Avoiding Chapter 22: Why post-emergence liquidity, profitability and leverage make all the difference

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More than 40 years ago, this author published an article (Altman, 1968) on how fundamental financial data and equity market values could be combined to effectively predict whether firms would go bankrupt in the US. That resulting Z-Score model has become an established tool for assessing the creditworthiness of manufacturing firms throughout the world and is used by scholars and practitioners in a variety of ways, including credit and debt analysis, investment decisions, default probability and M&A screens. It is also used by advisors and managers themselves in executing a financial turnaround of distressed companies.

This article extends the applicability of bankruptcy prediction to a unique assessment of the health of corporate industrial entities as they emerge from the Chapter 11 bankruptcy process, and also examines the likelihood of whether the debtor will have to file for bankruptcy again — the so-called "Chapter 22" phenomenon.

Chapter 11 bankruptcy reorganization

Over the years, in addition to the issue of the overall effectiveness of Chapter 11 in the US, there has been constant debate on whether the process provides the right balance between reorganizing economically viable firms and liquidating non-viable companies under Chapter 7. For those companies that do attempt a reorganization, seeking temporary protection from creditors while an improved operational plan and financial structure are put in place, there are several ways in which one might evaluate its success.

The first requirement of a restructuring is that the company can emerge from the process as a going concern. A further test is to assess the post-bankruptcy results of the entity in terms of its operating and/or its stock market performance. While this performance may be compared to other firms in the same industry or to some market index, it is clear that if the firm is forced to seek another distressed restructuring relatively soon after emerging, the process has not been a success at all. The most extreme instance of a failed Chapter 11 is that the company files for bankruptcy again — Chapter 22. (Hotchkiss, 1992, Altman, 1993).

Studies of post-bankruptcy performance have found that that while many firms restructure without the need for further remedial action, a striking number of cases require another restructuring through a private work-out or a second (or third) bankruptcy. For example, Edith Hotchkiss (1995) found that 32 per cent of a sample of large companies that had emerged as a public entity restructured again through a private or court-determined restructuring, while LoPucki and Whitford (1993), in their study of larger Chapter 11 filings, found that 32 per cent filed again within four years of emerging. While some companies come out of the process still holding too much debt, most cite operating problems as the primary reason for the second filing.

As we will show, the troubling incidence of subsequent failures has accrued despite requirements — under the Bankruptcy Code enacted in 1978,

Table I

Academic studies of post-bankruptcy performance

This table lists a number of existing studies related to the performance of firms emerging from Chapter 11

Ability to Meet	*Operating Performance*	*Cash-Flow Projections*	*Stock Performance*	*Sample*
Hotchkiss (1995)	√	√		197 firms emerging by 1989
Hotchkiss & Mooradian (2004)	√		√	620 firms emerging by 2004
Maksimovic & Phillips (1998)	√			Plant-level data for 302 manufacturing firms in Chapter 11, 1978-1989
Alderson & Betker (1999)	√			89 firms emerging from Chapter 11, 1983-1993
Hotchkiss & Mooradian (1997)	√			288 firms defaulting on public debt 1980-1993 (166 reorganized in Chapter 11)
McHugh, Michel & Shaked (1998)		√		35 firms emerging from Chapter 11, 1990-1994
Betker, Ferris & Lawless (1999)		√		69 firms emerging from Chapter 11, 1984-1994
Aggarwal, Altman & Eberhart (1999)			√	131 firms emerging from Chapter 11, 1980-1993
Goyal, Kahl & Torous (2002)			√	Firms distressed between 1980 and 1983; 35 firms in first year after resolution of distress to 25 firms five years after
Lee & Cunney (2004)			√	111 firms emerging from Chapter 11, 1988-2005

Source: Updated from Altman & Hotchkiss (2005)

and amended in 2005 (Bankruptcy Abuse Prevention and Consumer Protection Act) — that in order for a reorganization plan to be confirmed, the court must make an independent finding that it is feasible and further reorganization is not likely or needed; specifically, that the plan "is not likely to be followed by the liquidation or the need for further financial reorganization of the debtor or any successors of the debtor under the plan". In reality, however, unless there is convincing opposing evidence presented by interested parties, the bankruptcy court has little choice but to sanction the plan as presented.

The purpose of this study is not to debate the merits of Chapter 11, especially since the Bankruptcy Code was substantially modified in 2005. The purpose is to analyze whether one can predict, with a reasonable degree of accuracy, which firms emerging from bankruptcy are more likely to suffer subsequent problems and file again under Chapter 22. In other words, can advisors, analysts, investors and debtors — indeed, the court system itself — avoid as much as possible the Chapter 22 phenomenon?

Post-bankruptcy performance

A relatively high proportion of larger companies that attempt to reorganize under Chapter 11 do emerge as independent going concerns. At the same time, for public firms of all sizes, only between 26 and 45 per cent (depending upon the year) emerged over the period 1990-2002 with their

reorganization plans confirmed by the courts, and these statistics include many companies with multiple filings for various subsidiaries of the same group. For those firms that had their plans confirmed, about 44 per cent emerged as publicly registered companies.

The most important factors in coming out of the process successfully are the firm's size and its ability to secure debtor-in-possession financing.

Stuart Gilson (1997) found that leverage remained high after both out-of-court restructurings and Chapter 11 reorganizations, although it was considerably more elevated in the former. In a study of 58 out-of-court cases and 51 firms that went through the Chapter 11 process between 1980 and 1989, he found that the median ratio of long-term debt (face value) to the sum of long-term debt and common shareholders' equity (market value) was 0.64 for firms in out-of-court restructurings and 0.47 for those in Chapter 11. Hence, significant remaining debt on the balance sheets of reorganized firms could contribute to their refiling not too long after emergence. He also found that as much 25 per cent of his total sample had to file for bankruptcy or restructure their debt again.

Heron, Lie and Rogers (2006) came to a similar conclusion in that while the 172 firms they studied for the period 1990-2004 had substantially reduced their debt burden in "fresh start" Chapter 11 reorganizations, they still emerged with higher debt ratios than was typical in their respective industries.

Studies that have examined the post-bankruptcy performance of firms registered as public companies can be found in Table I. Several of these studies assessed profitability and cash flows relative to comparable firms in similar industries. The eye-catching result was that more than two-thirds of those emerged firms underperformed industry peers for up to five years following bankruptcy, and in some studies (eg Hotchkiss 1995) as many as 40 per cent continued to experience operating losses in the three years after emergence. McHugh et al (1998) shows that projections provided by the bankruptcy reorganization plan for two-time filers (Chapter 22s) prior to their emergence from their first Chapter 11 are typically overstated, and these overstatements are more pronounced than for single filers.

On the other hand, the experience of larger firms does show improved post-bankruptcy performance and one study, by Eberhart, Aggarwal and Altman (1999), shows excess stock market returns in the 200 days following emergence for those firms that came out of the process between 1980 and 1993 with publicly listed equity. While such positive performance seems to be cyclical, with poorer outcomes in the mid-to-late 1990s, a number of firms enjoyed spectacular returns after the surge in bankruptcies in 2001-2002. Lee and Cunney (2004) found that investing in formerly bankrupt firms' equities between 1988 and 2003 (sample of 111 firms) resulted in a positive average 85 per cent relative to the performance of the S&P

Table II

Chapter 22s and 33s in the United States 1984-2009

Year	Number of Chapter 22s	Number of Chapter 33s
1984	2	0
1985	2	0
1986	4	0
1987	1	0
1988	5	0
1989	4	0
1990	10	0
1991	9	0
1992	6	0
1993	8	0
1994	5	0
1995	9	0
1996	12	2
1997	5	0
1998	2	1
1999	10	0
2000	12	1
2001	17	2
2002	11	0
2003	17	1
2004	6	0
2005	9	1
2006	4	0
2007	8	1
2008	19	0
2009	18	1
Totals	215	10

Source: The Bankruptcy Almanac, annually, Boston: New Generation Research and Altman and Hotchkiss Corporate Financial Distress and Bankruptcy, J. Wiley, Hoboken, NJ (2006)

Table IIIa

2008 Chapter 22s: size and duration

This table lists the actual firms that filed for bankruptcy protection a second time in 2008.

Company	Bankruptcy Date	Assets	Confirm Date	Time Between Confirmation and Second Filing	Public/ Private
Aloha Airlines Inc (2004)	12/30/04	$100,000,000	11/26/05	2 years, 4 months	Private
Aloha Airlines Inc (2008)	03/20/08	$215,850,000			Private
ATA Holdings Corp (2004)	10/26/04	$869,987,000	01/31/06	1 year, 1 month	Public
ATA Airlines Inc (2008)	04/02/08	$100,000,000			Private
Bally Total Fitness Holding (2007)	07/31/07	$396,771,000	09/17/07	1 year, 3 months	Public
Bally Total Fitness Holding (2008)	12/03/08	$1,376,000,000			Public
Dan River Inc (2004)	03/31/04	$466,479,000	01/18/05	3 years, 3 months	Public
Dan River Inc (2008)	04/20/08	$50,000,000			Private
DESA Holdings Corp (2005)	06/08/02	$132,500,000	04/01/05	3 years, 9 months	Public
DESA LLC (DHP Holdings II) (2008)	12/29/08	$233,896,000			Private
Friedman's Inc (2005)	01/14/05	$447,883,000	11/28/05	2 years, 2 months	Public
Friedman's Inc (2008)	01/28/08	$245,787,000			Private
Gemini Air Cargo (2006)	03/15/06	$59,363,216	07/21/06	2 years, 0 months	Private
Gemini Air Cargo (2008)	06/18/08	$100,000,000			Private
Indesso International (2000)	11/17/00	$165,846,000	01/11/02	6 years, 6 months	Public
Continental AFA Dispensing (2008)	08/07/08	$18,000,000			Private
Intermet Corp (2004)	09/29/04	$686,684,000	09/25/05	2 years, 11 months	Public
Intermet Corp (2008)	08/12/08	$50,000,000			Private
KB Toys Inc (2004)	01/14/04	$507,000,000	08/18/05	3 years, 4 months	Private
KB Toys Inc (2008)	12/11/08	$100,000,001			Private

500 index in the first 12 months after emergence. The volatility of these returns was extremely high, however, with only 50 per cent of the stocks outperforming, although the excellence of many firms in the 2003-2005 period prompted one investment bank, Jefferies & Co, to create an index of post-bankruptcy equity performance, the Jefferies Re-org Index.sm.

A few additional studies show fairly positive post-bankruptcy performance. Alderson and Betker (1999) examined a sample of 89 firms emerging between 1983 and 1993 and computed the five-year annualized return earned by the reorganized company, relative to the value that would have been received in liquidation and invested in alternative assets. Where the liquidation value was not available from the plan, the authors used the plan's estimated market value at emergence. They found that the reorganized firms' annualized returns were not significantly different from those on the S&P 500 index.

From a sample of 288 firms that defaulted on public debt, most of whom went bankrupt, Hotchkiss and Mooradian (1997) found that while 32 per cent experienced negative operating performance in the year following emergence if there were no outside "vulture" investors directly involved with significant ownership, only about 12 per cent had the same negative experience when a "vulture" was actively involved in the restructuring.

Subsequent distressed restructurings

As noted earlier, roughly one-third of firms emerging as a publicly registered company go through some form of distressed restructuring again, including filing for a second (or third, or even more) bankruptcy. Table II shows the number of Chapter 22s and 33s from 1984 to 2009. Including 19 in 2008 (the highest single annual total in our sample) and 18 in 2009, there have been 215 Chapter 22s and ten Chapter 33s (see Appendix A for the list of Chapter 33s). In a sample of about 60 Chapter 22s, all the second filings took place within

Table IIIa (continued)

2008 Chapter 22s: size and duration

Company	Bankruptcy Date	Assets	Confirm Date	Time Between Confirmation and Second Filing	Public/ Private
Key Plastics LLC (2000)	03/23/00	$388,490,000	04/02/01	7 years, 8 months	Public
Key Plastics LLC (2008)	12/15/08	$100,000,001	01/29/09		Public
Leiner Health Products Inc (2002)	02/28/02	$353,137,000	04/15/02	5 years, 11 months	Public
Leiner Health Products Inc (2008)	03/10/08	$378,618,000	10/15/08		Public
Mattress Discounters Corp (2002)	10/23/02	$105,746,000	03/04/03	5 years, 6 months	Public
Mattress Discounters Corp (2008)	09/10/08	$16,922,316			Private
Penn Specialty Chemicals Inc (2001)	07/09/01	$83,260,620	07/19/02	6 years, 5 months	Private
Penn Specialty Chemicals Inc (2008)	12/17/08	$1,000,001			Private
Polar Molecular Corp (2008)	01/11/08	$400,001,500	05/19/08	6 years, 3 months	Private
Polar Molecular Corp (2008)	08/04/08	$1,500			Private
Polaroid Corp (2001)	10/12/01	$2,043,000,000	11/18/03	5 years, 1 month	Public
Polaroid Corp (2008)	12/18/08	$250,000,000			Private
Steakhouse Partners (2002)	02/15/02	$45,390,000	12/19/03	4 years, 5 months	Public
Steakhouse Partners (2008)	05/15/08	$17,750,000			Public
US Wireless Data Inc (2004)	03/26/04	$13,963,000	12/27/04	3 years, 3 months	Public
StarVox Communications Inc (2008)	03/26/08	$4,865,000			Public
Sun Country Airlines Inc (2002)	03/12/02	$ 55,200,000	12/19/03	4 years, 10 months	Private
Sun Country Airlines Inc (2008)	10/06/08	$9,923,642			Private

Average time between emergence and second filing: 4 years and 6 months

Source: New Generation Research, Boston, MA and NYU Salomon Center Bankruptcy Database

nine years of the firm emerging from its first Chapter 11 and a surprisingly large proportion (92 per cent) happened within five years.

For example, among the "class of 2008" Chapter 22s, 12 of the 19 filed within five years and 15 within six (Table IIIa). The average time between the first emergence and the second filing was four years and six months. In 2009, 10 of the 18 filed again within five years and the average time between the first emergence and second filing was four years and five months (Table IIIb). Usually, but not always, the amount of assets in Chapter 22 firms is greater at the time of the first filing, since one of the strategies found in most bankruptcy reorganizations is the selling of assets to improve operations or to provide much-needed liquidity.

It is interesting to observe that Chapter 22 cases are still prominent now, even though the outright sale of a bankrupt firm during the reorganization period has become quite a common occurrence under the revised code of 2005. Time will tell if the Chapter 22 phenomenon will decrease somewhat as the older reorganizations are flushed from the system. What we are now observing, however, is that many of the larger Chapter filings involve "prepackaged" agreements, which usually only attempt to "fix" the capital structure problems of the distressed company. Among these cases, more Chapter 22s might be expected.

Avoiding Chapter 22

To predict the performance of firms emerging from Chapter 11 bankruptcy reorganization, we utilize the Z-Score model, which was first developed for testing the credit scoring of emerging market firms and then applied in the US, primarily for manufacturers but for other industrial groups too.

The logic behind this methodology is that if a model has proved credible and is accepted by academics and practitioners as a way of predicting corporate distress, it might also be effective in assessing the future health of firms emerging from bankruptcy reorganization, especially if the result you are trying to predict (avoid) is a second filing.

Table IIIb

2009 Chapter 22s: size and duration

This table lists the actual firms that filed for bankruptcy protection a second or third time in 2009

Company	Bankruptcy Date	Assets	Confirm Date	Time Between Confirmation and Second Filing	Public/ Private
Bruno's Inc (1998)	02/02/98	$791,430,000	12/30/99	8 years, 2 months	Public
Bruno's Supermarkets LLC (2009)	02/05/09	$100,000,001	09/25/09		Private
Eagle Geophysical Inc (1999)	09/29/99	$273,200,000			Public
Eagle Geophysical Inc (2009)	05/31/09	$6.526.394	n/a	n/a	Public
Spiegel Inc (2003)	03/17/03	$1,889,580,000	05/25/05	4 years, 1 month	Public
Eddie Bauer Holdings Inc (2009)	06/17/09	$596,920,000			Public
eNucleus Inc (2001)	05/10/01	$2,505,930	11/06/03		Public
eNucleus Inc (2009)	07/25/09	$500		5 years, 8 months	Public
Filene's Basement Corp (1999)	08/23/99	$202, 700,000	10/23/00		Public
Filene's Basement, Inc (2009)	05/04/09	$79,967,643	01/26/10	8 years, 7 months	Private
FIRSTPLUS Financial Grp Inc (1999)	03/05/99	$2,447,206,000	04/07/00		Public
FIRSTPLUS Financial Grp Inc (2009)	06/23/09	$19,620,935		9 years, 2 months	Public
Foamex International Inc (2005)	09/19/05	$645,710,000	02/01/07		Public
Foamex International Inc (2009)	02/18/09	$430,550,000		2 years, 0 months	Public
Fortunoff Fine Jewelry & Silverware, LLC (2008)	02/04/08	$267,624,000			Private
Fortunoff Holdings LLC (2009)	02/05/09	$154,698,000	n/a	n/a	Private
Goody's Family Clothing Inc (2008)	06/09/08	$313,000,000	10/07/08		Private
Goody's LLC (2009)	01/13/09	$206,000,000		0 years, 3 months	Private
Hayes Lemmerz Int'l Inc (2001)	12/05/01	$2,811,100,000	05/12/03		Public
Hayes Lemmerz Int'l Inc (2009)	05/11/09	$1,096,200,000	11/03/09	6 years, 0 months	Public

Firms need to be public entities since one of the variables, the market value of equity/total liabilities (X4 in Table IV), requires the availability of publicly traded equity. In order to make the model more robust across all industrial groupings, as well as for privately owned companies, the Z-Score model was adapted: note that it now has four variables, not five as in the original model; the Sales/Total Tangible Assets variable is removed and the coefficients re-estimated.

To give the model more meaning, the idea of a bond-rating-equivalent (BRE) of the Z-Score has been developed. Table VI shows the Z-Score model and its BREs based on data from 1996, chosen as an appropriate year for our subsequent empirical tests. The equation used in the calculations was modified by adding a constant term of 3.25 so as to scale the scores to a "D" rating equal to zero (0.0). Firms with Z-Scores above zero have BREs in the non-bankrupt zones (AAA to CCC-).

We will now explore the results of applying the Z-Score model to two samples of firms that emerged from bankruptcy. One sample consists of Chapter 22s or 33s, the other represents those companies that emerged from Chapter 11 and did not file a second time.

Table IV

Z-Score component definitions and weightings

This table shows the original Z-Score model's variables and co-efficients

Variable	Definition	Weighting Factor
X1	Working capital / Total Assets	1.2
X2	Retained earnings / Total Assets	1.4
X3	EBIT / Total Assets	3.3
X4	Market value of equity / Book value of total liabilities	0.6
X5	Sales / Total assets	1.0

Source: Altman & Hotchkiss (2006) and Altman (1968)

Since both categories comprise companies that have undergone an extensive restructuring, usually

Table IIIb (continued)

2009 Chapter 22s: size and duration

Company	Bankruptcy Date	Assets	Confirm Date	Time Between Confirmation and Second Filing	Public/ Private
Holley Performance Inc (2008)	02/11/08	$111,997,000	03/19/08		Public
Holley Performance Inc (2009)	09/28/09	$46,426,943		1 year, 6 months	Public
JL French Automotive Inc (2006)	02/10/06	$366,681,000	06/21/06		Public
JL French Automotive Inc (2009)	07/13/09	$100,000,000	09/03/09	3 years, 1 month	Private
Meridian Automotive Inc (2005)	04/26/05	$530,000,000	12/06/06		Private
Meridian Automotive Inc (2009)	08/07/09	$25,593,104		2 years, 8 months	Private
Penn Traffic Company (1999)	03/01/99	$1,563,590,000	05/27/99		Public
Penn Traffic Company (2003)	05/30/03	$806,370,000	03/17/05		Public
Penn Traffic Company (2009)	11/18/09	$193,714,000		4 years, 8 months	Public
Pliant Corp (2006)	01/03/06	$777,092,000	06/23/06		Public
Pliant Corp (2009)	02/11/09	$675,979,000	10/06/09	2 years, 8 months	Public
Silicon Graphics Inc (2006)	05/08/06	$452,145,000	09/19/06		Public
Silicon Graphics Inc (2009)	04/01/09	$415,195,000	11/10/09	2 years, 7 months	Public
Trump Hotels and Casino Resorts Inc (2004)	11/21/04	$2,031,433,000	04/04/05	3 years, 10 months	Public
Trump Entertainment Resorts Inc. (2009)	02/17/09	$2,231,211,000			Public
Ultra Stores Inc (2002)	03/07/01	$76,060,000	12/03/01		Private
Ultra Stores Inc (2009)	04/09/09	$63,850,350	07/28/09	7 years, 4 months	Private

Average time between emergence and second filing: 4 years and 5 months

Source: New Generation Research, Boston, MA and NYU Salomon Center Bankruptcy Database

Table V

Z"-Score model for manufacturers, non-manufacturer industrials and emerging market credits

This table shows a modification to the original Z-Score model. It is known as the Z"-Score mode.

$$Z'' = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4$$

$$X1 = \frac{\text{Current assets} - \text{current liabilities}}{\text{Total assets}}$$

$$X2 = \frac{\text{Retained earnings}}{\text{Total assets}}$$

$$X3 = \frac{\text{Earnings before interest and taxes}}{\text{Total Assets}}$$

$$X4 = \frac{\text{Book value of equity}}{\text{Total liabilities}}$$

Source: Altman and Hotchkiss (2006)

of both their operations and their capital structures, one might expect that their financial profiles upon emergence would resemble a going-concern, non-bankrupt entity. If, however, the model is effective in detecting future problems, we should find the

Table VI

US bond rating equivalents based on Z"-Score model *(Sample size in parentheses)*

This table shows the standardized Z"-Score model and the bond rating equivalents for the resulting scores

Z" = 3.25 + 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4

Rating	Average 1996 Z"-Score (1)
AAA/AA+	8.15 (8)
AA/AA-	7.16 (33)
A+	6.85 (24)
A	6.65 (42)
A-	6.40 (38)
BBB+	6.25 (38)
BBB	5.85 (59)
BBB-	5.65 (52)
BB+	5.25 (34)
BB	4.95 (25)
BB-	4.75 (65)
B+	4.50 (78)
B	4.15 (115)
B-	3.75 (95)
CCC+	3.20 (23)
CCC	2.50 (10)
CCC-	1.75 (6)
CC/D	0.00(14)

Source: Compustat, Company Filings and S&P

Table VIIa

Z″-Scores for Chapter 11s

This table lists a sample of firms and their Z″-Scores that emerged from bankruptcy and did not file for bankruptcy protection a second time

Chapter 11 Company name	Effective date	Z″-Score after emergence	Bond rating equivalent	Z″-Score 1-year post	Bond rating equivalent
1 Boonton Electronics	11/18/94	7.67	AAA/AA+	7.63	AA
2 CAI Wireless Systems Inc	10/14/98	2.12	CCC-	n/a	n/a
3 Cherokee Corp	06/01/93	4.00	B	2.09	CCC-
4 Consolidated Hydro Inc	11/07/97	3.90	B-	4.81	BB-
5 El Paso Electronic	02/12/96	4.36	B+	4.75	BB-
6 Elsinore Corporation	02/28/97	3.65	B-	4.18	B
7 Emcor	10/03/94	4.03	B	4.38	B+
8 Emerson Radio	08/09/94	5.42	BB+	4.08	B
9 Fansteel Inc	12/22/03	0.72	D	2.67	CCC
10 Flagstar Companies Inc	01/07/98	2.90	CCC+	(0.44)	D
11 Gantos	03/07/95	6.58	A	6.17	BBB+
12 Gentek Inc	10/07/03	4.51	B+	2.19	CCC
13 Grant Geophysical	09/30/97	4.49	B+	4.14	B
14 Harnischfeger Industries Inc	07/13/01	5.70	BBB-	5.30	BB+
15 Hayes Lemmerz International	05/12/03	4.38	B+	0.18	CC/D
16 Heartland Wireless Inc	04/05/99	6.11	BBB+	5.01	BB
17 Hexcel Corporation	01/12/95	4.83	BB-	4.45	B+
18 Hvide Marine Inc	12/15/99	3.69	B-	3.64	B-
19 Imperial Sugar Co TX	08/29/01	3.98	B	5.00	BB
20 Kaiser Group International Inc	12/18/00	6.94	A+	4.23	B
21 Kash N′ Karry	12/12/94	4.20	B	4.60	B+
22 Kitty Hawk Inc	09/30/02	6.19	BBB+	7.39	AA
23 Krystal Company	04/22/97	3.46	CCC+	9.41	AAA
24 Laidlaw Inc	02/28/03	4.40	B+	5.55	BBB-
25 Loehmann′s Holdings Inc DE	10/31/00	5.48	BBB-	6.24	BBB+
26 Loewen Group Int′l Inc	01/02/02	3.09	CCC+	3.62	B-
27Lone Star Industries	03/01/94	5.16	BB+	6.19	BBB+
28 Magellan Health Services Inc	10/08/03	4.96	BB	7.89	AAA/AA+
29 NRG Energy	11/24/03	3.75	B-	1.22	CCC-
30 Paragon Trade Brands Inc	01/28/00	5.72	BBB-	n/a	n/a
31 Pathmark Stores Inc	09/18/00	4.12	B	2.47	CCC
32 Peregrine Systems Inc	07/18/03	4.28	B	3.47	CCC+
33 Petroleum Geo Services ASA	10/21/03	4.32	B	5.48	BBB-
34 Phone Tel	11/18/99	3.54	B-	4.30	B
35 Polymre Group Inc	01/03/03	2.35	CCC	2.09	CCC-
36 Redback Networks Inc	12/22/03	6.56	A	6.19	BBB+
37 Safety Components Int′l	10/11/00	6.13	BBB+	5.13	BB+
38 Southern Mineral Corp	08/01/00	5.38	BB+	n/a	n/a
39 Stage Stores Inc NV	08/24/01	9.98	AAA	11.78	AAA
40 Sterling Chemicals Inc	12/19/02	4.98	BB	3.58	B-
41 Stratosphere Corporation	10/04/98	8.16	AAA	8.56	AAA
42 Telemundo	07/20/94	5.00	BB	4.98	BB
43 Teletrac Inc	09/15/99	3.82	B-	2.54	CCC
44 Vista Eyecare Inc	05/31/01	3.41	CCC+	3.34	CCC+
45 Warnaco Group Inc	01/16/03	4.27	B	4.62	B+
Number of Bankruptcies		**45**		**42**	
Average Z Score		**4.73**	**B+**	**4.65**	**B+**
Median Z Score		**4.38**		**4.53**	
Standard Deviation		**1.63**		**2.55**	

*Source: Author′s compilation from Capital IQ data*h.

average Z-Score values of the Chapter 22 group will be significantly worse than among the Chapter 11s.

In our samples, the effective confirmation dates of the bankruptcy reorganization plans for the 45 Chapter 11s was between 1993 and 2003 (Table VIIa). These companies were chosen mainly according to data availability for calculating the Z-Score distress-prediction. Our objective was to assemble a reasonably large representative sample of industrial firms that had filed for bankruptcy and emerged as publicly held firms with post-bankruptcy financial data available during roughly

Table VIIb

Z"-Scores for Chapter 22s

This table lists a sample of firms that filed for bankruptcy protection at least two times, and their Z"-Scores just after emergence and a year later

Chapter 22 Company name	Effective date	Z"-Score after emergence	Bond rating equivalent	Z"-Score 1-year post	Bond rating equivalent	Re-filing date	Period between emergence and second filing: years, months, days
1 American Banknote	11/21/00	0.34	D	0.35	D	04/08/05	4, 4, 18
2 Ames Dept Stores	12/18/92	4.74	BB-	6.31	BBB+	08/20/01	8, 8, 2
3 Anacomp	06/04/96	3.72	B-	2.93	CCC+	10/19/01	5, 4, 15
4 Anchor Glass	11/25/97	3.62	B-	3.73	B	04/15/02	4, 4, 21
5 Anchor Glass	08/09/02	3.61	B-	4.05	B	08/08/05	2, 11, 30
6 ATA Holdings	01/31/06	3.18	CCC+	3.40	CCC+	04/02/08	2, 2, 2
7 Brendle's	12/20/93	6.65	A	6.60	A	04/16/96	2, 3, 27
8 Coho Energy	03/21/00	1.71	CCC-	(3.27)	D	02/24/03	2, 11, 3
9 Eagle Food Centers	07/10/00	2.49	CCC	3.45	CCC+	03/25/04	3, 8, 15
10 Edison Brothers	09/26/97	4.19	B	2.85	CCC	03/09/99	1, 5, 11
11 Galey & Lord	02/10/04	(0.66)	D	0.28	D	03/05/04	0, 0, 24
12 Grand Union Co	05/31/95	2.81	CCC	1.90	CCC-	06/24/98	3, 0, 24
13 Grand Union Co	08/05/98	3.41	CCC+	0.76	D	10/03/00	2, 1, 28
14 Harvard Industries	08/10/92	2.38	CCC	1.10	CCC-	05/08/97	4, 8, 28
15 Harvard Industries	10/15/98	1.21	CCC-	0.80	D	01/16/02	3, 3, 1
16 Heartland Wireless	03/15/99	3.87	B-	5.25	BB+	09/05/03	4, 5, 21
17 Homeland Holding	07/16/96	4.73	BB-	4.18	B	08/01/01	5, 0, 16
18 Ithaca Industries	12/16/96	7.21	AA/AA-	6.86	A+	05/09/00	3, 4, 23
19 Lamonts Apparels	12/18/97	2.83	CCC	2.16	CCC	01/04/00	2, 0, 17
20 McleodUSA	04/18/02	(2.77)	D	3.42	CCC+	12/16/05	3, 7, 28
21 Memorex Telex	02/07/92	(0.49)	D	1.37	CCC-	02/11/94	2, 0, 4
22 Memorex Telex	03/14/94	0.62	D	(1.30)	D	10/15/96	2, 7, 1
23 Payless Cashways	12/02/97	5.19	BB+	5.64	BBB-	06/04/01	3, 6, 2
24 Penn Traffic Co	05/27/99	4.39	B+	3.73	B-	03/17/05	5, 9, 18
25 Pillowtex	05/02/02	2.78	CCC	n/a	n/a	07/30/03	1, 2, 28
26 Planet Hollywood	01/21/00	(8.24)	D	(6.77)	D	10/19/01	1, 8, 28,
27 Rymer Foods	04/07/93	4.44	B+	4.14	B	07/08/97	4, 3, 1
28 Salant	07/30/93	6.52	A-	5.80	BBB	12/29/98	5, 4, 29
29 Smith Corona	02/28/97	5.36	BB+	3.92	B-	05/23/00	3, 2, 25
30 Solo Serve	07/06/95	2.98	CCC+	1.50	CCC-	01/20/99	3, 6, 14
31 Steakhouse Ptnrs	12/19/03	1.41	CCC-	1.19	CCC-	05/15/08	4, 4, 26
32 Todays Man	12/12/97	7.24	AA-	9.12	AAA	05/06/04	6, 4, 24
33 Tokheim	10/09/00	3.90	B-	(0.57)	D	11/21/02	2, 1, 12
34 Trans World Air	08/11/93	(1.33)	D	1.98	CCC-	06/30/95	1, 10, 19
35 Trans World Air	08/04/95	3.05	CCC+	2.09	CCC-	01/10/01	5, 5, 6
36 Trism	12/09/99	(2.06)	D	(1.02)	D	12/18/01	2, 0, 9
37 United Merchants	08/16/91	(1.51)	D	0.63	D	02/22/96	4, 6, 6
38 US Airways Group	03/18/03	2.63	CCC	1 84	CCC-	09/16/05	2, 5, 29
39USG	04/23/93	3.48	CCC+	3.82	B-	06/25/01	8, 2, 2
40 Westmoreland Coal	12/22/94	2.18	CCC	(4.36)	D	12/23/96	2, 0, 1
41 Wherehouse	12/16/96	7.59	AA/AA-	7.95	AA+	01/20/03	6, 1, 4
Number of bankruptcies		**41**		**40**		**Average**	**3,4,16**
Average Z-Score		**2.67**	**CCC**	**2.45**	**CCC**		
Median Z-Score		**3.05**		**2.51**			
Standard deviation		**3.06**		**3.18**			

Source: Author's comilation from Capital IQ data

the same data period as our Chapter 22 sample. Our data source is New Generation Research.

For the 41 Chapter 22 firms in Table VII(b), the effective date of emergence from their first bankruptcy ranged between 1993 and 2006 (only two were after 2003). Five were Chapter 33s, so they appear twice in the sample. The average time between emergence and the second filing was three years, four and a half months, and the range was from one year and 10 months (TWA) to eight years and eight months (Ames Department Stores). While the number of Chapter 22s sampled is about

Table VIII

Difference in means test between Chapter 22 and Chapter 11 results
The table shows the difference of Z″-Score means test between Chapter 11 firms that did not file for bankruptcy a second time, and those that did file at least twice (Chapter 22s)

	Z″-Score after emergence	Z″-Score One-year post emergence
Chapter 11 Mean	4.73	4.65
(Chapter 11 Standard Deviation)	(1.63)	(2.55)
Chapter 22 Mean	2.67	2.45
(Chapter 22 Standard Deviation)	(3.05)	(3.18)
t-test(*)	3.84(**)	3.60(**)

**Significant at .01 level, **significant at .10 level.*
Source: Author's calculations from firms listed in Tables VII(a) and VII(b), Capital IQ

30 per cent of the total Chapter 22s since 1993, they represent a cross-section of industrial companies.

Post-bankruptcy distress-prediction results

We can see from Table VII(a) that the average Z-Score for our sample of single-filers, based on data from their first financial statement following their emergence from Chapter 11, was 4.73, with a bond rating equivalent of B+ (see Table VI). The B+ BRE is consistent with our observations over time that almost all firms emerging with bonds outstanding have a bond rating usually in the single-B to double-B range, rarely higher. For our Chapter 22 sample, the average Z-Score was much worse at 2.67, with a BRE of CCC (Table VIIb). The differential between the Chapter 11s and 22s stayed similar when the data took in an additional one year beyond the date of emergence (4.65 vs 2.45). Indeed, the Chapter 22s average scores dipped by 0.08 one year after the first financial period, consistent with deteriorating conditions as the firm moved towards its second filing.

For the sample of Chapter 22s, nine of the 41 firms actually had a financial profile (BRE) near the date of emergence consistent with a "D" (default) rating, and only 16 had a BRE better than CCC. Most of these firms showed early-warning signs of distress. In the Chapter 11 sample, only one firm (Fansteel) had a Z-Score consistent with a "D".

Significance test

To examine the statistical significance of our average results for the two samples, we performed a "difference of means" test, indicated in Table VIII. The t-test (statistical hypothesis) between a mean of 4.73 (Chapter 11s) and 2.67 (Chapter 22s) was significantly different at the .01 level (t-test = 3.84) both at the point nearest the emergence date and also one year later (t=3.60). So, it is clear that those firms that eventually filed again had a much worse financial profile just after emerging from bankruptcy than did those firms that remained going concerns for at least five years.

Why can't firms restructure successfully?

It now remains to observe whether there were specific warning signs, in addition to the composite Z-score, on the impending fate of these two groups of enterprises. To accomplish this, we analyze the four individual indicators that comprise the model: corporate liquidity, solvency, profitability and leverage. The results are quite revealing.

Table IX

Difference in means and tests of specific performance and risk levels: Chapter 22 firms vs Chapter 11s
This table shows the mean values for the four variables in the Z″-Score model and the difference in means tests between Chapter 11 and Chapter 22 firms

Variable	Chapter 11 sample	Standard error	Chapter 22 sample	Standard error	Difference in means test (t-test)	P-value
X1 = Working Capital/TA	0.15	0.16	0.09	0.28	1.24	0.22
X2= Retained Earnings/TA	(0.09)	0.22	(0.22)	0.39	1.88**	0.06**
X3= EBIT/TA	0.01	0.07	(0.07)	0.19	2.49*	0.02*
X4= Book Equity/Total Liabilities	0.74	1.08	0.27	0.39	2.71*	0.01*

**Significant at .01 level, **significant at .10 level.*
Source: Author's calculations from firms listed in Tables VII(a) and VII(b), Capital IQ

Appendix A: Chapter 33s

Chapter 33 is the unofficial name given to companies that have filed for Chapter 11 reorganization for a third time. Below is a historical listing of companies in this category

Company	Bankruptcy Date	Confirm Date	Assets ($ millions)
Anchor Glass Container Corp (2005)	08/08/05	04/18/06	657
Anchor Glass Container Corp (2002)	04/15/02	08/09/02	536
Anchor Glass Container Corp (1996)	09/13/96	11/25/97	1,208
Grand Union Co (2000)	10/03/00	10/08/02	1,089
Grand Union Co (1998)	06/24/98	08/05/02	1,061
Grand Union Co (1995)	01/25/95	05/31/95	1,394
Harvard Industries Inc (2002)	01/16/02	02/26/04	277
Harvard Industries Inc (1997)	05/08/97	10/15/98	618
Harvard Industries Inc (1991)	04/11/91	08/10/92	533
Levitz Home Furnishings Inc (2005)	11/08/07	unknown	178
Levitz Home Furnishings Inc (1997)	10/11/05	12/15/05	245
PLVTZ Inc (Levitz Furniture) (2007)	09/05/97	pending	934
Memorex Telex Corp (1996)	10/15/96	10/09/98	268
Memorex Telex NV (1994)	02/11/94	03/14/94	1,139
Memorex Telex NV (1992)	01/06/92	02/07/92	1,643
Salant Corp (1998)	12/29/98	04/16/99	233
Salant Corp (1990)	06/27/90	07/30/93	333
Salant Corpn (1985)	02/22/85	05/19/97	95
Samuels Jewelers Inc (2003)	08/04/03	03/30/04	48
Barry's Jewelers, Inc. (1997)	05/11/97	12/22/98	146
Barry's Jewelers Inc (1992)	02/26/92	06/19/92	158
The Penn Traffic Co (1999)	03/01/99	05/27/99	1,563
The Penn Traffic Co (2003)	05/30/03	03/17/05	606
The Penn Traffic Co (2009)	11/18/09	unknown	184
Trans World Airlines (2001)	01/10/01	06/18/02	2,137
Trans World Airlines (1995)	06/30/95	08/04/95	2,495
Trans World Airlines (1992)	01/31/92	08/11/93	2,864
United Mechanics & Manufacturers (1996)	02/22/96	04/19/97	27
United Mechanics & Manufacturers (1990)	11/02/90	08/16/91	224
United Mechanics & Manufacturers (1977)	07/01/77	unknown	unknown

Source: The 2008 Bankruptcy Yearbook & Almanac, New Generation Research, Boston, MA 2009

We conclude that the Chapter 22 sample were inferior in all four dimensions and that, in particular, measures of profitability and leverage were significantly different between the two groups. While we could argue that a reorganization plan might eventually lead to an improvement in profitability, there does not appear to be any excuse for being over-leveraged. Indeed, the equity/total liability ratio of Chapter 22 firms was only 0.27, vs 0.74 for the Chapter 11 firms.

To put it differently, the leverage of firms that failed again was almost three times greater than for those that emerged and remained solvent. The Chapter 22 sample had almost four times as much liability as equity ($3.70 of debt to every dollar of equity), while the Chapter 11 firms had about $1.35 of debt to every dollar of equity. The prescription for successful reorganizations is clear: emerging firms must not overload the balance sheet with debt.

Table IX also shows that the average working capital to total assets of Chapter 22 firms was 0.09, against 0.15 for Chapter 11 firms. The retained earnings to total assets for Chapter 22s was a negative 0.22, vs a negative 0.09 for 11s, and the EBIT/TA for the Chapter 22s was a negative 0.07, against a positive 0.01.

Implications and conclusions

Using the Z-Score model, we have found that those firms filing a subsequent bankruptcy petition had a significantly worse financial profile than those emerging as going concerns and continuing on down that path. Indeed, the average financial

profiles and bond ratings of firms in the Chapter 22 sample, on emerging from their first bankruptcy, were not that much better than those of companies in default.

We believe that a credible distress-prediction model can be an important indicator of the future success of firms emerging from bankruptcy, and could even be used as an independent technique by a court in assessing the viability of a reorganization plan. It could also be used by those responsible for devising the plan, especially if in identifying signs of continuing distress, they can make further modifications. Another potential benefit may be felt by creditors of the "old" company, in the sense they can assess the value of the new package of securities, including equity, offered in the plan. Finally, professional turnaround specialists can use this early-warning technique to assess the likelihood of their efforts succeeding.

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