

WILEY FINANCE

Corporate Financial Distress and Bankruptcy

THIRD EDITION

*Predict and Avoid Bankruptcy,
Analyze and Invest in Distressed Debt*

EDWARD I. ALTMAN
EDITH HOTCHKISS

Corporate Financial Distress and Bankruptcy

*Predict and Avoid Bankruptcy,
Analyze and Invest in Distressed Debt*

Third Edition

EDWARD I. ALTMAN
EDITH HOTCHKISS



John Wiley & Sons, Inc.

Copyright © 2006 by Edward I. Altman and Edith Hotchkiss. All rights reserved.

Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

Published simultaneously in Canada.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning, or otherwise, except as permitted under Section 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, (978) 750-8400, fax (978) 646-8600, or on the web at www.copyright.com. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at <http://www.wiley.com/go/permissions>.

Limit of Liability/Disclaimer of Warranty: While the publisher and author have used their best efforts in preparing this book, they make no representations or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. No warranty may be created or extended by sales representatives or written sales materials. The advice and strategies contained herein may not be suitable for your situation. You should consult with a professional where appropriate. Neither the publisher nor author shall be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, or other damages.

For general information on our other products and services or for technical support, please contact our Customer Care Department within the United States at (800) 762-2974, outside the United States at (317) 572-3993 or fax (317) 572-4002.

Designations used by companies to distinguish their products are often claimed by trademarks. In all instances where the author or publisher is aware of a claim, the product names appear in Initial Capital letters. Readers, however, should contact the appropriate companies for more complete information regarding trademarks and registration.

Wiley also publishes its books in a variety of electronic formats. Some content that appears in print may not be available in electronic books. For more information about Wiley products, visit our web site at www.wiley.com.

Library of Congress Cataloging-in-Publication Data:

Altman, Edward I., 1941–

Corporate financial distress and bankruptcy : predict and avoid
bankruptcy, analyze and invest in distressed debt / Edward I. Altman,
Edith Hotchkiss. — 3rd ed.

p. cm. — (Wiley finance series)

Includes bibliographical references and index.

ISBN-13: 978-0-471-69189-1 (cloth)

ISBN-10: 0-471-69189-5 (cloth)

1. Bankruptcy—United States. I. Hotchkiss, Edith, 1961– .

II. Title. III. Series.

HG3766.A66 2006

658.15—dc22

2005017835

Printed in the United States of America.

10 9 8 7 6 5 4

Preface

In looking back over the first two editions of *Corporate Financial Distress and Bankruptcy* (1983 and 1993), we note that on both occasions of their publication the incidence and importance of corporate bankruptcy in the United States had risen to ever more prominence. The number of professionals dealing with the uniqueness of corporate death in this country was increasing so much that it could have perhaps been called a “bankruptcy industry.” There is absolutely no question now in 2005 that we can call it an industry. The field has become even more popular in the past 10 to 15 years, and this has been accompanied by an increase in the number of academics specializing in the corporate distress area. These academics provide the serious analytical research that is warranted in this field. Indeed, there is nothing more important in attracting rigorous and thoughtful research than data! With this increased theoretical and especially empirical interest, Edith Hotchkiss has joined the original author of the first two editions to produce this volume.

It is now quite obvious that the bankruptcy business is big-business. While no one has done an extensive analysis of the number of people who deal with corporate distress on a regular basis, we would venture a guess that it is at least 40,000 globally, with the vast majority in the United States but a growing number abroad. We include turnaround managers (mostly consultants); bankruptcy and restructuring lawyers; bankruptcy judges and other court personnel; accountants, bankers, and other financial advisers who specialize in working with distressed debtors; distressed debt investors, sometimes referred to as “vultures”; and, of course, researchers. Indeed, the prestigious Turnaround Management Association (www.turnaround.org) numbered more than 7,000 members in 2005.

The reason for the large number of professionals working with organizations in various stages of financial distress is the increasing number of large and complex bankruptcy cases. In the United States in the three-year period 2001–2003, 100 companies with liabilities greater than \$1 billion filed for protection under Chapter 11 of the Bankruptcy Code. These “billion-dollar babies” are listed in the appendix to Chapter 1. Over the past 35 years (1970–2005), there have been at least 228 of these large firm bankruptcies in the United States. On the eve of the publication of this book,

two of the nation's major airlines, Delta and Northwest, have filed for bankruptcy protection. Chapter 1 of this book presents some relevant definitions and statistics on corporate distress and highlights the increasing reality that size is no longer a proxy for corporate health.

The planning for this book began long before its completion in mid-2005, and we were unaware that the eventual passing of the new Bankruptcy Abuse Prevention and Consumer Protection Act of 2005 (BAPCPA) would coincide with the timing of our completion. Most observers were commenting on the implications of the new Act for consumer (personal) bankruptcies, but as the details of the new Act became evident, it was clear that the implications for corporations and the reorganization process are also quite important. We attempt to treat many of these new provisions in Chapter 2 when we explore the evolution of the bankruptcy process in the United States with comparisons to many other countries.

With this background in place, the remaining chapters in the first section of the book address a number of key issues central to our understanding of the restructuring process. In Chapter 3, we explore the success of the bankruptcy reorganization process, especially with respect to the post-bankruptcy performance of firms emerging from Chapter 11. In a disturbing number of instances, these emerging firms have sustained recurring operating and financial problems, sometimes resulting in a second filing, unofficially called a "Chapter 22." Indeed, we are aware of at least 157 of these two-time filers over the period 1980–2004, and seven three-time filers (Chapter 33s). If we include filings prior to the 1978 Bankruptcy Reform Act, there is even one Chapter 44 (TransTexas Gas Corporation)! Despite the numbers of bankruptcy repeaters, many firms reduce the burden of their debt and go on to achieve success, especially if the core business is solid and can be managed more effectively with less debt.

As bankruptcy cases have become larger and more complex, there is a need for professionals with increasingly specialized skills. For example, with the sales of pieces of or entire businesses becoming more common in the recent wave of bankruptcies, there is a need for professionals skilled in managing the mergers and acquisitions (M&A) process. With the growth in the number and size of cases has come increased scrutiny of bankruptcy costs. Chapter 4 summarizes the extensive amount of academic research that has helped us to understand the nature of these costs. For larger firms, the dollar magnitude of these costs may be tremendous; for smaller firms, these costs may be prohibitive and ultimately lead to liquidation.

Chapters 5 and 6 explore the importance and analytics of the distressed firm valuation process from theoretical and pragmatic standpoints. In essence, the most important determinants of the fate of the distressed firm are (1) whether it is worth more dead than alive and (2) if worth more alive, what its value is relative to the claims against the assets. Chapter 5

provides a careful discussion of valuation models for distressed firms, and explains why we observe seemingly wide disagreements over the reorganized firm's value between different parties in the bankruptcy negotiation process. Chapter 6 concentrates on the highly leveraged restructuring, the relevant valuation and capital structure theories, and empirical results.

Chapters 7 through 9 explore, in great depth, the two relevant capital markets most important to risky and distressed firms. Chapter 7 explores the development and risk-return aspects of the U.S. high yield bond and bank loan markets. Since high yield or "junk" bonds are the raw material for future possible distressed debt situations, it is important to investigate their properties. Among the most relevant statistics to investors in this market are the default rate as well as the recovery rate once the firm defaults. The high yield corporate bond market approached \$1 trillion outstanding in 2005, and topped \$1 trillion when General Motors' and Ford's bonds were downgraded to non-investment grade status in May 2005.

Chapters 8 and 9 go on to examine the size and development of the distressed and defaulted debt market. This market was actually larger than the high yield market in 2002 when the face value of distressed debt (public and private) was almost \$950 billion—at that time greater in size than the gross domestic products (GDPs) of all but seven of the world's countries! As the default rate subsequently decreased from record high levels in 2002, the size receded somewhat but still was relatively large in 2005 so that the distressed and defaulted debt market is now generally thought of as a unique asset class itself and perhaps the fastest growing segment in the hedge fund sector. As such, we explore its size, growth, risk-reward dimensions, and investment strategies.

Rounding out the first major section of this book is Chapter 10 on corporate governance in the distressed firm. Virtually every aspect of a firm's governance can change in some way when a firm undergoes a distressed restructuring. Management turnover rates for firms that emerge from Chapter 11 reach 90 percent. Board size declines as firms become distressed, and the board often changes in its entirety at reorganization. Most importantly, many restructurings ultimately involve a change in control of the company.

The second section of this book deals with the development and implications of models built to classify and predict corporate distress. The estimation of the probability of default in the United States (Chapter 11) and for emerging markets (Chapter 12) and the loss given default (Chapter 15) are explored in depth. Emphasis is on estimation procedures and their relevance to the new features of Basel II's capital adequacy requirements for banks and other financial institutions.

In an appendix to Chapter 11 of this book, we present a bibliography of the development and application of distress prediction models in more than 20 countries outside the United States. This highlights the incredible

explosion in interest in the corporate bankruptcy phenomenon all over the world. As illustrated earlier in Chapter 2 and further documented in Chapter 12, corporate distress is a global phenomenon and, as such, deserves careful analysis and constructive commentary and legislation.

Models for estimating default probabilities are discussed in Chapters 11 and 12 followed in Chapter 13 by their applications to many different scenarios, including credit risk management, distressed debt investing, turnaround management and other advisory capacities, and legal issues. This chapter, in addition, comments on the leading practitioner firms in these functions.

With respect to the turnaround management arena, Chapter 14 further explores the possibility of using distressed firm predictive models, for example our Z-Score approaches, for assisting the management of the distressed firm itself in order to manage a return to financial health. We illustrate this via an actual case study discussed in Chapter 14—the GTI Corporation and its rise from near extinction.

EDWARD I. ALTMAN
EDITH HOTCHKISS

*New York, New York
Chestnut Hill, Massachusetts
October 2005*

Acknowledgments

We would like to acknowledge an impressive group of practitioners and academics who have assisted us in the researching and writing of this book. We are enormously grateful to all of these persons for helping us to shape our analysis and commentary in our writings and in our classes at the New York University Stern School of Business and Boston College.

Among the practitioners, Ed Altman would like to thank Amit Arora, John Beiter, Maria Boyarzny, Brooks Brady, Bruce Buchanan, Michael Embler, Ken Emery, Holly Etlin, John Fenn, Jerry Foms, Martin Fridson, Rich Gere, Geoffrey Gold, Shelly Greenhaus, Harvey Gross, Robert Grossman, David Hamilton, Loretta Hennessey, Max Holmes, Shubin Jha, Sau-Man Kam, D. L. Kao, David Keisman, Al Koch, Martha Kopacz, Pat LaGrange, Markus Lahrkamp, E. Bruce Leonard, Bill Lutz, Judge Robert Martin, Chris McHugh, Robert Miller, Steven Miller, Wilson Miranda, David Newman, Mark Patterson, Gabriella Petrucci, Robert Raskin, Barry Ridings, Wilbur Ross, Til Scheurmann, Mark Shenkman, Dennis Smith, Christopher Stuttard, Ronald Sussman, Matt Venturi, Mariarosa Verde, Robert Waldman, Lionel Wallace, Jeffrey Werbalofsky, Bettina Whyte, David Winters, and Steven Zelin. And extra special thanks to his two ex-students, Allan Brown and Marti Murray. Edie Hotchkiss would like to thank William Derrough, Joseph Guzinski, Melissa Hager, Gregory Horowitz, Isaac Lee, Brett Miller, and Barry Ridings for their helpful discussions.

Ed Altman would also like to thank the many graduate assistants at the NYU Salomon Center over the years and the wonderful staff at the Center, including Mary Jaffier, Anita Lall, Robyn Vanterpool, and especially Lourdes Tanglao. The authors also thank Kimberly Thomas for her assistance with this manuscript. The editorial assistance of Mary Daniello, Bill Falloon, and Laura Walsh of John Wiley & Sons is also appreciated by the authors.

Edie Hotchkiss and Ed Altman would like to acknowledge the many contributions to the literature and field of corporate distress by academics, especially the more than 20 scholars who make up the Academic Advisory Council to the Turnaround Management Association and the many coauthors on their academic research papers.

Finally, Ed Altman would like to thank his wife and longtime companion, Elaine Altman, and son Gregory, for enduring his perverse enthusiasm for various degrees of corporate distress. Edie Hotchkiss would like to thank Ed for first introducing her to this field as her Ph.D. dissertation adviser, and for inviting her to collaborate on this project. She would also like to thank her husband Steven and daughter Jenny for their loving support.

E.I.A.

E.H.

About the Authors

Edward I. Altman is the Max L. Heine Professor of Finance at the Stern School of Business, New York University, and director of the Credit and Fixed Income Research Program at the NYU Salomon Center.

Dr. Altman has an international reputation as an expert on corporate bankruptcy, high yield bonds, distressed debt, and credit risk analysis. He was named Laureate 1984 by the Hautes Etudes Commerciales Foundation in Paris for his accumulated works on corporate distress prediction models and procedures for firm financial rehabilitation, and he was awarded the Graham and Dodd Scroll for 1985 by the Financial Analysts Federation for his work on default rates and high yield corporate debt.

He was inducted into the Fixed Income Analysts Society Hall of Fame in 2001 and elected president of the Financial Management Association (2003) and a Fellow of the FMA in 2004. He was honored by *Treasury and Risk Management* magazine as one of the 100 most influential people in finance (June 2005).

Dr. Altman is an adviser to many financial institutions, including Citigroup, Concordia Advisors, Droege & Company, Investcorp, Miller-Mathis, the New York State Common Retirement Fund, and SERASA, S.A.; he is on the boards of the Franklin Mutual Series Funds, Automated Trading Desk L.L.C., and the Ascend Group, and is chairman of the Academic Advisory Council to the Turnaround Management Association; and he has testified before federal and state legislative bodies.

Edith Hotchkiss is an Associate Professor of Finance at the Carroll School of Management at Boston College. She received her Ph.D. in Finance from the Stern School of Business at New York University and her B.A. from Dartmouth College. Prior to entering academics, she worked in consulting and for the Financial Institutions Group of Standard & Poor's Corporation.

Dr. Hotchkiss's research covers such topics as corporate financial distress and restructuring, the efficiency of Chapter 11 bankruptcy, and

trading in corporate debt markets. Her work has been published in journals including the *Journal of Finance*, *Journal of Financial Economics*, *Journal of Financial Intermediation*, and *Review of Financial Studies*. She has served on the national board of the Turnaround Management Association, and as a consultant to the National Association of Securities Dealers (NASD) on trading in corporate bond markets.

Contents

Preface	vii
Acknowledgments	xi
About the Authors	xiii

PART ONE

The Legal, Economic, and Investment Dimensions of Corporate Bankruptcy and Distressed Restructurings

CHAPTER 1	
Corporate Distress: Introduction and Statistical Background	3
CHAPTER 2	
Evolution of the Bankruptcy Process in the United States and International Comparisons	21
CHAPTER 3	
Post–Chapter 11 Performance	79
CHAPTER 4	
The Costs of Bankruptcy	93
CHAPTER 5	
Distressed Firm Valuation	103
CHAPTER 6	
Firm Valuation and Corporate Leveraged Restructuring	121
CHAPTER 7	
The High Yield Bond Market: Risks and Returns for Investors and Analysts	145

CHAPTER 8	
Investing in Distressed Securities	183
CHAPTER 9	
Risk-Return Performance of Defaulted Bonds and Bank Loans	203
CHAPTER 10	
Corporate Governance in Distressed Firms	219
PART TWO	
Techniques for the Classification and Prediction of Corporate Financial Distress and Their Applications	
CHAPTER 11	
Corporate Credit Scoring—Insolvency Risk Models	233
CHAPTER 12	
An Emerging Market Credit Scoring System for Corporates	265
CHAPTER 13	
Application of Distress Prediction Models	281
CHAPTER 14	
Distress Prediction Models: Catalysts for Constructive Change—Managing a Financial Turnaround	297
CHAPTER 15	
Estimating Recovery Rates on Defaulted Debt	307
References	331
Author Index	347
Subject Index	350

PART

One

The Legal, Economic, and Investment Dimensions of Corporate Bankruptcy and Distressed Restructurings

Corporate Distress: Introduction and Statistical Background

Corporate distress, including the legal processes of corporate bankruptcy reorganization (Chapter 11 of the Bankruptcy Code) and liquidation (Chapter 7), is a sobering economic reality reflecting the uniqueness of the American way of corporate “death.” The business failure phenomenon received some exposure during the 1970s, more during the recession years of 1980 to 1982, heightened attention during the explosion of defaults and large firm bankruptcies in the 1989–1991 period, and an unprecedented interest in the 2001–2002 corporate debacle and distressed years. In the 1989–1991 period, 34 corporations with liabilities greater than \$1 billion filed for protection under Chapter 11 of the Bankruptcy Code, and in the three-year period 2001–2003 as many as 100 so-called billion-dollar babies, including the top five, filed for protection under the Code (see Appendix 1.1).

The lineup of major corporate bankruptcies was capped by the mammoth filings of Consec (\$56.6 billion in liabilities), WorldCom (\$46.0 billion), and Enron (\$31.2 billion—actually almost double this amount once you add in the enormous amount of off-balance liabilities, making it the largest bankruptcy in the United States). Two of these three largest bankruptcies were fraud-related (see our discussion of corporate governance issues in distressed companies in Chapter 10). Incidentally, we believe that it is more relevant to list and discuss the size of bankruptcies in terms of liabilities at the time of filing rather than assets. For example, WorldCom had about \$104 billion in book value of assets but its market value at the time of filing was probably less than one-fifth of that number. It is the claims against the bankruptcy estate, as well as the going-concern value of the assets, that are most relevant in a bankrupt company. We list the largest corporate bankruptcies in the United States over the period 1970–2005 (Q1) in Appendix 1.1—the so-called billion-dollar babies. Actually, only two of the

228 entries in this list were from the 1970–1979 decade—Penn Central (1970) and W. T. Grant (1975)—and only 21 occurred in the 1980s. The majority of the largest bankruptcies in the 1970–2004 period were from the first four years of the new millennium. Even adjusting for inflation, it is clear that size is no longer a proxy for corporate health, and there is little evidence, except in very rare circumstances, of the old adage “too big to fail.” Lately, that question has been asked about General Motors and Ford.

The unsuccessful business enterprise has been defined in numerous ways in attempts to depict the formal process confronting the firm and/or to categorize the economic problems involved. Four generic terms that are commonly found in the literature are *failure*, *insolvency*, *default*, and *bankruptcy*. Although these terms are sometimes used interchangeably, they are distinctly different in their formal usage.

Failure, by economic criteria, means that the realized rate of return on invested capital, with allowances for risk consideration, is significantly and continually lower than prevailing rates on similar investments. Somewhat different economic criteria have also been utilized, including insufficient revenues to cover costs and where the average return on investment is continually below the firm’s cost of capital. These economic situations make no statements about the existence or discontinuance of the entity. Normative decisions to discontinue operations are based on expected returns and the ability of the firm to cover its variable costs. It should be noted that a company may be an economic failure for many years, yet never fail to meet its current obligations because of the absence or near absence of legally enforceable debt. When the company can no longer meet the legally enforceable demands of its creditors, it is sometimes called a legal failure. The term *legal* is somewhat misleading because the condition, as just described, may exist without formal court involvement.

The term *business failure* was adopted by Dun & Bradstreet (D&B), which for many years until recently supplied relevant statistics on businesses to describe various unsatisfactory business conditions. According to D&B, business failures included “businesses that cease operation following assignment or bankruptcy; those that cease with loss to creditors after such actions or execution, foreclosure, or attachment; those that voluntarily withdraw, leaving unpaid obligations, or those that have been involved in court actions such as receivership, bankruptcy reorganization, or arrangement; and those that voluntarily compromise with creditors.”¹

¹In the prior editions of this book (Altman 1983 and 1993) we used the D&B “failure rate” definition to explore the macro and micro determinants of failure. Since D&B has discontinued its business failure coverage, we no longer will focus on this statistic.