the U.S., and Dahya, McConnell, and Travlos, 2002; Florou, 2005, in the U.K.), only a few studies explicitly examine the correlation between Chapter 11 bankruptcy and CEO turnover. Hotchkiss (1995) found that 55 percent of the publicly-traded firms that emerged from Chapter 11 as publicly-traded had replaced the CEO within two years of the original filing date. Brockmann, Hoffman and Dawley (2006) investigated 208 manufacturing firms that filed for Chapter 11 bankruptcy protection between 1980 and 1995, and found that 38 percent replaced the CEO during the first full year after the filing was made. Hotchkiss (1995) looked at the period prior to a Chapter 11 filing and found that 41 percent of firms replaced the CEO within the two years prior to the month of filing, and that further changes occur when firms exit bankruptcy.

No studies were located examining the correlation between Chapter 11 bankruptcy and turnover among non-CEO members of the top management team. In

one related study, research that considered the relationship between top management turnover and financial distress, Gilson (1989) analyzed NYSE and AMEX stock returns and looked at only those firms in the bottom five percent for unadjusted stock returns between 1979 and 1984. From this group, those firms that defaulted on debt, privately restructured debt, or filed for bankruptcy (Chapter 7 or 11) were identified as "financially distressed." Gilson (1989) then examined all these firms for management changes (limiting the study to turnover of the CEO, president, and/or chairman of the board), finding a dramatic difference between the firms that were categorized as financially distressed and those that had poor stock performance but were not financially-distressed. For the three positions Gilson (1989) studied, the mean number of changes per firm-year was .52 for the financially-distressed companies, making them almost three times more likely to experience turnover than the non-financially-distressed firms. Gilson (1989) also found that, following their departure from the financially-distressed firms, managers were not subsequently employed by another exchange-listed firm for at least three years (controlling for those already at or near retirement age). Gilson (1990) followed-up that study by expanding the data to include one more year (1985), and looking at 111 publicly-traded companies that met the earlier criteria for financial distress. He found that only 43% of CEOs in these firms retained their positions for two years, and that they subsequently serve less often as directors of other companies.

Two earlier related studies were located. Ang and Chua (1981) examined 52 publicly-held firms who filed for Chapter 7 bankruptcy between 1969 and 1973 (predating the possibility of a Chapter 11 filing), and found that 63% of the top (three

highest-paid) executives lost their jobs within three years of filing with a spike in the second year, and that a substantial number of those executives lost more than half of their positions as outside director on another firm's board. The authors did attempt to correct for the obvious long-run outcome of most Chapter 7 bankruptcy proceedings – managers at a fully-liquidated firm clearly will lose that job – and did find the outlook for those managers was dismal compared to those at the bankrupt firms that eventually regained their financial footing. In the earliest study (Warner, 1977), a sample of 11 railroad bankruptcies between 1933 and 1955 revealed that CEOs are replaced at an annual rate of 8% over the five years following bankruptcy (for a total of 40% job loss), slightly lower than a control sample of non-bankrupt railroads. This study is not particularly informative due to the very small sample size (8% is slightly less than one person per year), the narrow field of interest, and the fact that the years investigated include the dramatic economic and social upheaval of the Great Depression and WWII (which are likely to make the results ungeneralizeable).

The current research contributes to the turnover literature by intentionally examining the relationship between turnover of the top management team members (CEO, CFO, COO, and Chairperson of the Board) and Chapter 11 bankruptcy. For the purposes of this study, the comparison is between matched FDB and RMB firms. It is recommended that a more extensive study of top management turnover under conditions of FDB Chapter 11 bankruptcy be conducted.

5.2 Financial distress and board turnover

While board composition as related to corporate performance is widely studied, the focus of such studies tends to be on board membership antecedent to performance (for instance, Daily, 1996; D'Aveni, 1990; Gales & Kesner, 1994). There are few studies that examine the relationship between firm performance, financial and non-financial, and subsequent turnover on the board of directors of organizations. In one example, Boeker and Goodstein (1991) studied hospitals, finding that poor performance in both occupancy rate (bed count) and financial measures correlated with changes in board composition.

Gilson's (1990) study of 111 publicly-traded financially-distressed firms between 1979 and 1985 is the only study found that examined the relationship between financial distress and subsequent board turnover. He found that only 46% of incumbent directors remain two years after bankruptcy or private debt restructuring, and that those directors subsequently hold significantly fewer seats on other boards. However, these data may be confounded by unitary leadership – that is, that a single person serves simultaneously as CEO and board chairman (Kesner, Victor, and Lamont, 1986). For the general time period covered by the Gilson (1990) study, the CEO served as a unitary leader in over 75 percent of large U.S. firms (Heidrick and Struggles, 1981; Korn/Ferry International, 1981), a practice which is almost as common nearly 30 years later (Heidrick and Struggles, 2008). It is unclear whether the Gilson (1990) data double-count CEOs who leave the firm who are also board members, or whether they are filtered from the results reported.

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In a recent study of Fortune 1000 firms, in response to the question "Has your company ever asked a director to resign or not stand for re-election?" only 31% responded that they have done so due to poor performance (Korn/Ferry International, 2008). It is unclear whether the "poor performance" is defined as individual performance, board performance, or overall performance of the corporation. The time frame "ever" is also poorly defined. Clearly, there is a need for research examining the relationship between poor firm performance and subsequent board turnover.

This research contributes to the literature on board member turnover by explicitly examining the correlation between board turnover and Chapter 11 bankruptcy. Again, this study is limited to a comparison of matched RMB and FDB firms. It is recommended that a more extensive study of board member turnover among FDB firms be conducted.

5.3 Stock Performance and Top Management Turnover

Although the contribution of top management to firm value is not directly observable, stock performance is frequently used by researchers as a proxy for management performance. Additionally, stock performance is often used by the board of directors and other stockholders as a measure to evaluate and reward management performance. While this is a commonly used proxy, it is a noisy one, since there are a variety of exogenous factors that influence the price of a stock. Studies using stock performance as a proxy almost invariably make the assumption that most of the noise-creating factors, such as the general state of the economy and the overall performance of the stock market, do not uniquely affect the firm in question.

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One of the first studies to demonstrate the correlation between stock performance and management turnover was conducted by Coughlin and Schmidt (1985), who examined public data from 1977 through 1980 and found that changes in management are motivated by changes in a firm's stock price performance. Weisbach (1988), examining NYSE firms between 1974 and 1983, also found a significant relationship between poor stock returns and the probability of a CEO losing his job. These two studies emphasized the role of the Board of Directors in monitoring and disciplining top managers. Weisbach (1988) reported that the probability of a CEO resignation following poor stock performance increased with outsider-dominated boards. Warner, et al. (1988) examined a smaller sample over a larger time period (1963 – 1978) and also found an inverse relationship between the probability of management change and a firm's per share performance. Fizel and Louie (1990) used the change in the value of one share of the firm's stock as a proxy for performance, noting that "it represents long-term unexpected profits" (p. 170), finding inconsistent results. Kim (1996) demonstrated the firm stock returns have a persistent inverse effect on CEO turnover possibility. Bhagat and Bolton (2008) concluded that, between 1993 and 2003, 33% of CEO turnover was "disciplinary," including outright terminations (3%) and "resigned to pursue other interests" (30%), and that there is a significant inverse relationship between such disciplinary turnover and stock market performance for the two prior years.

A variation on this research was conducted by Farrell and Whidbee (2003), who found a relationship between deviation from expected performance, rather than the absolute performance, to bear a strong relationship to CEO turnover. In a different

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variation, Murphy and Zimmerman (1993) found that earnings inversely predicted CEO turnover.

A less-traditional approach was taken by Huson, Malatesta, and Parrino (2004), who looked at accounting measures of performance rather than simply stock performance. They, too, found that CEO turnover was correlated with poor performance prior to the turnover, and that both stock and accounting measures of performance improved following the turnover announcement. Engel, Hayes and Wang (2003) found similar results for a multiple-performance-measures model, determining that accounting measures of performance were most influential in CEO turnover decisions when the accounting measures were more timely or sensitive than market measures.

A recent study looked at CEO turnover over a time span from 1996 to 2005, which included dramatic reforms in corporate governance and CEO accountability both in the U.S. and abroad (Gregory-Smith, Thompson, and Wright, 2009). They did find, as anticipated, that there was a greater likelihood of poor stock performance resulting in CEO dismissal following governance reforms. However, a second notable conclusion was that forced departure drops dramatically beyond the fourth year of tenure even among the poorly performing CEOs.

It should be noted that a criticism of the study of CEO turnover and stock performance in general is that, while the results may be statistically significant, the economic magnitude of the effects is very small (Brickley, 2003). Brickley (2003) goes on to suggest that, rather than investing additional energy in this line of study that

other reasons for CEO turnover should be explored. As such, stock performance was excluded from the current research, but the author considers it worthy of consideration for future research into turnover among members of the board and the top management team.

CHAPTER 6: Research Questions and Hypotheses

This chapter describes the research questions and hypotheses addressed by this study.

6.1 Financial Performance Hypotheses

As discussed in Chapter 4 and Appendix C, many bankruptcy models use financial information to predict corporate failure, attempting to differentiate between failing and non-failing firms through the use of financial ratios, stock performance data, and other sophisticated analysis. However, subsequent to the changes in bankruptcy laws in 1978 that originated the concept of Chapter 11 reorganization bankruptcy as an alternative to Chapter 7 bankruptcy (see Section 2.2 for a description of the legal changes that took place), a number of firms are widely-believed to have been using Chapter 11 bankruptcy as a strategy outside the expected use for financial distress. The use of Chapter 11 bankruptcy to manage risk, rather than to react to immediate financial distress, is described in Chapter 3, and includes the use of bankruptcy protection to evade labor contracts, to reduce tort liabilities, or to alter a bargaining relationship. As such, it is expected that firms which file Chapter 11 due to financial distress will differ financially from those firms that file Chapter 11 for other risk management reasons. Indeed, these two distinct reasons for filing for bankruptcy protection may even, in part, explain some of the common prediction models' limited ability to discriminate between failing and non-failing firms (see Chapter 4.3.1).

Similarly, but conversely, a number of authors have discussed "strategic" or "non-financial" bankruptcy (see Section 2.3 and Chapter 3). For the most part, these

authors categorized Chapter 11 filings with this nomenclature on the basis of legal experts' subjective analysis of information such as bankruptcy filing documents and news reports. One objective of the current research is to demonstrate that firms utilizing bankruptcy for risk-management purposes (RMB) are financially distinct from firms filing for Chapter 11 protection due to imminent financial distress (FDB). Consistent with bankruptcy prediction modeling (see Chapter 4), Altman's Z-score (multivariate) will be used as the measure of the financial/fiscal health of the firms. Consistent with all of the bankruptcy modeling literature, and particularly the Altman's Z-score model, the focus of the study is on the period prior to the year in which bankruptcy filings were made. Altman (2000, 1968) suggests the use of his model for the second year prior to bankruptcy filing, when it has the greatest predictive accuracy and where the signals of financial distress may be of greatest value to stakeholders. Altman (1968) observes that the year immediately preceding the bankruptcy filing is one where the spiral-down is virtually inevitable and fairly obvious. For this study, the second year prior to the bankruptcy filing was used, and the work was extended to the third year prior to the relevant filing year. Most bankruptcy studies, including Altman's (2000, 1968), did not research beyond two years prior to the filing year, so adding the third year prior generates an opportunity to observe the usefulness of the Altman model one year earlier than is usual.

As described in both Chapter 4 and Appendix C, most bankruptcy modeling is characterized by the ability to discriminate between firms that are financially sound and those that are in financial distress. In particular, Altman's Z-score model reflects higher Altman's Z-scores for "non-bankrupt" firms ($Z > 2.99$) than for "bankrupt"

firms ($Z < 1.81$). Firms with scores between those boundaries are considered to be "uncertain."

However, a material element of this research involves determining whether FDB and RMB firms are members of the same population – whether there is a single "Chapter 11 bankruptcy" population – or if FDB and RMB represent separate constructs. As noted previously, the law literature has treated them as separate constructs based on analysis of the filing documents, but no studies were found that tested whether there are concrete financial differences between FDB and RMB. Therefore, an important objective of this research is to determine whether there is an ability to discriminate financially between bankruptcies due to imminent financial distress (FDB) and those that are believed to be a longer-range risk-management strategy (RMB). To this end, as described in Chapter 1 and as will be detailed in Chapter 7, the pool of relevant firms who filed for Chapter 11 protection was divided into two groups – 199 FDB firms and 27 RMB firms. These groups are expected to differ financially from one another, so each will be the subject of separate hypotheses. In addition to these 226 Chapter 11 firms, an additional 226 matched firms not involved with bankruptcy proceedings during the relevant time period were selected for comparison (details on selection and matching in Section 7.1).

The first hypothesis developed for this research reflects the traditional outcome of Altman's Z-score (numerical).

H1: For the third and second year prior to the year in which bankruptcy filings were made, firms who have filed for Chapter 11 protection will have Altman's Z-scores lower than those for firms not filing for Chapter 11 protection.

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While Hypotheses 1 does not envisage any novel outcomes, it does extend the time frame in which the two bankruptcy predictors are applied. More significantly, H1 involves comparison of all 226 of the Chapter 11 firms included in this study to the non-bankrupt matched firms. Since a major premise of this paper is that FDB firms are in more tenuous financial condition than RMB firms, Hypothesis 2 endeavors to demonstrate empirically that the two categories of Chapter 11 firms are distinguishable from one another and are not drawn from the same population.

H2: For the third and second year prior to the year in which bankruptcy filings were made, firms considered to have filed for Chapter 11 protection due to financial distress (FDB) will have Altman's Z-scores lower than those for firms filing for Chapter 11 protection for risk management reasons (RMB).

Since a bankruptcy declaration is widely presumed to be *prima facie* evidence of financial difficulty, if RMB firms fit the traditional bankruptcy models proposed by Altman and others they should exhibit a more fragile financial condition than non-bankrupt firms. Hypothesis 3 delineates this relationship, having removed the influence of the larger pool of FDB firms.

H3: For the third and second year prior to the year in which bankruptcy filings were made, firms considered to have filed for Chapter 11 protection due to risk management reasons (RMB) will have Altman's Z-scores lower than those for firms not filing for Chapter 11 protection.

One of the key elements of Altman's work with bankruptcy prediction is the ability to classify firms into one of three categories – "non-bankrupt," bankrupt," and" uncertain" – on the basis of their Altman's Z-score. As described in Section 4.2, firms with Altman's Z-scores less than 1.81 are considered "bankrupt," while firms with Altman's Z-scores greater than 2.99 are considered "non-bankrupt." Firms in between, with Altman's Z-scores ranging from 1.81 through 2.99 are considered to be

"uncertain." As such, each of the 452 firms included in this study were categorized on the basis of their Altman's Z-score. Consistent with Altman's bankruptcy model, it would be expected that most of both FDB and RMB firms would be categorized as "bankrupt" per Altman, and the non-bankrupt firms would fit Altman's "non-bankrupt" category. As with Hypotheses 1 and 3, Hypotheses 4 and 6 reflect this widely-accepted logic. However, consistent with the reasoning behind Hypothesis 2, Hypothesis 5 suggests that firms in RMB are in stronger financial condition than the FDB firms.

H4: For the third and second year prior to the year in which bankruptcy filings were made, firms considered to have filed for Chapter 11 protection due to financial distress (FDB) will be more likely to be categorized as "bankrupt" per Altman's Z categorization lower than those for firms not filing for Chapter 11 protection.

H5: For the third and second year prior to the year in which bankruptcy filings were made, firms considered to have filed for Chapter 11 protection due to financial distress (FDB) will be more likely to be categorized as "bankrupt" per Altman's Z categorization than firms filing for Chapter 11 protection for risk management reasons (RMB).

H6: For the third and second year prior to the year in which bankruptcy filings were made, firms considered to have filed for Chapter 11 protection for risk management reasons (RMB) will be more likely to be categorized as "bankrupt" per Altman's Z categorization lower than those for firms not filing for Chapter 11 protection.

6.2 Top Management Team Turnover Hypotheses

The link between financial distress and executive turnover is a rational one. It is logical that the stockholders of a corporation that is performing poorly enough to warrant Chapter 11 bankruptcy protection would consider replacing the executive officers who led the firm into this untenable financial condition. As noted in Chapter 5, stock performance is often used as a proxy for firm performance, and has been negatively correlated with CEO turnover (e.g. Bhagat and Bolton, 2008). A few

previous studies indicate a correlation between financial distress as manifest by a Chapter 11 bankruptcy filing and CEO turnover (e.g. Brockmann, Hoffman and Dawley, 2006), as described in Chapter 5.   However, there is considerable speculation that bankruptcy no longer carries a stigma that attaches itself to executives. Sirower (1991, p. 46) suggests that "bankruptcy has lost its sting as an admission of failure," and Warren and Westbrook (1986, p. 475) claim that Chapter 11 bankruptcy, in particular, no longer has an "overwhelming association with failure" and that it has become "more respectable…as a possible solution to a host of difficulties." Consistent with traditional expectations of turnover of those top executives involved with a bankruptcy proceeding, Hypotheses 7 through 9 are developed to test the relationship between Chapter 11 bankruptcy and turnover of the three top executive officers for firms in Financial Distress Bankruptcy:

H7: The frequency of turnover of the Chief Executive Officer will be higher for firms considered to have filed for Chapter 11 protection due to financial distress reasons (FDB) than for those firms not filing for Chapter 11 protection.

H8: The frequency of turnover of the Chief Financial Officer will be higher for firms considered to have filed for Chapter 11 protection due to financial distress reasons (FDB) than for those firms not filing for Chapter 11 protection.

H9: The frequency of turnover of the Chief Operating Officer will be higher for firms considered to have filed for Chapter 11 protection due to financial distress reasons (FDB) than for those firms not filing for Chapter 11 protection.

Using an analogous argument, if the Chapter 11 declaration for Risk Management Bankruptcy is not really distinguishable from FDB filings, it would be expected that the RMB executives would likewise manifest higher turnover as compared to the non-bankrupt firms. Hypotheses 10 through 12 test that relationship.

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H10: The frequency of turnover of the Chief Executive Officer will be higher for firms considered to have filed for Chapter 11 protection due to risk management reasons (RMB) than for those firms not filing for Chapter 11 protection.

H11: The frequency of turnover of the Chief Financial Officer will be higher for firms considered to have filed for Chapter 11 protection due to risk management reasons (RMB) than for those firms not filing for Chapter 11 protection.

H12: The frequency of turnover of the Chief Operating Officer will be higher for firms considered to have filed for Chapter 11 protection due to risk management reasons (RMB) than for those firms not filing for Chapter 11 protection.

While anecdotal evidence indicates that the stigma of failure attached to leading a firm to a bankruptcy filing is less apparent for a risk management bankruptcy than for financial failure (for instance, Tavakolian, 1995), this does not appear to have ever been empirically studied. Neither the Gilson (1989) nor the Hotchkiss (1995) study differentiated between filing for Chapter 11 bankruptcy protection due to financial distress and filing as a risk management strategy. Indeed, since filing for Chapter 11 protection for reasons other than immediate financial distress is an unusual and bold strategic move, it is quite possible that the executives involved in such a dramatic tactic are rewarded with for its successful execution.

A significant assertion of this paper is that firms in imminent financial distress who file for Chapter 11 bankruptcy protection (FDB) are distinguishable from firms filing for Chapter 11 bankruptcy protection as a long-term risk management strategy (RMB). Hypotheses 2 and 5, in particular, test this assertion, with the specific expectation that FDB firms are in an inferior financial condition compared to the RMB firms. If, as expected, RMB firms are empirically financially better-off than FDB firms, this lends credence to the assertion that FDB and RMB are separate constructs. Hypotheses 13 through 15 reflect the proposition that the top officers of a RMB firm will experience lower rates of turnover than their FDB counterparts. While this

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research does not and cannot confirm that those RMB executives are being rewarded for successfully executing this long-term bold risk management strategy, support of these hypotheses does offer support to the anecdotal evidence noted above. As such, the following hypotheses are stated and tested in this research:

H13: The frequency of turnover of the Chief Executive Officer in firms considered to have filed for Chapter 11 protection due to risk management reasons (RMB) will be lower than the rate of turnover in firms filing for bankruptcy protection for financial distress reasons (FDB).

H14: The frequency of turnover of the Chief Financial Officer in firms considered to have filed for Chapter 11 protection due to risk management reasons (RMB) will be lower than the rate of turnover in firms filing for bankruptcy protection for financial distress reasons (FDB).

H15: The frequency of turnover of the Chief Operating Officer in firms considered to have filed for Chapter 11 protection due to risk management reasons (RMB) will be lower than the rate of turnover in firms filing for bankruptcy protection for financial distress reasons (FDB).

6.3 Board Turnover Hypotheses

Only one study (Gilson, 1990) was found that explicitly addressed the relationship between filing for Chapter 11 bankruptcy protection and board turnover. The results of that study indicate that there is a strong positive relationship, with only 54% of incumbent directors remaining two years following the bankruptcy declaration. However, this study did not consider the potential disparity between conditions of financial distress and strategic bankruptcy. With justifications similar to those regarding top management team turnover, the following hypotheses are stated and tested in this research:

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H16: The frequency of turnover of the Chairman of the Board will be higher for firms considered to have filed for Chapter 11 protection due to financial distress reasons (FDB) than for those firms not filing for Chapter 11 protection.

H17: The frequency of turnover of the Chairman of the Board will be higher for firms considered to have filed for Chapter 11 protection due to risk management purposes (RMB) than for those firms not filing for Chapter 11 protection.

H18: The frequency of turnover of the Chairman of the Board will be higher for firms considered to have filed for Chapter 11 protection due to financial distress reasons (FDB) than for those firms considered to have filed for Chapter 11 protection due to risk management purposes (RMB) .

H19: The rate of turnover for members of a firm's board of directors will be higher for firms considered to have filed for Chapter 11 protection due to financial distress reasons (FDB) than for those firms not filing for Chapter 11 protection.

H20: The rate of turnover for members of a firm's board of directors will be higher for firms considered to have filed for Chapter 11 protection due to risk management purposes (RMB) than for those firms not filing for Chapter 11 protection.

H21: The rate of turnover for members of a firm's board of directors will be higher for firms considered to have filed for Chapter 11 protection due to financial distress reasons (FDB) than for those firms considered to have filed for Chapter 11 protection due to risk management purposes (RMB) .

Chapter 7 – Research Methods

This study consisted of an archival study of information available from public sources – particularly the 10-K and DEF 14A forms filed with the Securities and Exchange Commission. There were 452 publicly-traded corporations included in this study, of which 226 were firms who filed for United States Chapter 11 bankruptcy protection during the time period from 1998 through 2007 and who had emerged from bankruptcy by 2008. Using the method described in Section 7.1.1, these 226 firms were categorized as either having filed for Chapter 11 protection due to imminent financial distress (n = 200) or for long-term risk management reasons (n=27). The remaining 226 firms were corporations who were not involved in bankruptcy proceedings during the relevant time period, and who were selected to match, as well as possible, the bankrupt firms as described in Section 7.1.1. Financial variables, executive turnover, and board turnover were the dependent variables for this study.

7.1 Bankruptcy sample and data sources

In order to study top management and board turnover in relation to bankruptcy as a risk management strategy, it is imperative to begin with firms that have filed for Chapter 11 bankruptcy. For a variety of practical reasons, this study is limited to domestic firms publicly traded on U.S. stock exchanges.

There are several sources that were vital to developing the list of firms filing Chapter 11. The first is the Bankruptcy Research Database established and maintained by Lynn M. LoPucki of UCLA Law School and Harvard Law School (http://lopucki.law.ucla.edu). His database is the foundation for the vast majority of the empirical work on bankruptcy, and he was most generous in sharing the database for this research project. The annual *Bankruptcy Yearbook and Almanac* (editions

1999 – 2009) produced by New Generation Research was a second source used to generate the list. A third principle source for this information was the Bankruptcy Data Project (BDP) at Harvard (http://bdp.law.harvard.edu), maintained by Professors Robert Lawless of the University of Illinois College of Law and Elizabeth Warren of Harvard University. The BDP facilitates access to the proprietary data on bankruptcies at the Automatic Access to Court Electronic Records (AACER). Since each of these sources has unique criteria for inclusion of firms, the three sources were used together to develop a more comprehensive list.

The three databases are developed primarily by bankruptcy attorneys who sift through the thousands of pages of legal documents related to each corporation in order to ascertain the fundamental causes of or reasons for the bankruptcy (whether financial distress or risk management-related). The LoPucki Bankruptcy Research Database is the primary source of data for several hundred scholarly articles including Covitz, Han and Wilson (2008), Hofer, Dresner and Windle (2009), Levitin (2010), and Nasser and Gup (2008). The Bankrutcy Data Project at Harvard is similarly the primary source for hundreds of scholarly articles including Lawless et al, (2008), Mann and Porter (2010), and Sullivan, Warren, and Westbrook (2006). The Bankruptcy Yearbook and Almanac has been used for dissertations (i.e. Lombard, 1998), scholarly articles (i.e. Aziz and Dar, 2006), and books (i.e. Delaney, 1992).

7.1.1 Selection of the sample.

From the databases described above a list of 1309 publicly-traded corporations filing for Chapter 11 bankruptcy protection for the ten years 1998 through 2007 was developed. On the basis of subsequent reporting by these databases, 246 firms that

changed their filing status to Chapter 7 or were otherwise liquidated were omitted from the study. This left 1063 potential firms for the study. From that total, firms that were very closely held, especially "family" firms, were culled, as it became obvious that both the board and top management team were nearly 100% unchanging due to the personal interrelationships among the parties and the lack of independent investment, and that the few changes that did occur were virtually all due to planned retirement or death/disability of the person in question. The characterization of a firm as "very closely held" was made on the basis of the SEC annual reporting on a form other than a 10–K, or on the basis of descriptions of the relationships among officers and board members on either the 10–K or DEF 14A (the Definitive Proxy Form, which often is where the mandatory executive and board disclosures appear per reference in the 10–K) filing with the SEC. Following the exclusion of the very-closely-held firms, 468 publicly-traded firms that entered Chapter 11 bankruptcy and which survived for at least three years after the year of filing remained as the population for the study. Of these, 188 were excluded because inadequate data were publicly available. About 50 more were excluded because, rather than emerging as publicly-traded firms, they were taken private and no further data were available.

Therefore, the final pool from which firms in this study were drawn included 226 large, publicly-traded firms that filed for and emerged from Chapter 11 bankruptcy between 1998 and 2008. Of these, 27 firms were classified in the LoPucki database and/or by the Bankruptcy Almanac on the basis of their Chapter 11 documentation and legal analysis as "non-financial" bankruptcies, which equates to

"risk management" bankruptcy in this study. Appendix A lists the 27 RMB firms used in this study. The list of 199 FDB firms may be found at Appendix B.

In order to address Hypotheses One through Six regarding financial distinction between firms in FDB and RMB, these 226 bankrupt firms were matched with 226 large, publicly-traded firms that did not file for bankruptcy protection during the relevant time period. Each bankrupt firm was matched with a similar non-bankrupt firm. It should be noted that there are 200 FDB bankruptcies but only 199 FDB firms – US Air Corporation filed for Chapter 11 protection in 2002 and again in 2004, so it was matched with the same firm (Alaska Air) for both periods. The matching firms were selected on the basis of Standard Industry Code (SIC) and availability of financial information for the relevant years of study as determined by the year of bankruptcy filing. For instance, Imperial Sugar Company (SIC 2062) filed for Chapter 11 bankruptcy protection in 2001. Imperial was then matched with Sterling Sugars, Inc. (SIC 2062) using Sterling's information for the same time bracket with 2001 as the fulcrum. The SIC was chosen for this purpose since that was the principal categorization used by the SEC during the time period in question.

For several SIC categories (such as food service) there were many matching firms from which to choose. When there was a choice to be made, the Thomson One Banker database was consulted to find the closest competitor with the same SIC in the year of bankruptcy. If the Thomson One Banker database did not offer any appropriate competitors (neither U.S.-based, nor publicly-traded, nor available for all relevant years), the Hoover's database was consulted. If Hoover's still did not offer any appropriate competitor, then the particular firm's 10-K forms were consulted to

determine if they included reference to an appropriate competitor. If none of those three sources yielded a match, a random generator was used to select from among the firms available (for the relevant years) in the relevant SIC category per the SEC Edgar database. A complete listing of the FDB and matching non-bankrupt firms studied is available in Appendix B, and the set of 27 matched RMB and non-bankrupt firms is in Appendix A.

In addition to the aspect of this study that examined the financial comparisons between FDB, RMB, and non-bankrupt firms, a significant portion of this study addressed the frequency or rates of turnover among the top management team and the board of directors. The 27 RMB firms listed in Appendix A were the firms of particular interest for the turnover aspect of this study, since a fundamental question of this research is whether the RMB firms are drawn from the same population as the FDB firms, or whether they are different both financially and in terms of turnover. Those 27 RMB firms were compared to their 27 non-bankrupt matched firms used in the financial-difference portion of the study. Additionally, from the pool of 199 FDB firms, 27 FDB firms were selected for turnover comparison. These FDB firms were matched to the RMB firms for SIC and year, when possible. When no direct match to the RMB firms was available, a FDB firm filing in the same year was selected using random generation techniques. In total, then, there were 81 firms studied for the turnover aspect of this research – 27 each of RMB, FDB, and non-bankrupt – matched as well as possible for industry and time period.

7.1.2 Sample size.

Many earlier studies in bankruptcy have employed small sample sizes, such as Altman's (1968) seminal work that contained 33 bankruptcies and Ang and Chua's (1981) study of executive turnover, primarily due to the limited pool of large commercial bankruptcies for which information is publicly available. Research into particular types of bankruptcy, or particular industries, has resulted in sample sizes as small as eleven (Warner, 1977). As such, this study's final sample size of 81 is consistent with the prior literature for research of this nature. The largest sample sizes in bankruptcy research reflect very long time frames, such as Shumway's (2001) study of 300 de-listings over a thirty-year period and the Hillegeist, Keating, Cram, and Lundstedt (2004) study of all 756 bankruptcies of publicly-traded firms over a twenty-year span. Those two studies reflect both broader scope and longer time than is relevant for comparison with the current study.

7.1.3 Financial data sources.

Financial information necessary for the calculation of Altman's Z-score was obtained for each of the firms included in this study. Most of the data were developed from the Thomson One Banker database. However, when necessary information was not available from the Thomson One Banker database, Form 10-K and other original company filings in the Securities and Exchange Commission Edgar database were examined.

7.1.4 Turnover data sources.

This study involved a longitudinal investigation of turnover in the top management team and board of directors, and relied on archival data. Data regarding

the composition of the top management team and the Board of Directors were obtained from required SEC filings, including form 10-K and DEF 14A. Where questions remained as to the inclusion or disappearance of an individual member of the board or in an executive position, information was gathered from obituaries in the local newspaper, corporate websites or press releases, or other publicly-available sources deemed to be reliable.

7.2 Data gathering

There were two parallel data gathering processes – one for financial information and one for turnover information. The following sections describe how the data were obtained.

7.2.1 Financial data accumulation.

Once the sample of 452 publicly-traded corporations – 27 RMB, 199 FDB, and the matching 226 non-bankrupt firms – was selected, financial data were gathered from the Thompson One Banker database and original 10-K forms filed with the SEC as described in Section 7.1.1. From these sources, information about each firm's financial condition was obtained to enable calculation of Altman's Z-score as a dependent variable (see Section 7.3.2).

7.2.2 Turnover data accumulation.

As described in Section 7.1.4, most of the data on the top management team and the board of directors were gathered from original 10-K and DEF 14A documents filed with the Securities and Exchange Commission and publicly available from their Edgar database. These data were gathered only for the 81 firms constituting the 27 matched triads of RMB/non-bankrupt/FDB corporations listed in Appendix A. For

each company studied, a similar process was followed. The 10-K and Def 14A forms were obtained from the SEC Edgar database for a six-year time period: the year in which Chapter 11 bankruptcy was declared, two years prior thereto, and three years hence. From those mandatory reports, the names and positions of the members of the board of directors and the executive officers (CEO, CFO, and COO or equivalents) were obtained.

For these 81 corporations, a year-to-year comparison was made to determine whether there were any changes in membership of either the board or the executive officers. Originally, consideration was given to determining the purported reason for the change, with an attempt to identify "involuntary" turnover from voluntary or planned turnover. A number of turnover studies use methodology to classify turnover as voluntary or involuntary, such as presuming that anyone over age 65 leaving the corporation was doing so for voluntary "normal" retirement. However, as noted in Chapter 5, several authors deemed the segregation of voluntary from involuntary turnover to be susceptible to spurious data (Warner, Watts, and Wruck, 1988; Weisbach, 1988). Therefore, if the person named as a particular officer changed for any reason it was considered a change for the purposes of this study. The only exception was the discontinuation of the business as a separate entity, where there would have been 100 percent change at the closing stage. To maintain conservative and comparable data, the event of discontinuation was not counted as a change. The inclusion of all turnover, involuntary or otherwise, reflects the presumption that "normal" turnover would occur at similar rates among all firms in a particular industry

during the same time window, and that a variation from the norm is an artifact of a non-normal condition such as bankruptcy.

Once the data were gathered, turnover among the top management team and the board were coded to reflect whether turnover had occurred and to what extent. Turnover in the executive positions, including the CEO, CFO, COO, and Chairperson of the Board, were coded by the number of changes in each time period and aggregated for the full six-year time period. A change in the membership of the board itself was measured by calculating the number of people who left the board during the time period from two years prior to the bankruptcy declaration to three years subsequent thereto as a percentage of the size of the entire board two years prior to the bankruptcy.

7.3 Variables

The following variables are used in this study:

7.3.1 Independent Variables.

The primary independent variable used in this study is the categorization of a firm as bankrupt due to financial distress (FDB), bankrupt for risk management reasons (RMB) , or not bankrupt for the period relevant to the study. As described in Section 7.1.1, the categorization of the bankruptcy is based on classification by the Lynn M. LoPucki Bankruptcy Research Database, the Bankruptcy Yearbook and Almanac, and/or the Bankruptcy Data Project at Harvard, all of which are widely cited in bankruptcy research. With few exceptions these three sources are generally in agreement with each other where the databases overlap, and all of the firms in this

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study that are included in all three databases were categorized consistently as fitting our definition of RMB.

7.3.2 Dependent Variables.

Financial Variables.

The financial variable used was the Altman's Z-score, a multidimensional score reflecting the financial "health" of an organization. Developed in 1968 by Edward Altman (Altman, 1968), this widely-used measure of financial distress is a linear combination of common business financial ratios weighted by coefficients, with an accuracy rate of more than 72 percent in a variety of contexts and countries (Altman (2000) would put this as high as eighty to ninety percent). The Altman's Z-score provides a singular measure of financial distress potential, eliminating the potential for co-linearity among univariate measures (Krishnan and Moyer, 1994), and continues to be supported as a bankruptcy predictor (Agarwal and Taffler, 2008) despite challenges by researchers (Hillegeist, et al, 2004). There are contemporary variants of the original Altman's Z-score for use in analyzing private firms, firms in emerging markets, and other niche research. However, for this study the original Altman's formula was used, as follows:

T_1 = working capital/total assets
T_2 = retained earnings/total assets
T_3 = earnings before interest and taxes/total assets
T_4 = market value of equity/total liabilities
T_5 = sales/total assets

$$Z = 0.012T_1 + 0.014T_2 + 0.033T_3 + 0.006T_4 + 0.999T_5$$

The raw Altman's Z-score as calculated for the second and third years prior to the relevant bankruptcy filing date was used to test Hypotheses One, Two and Three. This

is consistent with Altman's (2000, 1968) research indicating the score should be calculated two years prior to the bankruptcy filing for best predictive validity with the smallest Type II error rate. This Type II error rate, in which firms would be scored as financially troubled even when really financially sound, is of greater concern in both this research and to most investors and other stakeholders than Type I error. Since accounting data are used, two accounting principles, going-concern and conservatism, often cause asset values to be understated relative to their fair market values. The potential for understatement is especially true for fixed assets and intangibles. This artifact of accounting data would have the effect of suppressing the Altman's Z-score resulting in greater Type II error. Several studies were found that carried the Altman's Z-score calculation back as far as ten years, but it was found to lose predictive relevance as the horizon extended beyond three years (Crosbie & Bohn, 2002; Reisz & Perlich, 2007). Hence, the current study limited itself to the second and third years prior to the relevant bankruptcy filing date.

The Altman model further uses the Z-score to sort firms into one of three categories, which constituted the second financial dependent variable. Firms considered "safe" from bankruptcy have a Z-score of greater than 2.99. Firms in the "distress zone," with bankruptcy either imminent or already achieved, have a Z-score of 1.80 or less. Firms in between, with Z-scores greater than 1.80 and up to 2.99, are considered in the "grey" zone, or "zone of uncertainty." Using the Z-scores calculated for each year, each of the firms in this study was categorized into one of these Zones of Discrimination: Safe, Distressed, or Uncertain (frequently referred to as non-bankrupt, bankrupt, and uncertain). For reasons noted above, these categorizations

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were made for the second and third year prior to the bankruptcy filing. The Altman's Z-score categorization was used to test Hypotheses Four, Five and Six. While it is recognized that use of the categorization dependent on the Altman's Z-score is really just a re-sorting of the data with reduced variance, it is considered by the author to be worthwhile since the Altman's Z-score categories are widely used in bankruptcy research.

Turnover Variables.

As described in Section 7.2.2, turnover for each position of Chairperson of the Board, Chief Executive Officer, Chief Operating Officer, and Chief Financial Officer was determined for the time period extending from two years prior to the relevant bankruptcy filing and ending with the third year after the bankruptcy filing. Both Gilson (1989) and Hotchkiss (1995) indicated that the two-year window post-bankruptcy was a period of substantial turnover in the position of CEO. The current study extended the time for an additional year, to three years following the relevant year of bankruptcy, consistent with the work done by Ang and Chua (1981) who noted a spike in the second year post-bankruptcy but additional bankruptcy-related turnover in the third year. For the purposes of data analysis, any change in the individual named to a particular position was counted as turnover, and the absolute number of changes in each position was the measure employed. These turnover data, which ranged from zero changes to four changes for a single position, were used to test Hypotheses Seven through Eighteen.

A change in the membership of the board itself was measured by calculating the number of people who left the board during the time period from two years prior to

the bankruptcy declaration to three years subsequent thereto as a percentage of the size of the entire board two years prior to the bankruptcy. Board membership data were used to test Hypotheses 19 through 21.

7.4 Data Analysis

Data were analyzed using SPSS Version 17. While the overall sample size was large (n=452), the number of RMB bankruptcies resulted in a small sample size for that category (n=27), making a presumption of normality untenable. Likewise, when the data are reduced to the three "matched" samples of 27-items each, normality is unlikely. The Kolmogorov-Smirnov test for normality (Siegel and Castellan, 1988) revealed that, as anticipated, the small-size samples did not have a normal distribution. As such, the data analysis was done using non-parametric methods.

CHAPTER 8: Results

This chapter presents the results of this study and the assessment of the hypotheses presented in Chapter 6.

8.1 Results to demonstrate group comparability

Since the focal point for this research is the list of 27 firms which filed for Chapter 11 protection for risk-management objectives, it is important to demonstrate that the firms selected for comparison are actually comparable. Both the financially-distressed bankrupt and non-bankrupt firms were selected by SIC and year to match the risk-management bankruptcies, as described in 6.3.2. However, there is clearly no way to obtain a direct match, since each firm is unique, the incidence of bankruptcy is small, and the time periods restricted data availability. It is important, though, to have a degree of confidence that one of the groups of 27 is not composed entirely of enormous Fortune 100-sized corporations while another is composed of small publicly-traded entities.

In order to have some assurance of financial comparability, the RMB, FDB, and non-bankrupt firms were compared for revenues, total assets, and total equity for in both the third and second years before the year in which the bankruptcy was declared (or of non-declaration in the case of the non-bankrupt firms). These two years were selected as they are the years for which financial performance variables are tested in Hypotheses One through Six (see 6.1). Since each of the three relevant categories only contains 27 values, a presumption of a normal distribution is untenable. The Kolmogorov-Smirnov test for normality (Siegel and Castellan, 1988) revealed that none of the financial variables has a normal distribution within the

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relevant category. Therefore, the Kruskal-Wallis one-way analysis of variance was used to test for equality of medians. Kruskal-Wallis is a non-parametric test that is analogous to ANOVA, and is essentially a Mann-Whitney test extended to three or more groups (Kruskal and Wallis, 1952; Mann and Whitney, 1947). For none of the variables – revenues, total assets, or total equity in either the third or second year prior to the relevant bankruptcy date – were there any statistically-significant differences among the groups (Table 1).

Table 1: Results of the Kruskal-Wallace Test among the 81 matched firms grouped by bankruptcy type (n=27 each category)

	Assets 3 years prior to BR	Assets 2 years prior to BR	Revenue 3 years prior to BR	Revenue 2 years prior to BR	Equity 3 years prior to BR	Equity 2 years prior to BR
FDB mean rank	40.31	40.30	39.38	40.07	35.85	35.48
RMB mean rank	39.96	41.93	38.52	39.22	39.96	41.63
Non-bankrupt mean rank	41.22	40.78	43.56	43.70	45.52	45.89
Chi-Square df Asymp. Sig.	.042 2 .979	.068 2 .966	.723 2 .697	.553 2 .759	2.317 2 .314	2.671 2 .263

As such, it is reasonable to conclude that the three sets of 27 firms are do not differ significantly from one another on the basic of SIC, (non)bankruptcy date, and financial size.

8.2 Results regarding financial condition

Since Chapter 11 bankruptcy is regarded as a clear indicator of financial distress, it is logical to expect that firms filing bankruptcy will manifest a deteriorating

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financial condition several years prior to the actual year of filing. Indeed, as noted in Chapter 4 and Appendix C, the most common bankruptcy prediction models rely on financial signals as heralds of impending distress. This study considered one of the most commonly used bankruptcy prediction models, the Altman's Z-score, in both the original raw score and the categorization used by Altman. Hypotheses 1 through 6 examine the bankrupt and non-bankrupt firms through a filter segregating the FDB and RMB firms. As expected, the Kolmogorov-Smirnov test for normality (Siegel and Castellan, 1988) revealed that neither the Altman's Z-score (numerical) nor the Altman's Z-score (categories) met the criteria that would facilitate parametric testing, so non-parametric measures were used to test the hypotheses.

Consistent with general bankruptcy prediction modeling, and the logic of the entire bankruptcy process, Hypothesis One predicts that firms filing for bankruptcy protection will be less financially healthy than non-bankrupt firms, which was measured using the Altman's Z-score for the third and second years prior to the bankruptcy declaration. Results of the non-parametric tests are given in Tables 2 and 3, and indicate that there is a statistically significant difference between the bankrupt and non-bankrupt firms for each of the two years tested.

Table 2: Ranks of matched bankrupt and non-bankrupt firms for Altman's Z-score for the third and second year prior to Chapter 11 declaration (n = 452)

		N	Mean Rank	Sum of Ranks
Altman's Z three years prior to bankruptcy	Non-bankrupt	226	302.23	68304.50
	Chapter 11	226	152.10	34526.50
	Total	452		
Altman's Z two years prior to bankruptcy	Non-bankrupt	226	309.10	69857.50
	Chapter 11	226	143.90	32520.50
	Total	452		

Table 3: Test statistics of matched bankrupt and non-bankrupt firms for Altman's Z-score for the third and second year prior to Chapter 11 declaration (n = 452)

	Altman's Z-score three years prior to bankruptcy	Altman's Z-score two years prior to bankruptcy
Mann-Whitney U	8648.500	6869.500
Wilcoxon W	34526.500	32520.500
Z	-12.204	-13.444
Asymp. Sig. (2-tailed)	.000	.000

The data presented in Tables 2 and 3 reflect the testing for the entire pool of 226 Chapter 11 bankruptcy firms and 226 non-bankrupt firms. As an alternative, the same tests were done for the matched set of 81 firms, including 27 RMB and 27 FDB as the Chapter 11 firms and the 27 matched non-bankrupt firms. These data are presented in Tables 4 and 5, with similar results to those for the entire pool of 452. In both situations, these results agree with the outcomes that were hypothesized and that would be anticipated based on decades of work using the Altman's Z-score.

Table 4: Ranks of matched bankrupt and non-bankrupt firms for Altman's Z-score for the third and second year prior to Chapter 11 declaration (n = 81)

		N	Mean Rank	Sum of Ranks
Altman's Z three years prior to bankruptcy	Non-bankrupt	27	55.15	1489.00
	Chapter 11	54	33.93	1832.00
	Total	81		
Altman's Z two years prior to bankruptcy	Non-bankrupt	27	57.67	1557.00
	Chapter 11	54	32.67	1764.00
	Total	81		

Table 5: Test statistics of matched bankrupt and non-bankrupt firms for Altman's Z-score for the third and second year prior to Chapter 11 declaration (n = 81)

	Altman's Z-score three years prior to bankruptcy	Altman's Z-score two years prior to bankruptcy
Mann-Whitney U	347.000	279.000
Wilcoxon W	1832.000	1764.000
Z	-3.827	-4.508
Asymp. Sig. (2-tailed)	.000	.000

A major argument of this research is that the FDB and RMB firms will differ financially, supporting the widely-used differentiation between them in the legal literature. In particular, it was hypothesized that FDB firms will be less financially healthy than RMB firms. Hypothesis 2, which states that the FDB Altman's Z-scores would be lower than those for the RMB firms for the third and second year prior to bankruptcy, was fully supported. Test results are given in Tables 6 and 7.

Table 6: Ranks of FDB and RMB firms for Altman's Z-score for the third and second year prior to Chapter 11 declaration (n = 227 & 226)

		N	Mean Rank	Sum of Ranks
Altman's Z three years prior to bankruptcy	FDB	200	107.05	21410.00
	RMB	27	165.48	4468.00
	Total	227		
Altman's Z two years prior to bankruptcy	FDB	199	107.98	21489.00
	RMB	27	154.15	4162.00
	Total	226		

Table 7: Test statistics of FDB and RMB firms for Altman's Z-score for the third and second year prior to Chapter 11 declaration (n = 227 & 226)

	Altman's Z-score three years prior to bankruptcy	Altman's Z-score two years prior to bankruptcy
Mann-Whitney U	1310.000	1589.000
Wilcoxon W	21410.000	21489.000
Z	-4.340	-3.442
Asymp. Sig. (2-tailed)	.000	.001

For Hypothesis Two, as with Hypothesis One, the same tests were re-run for the reduced matched sample used in the turnover research to be reported later in this paper. The results remain strong, with support for the hypothesis that the FDB firms are in more tenuous financial condition than the RMB firms. These data are presented in Tables 8 and 9.

Table 8: Ranks of matched FDB and RMB firms for Altman's Z-score for the third and second year prior to Chapter 11 declaration (n = 54)

		N	Mean Rank	Sum of Ranks
Altman's Z three years prior to bankruptcy	FDB	27	21.44	579.00
	RMB	27	33.56	906.00
	Total	54		
Altman's Z two years prior to bankruptcy	FDB	27	22.59	610.00
	RMB	27	32.41	875.00
	Total	54		

Table 9: Test statistics of matched FDB and RMB firms for Altman's Z-score for the third and second year prior to Chapter 11 declaration (n = 54)

	Altman's Z-score three years prior to bankruptcy	Altman's Z-score two years prior to bankruptcy
Mann-Whitney U	201.000	232.000
Wilcoxon W	579.000	610.000
Z	-2.829	-2.292
Asymp. Sig. (2-tailed)	.005	.022

Hypothesis Three addresses the question of whether RMB firms are in a financial condition similar to other "ordinary" Chapter 11 firms – do they exhibit the poorer financial health expected of a firm declaring bankruptcy? While Hypothesis Two directly compared the FDB and RMB firms, and the results suggest that the RMB firms are in better financial condition than the FDB firms, that still does not tell us how the RMB firms compare to non-bankrupt firms. As with Hypotheses One and Two, Altman's Z-score was used as a proxy for financial condition in Hypothesis Three. Test results are presented in Tables 10 and 11 comparing the 27 RMB firms to 226 non-bankrupt firms, and in Tables 12 and 13 comparing the 27 RMB firms to the 27 matched non-bankrupt firms.

Table 10: Ranks of non-bankrupt and RMB firms for Altman's Z-score for the third and second year prior to Chapter 11 declaration (n = 253)

		N	Mean Rank	Sum of Ranks
Altman's Z three years prior to bankruptcy	Non-bankrupt	226	130.57	29508.00
	RMB	27	97.15	2623.00
	Total	253		
Altman's Z two years prior to bankruptcy	Non-bankrupt	226	133.04	30068.00
	RMB	27	76.41	2063.00
	Total	253		

Table 11: Test statistics of non-bankrupt and RMB firms for Altman's Z-score for the third and second year prior to Chapter 11 declaration (n = 253)

	Altman's Z-score three years prior to bankruptcy	Altman's Z-score two years prior to bankruptcy
Mann-Whitney U	2245.000	1685.000
Wilcoxon W	2623.000	2063.000
Z	-2.243	-3.801
Asymp. Sig. (2-tailed)	.025	.000

Table 12: Ranks of matched non-bankrupt and RMB firms for Altman's Z-score for the third and second year prior to Chapter 11 declaration (n = 54)

		N	Mean Rank	Sum of Ranks
Altman's Z three years prior to bankruptcy	Non-bankrupt	27	31.22	843.00
	RMB	27	23.78	642.00
	Total	54		
Altman's Z two years prior to bankruptcy	Non-bankrupt	27	33.48	904.00
	RMB	27	21.52	581.00
	Total	54		

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Table 13: Test statistics of matched non-bankrupt and RMB firms for Altman's Z-score for the third and second year prior to Chapter 11 declaration (n = 54)

	Altman's Z-score three years prior to bankruptcy	Altman's Z-score two years prior to bankruptcy
Mann-Whitney U	264.000	203.000
Wilcoxon W	642.000	581.000
Z	-1.739	-2.794
Asymp. Sig. (2-tailed)	.082	.005

While, in both the larger (n=253) and smaller (n=54) comparative groups, the RMB firms consistently had Altman's Z-scores lower than those of the non-bankrupt firms, it appears that the results for the third year prior to bankruptcy are considerably less statistically significant than for the similar comparison of all Chapter 11 firms with the non-bankrupt firms. In particular, with the smaller sample where the RMB firms are matched to the non-bankrupt firms by industry and date, the Altman's Z-scores of the RMB firms compared to those of the non-bankrupt firms do not manifest a statistically significant difference at the $p < .005$ level.

While the results shown in this section all reflect non-parametric testing, it is informative to consider the mean Altman's Z-score for each of the three FDB, RMB, and non-bankrupt categories for both the third and second year prior to bankruptcy. These are presented in Figure 1 for the entire 452 sample firms, but do not differ substantively from the 81 matched firms.

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Figure 1: Mean Altman's Z-score the third and second year prior to the bankruptcy filing (n = 452). The hazy region is the zone of "uncertainty" per Altman (1968), below which is "distressed" and above which is "safe."
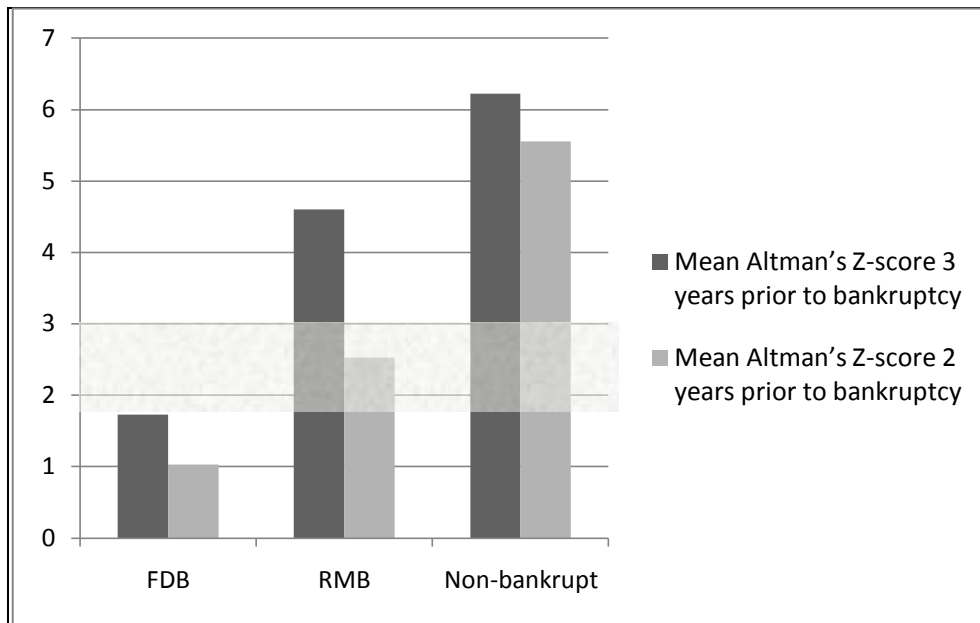
An important part of the Altman's Z-score model is the ability to categorize firms as "safe," "uncertain," and "distressed." Hypotheses Four, Five, and Six, parallel the first three hypotheses, but reflect this categorization for each of the firms/years in question rather than raw Altman's Z-scores. Data presented here are for the matched 27 RMB, 27 FDB, and 27 non-bankrupt firms only. Table 14 summarizes the categorical data for the 81 matched firms. These data are presented graphically in Figures 2 and 3.

Table 14: Altman's Z-score Categorical for matched FDB, RMB, and non-bankrupt firms (n=81)

	Altman's Z-score category three years prior to bankruptcy			Altman's Z-score category two years prior to bankruptcy		
	Distressed	Uncertain	Safe	Distressed	Uncertain	Safe
Non-bankrupt	1	10	16	3	9	15
RMB	7	9	11	15	3	9
FDB	17	10	0	20	7	0
Total	25	29	27	38	19	24

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Figure 2: Altman's Z-score Categorical three years prior to bankruptcy for matched FDB, RMB, and non-bankrupt firms (n=81)
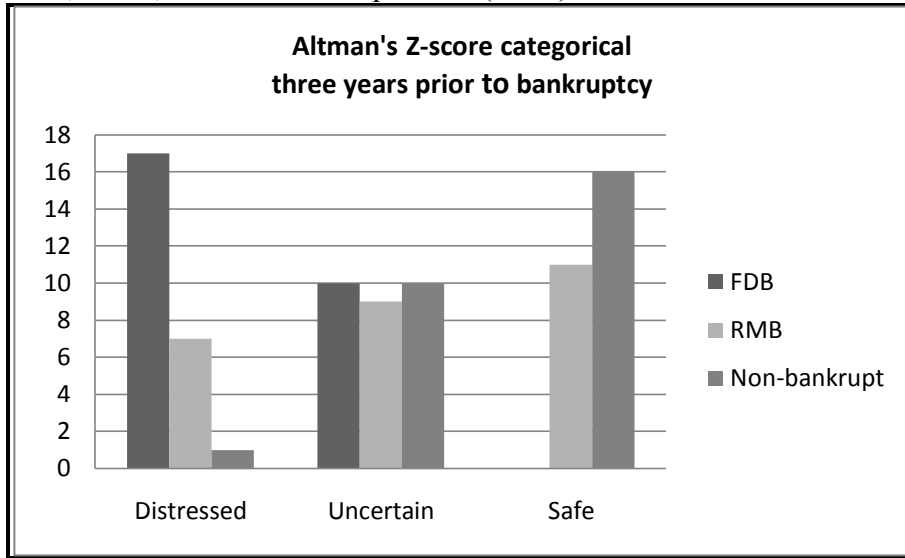
Figure 3: Altman's Z-score Categorical two years prior to bankruptcy for matched FDB, RMB, and non-bankrupt firms (n=81)
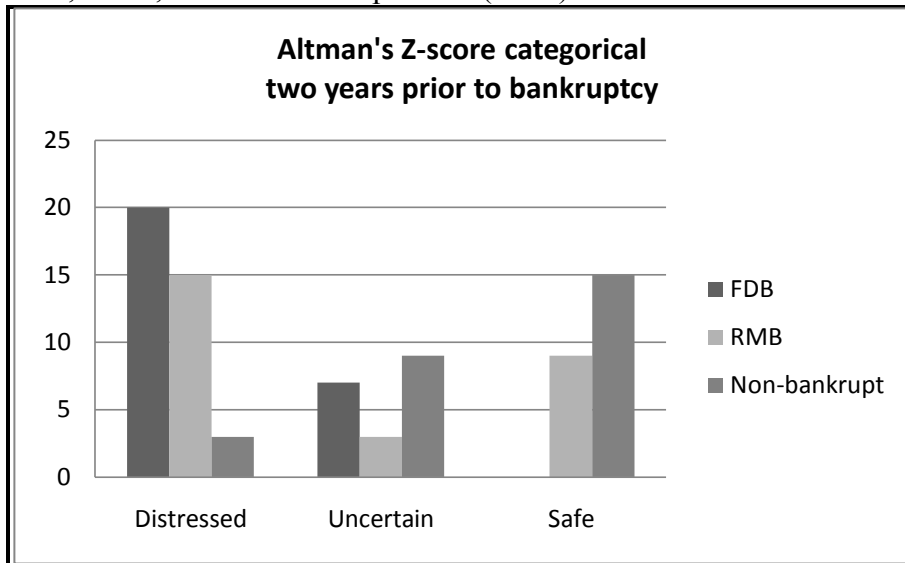
From the data presented in Table 14, and Figures 1 and 2, it is clear that there are a substantial number of RMB firms that remain in the "safe" category even two years prior to their bankruptcy filing, while none of the FDB firms is classified as "safe" either two or three years prior to declaring Chapter 11. Test statistics

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specifically addressing the hypotheses are presented in Table 15 (Hypothesis 4), Table 16 (Hypothesis 5), and Table 17 (Hypothesis 6). Hypothesis 4, that FDB will have lower Altman's Z-scores Categorical than non-bankrupt firms was supported for both the third and second year prior to bankruptcy ($p < .000$ each year), which is consistent with bankruptcy modeling theory in general and Altman's model in particular. Hypothesis 5, that FDB will have lower Altman's Z-scores Categorical than RMB firms was also supported for both the third and second year prior to bankruptcy ($p < .000$ and $p < .003$, respectively), giving credence to the suggestion that FDB and RMB are constructs financially distinct from one another.

Table 15: Test statistics for Altman's Z-score Categorical for matched FDB firms and non-bankrupt firms (n=54)

Altman's Z-score category three years prior to bankruptcy	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.222	2	.000
Likelihood Ratio	39.410	2	.000
Linear-by-Linear Association	29.624	1	.000
N of Valid Cases	54		

Altman's Z-score category two years prior to bankruptcy	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.815	2	.000
Likelihood Ratio	35.118	2	.000
Linear-by-Linear Association	27.300	1	.000
N of Valid Cases	54		

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Table 16: Test statistics for Altman's Z-score Categorical for matched FDB firms and RMB firms (n=54)

Altman's Z-score category three years prior to bankruptcy	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.219	2	.000
Likelihood Ratio	19.598	2	.000
Linear-by-Linear Association	13.581	1	.000
N of Valid Cases	54		

Altman's Z-score category two years prior to bankruptcy	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.314	2	.003
Likelihood Ratio	14.839	2	.001
Linear-by-Linear Association	6.111	1	.013
N of Valid Cases	54		

Table 17: Test statistics for Altman's Z-score Categorical for matched RMB firms and non-bankrupt firms (n=54)

Altman's Z-score category three years prior to bankruptcy	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.479	2	.065
Likelihood Ratio	6.046	2	.049
Linear-by-Linear Association	4.194	1	.041
N of Valid Cases	54		

Altman's Z-score category two years prior to bankruptcy	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.500	2	.002
Likelihood Ratio	13.389	2	.001
Linear-by-Linear Association	7.694	1	.006
N of Valid Cases	54		

The data in Table 17 relate to Hypothesis 6, that RMB firms would have

Altman's Z-scores Categorical lower than non-bankrupt firms. Clearly, H6 is

supported for the second year prior to bankruptcy. However, this hypothesis is not

supported at the p < .05 level for the third year prior to bankruptcy. A second test was

executed comparing the 27 RMB firms to the total pool of 226 non-bankrupt firms,

finding that, for the third year prior to bankruptcy, Hypothesis 6 was not supported

even at the p < .1 level. Those data are presented in Table 18.

Table 18: Test statistics for Altman's Z-score Categorical for matched RMB firms
and non-bankrupt firms (n=253)

Altman's Z-score category three years prior to bankruptcy	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.404	2	.111
Likelihood Ratio	4.207	2	.122
Linear-by-Linear Association	4.346	1	.037
N of Valid Cases	253		

Altman's Z-score category two years prior to bankruptcy	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.868	2	.000
Likelihood Ratio	17.913	2	.000
Linear-by-Linear Association	16.268	1	.000
N of Valid Cases	253		

8.3 Results regarding top management team and board turnover

The primary contribution of this research is the study of turnover of the

executive officers, the board chairman, and members of the board under FDB and

RMB conditions. As with the study of financial conditions, the first three turnover-

related hypotheses address the comparison of FDB firms to non-bankrupt firms in

terms of turnover of the CEO (H7), the CFO (H8), and the COO (H9). Consistent with

prior studies and widely-held expectations, these hypotheses suggest that turnover will

be higher among the FDB firms than the non-bankrupt firms. These hypotheses were all strongly supported at the $p < .005$ level or smaller. Table 19 presents the descriptive statistics for executive officer turnover for the matched 27 non-bankrupt, 27 FDB, and 27 RMB firms. Table 20 presents ranks and test statistics for CEO, CFO, and COO turnover for FDB and non-bankrupt firms for the six-year period beginning two years prior to the year of bankruptcy filing and ending three years following the year of filing.

Table 19: Descriptive statistics for turnover in CEO, CFO, and COO over the six-year time period from two years prior to the bankruptcy filing through the third year following the bankruptcy filing for matched non-bankrupt, FDB, and RMB firms (n=81).

		N	Mean	Standard Deviation	Standard Error
CEO Change	Non-bankrupt	27	.5926	.88835	.17096
	FDB	27	1.5926	.88835	.17096
	RMB	27	1.0741	.82862	.15947
	Total	81			
CFO Change	Non-bankrupt	27	.8519	.86397	.16627
	FDB	27	1.6667	.91987	.17703
	RMB	27	.9630	.70610	.13589
	Total	81			
COO Change	Non-bankrupt	27	1.0370	.70610	.13589
	FDB	27	1.7037	.95333	.18347
	RMB	27	.8519	.94883	.18260
	Total	81			

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Table 20: Turnover in CEO, CFO, and COO over the six-year time period from two years prior to the bankruptcy filing through the third year following the bankruptcy filing for matched FDB and non-bankrupt firms (n=54).

		N	Mean Rank	Sum of Ranks		
CEO Change	Non-bankrupt FDB Total	27 27 54	19.00 36.00	513.00 972.00	Mann-Whitney U Wilcoxon W Z Asymp. Sig. (2-tailed)	135.000 513.000 -4.187 .000
CFO Change	Non-bankrupt FDB Total	27 27 54	20.85 34.15	563.00 922.00	Mann-Whitney U Wilcoxon W Z Asymp. Sig. (2-tailed)	185.000 563.000 -3.278 .001
COO Change	Non-bankrupt FDB Total	27 27 54	22.00 33.00	594.00 891.00	Mann-Whitney U Wilcoxon W Z Asymp. Sig. (2-tailed)	216.000 594.000 -2.779 .005

The second three turnover-related hypotheses mirror those just discussed but address the comparison of RMB firms to non-bankrupt firms in terms of turnover of the CEO (H10), the CFO (H11), and the COO (H12). Results are presented in Table 21, and indicate there is no statistically-significant difference between RMB and non-bankrupt firms in terms of CFO or COO turnover, and that the difference between the two types of firms for CEO turnover is significant at $p < .011$. In fact, contrary to the expectations presented in Hypothesis 12, the mean turnover in the COO position was lower for the RMB firms than the non-bankrupt firms (refer to Table 19) .

Table 21: Change in CEO, CFO, and COO over the six-year time period from two years prior to the bankruptcy filing through the third year following the bankruptcy filing for matched RMB and non-bankrupt firms (n=54).

		N	Mean Rank	Sum of Ranks		
CEO Change	Non-bankrupt RMB Total	27 27 54	22.52 32.48	608.00 877.00	Mann-Whitney U Wilcoxon W Z Asymp. Sig. (2-tailed)	230.000 608.000 -2.537 .011
CFO Change	Non-bankrupt RMB Total	27 27 54	25.87 29.13	698.50 786.50	Mann-Whitney U Wilcoxon W Z Asymp. Sig. (2-tailed)	320.500 698.500 -.850 .395
COO Change	Non-bankrupt RMB Total	27 27 54	29.87 25.13	806.5 678.5	Mann-Whitney U Wilcoxon W Z Asymp. Sig. (2-tailed)	300.500 678.500 -1.198 .231

The third set of three turnover-related hypotheses address the principal contribution of this study – the comparison of RMB firms to FDB firms in terms of turnover of the CEO (H13), the CFO (H14), and the COO (H15). Specifically, it was hypothesized that there would be greater turnover among the FDB firms than in the RMB firms. Results are presented in Table 22. As hypothesized, for all three officers, there was a substantially higher turnover rate in the FDB firms than in the RMB firms (see Table 19). The difference in CEO turnover was significant at the $p < .023$ level, while for the CFO and the COO the turnover difference was significant at $p < .002$.

Table 22: Change in CEO, CFO, and COO over the six-year time period from two years prior to the bankruptcy filing through the third year following the bankruptcy filing for matched FDB and RMB firms (n=54).

		N	Mean Rank	Sum of Ranks		
CEO Change	FDB	27	32.02	864.50	Mann-Whitney U	242.500
	RMB	27	22.98	620.50	Wilcoxon W	620.500
	Total	54			Z	-2.271
					Asymp. Sig. (2-tailed)	.023
CFO Change	FDB	27	33.52	905.00	Mann-Whitney U	202.000
	RMB	27	21.48	580.00	Wilcoxon W	580.000
	Total	54			Z	-3.042
					Asymp. Sig. (2-tailed)	.002
COO Change	FDB	27	33.93	916.00	Mann-Whitney U	191.000
	RMB	27	21.07	569.00	Wilcoxon W	569.000
	Total	54			Z	-3.128
					Asymp. Sig. (2-tailed)	.002

In addition to the turnover among the members of the top management team, this research studies the turnover in the board of directors, both the position of Chairperson of the Board (Hypotheses 16, 17, and 18) and the members of the board (Hypotheses 19, 20, and 21). These hypotheses parallel Hypotheses 7 through 15, with the expectation that the FDB firms will have the greatest turnover, the non-bankrupt firms the lowest turnover, and the RMB firms in-between. Descriptive statistics for turnover in the position of Chairperson of the Board and the board members are presented in Table 23, with test statistics presented in Table 24 for turnover in the Chairperson position and Table 25 for turnover in board membership.

Table 23: Descriptive statistics for turnover in Chairperson of the Board and board members over the six-year time period from two years prior to the bankruptcy filing through the third year following the bankruptcy filing for matched non-bankrupt, FDB, and RMB firms (n=81). For the board membership, a mean of 1.0 indicates a 100% turnover of the members of the board.

		N	Mean	Standard Deviation	Standard Error
Chair Change	Non-bankrupt	27	.5926	.63605	.12241
	FDB	27	1.2963	.72403	.13934
	RMB	27	1.0000	.67937	.13074
	Total	81			
Board Member Change (percent)	Non-bankrupt	27	.3889	.25260	.04861
	FDB	27	1.0700	.34238	.06589
	RMB	27	.5615	.43191	.08471
	Total	81			

Table 24: Test statistics for turnover in the position of Chairperson of the Board over the six-year time period from two years prior to the bankruptcy filing through the third year following the bankruptcy filing for matched FDB, RMB, and non-bankrupt firms (n=81).

		N	Mean Rank	Sum of Ranks		
Chair Change (H16)	Non-bankrupt	27	20.76	560.50	Mann-Whitney U	182.500
	FDB	27	34.23	924.50	Wilcoxon W	560.500
	Total	54			Z	-3.407
					Asymp. Sig. (2-tailed)	.001
Chair Change (H17)	Non-bankrupt	27	23.24	627.50	Mann-Whitney U	249.500
	RMB	27	31.76	857.50	Wilcoxon W	627.500
	Total	54			Z	-2.237
					Asymp. Sig. (2-tailed)	.025
Chair Change (H18)	FDB	27	30.69	828.50	Mann-Whitney U	278.500
	RMB	27	24.31	656.50	Wilcoxon W	656.500
	Total	54			Z	-1.687
					Asymp. Sig. (2-tailed)	.092

Table 25: Test statistics for turnover in the membership in the board of directors over the six-year time period from two years prior to the bankruptcy filing through the third year following the bankruptcy filing for matched FDB, RMB, and non-bankrupt firms (n=81).

		N	Mean Rank	Sum of Ranks		
Member Change (H16)	Non-bankrupt FDB Total	27 27 54	15.54 39.46	419.50 1065.50	Mann-Whitney U Wilcoxon W Z Asymp. Sig. (2-tailed)	41.500 419.500 -5.598 .000
Member Change (H17)	Non-bankrupt RMB Total	27 27 54	24.30 29.81	656.00 775.00	Mann-Whitney U Wilcoxon W Z Asymp. Sig. (2-tailed)	278.000 656.000 -1.307 .191
Member Change (H18)	FDB RMB Total	27 27 54	35.37 18.31	955.00 476.00	Mann-Whitney U Wilcoxon W Z Asymp. Sig. (2-tailed)	125.000 476.000 -4.092 .000

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CHAPTER 9: Discussion

This study is the first to support, with financial data, the differentiation of Chapter 11 bankruptcy into two separate constructs – Financial Distress Bankruptcy (FDB) and Risk Management Bankruptcy (RMB). With a variety of nomenclature, this FDB and RMB categorization has been used in the legal literature for several decades. The strong support for Hypothesis Two, that the FDB firms would have lower Altman's Z-scores than the RMB firms, suggests that FDB and RMB are two separate constructs from a financial perspective in addition to the legal perspective. The strong support for Hypothesis Five, that the FDB firms would have a lower Altman's Z-score Categorical, offers additional argument in favor of two separate constructs. Indeed, the mixed results for Hypotheses Three and Six, which predicted that RMB firms would manifest lower Altman's Z-scores (both numerical and categorical) than non-bankrupt firms, suggest that it may be difficult to differentiate RMB firms from non-bankrupt firms in the third year prior to bankruptcy. While it is beyond the scope of this paper, it is possible that bankruptcy modeling could be improved by segregating FDB and RMB firms, reducing the confounding that may be occurring as a result of combining the two in a single Chapter 11 construct.

This study is also the first to examine the correlation between turnover of the top management team with FDB and RMB Chapter 11 filings. Hypothesis 13, that FDB firms would have higher CEO turnover than RMB firms, was supported at the $p < .023$ level. Hypotheses 14 and 15, which parallel Hypothesis 13 for the CFO and COO positions, were both strongly supported as well ($p < .002$). These results suggest that executives involved with an RMB bankruptcy do not suffer the burden of blame

or stigma for their role in a corporate bankruptcy at the level FDB executives bear, and the RMB executives are far more likely to retain their positions. Again, when the RMB executive turnover is compared to non-bankrupt firms, there is no statistically-significant difference between RMB and non-bankrupt firms for turnover in the CFO or COO position (Hypotheses Eleven and Twelve, respectively). There is greater turnover for the CEOs in RMB firms compared to non-bankrupt firms (Hypothesis Ten, $p < .0.11$), raising the question as to whether the higher Chief Executive Officer turnover is voluntary or involuntary, something which is not readily determined without insider information.

It is unsurprising that Hypotheses Seven, Eight, and Nine, which predicted higher turnover among the top executives in FDB firms than in non-bankrupt firms, were strongly supported. However, there are few studies that have looked at executive turnover as related to Chapter 11 bankruptcy, so even these more banal results do add to the literature.

This study also appears to be the first to address the connection between turnover on the board of directors and the filing for Chapter 11 protection by FDB and RMB firms. Hypothesis 21, which postulated higher turnover among members of the board for FDB firms as compared to RMB firms was strongly supported ($p < .000$). Hypothesis 20, that the RMB firms would have greater board member turnover than non-bankrupt firms, was not supported even at the $p < .10$ level, while there was strong support for greater board member turnover among FDB firms compared to non-bankrupt firms (Hypothesis 19, $p < .000$). This strongly suggests that, as with the CFO and COO, the board members are stigmatized or punished far less for their

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involvement in a Chapter 11 filing for risk management purposes than for a financial distress bankruptcy. However, Hypothesis 21, which predicted higher turnover for the position of Chairperson of the Board in FDB firms than in RMB firms, was not supported. While there was, indeed, lower turnover in the RMB firms, the difference was not statistically significant.

CHAPTER 10: Conclusions of the study

On the basis of the results presented in Chapter 8, this research contributes to both the accounting and the management literature in several ways. First, legal scholars have maintained that Chapter 11 bankruptcies have been used as a business strategy to accomplish a corporate goal in a manner distinct from traditional bankruptcies involving firms in dire financial condition. This study is the first to provide evidence that there are financial differences between FDB and RMB firms, offering valuable support to these being distinct constructs financially as well as legally.

Additionally, this study is the first to consider executive and board turnover while discriminating between the FDB and RMB categories, enhancing the understanding of corporate behavior in insolvency. When partitioned, it becomes evident that turnover among the members of the management team (CEO, CFO, and COO) is materially higher in the financially-distressed firms than in RMB firms. The nature of the Chapter 11 bankruptcy filing also was found to correlate with the rate of turnover of members of the Board, with FMB firms experiencing board member turnover nearly twice that of RMB firms. The only position for which test results did not demonstrate a material difference between FDB and RMB firms is the position of Chairperson of the Board. While the mean turnover for the Chairperson was nearly 30 percent higher in the FDB firms than in the RMB firms, this difference was not statistically-significant at the $p < .05$ level.

When compared with the non-bankrupt firms, the FDB firms experienced significantly higher rates of turnover, consistent with virtually all prior studies linking

turnover to financial distress. However, this study is the first to separately compare the turnover in RMB firms with that in non-bankrupt firms. None of the executive or board positions manifested significant differences between the RMB and non-bankrupt firms at the $p < .01$ level. Indeed, the CFO and COO positions in RMB firms had turnover similar to, or even lower than, firms not experiencing a bankruptcy filing, and there was not any statistically significant difference between the RMB and non-bankrupt firms for those positions. Likewise, board member turnover did not differ significantly between RMB and non-bankrupt firms. Only the CEO and Chairperson of the Board positions were statistically different at the $p < .05$ level

These findings on turnover strongly suggest that executives and board members of a firm that files for Chapter 11 protection as a risk management strategy are not penalized for their involvement with in a bankruptcy proceeding. In contrast, people in similar positions in firms filing for Chapter 11 protection as a result of financial distress seem to be penalized for any role they may have played in failing to prevent financial problems. It is true that the higher turnover among executives and board members in the FMB firms may reflect voluntary departures – the cliché of rats running off the sinking ship does come to mind – but other research correlating executive turnover with financial problems has clearly indicated the presumption that such turnovers are primarily involuntary, and that association with a corporate bankruptcy carries a career stigma (refer to Chapter 5 for examples and discussion).

Finally, this study may contribute to the literature on bankruptcy modeling and related topics. The partitioning of bankruptcies into RMB and FDB may improve the performance of a variety of bankruptcy prediction models based on financial

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performance. The comparison of RMB and FDB using Altman's Z-scores, both raw and categorical, clearly indicate that these two categories of firms are financially different, with RMB firms manifesting considerably better financial health than the FDB firms. Since Altman's Z-score is a very widely used bankruptcy predictor, the distinction between RMB and FDB may be important to improve the model and a number of other bankruptcy prediction models that are built upon Altman's Z-score as a foundation.

10.1 Implications of the findings

There are several general conclusions of this study. It is clear that grouping together of all Chapter 11 bankruptcies rather than segregating those sourced in financial distress from those that are risk management creates noise. In terms of top management turnover, board turnover, and financial condition, there are significant differences between RMB and FDB firms.

Additionally, this study indicates that CEOs involved with a financial-distress bankruptcy continue to leave their positions at a much higher rate than in non-bankrupt firms, despite suggestions to the contrary (Sirower, 1991; Warren and Westbrook, 1986). Likewise, this research is among the first to shed light on the comparably high rate of turnover among other executive officers and board members during bankruptcy.

Finally, the turnover and financial patterns observed may allow *ex post facto* identification of bankruptcies for risk management purposes. The ability to identify a case of RMB may then facilitate further investigation of the underlying cause(s) and, in particular, inform the literature on corporate social responsibility.

10.2 Limitations of the study

As with any study, there are limitations and problems that must be recognized. One important limitation is the small sample size available, which did limit the power of statistical tests. Although there was a large pool of FDB firms (n=199) during the time period included with this study, the number of RMB firms was limited. Since only twenty-seven risk management bankruptcies were available that met the criteria and had sufficient data, this guided the selection of twenty-seven financial distress bankruptcies and twenty-seven non-bankrupt firms as matches. Over time, as more Chapter 11 bankruptcies occur, larger pools of information will be available.

A second limitation, which is inherent in any archival research, is that only a coarse-grained approach is possible. This study looked at annual financial reports submitted to the Securities and Exchange Commission, which does not allow a fine-grained analysis of day-to-day changes. The reports to the SEC, particularly the 10-K and DEF14A, do not contain the "insider" information that is likely to illuminate the rationale behind filing for Chapter 11 protection and/or turnover.

10.3 Directions for future research

A number of concepts arose during this study that could not be pursued due to lack of time and availability of funding, but which may be the bases for future research. Since Chapter 11 bankruptcy is a United States legal procedure, it would be interesting to explore comparable forms of bankruptcy outside the U.S. using the dependent variables from this research. This study could also be further expanded to look at other factors which may relate to either the use of bankruptcy as a risk-management strategy and/or the turnover implications thereof, including the

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composition of the Board of Directors, the percentage of ownership held by insiders, and ratings of corporate social responsibility. Other signals of risk-management bankruptcy could be explored, such as discretionary accruals, lease ratios, and analysts' ratings. Finally, simply continuing to gather data as additional bankruptcies occur could offer greater statistical power and additional understanding.

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Appendix A: Subset of 81 matched firms for this study

Filing Year	RMB Firms	Non-bankrupt Firms (matched to RMB)	FDB Firms (matched when possible)
2005	Delphi Corporation	Lear Corporation	Calpine Corp.
2004	Footstar Inc.	Genesco Inc	Trico Marine Services
2004	Oglebay Norton Company	Martin Marietta Materials	International Wire Group Inc.
2003	MCSI Inc.	GTSI Corp	DDI Corp.
2003	Impath Inc	Laboratory Corp. of America Holdings	NRG Energy, Inc.
2003	Seitel Inc	Contango Oil & Gas Company	Magellan Health Services Inc.
2002	Global Crossing Ltd	Verizon Communications	Mpower Holding Corp.
2002	Kaiser Aluminum Corporation	Alcoa Incorporated	Special Metals Corp
2002	Worldcom, Inc.	Crown Castle International	ITC DeltaCom, Inc.
2002	Kmart Corporation	Target Corp	Jacobson Stores, Inc.
2002	Peregrine Systems Inc	Midway Games Inc	Conseco, Inc.
2001	USG Corporation	Eagle Materials Inc	Thermadyne Holdings Corp.
2001	W.R.Grace & Company	FMC Corp	Bethlehem Steel Corp
2001	Washington Group International	Global Industries Limited	Friede Goldman Halter
2001	Federal-Mogul Corporation	Dana Holding Corp	Hayes Lemmerz International, Inc.
2000	Armstrong World Industries	Congoleum Corp	Integrated Health Services, Inc.
2000	Owens Corning	PPG Industries Inc	Carmike Cinemas, Inc.
2000	CareMatrix Corporation	Almost Family Inc	Pathmark Stores, Inc.
1999	Fine Host Corporation	Brinker International Inc	Planet Hollywood International, Inc.
1999	Philip Services Corporation	Waste Management Inc	Trism, Inc.
1999	Smartalk Teleservices, Inc.	AT & T	Hvide Marine Incorporated
1999	Complete Management, Inc.	Sunlink Health Systems Inc	Harnischfeger Industries, Inc.
1999	American Banknote Corporation	Champion Industries	Sun HealthCare Group, Inc.
1999	Just For Feet, Inc.	Brown Shoe Company Inc	Edison Brothers Stores, Inc.
1998	Paragon Trade Brands, Inc.	Sealed Air Corp	Nu-kote Holding, Inc.
1998	Boston Chicken, Inc.	Sonic Corp	Grand Union Company
1998	Reliance Acceptance Group, Inc.	HSBC Finance Corp	Salant Corp.

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Appendix B: Firms in Financial-distress bankruptcy with matched non-bankrupt firms

Year	SIC	FDB Bankrupt Firms	Non-bankrupt Firms (matched)
2007	6798	American Home Mortgage Investment Corp.	Vornado Realty Trust
2007	7997	Bally Total Fitness Holding Corporation	Life Time Fitness
2007	5940	Hancock Fabrics, Inc.	Staples Inc
2007	6163	Delta Financial Corporation	Security National Financial Corp
2007	2611	Pope & Talbot, Inc.	Potlatch Corp
2007	7841	Movie Gallery, Inc.	Netflix Inc
2007	8071	InSight Health Services Holdings Corp	Alliance Healthcare Services Inc
2007	5731	Tweeter Home Entertainment Group, Inc.	Best Buy Company Inc
2006	3714	Dura Automotive Systems, Inc.	Teleflex
2006	4400	Sea Containers Ltd.	Tidewater Inc
2006	4833	Granite Broadcasting Corporation	Fisher Communications Inc
2006	3714	Dana Corporation	Autoliv Inc
2006	2673	Pliant Corporation	Bemis Corporation
2006	1731	Integrated Electrical Services, Inc.	Dycom Industries Inc
2006	3910	Oneida Ltd.	Lenox Group Inc
2006	3571	Silicon Graphics, Inc.	Dell Inc
2005	3086	Foamex International, Inc.	UFP Technologies
2005	8734	aaiPharma Inc.	Bio-Reference Laboratories Inc
2005	4931	Entergy New Orleans, Inc.	Allete Inc
2005	4512	Delta Air Lines, Inc.	Continental Airlines Inc
2005	4512	Northwest Airlines Corporation	Southwest Airlines Company
2005	6162	American Business Financial Services, Inc.	Financial Federal Corp
2005	5944	Friedman's Inc.	
2005	6331	Acceptance Insurance Companies Inc.	Bancinsurance Corp
2005	5411	Winn-Dixie Stores, Inc.	Publix Super Markets Inc
2005	3470	WHX Corporation	Ampco Pittsburgh Corp
2005	3490	Amcast Industrial Corporation	Compx International Inc
2005	3714	Calpine Corp.	Duke Energy Corp.
2004	4813	RCN Corporation	Dish Network Corp
2004	2050	Interstate Bakeries Corporation	J&J Snack Foods Corp
2004	4512	US Airways Group, Inc. (2004)	Alaska Air Group Inc
2004	4522	ATA Holdings Corp.	Airtran Holdings Inc
2004	7372	Liberate Technologies	NDS Group PLC
2004	3357	International Wire Group Inc.	Encore Wire Corp
2004	6770	Atlas Air Worldwide Holdings Inc.	ExpressJet Holdings Inc
2004	3490	Amcast Industrial Corporation (2004)	Compx International Inc
2004	7011	Trump Hotels & Casino Resorts Inc.	Multimedia Games Inc
2004	4400	Trico Marine Services	Oceaneering International Inc
2004	3081	Applied Extrusion Technologies, Inc.	Tredegar Corp

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Year	SIC	FDB Bankrupt Firms	Non-bankrupt Firms (matched)
2003	4813	Leap Wireless International Inc.	Gray Television
2003	8060	Magellan Health Services Inc.	Health Net Inc
2003	5110	DaisyTek International Corp.	Insight Enterprises Inc
2003	5961	Spiegel Inc.	JC Penney Company Inc
2003	4813	AT&T Latin America Corp.	Sprint Nextel Corp
2003	7389	divine, inc.	Apac Customer Services Inc
2003	4813	NTELOS, Inc.	Atlantic Tele-Network Inc
2003	4812	iPCS, Inc.	Plantronics Inc
2003	3679	Recoton Corp.	EMS Technologies Inc
2003	3576	SONICblue, Inc.	Mercury Computer Systems Inc
2003	3679	Read-Rite Corp.	Woodhead Industries Inc
2003	3663	Loral Space & Communications Ltd.	Lockheed Martin Corp
2003	4911	Mirant Corp.	FPL Group Inc
2003	4911	NRG Energy, Inc. (2003)	Ameren Corp
2003	3443	Chart Industries Inc.	Praxair Inc
2003	4813	Touch America Holdings Inc	AT & T Inc
2003	2390	WestPoint Stevens Inc.	Decorator Industries Inc
2003	7510	Amerco	Rush Enterprises Inc
2003	4813	Allegiance Telecom Inc.	Polycom Inc
2003	5411	Penn Traffic Co	The Kroger Company
2003	3312	Weirton Steel Corp.	Gibralter Industries Inc
2003	4931	Northwestern Corp.	CH Energy Croup Inc
2003	3320	Atchison Casting Corp.	Matthews International Corp
2003	3672	DDI Corp.	Plexus Corp
2003	4911	PG&E National Energy Group	Consolidated Edison Inc
2003	3312	Rouge Industries, Inc.	Olympic Steel Inc
2003	7389	Redback Networks Inc.	NL Industries Inc
2003	2800	Solutia, Inc.	Albemarle Corp
2002	4931	Covanta Energy Corp.	Empire District Electric Company
2002	8710	IT Group, Inc. (The)	CDI Corp
2002	3691	Exide Technologies	Spectrum Brands Inc
2002	2299	Polymer Group, Inc.	Kimberly-Clark Corp
2002	3221	Anchor Glass Container Corp.	Owens Illinois Inc
2002	1311	Coho Energy, Inc.	Newfield Exploration Company
2002	5088	Kellstrom Industries, Inc.	Heico Corporation
2002	4813	Mpower Holding Corp.	Atlantic Tele-Network Inc
2002	3399	Special Metals Corp	Nanophase Technologies Corp
2002	4813	International Fibercom, Inc.	Atlantic Tele-Network Inc
2002	5699	Jacobson Stores, Inc.	Christopher & Banks Corp
2002	2337	Kasper A.S.L., Ltd.	Liz Claiborne Inc
2002	4813	XO Communications, Inc.	IDT Corporation
2002	4512	US Airways, Inc.	Alaska Air Group Inc

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Year	SIC	FDB Bankrupt Firms	Non-bankrupt Firms (matched)
2002	4213	Consolidated Freightways Corp.	Landstar System Inc
2002	4813	ITC DeltaCom, Inc.	American Tower Corporation
2002	1700	Encompass Services Corporation	Quanta Services Inc
2002	7389	Frontline Capital Group	Forest City Enterprises Inc
2002	3822	Agway Inc.	Measurement Specialties Inc
2002	2819	GenTek, Inc.	CommScope Inc
2002	4512	UAL Corporation (United Airlines)	Frontier Airlines Holdings Inc
2002	2451	Oakwood Homes Corp.	Skyline Corp
2002	6311	Conseco, Inc.	American National Insurance Company
2002	4911	NRG Energy, Inc.	Ameren Corp
2001	4812	Advanced Radio Telecom Corp.	New ULM Telecom Inc
2001	8741	ProMedCo Management Company	Healthways Inc
2001	7993	JCC Holding Co.	Penn National Gaming Inc
2001	4813	Star Telecommunications Inc.	General Communication Inc
2001	4813	Teligent Inc	J2 Global Communications Inc
2001	4812	Viatel Inc.	Frontier Communications Corp
2001	4812	WebLink Wireless, Inc.	Skyterra Communications Inc
2001	5912	Drug Emporium, Inc.	CVS Caremark Corp
2001	5193	U.S.A. Floral Products, Inc.	1-800-Flowers.com Inc
2001	4953	Waste Systems International, Inc.	Republic Services Inc
2001	6153	Finova Group, Inc.	Leucadia National Corp
2001	4911	Pacific Gas & Electric Co.	Sempra Energy
2001	7373	PSINet	Ibasis Inc
2001	2321	Warnaco Group Inc.	VF Corp
2001	4813	Winstar Communications, Inc.	Gray Television Inc
2001	3731	Friede Goldman Halter	Dril-Quip Inc
2001	2035	Vlasic Foods International, Inc.	HJ Heinz Company
2001	3312	Bethlehem Steel Corp	Allegheny Technologies Inc
2001	7377	Comdisco, Inc.	Hewlett-Packard Company
2001	4813	Covad Communications	Level 3 Communications Inc
2001	7379	Exodus Communications, Inc.	Micros Systems Inc
2001	4813	Global TeleSystems, Inc.	Flextronics International Limited
2001	3714	Hayes Lemmerz International, Inc.	Gentex Corp
2001	7011	Lodgian, Inc.	Marriott International Inc
2001	5051	Metals USA, Inc.	RTI International Metals Inc
2001	3861	Polaroid Corp	Eastman Kodak Company
2001	4813	Rhythms NetConnections, Inc.	8X8 Inc
2001	4813	World Access, Inc.	IDT Corp
2001	5148	Chiquita Brands International, Inc.	Fresh Del Monte Produce
2001	5211	Payless Cashways, Inc.	Building Materials Holding Corp
2001	2812	Pioneer Companies, Inc.	Dow Chemical Company
2001	7353	NationsRent, Inc.	United Rentals Inc

Year	SIC	FDB Bankrupt Firms	Non-bankrupt Firms (matched)
2001	3695	Komag, Inc.	Imation Corp
2001	5912	Phar-Mor, Inc.	Walgreen Company
2001	2062	Imperial Sugar Company	Sterling Sugars Inc
2001	8059	Assisted Living Concepts, Inc.	America Service Group Inc
2001	4899	Telscape International, Inc.	TW Telecom Inc
2001	3548	Thermadyne Holdings Corp.	Illinois Tool Works Inc
2001	5099	Valley Media Inc.	Image Entertainment Inc
2001	4931	York Research Corp.	Integrys Energy Group Inc
2001	7948	AMF Bowling, Inc.	Bowl America Inc
2001	4813	e.spire Communications, Inc.	Bellsouth Corp
2000	4813	GST Telecommunications, Inc.	Surewest Communications
2000	8052	Integrated Health Services, Inc.	Amsurg Corp
2000	2678	American Pad & Paper Company	Avery Dennison Corp
2000	1311	KCS Energy, Inc.	Nabors Industries Limited
2000	6311	PennCorp Financial Group, Inc.	Protective Life Corp
2000	7999	Family Golf Centers, Inc.	Six Flags Inc
2000	4512	Tower Air, Inc.	Forward Air Corp
2000	5411	Grand Union Company	Weis Markets Inc
2000	8059	Grand Court Lifestyles, Inc.	America Service Group Inc
2000	8093	Medical Resources, Inc.	Hanger Orthopedic Group Inc
2000	5712	Heilig-Meyers Company	Pier 1 Imports Inc
2000	6531	Sunterra Corp	Palm Harbor Homes Inc
2000	5812	Einstein Noah Bagel Corp	Starbucks Corp
2000	5713	Flooring America, Inc.	Lowe's Companies Inc
2000	5311	Bradlees Inc.	Kohl's Corp
2000	4812	Paging Network, Inc.	Sprint Nextel Inc
2000	2392	Pillowtex Corp.	Decorator Industries Inc
2000	7832	Carmike Cinemas, Inc.	Gaylord Entertainment Company
2000	5411	Pathmark Stores, Inc.	Great Atlantic & Pacific Tea Company Inc
2000	3312	Northwestern Steel & Wire Co.	Worthington Industries Inc
2000	5651	Stage Stores, Inc.	Stein Mart Inc
2000	8711	Stone & Webster, Inc.	VSE Corp
2000	1799	American Eco Corp.	
2000	2211	Dyersburg Corp.	Crown Crafts Inc
2000	7832	GC Companies, Inc.	Reading Entertainment Inc
2000	8711	Kaiser Group International, Inc.	URS Corp
2000	8062	New American Healthcare Corp.	Hooper Holmes Inc
2000	8062	Paracelsus Healthcare Corp.	Health Management Associates Inc
2000	3312	LTV Corp.	Harsco Corp
2000	7372	System Software Associates, Inc.	Computer Task Group Inc
2000	5251	Trend-Lines, Inc.	Insight Enterprises Inc

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Year	SIC	FDB Bankrupt Firms	Non-bankrupt Firms (matched)
1999	7261	Loewen Group, Inc., The	Stewart Enterprises Inc
1999	3532	Harnischfeger Industries, Inc.	Caterpillar Inc
1999	5961	Service Merchandise Company, Inc.	Systemax Inc
1999	3651	Zenith Electronics Corp.	Harman International Industries Inc
1999	4212	Trism, Inc.	Pam Transportation Services Inc
1999	2281	Tultex Corporation	Hampshire Group Limited
1999	5812	Planet Hollywood International, Inc.	Benihana Inc
1999	3841	Graham-Field Health Products, Inc.	Invacare Corp
1999	5661	Edison Brothers Stores, Inc.	Hot Topic Inc
1999	8051	Sun HealthCare Group, Inc.	Chemed Corp
1999	6162	PacificAmerica Money Center, Inc.	Capstead Mortgage Corp
1999	1311	Coho Energy, Inc.	Newfield Exploration Company
1999	1311	Costilla Energy, Inc.	Helmerich & Payne Inc
1999	6162	Wilshire Financial Services Group, Inc.	Oceanfirst Financial Corp
1999	4424	Hvide Marine Incorporated	Tidewater Inc
1999	3312	Geneva Steel Company	Gibralter Industries Inc
1999	1311	Forcenergy Inc	Devon Energy Corp
1999	4841	Wireless One, Inc.	Time Warner Cable
1999	5093	Recycling Industries, Inc.	Reliance Steel and Aluminum Company
1999	2731	Golden Books Family Entertainment, Inc.	Scholastic Corp
1999	2322	Fruit of the Loom, Inc.	Oxford Industries Inc
1999	8062	Vencor, Inc.	Sunrise Senior Living Inc
1999	5149	Penn Traffic Co	The Kroger Company
1998	2325	Salant Corp.	Phillips-Van Heusen
1998	1311	National Energy Group, Inc.	Magellan Petroleum Corp
1998	5331	Venture Stores, Inc.	Fred's Inc
1998	5013	APS Holding Corp.	Genuine Parts Company
1998	4213	Builders Transport Inc.	Frozen Food Express Industries Inc
1998	5411	Grand Union Company	Weis Markets Inc
1998	4812	Geotek Communications, Inc.	STM Wireless Inc
1998	6324	FPA Medical Management, Inc.	Coventry Health Care Inc
1998	4841	CAI Wireless Systems, Inc.	Cable Design Technologies
1998	5731	Sun Television and Appliances, Inc.	Radioshack Corp
1998	3955	Nu-kote Holding, Inc.	Office Depot Inc
1998	6324	PHP Healthcare Corporation	Integramed America Inc
1998	3312	Laclede Steel	Insteel Industries Inc
1998	4841	Heartland Wireless Communications, Inc.	Wireless Telecom Group Inc
1998	5941	JumboSports, Inc.	Sports Chalet Inc

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Appendix C: Bankruptcy Models

As noted in Chapter 4, the question arises as to what separates the firms who file for Chapter 11 reorganization from those who file for Chapter 7 liquidation or who struggle along doing nothing at all? There are both qualitative and empirical models. The former are generally descriptive, while the latter are usually designed for early prediction of bankruptcy. This Appendix provides a brief summary of bankruptcy modeling.

Qualitative conditions that influence the decision to file Chapter 11

Size of firm

Flynn and Farid (1991) note that one major factor in the decision to file for Chapter 11 is company size. They suggest that small- and medium-size firms are more likely to select Chapter 11. This is supported by noting that more than seventy percent of the firms filing for Chapter 11 protection in 1987 had sales of $50 million or less (Brown, B., 1988), and that in the first decade following passage of the Code, only about 0.5% of Chapter 11 filings were from publicly-traded firms (Nachtman, 1999). However, evidence exists that could be contradictory. LoPucki's Bankruptcy Research Database (lopucki.law.ucla.edu), used in hundreds of peer-reviewed articles, indicates that from 1980 through 2008, only 37% of Chapter 11 filings were by firms with assets of less than $500 million. However, the LoPucki database gleans its information from the problematic data kept by the Administrative Office of the U.S.

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Courts, which is believed to dramatically understate filings by small and medium-size firms (see 2.5).

Flynn and Farid (1991) argue that smaller firms are more likely to file for Chapter 11 since entrepreneurial management is better able to recognize a crisis developing due to their more intimate immersion in the day-to-day operations of the firm. The lower level of internal complexity in smaller firms also make it relatively easier for them to change direction. In contrast, large firms have greater financial resources to provide resilience to environmental shocks – in line with D'Aveni's (1989) "internal resource munificence." This resilience, combined with dispersion of ownership, makes the larger firms relatively less likely to file Chapter 11. Additionally, the substantial costs of bankruptcy, financial and otherwise, reduce the likelihood of large company filings. However, large firms have a better chance of reorganizing and surviving the bankruptcy filing than do smaller firms (Moulton and Thomas, 1993; Rodgers, 2000), probably because of their munificent internal resources.

Environmental adversity faced by the firm

The level of adversity faced by the firm is also suggested as a factor in the decision whether to file for Chapter 11, Chapter 7, or to postpone doing anything. Flynn and Farid (1991) that firms facing greater adversity (moderate or severe) should be more likely to file Chapter 11 than firms facing low adversity, since firms facing low adversity would be well-served by trying to take better advantage of existing but underutilized assets. This is consistent with empirical observations that suggest that

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firms in low-adversity environments often ignore the adversity and are influenced by their past experience and institutionalized policies and procedures (Nelson, 1981), akin to the "strategic paralysis" suggested by Whetton (1980). Under conditions of low adversity, organizational inertia or resistance to change may result in Chapter 11 not even being considered as an option, perhaps wisely taking a "defender" strategy as opposed to a "reactor" strategy (Miles and Snow, 1978; Namiki, 1989).

Under conditions of moderate or high environmental adversity, Flynn and Farid (1991) propose that Chapter 11 is a better alternative to either filing for liquidation or doing nothing at all, allowing the firm time for self-examination to determine the dysfunctional aspects of their business and to attend to reducing the impact of those dysfunctional aspects. For instance, the firm may consider downsizing, a shift in operating resources, technological improvements, and/or renegotiation of contracts.

Organizational slack

"Since organizations do not always optimize, they accumulate spare resources and unexploited opportunities which then become a buffer against bad times" (March, 1979, quoted in *Stanford GSB,* 1978-79, 17). While Chester Barnard (1938) first discussed the "inducement-contribution" ratio as a means of attracting employees and other participants to an organization, it was March and Simon (1958) who first described the I/C ratio of greater than one as "slack." Bourgeois (1981) considers slack to be an "internal shock absorber", allowing the organization to adjust to changes in the external environment and to experiment with new products and

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innovations. Essentially, slack is really a form of insulating inefficiency, protecting the firm from external threats while still allowing the organization to be successful and effective. While too much inefficiency is wasteful and can lead to organizational demise, a certain amount of slack will protect the organization from snapping under stress (implying a curvilinear relationship between slack and some measurement of success).

Organizational slack, therefore, can serve as a buffer for organizations faced with challenging circumstances. The less slack the organization encompasses, the less they are able to handle environmental adversity, and the more likely they should be to seek protection under Chapter 11 rather than just trying to "ride out" the storm. If there is truly zero slack, Chapter 11 may not even be an option, or will be a temporary stopover on the way to Chapter 7 liquidation. If there is abundant slack, the firms may be able to deal with even highly-adverse situations without seeking outside protection. Flynn and Farid (1991) suggest that, even under severe adversity, firms with high slack should delay filing for Chapter 11 and attempt a strategy of increasing their techno-structure to better utilize their assets.

It is unlikely that bankruptcy as a strategy would be adopted by firms with very low organizational slack. Instead, this is a strategy that would be expected to be adopted by firms with the luxury of being able to afford the financial and reputational impact of the Chapter 11 process in order to protect their valued assets. One would expect organizations to select the reorganization option before the demands on their resources reach the point where there is no cushion available to expend on this

challenging process. Under high adversity, with moderate to high slack, organizations may opt for a "shrink selectively strategy" (Harrigan and Porter, 1983), allowing them to preserve internal competitive advantages while shedding the undesirable aspects of the organization such as onerous unionized employees or contingent liabilities

Organizational complexity

Organizational complexity is suggested to influence the firm's choice to declare bankruptcy. Delaney (1989) noted that companies that choose bankruptcy have a complex creditor structure. In other words, they have a large number of creditors with competing interests, making it more difficult to effect an out-of-court agreement regarding resolution of payment problems.

Stage in Organizational life-cycle

Much has been written about the organizational life-cycle, with typical models describing a fairly structured, sequential evolution of young, small, and simple organizations becoming older, larger, and more complex (Miller and Friesen, 1984). While the models have a lot in common, they are not identical nor are they interchangeable. Quinn and Cameron (1983) synthesized ten life-cycle models into four general stages: entrepreneurial, collectivity, formalization, and elaboration of structure. However, of the ten models they reviewed, only one mentioned organizational decline (Adizes, 1979), and that one focuses on decline from maturity to death, not really allowing for either the possibility of decline earlier in the cycle or decline not resulting in death. A subsequent study supported the existence of distinct

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life-cycle stages, each with identifiable attributes, but did not demonstrate that the stages were sequential and/or inevitable (Miller and Friesen, 1984).

Clearly, the high failure rate of new businesses contradicts the notion that "death" follows maturity. Data from the U.S. Bureau of Labor Statistics indicate that about 34% of new businesses do not make it through the first two years, and that 56% do not last four years (Knaup, 2005). A follow-up study indicated that more than 69% of businesses do not survive seven full years (Knaup and Piazza, 2007). These data are consistent with a study of firms in Canada (Thornhill and Amit, 2003). This high mortality rate among young firms was first noted by Stinchcombe (1965) who called it "the liability of newness." A number of other authors have noted the high failure rate of "adolescent" firms, following which there is a monotonic asymptotic decline (Broderl and Schussler, 1990; Carroll, 1983; Freeman, Carroll, and Hannan, 1983; Sorenson and Stuart, 2000).

However, simply noting when firms have the greatest threat to survival is not the same as evaluating when they are most likely to file for bankruptcy protection under Chapter 11, nor is it the same as determining at which life-cycle stage they are most likely to *strategically* file for reorganization. Those have yet to be determined.

Empirical bankruptcy prediction models

While bankruptcy prediction studies have varied in their objectives, they are primarily designed to predict bankruptcy early enough to help investors and other organizational stakeholders avoid substantial losses. In one of the most widely-cited

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articles on the topic, Scott (1981) criticized these models because they lacked a well-developed theoretical foundation, but Aziz and Dar (2006) note that Scott's study is both limited in scope and out-of-date since it did not include modern techniques such as Artificial Intelligence Expert System (AIES) models. In addition to AIES modeling of bankruptcy prediction, other models may be either statistical or theoretical.

Statistical bankruptcy models

Statistical bankruptcy models are, by far, the most frequently used, included in 64 percent of 89 important empirical studies of bankruptcy prediction (Aziz and Dar, 2006). They generally focus on symptoms of failure, such as poor financial statement ratios and other indicators of poor performance, and the primary sources of information are reports generated by the companies in question. Other than those models developed before the late 1960s, most statistical bankruptcy models take a multivariate approach, often from a balance sheet perspective.

Univariate models ~ addressed in Chapter 4

Multivariate/Multiple Discriminant Analysis (MDA) ~ addressed in Chapter 4

Linear Probability Model (LPM)

Linear Probability Modeling (LPM) addresses some of the suggested shortcomings in MDA modeling, including violations of the statistical assumptions required and an MDA score that has little intuitive meaning. Most MDA studies use equal-size matched samples of failed and non-failed firms, which has been show to

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bias the results (Martin, 1977) since the population does not contain equal proportions of bankrupt and non-bankrupt firms. The dichotomous event Y (the firm fails/does not fail) is interpreted as a conditional probability of any independent variable X (specific financial ratios). A boundary value must be defined for Y, discriminating between failure/non-failure. LPM coefficient scores are then interpreted as probabilities of failure (Morris, 1998). Pinches, Mingo, and Caruthers (1973) found that the acid-test ratio is significant for three years prior to corporate failure, that long-term debt/total capital was significant for five years, and that turnover ratios were significant in the long term. LPM is not commonly-used, and has demonstrated the lowest predictive accuracy of all statistical models (Aziz and Dar, 2006). However, it has been transformed into the Logit model, the second-most widely employed model in the study of bankruptcy prediction.

Logit Model

This model is a transformation of the LPM model. It is similar to LPM in that it expresses the probability of failure of a firm as a dichotomous dependent variable as a function of a number of explanatory variables, but in this case the dichotomous dependent variable is the logarithm of the odds that an event (bankruptcy) will occur. A probability of 0.5 implies an equal chance that a firm will fail or will not fail, with probabilities closer to zero indicating a likelihood of bankruptcy, and probabilities nearing 1.0 indicating a likelihood of non-failure (Morris, 1998). Logit models have been used in more than 21 percent of bankruptcy prediction studies, with an overall predictive accuracy of 87 percent (Aziz and Dar, 2006). One of the few studies of

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strategic bankruptcy used Logit modeling to determine that the text length of a contingent liability disclosure should be considered in bankruptcy prediction models (Lombard, 1998).

Other Statistical Models

There are many other statistical prediction models which are used. The Probit model is similar to the Logit model, but uses the normal cumulative distribution function rather than a logistic one. CUSUM (cumulative sums) examines the time-series behavior of various attribute variables looking for a shift in the firm's financial condition that signals the beginning of deterioration (Kahya and Theodossiou, 1999). Partial adjustment processes are applied in bankruptcy prediction by examining cash management behavior of a firm, with failure being defined as the inability of a firm to meet financial obligations as they come due (Gujarati, 1998). These models are seldom used, with each being employed in only about two percent of empirical studies, but the Probit model has a predictive accuracy of 89 percent (Aziz and Dar, 2006).

Artificial Intelligence and Expert Systems Models

As a result of technological advancement, a number of computer-driven artificial intelligence and expert systems (AIES) bankruptcy prediction models have been developed since the 1980s. AIES models are now being used in about 25 percent of empirical bankruptcy prediction studies, with an overall predictive accuracy rate of about 88 percent, the highest group-level performance (Aziz and Dar, 2006). AIES

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models emphasize "machine learning" and knowledge acquisition in a problem-solving context under various degrees of supervision and control. Most basic are "recursively partitioned decision trees" in which the program learns by generalizing from examples, transforming data into a decision tree in which the final nodes are "bankrupt" and "non-bankrupt" (so, for prediction, firms are "likely to be bankrupt" and "likely to be non-bankrupt") (Pompe and Feelders, 1997). Case-based reasoning models predict a similar bankrupt/non-bankrupt classification by looking at similar previously "solved" cases (Kolodner, 1993). Neural networks attempt to conduct this predictive classification by mimicking brain processes (Yang, Platt, and Platt, 1999). Genetic algorithms use a stochastic search technique based on Darwinian evolution theory to predict whether or not a firm is likely to go bankrupt (Varetto, 1998). Finally, "rough sets" models use imprecise information and inductive learning to classify firms as healthy or not healthy by matching their characteristics with a set of derived decision rules (Dimitras, Slowinski, Susmaga, and Zopounidis, 1999). As with most statistical modeling, AIES models focus on symptoms of failure, and the data are drawn mostly from information provided in company-generated reports.

Theoretical Models

In contrast to the statistical and AIES bankruptcy prediction models, which focus on symptoms of failure, theoretical models attempt to determine qualitative causes of bankruptcy. Frequently, these theoretical models are not developed by building directly on theoretical principles, but by employing an appropriate statistical technique. While theoretical models are the least-frequently used of the three groups,

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appearing in only eleven percent of empirical studies, they have impressive predictive value, with two of the three models described herein having overall predictive accuracy greater than ninety percent (Aziz and Dar, 2006).

One way to identify a firm in financial distress is to examine changes in the composition of assets and liabilities on a firm's balance sheet. These "balance sheet decomposition measures" are based on the argument that firms try to maintain homeostasis in their financial structures, and that significant changes in the balance sheet indicates that a firm is incapable of maintaining financial equilibrium (Booth, 1983). "Credit Risk" theories are widely employed by financial firms, and refer to the risk that a borrower will default on a loan, for whatever reason. JP Morgan's CreditMetrics, Moody's KMV model, and McKinsey's CreditPortfolio model are all applications of credit risk theories, and are based on economic theories of corporate finance (Wilson, 1998). "Gambler's Ruin" theory, with the highest predictive accuracy (94%) of any specific method (Aziz and Dar, 2006), treats the firm as a gambler playing repeatedly with a given probability of loss. The gambler (firm) will continue to play until its net worth goes to zero (bankruptcy). This theoretical model examines the probability of a firm's cash flows being negative over a run of periods, and predicts bankruptcy based on the initial amount of cash held (Scott, 1981).