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## ARTICLES

### REVISITING THE RECIDIVISM – CHAPTER 22 PHENOMENON IN THE U.S. BANKRUPTCY SYSTEM

*Edward I. Altman\**

#### ABSTRACT

*This study finds that about 15% of all debtors who emerge as continuing entities from reorganization under Chapter 11 bankruptcy or are acquired as part of the process ultimately file for bankruptcy protection again. The recidivism rate spikes to 18.25% when considering only those firms that emerge as a continuing, independent entity. This highlights what appears to be a significant recidivism problem of our Chapter 11 system. I argue that the so-called “Chapter 22” issue should not be dismissed by the bankruptcy community as acceptable just because no interested party objected to the plan of reorganization during the confirmation hearing. Indeed, by applying the Z”-Score model to large samples of Chapter 11 and Chapter 22, 33, and 44 firms, highly different and significant expected survival profiles are shown at the time of emergence, whereby the bond rating equivalent of the multi-filing sample was CCC versus a BB- average profile for the single-filing Chapter 11 sample. I believe that credible distress prediction techniques can be important indicators of the future success of firms emerging from bankruptcy and could even be used by the bankruptcy court in assessing the feasibility of the plan of reorganization—a responsibility that is embedded in the Bankruptcy Code.*

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## INTRODUCTION

Ever since Edith Hotchkiss and I first coined the phrase “Chapter 22,”<sup>1</sup> summarized most recently in 2006,<sup>2</sup> the U.S. bankruptcy community has been debating the relevance and importance of the fact that some bankruptcy reorganizations under our Chapter 11 system go badly and the emerged company needs to file again, or, in some way, becomes seriously distressed in the not-too-distant future post-emergence.<sup>3</sup>

Setting aside the frequency of refiling for a moment, the question of whether we should continue to debate the issue seems obvious, since § 1129(a)(11) of the U.S. Bankruptcy Code explicitly provides that one condition for the continuation of a plan of reorganization is that “[c]onfirmation of the plan is not likely to be followed by the liquidation, or the need for further financial reorganization, of the debtor or any successor to the debtor under the plan, unless such liquidation or reorganization is proposed in the plan.”<sup>4</sup>

Hence, there is a clearly defined specification of a “feasibility requirement” for Chapter 11 plans of reorganization. Of course, the requirement itself could be debated, as some have done in a recent Chapter 22 symposium.<sup>5</sup> In a 2009 paper with T. Kant and T. Rattanuengyot, we argued that the courts and restructuring professionals should strongly consider the application of statistical methodologies for predicting corporate financial distress to complement the traditional tests now being used by restructuring specialists for their feasibility analysis.<sup>6</sup> We provided evidence that one such technique, known as the Altman-Z-Score method, discriminates quite significantly between firms that file for Chapter 11 at least one time after emergence compared to firms that do not suffer this recidivism event, based on data from just after emergence.<sup>7</sup>

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1. EDWARD I. ALTMAN, CORPORATE FINANCIAL DISTRESS AND BANKRUPTCY: A COMPLETE GUIDE TO PREDICTING AND AVOIDING DISTRESS AND PROFITING FROM BANKRUPTCY 10 (2d ed. 1993); Edith S. Hotchkiss, *Investment Decisions Under Chapter 11 Bankruptcy* (Aug. 1993) (unpublished Ph.D. dissertation, New York University) (on file with NYU Elmer Holmes Bobst Library).

2. EDWARD I. ALTMAN & EDITH HOTCHKISS, CORPORATE FINANCIAL DISTRESS AND BANKRUPTCY: PREDICT AND AVOID BANKRUPTCY, ANALYZE AND INVEST IN DISTRESSED DEBT (3d ed. 2006).

3. For commentary in the professional press about Chapter 22, see Gina Gutzeit & John Yozzo, *What's New with Chapter 22?*, AM. BANKR. INST. J., Sept. 2013, at 36; Diane Vazza & Evan M. Gunter, *Till Debt Do Us Part: Serial Defaults in the U.S. Show Lower Recoveries and Higher Losses*, S&P RATINGSDIRECT, Sept. 30, 2013, at 1; Diane Vazza et al., *Till Debt Do Us Part: A Study of Serial Defaults*, S&P RATINGSDIRECT, Nov. 10, 2010, at 1.

4. 11 U.S.C. § 1129(a)(11) (2012).

5. See Edward I. Altman, Presentation at the Barry L. Zaretsky Roundtable Discussion: Avoiding Chapter 22: Predicting Success in Chapter 11 (Nov. 18, 2013) (on file with author).

6. Edward I. Altman et al., *Post-Chapter 11 Bankruptcy Performance: Avoiding Chapter 22*, 21 J. APPLIED CORP. FIN. 53, 63 (2009).

7. *Id.* at 53.

The purpose of this new study is to update and increase the sample size of firms to test our theory, to comment for the first time on the extent and frequency of Chapter 22, 33, and 44 filings in the United States, and to provide some additional tests about a number of relevant variables.

The discussion of the magnitude and causes of the Chapter 22 phenomenon is one that has taken several forms in the past, including the impassioned debate concerning the efficacy of the District of Delaware's Bankruptcy Court. This debate was motivated by LoPucki's book on how competition for big bankruptcy cases was corrupting the system.<sup>8</sup> This was followed by Ayotte and Skeel's defense of the system, particularly the selection bias of firms filing in different court venues and the more complicated capital structures of firms filing in Delaware,<sup>9</sup> invoking Miller's suggestion that the higher percentages of recidivism may be attributed to the complex and sophisticated Chapter 11 cases that gravitate toward Delaware and New York.<sup>10</sup> LoPucki and Doherty's rejoinder to Ayotte and Skeel's models and conclusions followed.<sup>11</sup> What was not debated or questioned was the astounding level of recidivism rates for cases filed in Delaware, and to a lesser extent in New York, compared to "other courts." Indeed, LoPucki and Kalin, in an earlier study, provided statistics showing that companies emerging from bankruptcy reorganization in Delaware were far more likely to file a second bankruptcy than those emerging from other courts in the 1991–96 period,<sup>12</sup> and in a later study, LoPucki and Doherty found that in that same six-year period, 42% of Delaware-reorganized companies that emerged as public companies filed again within five years, compared to 19% from New York's Southern District and 4% elsewhere.<sup>13</sup> From LoPucki and Doherty's 2006 rejoinder to Ayotte and Skeel's review, we observe that the sample size of their total filing statistics were relatively small, with 26 from Delaware, 16 from New York, and 56 from other courts (a total of 98 cases). My own statistics show that from 1991–96, there were 404 company bankruptcy filings that

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8. See LYNN M. LOPUCKI, *COURTING FAILURE: HOW COMPETITION FOR BIG CASES IS CORRUPTING THE BANKRUPTCY COURTS* (2005).

9. Kenneth Ayotte & David A. Skeel, Jr., *An Efficiency-Based Explanation for Current Corporate Reorganization Practice*, 73 U. CHI. L. REV. 425 (2006) (reviewing LOPUCKI, *supra* note 8).

10. Harvey R. Miller, *Chapter 11 Reorganization Cases and the Delaware Myth*, 55 VAND. L. REV. 1987 (2002).

11. Lynn M. LoPucki & Joseph W. Doherty, *Delaware Bankruptcy: Failure in the Ascendancy*, 73 U. CHI. L. REV. 1387 (2006).

12. Lynn M. LoPucki & Sara D. Kalin, *The Failure of Public Company Bankruptcies in Delaware and New York: Empirical Evidence of a "Race to the Bottom,"* 54 VAND. L. REV. 231 (2001).

13. Lynn M. LoPucki & Joseph W. Doherty, *Why Are Delaware and New York Bankruptcy Reorganizations Failing?*, 55 VAND. L. REV. 1933, 1939 (2002).

emerged where the outcome was ultimately known (e.g., emerged, acquired, or liquidated) from that now somewhat remote period.<sup>14</sup>

The purpose of this current Article is not to rekindle the earlier debate on the efficiency of one court versus others. Indeed, Lee presents evidence that “in recent years, the failure rates [i.e., recidivism] have been approximately the same for cases filed in Delaware and in other jurisdictions.”<sup>15</sup> What is of interest here, however, is that the notion exists in many of the prior studies, as pointed out by Lee, that when the debtor corporation refiles after it emerges, this constitutes a reorganization failure, both in concept and cost.<sup>16</sup> This is due to the direct and indirect costs of bankruptcies. Direct costs are estimated to be between 1–6% of the firm’s value,<sup>17</sup> and indirect costs of bankruptcy, which I explored in an earlier study and based on my estimate of lost profits due to the expected probability of bankruptcy, range from 11–17% depending upon the industry.<sup>18</sup> The reasons for the lost sales and profits are easily argued, revolving around issues like lost reputation, management focus distractions, lost employees, and the sales of assets and foregone investments. Of course, there may be substantial benefits to any bankruptcy filing, whether in the initial filing, as in the recent American Airlines case<sup>19</sup> and subsequent merger with US Airways, or in the second filing of a firm, like Continental Airlines.<sup>20</sup> Indeed, Ayotte and Skeel argue that, in some cases, an intensive and costly reorganization is not always the optimal strategy, but rather a quick, less costly restructuring, including prepackaged Chapter 11s, may be more efficient and that a subsequent liquidation or return to Chapter 11 may confirm the efficiency of foregoing an intensive reorganization the first time in Chapter 11.<sup>21</sup>

My strong feeling is that the likely refiling of an emerging entity is *not* what the advisors or the court expect coming out the first time, and that a fast, low-cost, and accurate early warning system can make the refiling

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14. Edward I. Altman, *The Role of Distressed Debt Markets, Hedge Funds and Recent Trends in Bankruptcy on the Outcomes of Chapter 11 Reorganizations*, 22 AM. BANKR. INST. L. REV. 75, 93 fig.7 (2014).

15. Ruth Sarah Lee, *Delaware’s Relevance in Chapter 22: Who Is “Courting Failure” Now?*, 31 REV. BANKING & FIN. L. 443, 443 (2011).

16. *Id.* at 443–44.

17. LoPucki & Kalin, *supra* note 12, at 236 (“For a large, public company, the direct cost is probably about 1.5% to 6% of the company’s assets.”); Jerold B. Warner, *Bankruptcy Costs: Some Evidence*, 32 J. FIN. 337, 337 (1977) (finding that “the [direct] cost of bankruptcy is on average about one percent of the market value of the firm prior to bankruptcy”).

18. Edward I. Altman, *A Further Empirical Investigation of the Bankruptcy Cost Question*, 39 J. FIN. 1067, 1087 (1984).

19. *In re AMR Corp.*, 730 F.3d 88 (2d Cir. 2013), *petition for cert. filed*, 82 U.S.L.W. 3510 (U.S. Feb. 12, 2014) (No. 13-971).

20. *In re Cont’l Airlines Corp.*, 901 F.2d 1259 (5th Cir. 1990), *cert. denied*, 506 U.S. 828 (1992).

21. Ayotte & Skeel, *supra* note 9, at 453.

likelihood a much lower probability without materially adding to the costly nature of a long, drawn-out restructuring.

Part I provides updated numbers and commentary on Chapter 22, 33, and 44 filings from 1984–2013, as well as the success rate of Chapter 11 plans of reorganization (PORs), before and after adjustments for recidivism. Part II looks at post-Chapter 11 performance and at the Z'-Score model's updated results on the ability to forecast Chapter 22 based on data from emergence and one year post-emergence. The final Part discusses the Article's empirical findings and provides some conclusions.

## I. CHAPTER 22 FILINGS AND EMPIRICAL RESULTS

Figure 1 documents the number of Chapter 22, 33, and 44 filings for the thirty-year period of 1984–2013. In all, there have been 253 Chapter 22s, 16 Chapter 33s, and 3 Chapter 44s for a total of 272 multi-filing events. Our list contains multiple filings where at least one of the filings involved a publicly held company.<sup>22</sup> The number of multi-filings compared to total filings over the sample period averaged about 9% per year. The list of Chapter 33 and 44 filings can be found in Appendix A, while the list of multi-filing companies in 2013 can be found in Appendix B, including the dates and asset sizes of each filing.

While 9% may or may not sound like a very large proportion of total filings, a more meaningful metric is the proportion of multi-filing entities among those firms that have emerged from Chapter 11 as a “going concern,” and therefore might need to file again. From our recent study on bankruptcy trends, we observe that between 1981–2010, there were 1775 reorganized emergences and acquisitions in the Chapter 11 process, and from 1984–2013 there were 272 multi-filing events (Figure 1)—that is, 15.3% of all potential outcomes (Figure 2).<sup>23</sup> And if we examine just those firms that emerge from the bankruptcy process as a continuing, independent entity, the recidivism rate spikes to about 18.25%. This sizeable proportion of Chapter 11 filings could very well be classified as unsuccessful. As a minimum, we chose a three-year period after emergence to calculate the recidivism rate, hence starting the emergences in 1981 and ending in 2010, and the multi-filers as starting in 1984 and ending in 2013. We therefore do not capture any multi-filers in 1984 and thereafter which emerged before 1981 and also no multi-filers in the future which emerged before 2011. Still, we believe that a recidivism rate of 15–18% is a fair estimate of this

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22. Our source is primarily New Generation Research, Boston, MA. *New Generation Research, Inc.*, BANKRUPTCYDATA.COM, [https://www.bankruptcydata.com/About\\_Us.htm](https://www.bankruptcydata.com/About_Us.htm) (last visited Apr. 11, 2014). We also utilize the NYU Salomon Center Bankruptcy database.

23. EDWARD I. ALTMAN & BRENDA J. KUEHNE, NYU SALOMON CTR., DEFAULTS AND RETURNS IN THE HIGH-YIELD BOND AND DISTRESSED DEBT MARKET: THE YEAR 2013 IN REVIEW AND OUTLOOK (2014). We have included in our multi-filer total those few firms acquired in the Chapter 11 process that subsequently filed again.

phenomenon and a substantial issue that should be addressed by the bankruptcy community, especially since the existing Code is currently being evaluated by practitioners and academics again.<sup>24</sup>

**FIGURE 1. U.S. CHAPTER 22, 33, AND 44 FILING STATISTICS, 1984–2013**

Year	Chapter 22s <sup>a</sup>	Chapter 33s <sup>a</sup>	Chapter 44s <sup>a</sup>	Total Chapter 11 Filings	% Multiple Filers	
1984–1989	18	0	0	788	2.28	
1990	10	0	0	115	8.70	
1991	9	0	0	123	7.32	
1992	6	0	0	91	6.59	
1993	8	0	0	86	9.30	
1994	5	0	0	70	7.14	
1995	9	0	0	85	10.59	
1996	12	2	0	86	16.28	
1997	5	0	0	83	6.02	
1998	2	1	0	122	2.46	
1999	10	0	0	145	6.90	
2000	12	1	0	179	7.26	
2001	17	2	0	263	7.22	
2002	11	0	1	220	5.45	
2003	17	1	0	172	10.47	
2004	6	0	0	92	6.52	
2005	9	1	0	86	11.63	
2006	4	0	0	66	6.06	
2007	8	1	0	78	11.54	
2008	19	0	0	138	13.77	
2009	18	1	1	211	9.48	
2010	10	1	0	106	10.38	
2011	5	2	0	86	8.14	
2012	12	1	0	87	14.94	
2013	11	2	1	71	19.72	
<b>Totals</b>	<b>253</b>	<b>16</b>	<b>3</b>	<b>3649</b>	<b>9.05</b>	<b>Average, Annual</b>
					<b>7.45</b>	<b>Average, Overall</b>

<sup>a</sup>Must have been a public company at the time of one of the filings.

Sources: THE BANKRUPTCY YEARBOOK & ALMANAC (Christopher McHugh & Kerry Mastroianni eds., annually); ALTMAN & HOTCHKISS, *supra* note 2.

24. The American Bankruptcy Institute has appointed twenty-two commissioners and thirteen advisory committees to hold hearings on possible revisions to the existing Bankruptcy Code. Their suggested changes are expected soon. See Press Release, Am. Bankr. Inst., Leading Scholars to Present Research and Proposals for Potential Chapter 11 Reforms at the ABI-Illinois Symposium on Chapter 11 Reform on April 3–5 (Feb. 27, 2014), available at <http://news.abi.org/press-releases/leading-scholars-to-present-research-and-proposals-for-potential-chapter-11-reforms-a>.

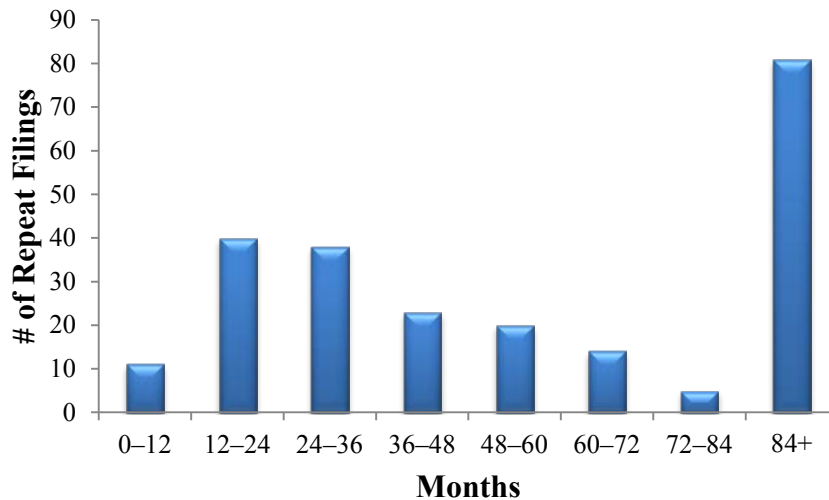
**FIGURE 2. PERCENT OF CHAPTER 11 PUBLIC COMPANY EMERGENCES AND ACQUISITIONS THAT LATER RESULT IN A CHAPTER 22, 33, OR 44 FILING, 1981–2013**

# of Chapter 22, 33, and 44 filings (1984–2013)	<b>272</b>
# of emergencies and acquisitions (1981–2010)	<b>1775</b>
% re-filed after emergence or acquisition	<b>15.24%</b>
% re-filed after emergence only	<b>18.25%</b>

Sources: *New Generation Research, Inc.*, *supra* note 22; compilation by E. Altman, NYU Salomon Center.

Another issue is the time it takes for a Chapter 22, 33, or 44 to take place after the firm emerges from the prior bankruptcy. Figures 3a and 3b show the frequency of time to recidivism (in months). While the majority (56%) file again less than five years (60 months) after emerging from the prior bankruptcy, a sizeable proportion (44%) file again after being “solvent” for at least five years after emergence. There is also a sizeable proportion (22%) who file again within two years (24 months) of the emergence date. Some may argue that a firm that “lives” for more than five years after emerging is *not* an unsuccessful Chapter 11 and therefore less of a blemish on the bankruptcy process. This, in my opinion, is a debatable point.

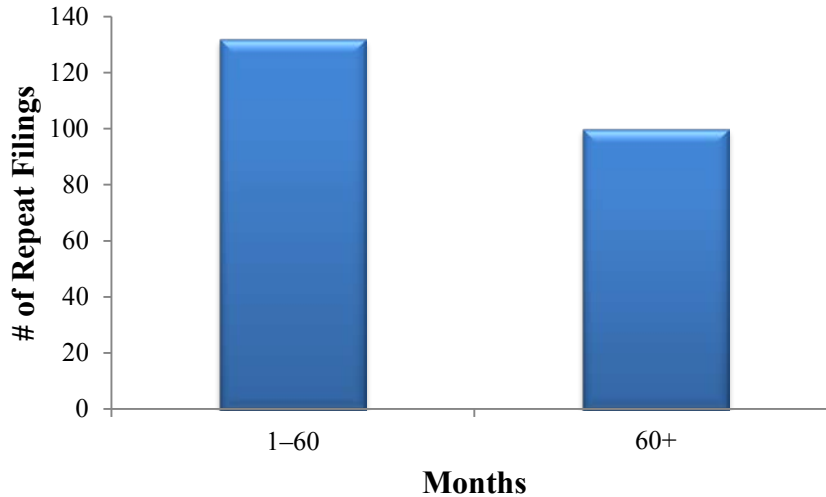
**FIGURE 3a. TIME TO RECIDIVISM (IN MONTHS)<sup>a</sup>**



<sup>a</sup>Based on 232 bankruptcies, 1984–2013.

Sources: *New Generation Research, Inc.*, *supra* note 22; compilation by E. Altman, NYU Salomon Center.



**FIGURE 3b. TIME TO RECIDIVISM (IN MONTHS)<sup>a</sup>**

<sup>a</sup>Based on 232 bankruptcies, 1984–2013.

Sources: *New Generation Research, Inc.*, *supra* note 22; compilation by E. Altman, NYU Salomon Center.

#### A. SUCCESS AND RECIDIVISM

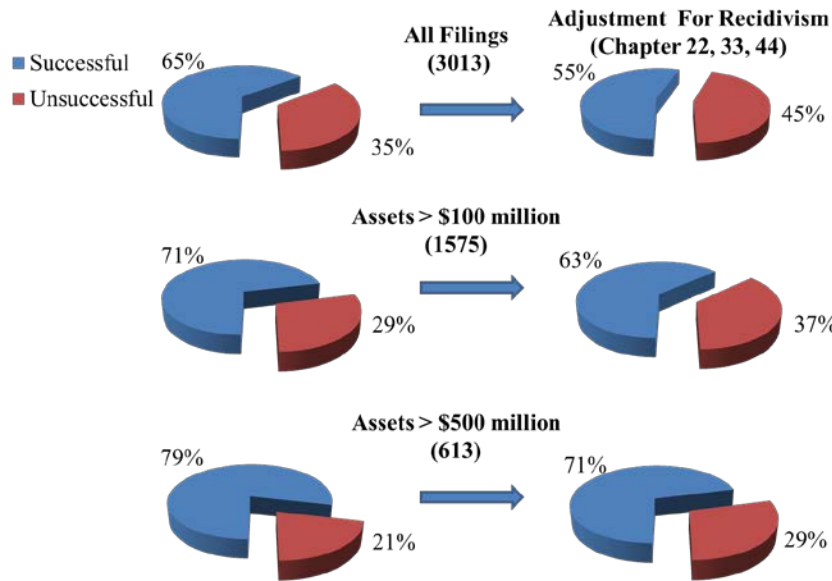
In our recent discussion of trends in bankruptcy, we defined success of a Chapter 11 reorganization as “either an emergence from the bankruptcy as a continuing entity, or an acquisition of the assets of the debtor.”<sup>25</sup> Liquidations under either Chapter 7 or 11 constitute our “unsuccessful” outcomes.<sup>26</sup> However, when an emerged entity has to file again (the recidivism problem), one could, and I do, conclude that the original Chapter 11 was not successful. In order to account for recidivism, we can adjust the 65% success rate for all Chapter 11 cases involving publicly held companies, with known Chapter 11 outcomes (over 3000 cases) from 1981–2013 (Figure 4).

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25. Altman, *supra* note 14, at 96; *see also* ALTMAN & KUEHNE, *supra* note 23, at 13.

26. *Id.*

**FIGURE 4. SUCCESS VERSUS NONSUCCESS IN CHAPTER 11 REORGANIZATIONS (BASED ON KNOWN OUTCOMES), 1981–2013**



Sources: *New Generation Research, Inc.*, *supra* note 22; compilation by E. Altman, NYU Salomon Center.

Since 1981, through 2013, there were 272 cases of a Chapter 22, 33, or 44 among publicly held firms. If we add those 272 multi-filers to the number of unsuccessful Chapter 11s (974) and subtract the same 272 multi-filing cases from the initial cohort of successful ones, the percentage of successful Chapter 11s drops to 55.5% (Figure 4). While a majority of Chapter 11 filings still result in a successful outcome, the results are less impressive and, in my opinion, can be improved by a more diligent assessment of the recidivism potential by all parties involved. Figure 4 also shows the percentage of Chapter 11 filings for all “known” filing results and for those with greater than \$100 million and \$500 million in assets. Note that the success rate after adjustment for recidivism increases as asset size increases, but there is still a noticeable decrease in the success rate after adjusting for Chapter 22, etc. For the largest Chapter 11s, the success rate fell from 79% to 71% after recidivism adjustments.

**B. THE POSSIBILITY TO IMPROVE POST-CHAPTER 11 SUCCESSES**

As we will show, the troubling incidence of subsequent failures has accrued despite, as noted earlier, requirements—under the Bankruptcy Code enacted in 1978 and amended in 2005—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, the

court must find 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.<sup>27</sup> In reality, however, unless there is convincing, opposing evidence of the lack of feasibility presented by interested parties, the bankruptcy court has decided that it has little choice but to sanction the plan as presented.

The purpose of this study is not to debate the overall merits of Chapter 11, especially since the Bankruptcy Code was substantially modified by the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005.<sup>28</sup> 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?

Studies of post-bankruptcy performance have found 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 found that 32% of a sample of large companies that had emerged as a public entity restructured again through a private or court-determined restructuring,<sup>29</sup> while LoPucki and Whitford, in their study of larger Chapter 11 filings, found that 32% filed again within four years of emergence.<sup>30</sup> While some companies come out of the process still holding too much debt, most cited operating problems as the primary reason for their second filing.<sup>31</sup>

Stuart Gilson found that leverage remained high after both out-of-court restructurings and Chapter 11 reorganizations, although it was considerably more elevated in the former.<sup>32</sup> 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.<sup>33</sup> 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 as 25% of his total sample had to file for bankruptcy or

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27. See 11 U.S.C. § 1129(a)(11) (2012).

28. See Bankruptcy Abuse Prevention and Consumer Protection Act of 2005, Pub. L. No. 109-8, 119 Stat. 23.

29. Edith Shwalb Hotchkiss, *Postbankruptcy Performance and Management Turnover*, 50 J. FIN. 3 (1995).

30. Lynn M. LoPucki & William C. Whitford, *Patterns in the Bankruptcy Reorganization of Large, Publicly Held Companies*, 78 CORNELL L. REV. 597, 608 (1993).

31. *Id.* at 609.

32. Stuart C. Gilson, *Transactions Costs and Capital Structure Choice: Evidence from Financially Distressed Firms*, 52 J. FIN. 161 (1997).

33. *Id.* at 167.

restructure their debt again.<sup>34</sup> Heron, Lie, and Rogers 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.<sup>35</sup>

Several 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, as many as 40% continued to experience operating losses in the three years after emergence.<sup>36</sup> Michel, Shaked, and McHugh show 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.<sup>37</sup>

On the other hand, the experience of some larger firms does show positive post-bankruptcy performance, and one of our studies 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.<sup>38</sup> 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 2001–02. Lee and Cunney found that investing in formerly bankrupt firms’ equities between 1988–2003 (a sample of 117 firms) resulted in a positive average 85% return relative to the performance of the S&P 500 index in the first twelve months after emergence.<sup>39</sup> The volatility of these returns was extremely high, however, with only 50% of the stocks outperforming. The excellent results of many emerged firms in the 2003–05 period prompted one investment bank, Jefferies & Co., to create an index of post-bankruptcy equity performance: the *Jefferies Re-org Index*.<sup>40</sup> This index is no longer in existence, however.

A few additional studies show fairly positive, or at least not negative, post-bankruptcy performance. Alderson and Betker examined a sample of eighty-nine firms emerging between 1983 and 1993 and computed the five-

34. *Id.* at 162.

35. Randall A. Heron et al., *Financial Restructuring in Fresh-Start Chapter 11 Reorganizations*, 38 FIN. MGMT. 727 (2009).

36. *E.g.*, Hotchkiss, *supra* note 29.

37. Allen Michel et al., *After Bankruptcy: Can Ugly Ducklings Turn into Swans?*, 54 FIN. ANALYSTS J. 31 (1998).

38. Allan C. Eberhart et al., *The Equity Performance of Firms Emerging from Bankruptcy*, 54 J. FIN. 1855 (1999).

39. THOMAS J. LEE & JOHN CUNNEY, JPMORGAN, *THE CHAPTER AFTER CHAPTER 11: A STRATEGIC GUIDE TO INVESTING IN POST-BANKRUPTCIES* (2004).

40. *Jefferies Expands Family of Indices to Include Unique Sets of Small- and Mid-Cap Companies*, BUS. WIRE (Dec. 20, 2006, 10:35 AM), [http://www.businesswire.com/news/home/20061220005578/en/Jefferies-Expands-Family-Indices-Include-Unique-Sets#.U1L112fD\\_5o](http://www.businesswire.com/news/home/20061220005578/en/Jefferies-Expands-Family-Indices-Include-Unique-Sets#.U1L112fD_5o).

year annualized return earned by the reorganized company, relative to the value that would have been received in liquidation and invested in alternative assets.<sup>41</sup> Where the liquidation value was not available from the plan, the authors used the plan's estimated market value at emergence.<sup>42</sup> They found that the reorganized firms' annualized returns were not significantly different from those of the S&P 500 Index.<sup>43</sup>

From a sample of 288 firms that defaulted on public debt, most of whom went bankrupt, Hotchkiss and Mooradian found in 1997, and also in their update (2004), that while 32% experienced negative operating performance in the year following emergence if there were no outside "vulture" investors directly involved with significant ownership, only about 12% had the same negative experience when a "vulture" was actually involved in the restructuring.<sup>44</sup>

## II. AVOIDING CHAPTER 22

To predict the performance of firms emerging from Chapter 11 bankruptcy reorganization, we utilized a revised version of the original Z-Score model, which was first developed for testing the credit scoring of emerging market firms<sup>45</sup> and then applied in the United States, 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 one is trying to predict (and avoid) is a second filing.

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41. Michael J. Alderson & Brian L. Betker, *Assessing Post-Bankruptcy Performance: An Analysis of Reorganized Firms' Cash Flows*, 28 FIN. MGMT. 68 (1999).

42. *Id.* at 69.

43. *Id.* at 74.

44. Edith S. Hotchkiss & Robert M. Mooradian, *Vulture Investors and the Market for Control of Distressed Firms*, 43 J. FIN. ECON. 401 (1997); Edith S. Hotchkiss & Robert M. Mooradian, Presentation at the Turnaround Management Association's Advanced Education Workshop: The Performance of Firms Emerging from Chapter 11: Recent Evidence (June 15, 2004) (on file with author).

45. Edward I. Altman, *An Emerging Market Credit Scoring System for Corporate Bonds*, 6 EMERGING MARKETS REV. 311 (2005).

**FIGURE 5. Z-SCORE COMPONENT DEFINITIONS AND WEIGHTINGS**

Variable	Definition	Weighting Factor
X <sub>1</sub>	$\frac{\text{Working Capital}}{\text{Total Assets}}$	1.2
X <sub>2</sub>	$\frac{\text{Retained Earnings}}{\text{Total Assets}}$	1.4
X <sub>3</sub>	$\frac{\text{EBIT}}{\text{Total Assets}}$	3.3
X <sub>4</sub>	$\frac{\text{Market Value of Equity}}{\text{Book Value of Total Liabilities}}$	0.6
X <sub>5</sub>	$\frac{\text{Sales}}{\text{Total Assets}}$	1.0

Sources: ALTMAN & HOTCHKISS, *supra* note 2; Edward I. Altman, *The Prediction of Corporate Bankruptcy: A Discriminant Analysis*, 23 J. FIN. 193 (1968).

In the original Z-Score model, (Figure 5), firms needed to be public entities since one of the variables, the market value of equity/total liabilities, 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 the revised model, called Z<sup>''</sup>-Score, has four variables, not five as in the original model; the Sales/Total Tangible Assets variable is removed and the coefficients re-estimated (Figure 6). In addition, we substitute the book value of equity for the market value (X<sub>4</sub>) in the Z<sup>''</sup>-Score model.

**FIGURE 6. Z<sup>''</sup>-SCORE MODEL FOR MANUFACTURERS, NON-MANUFACTURERS, INDUSTRIALS, AND EMERGING MARKET CREDITS**

$Z'' = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$		
X <sub>1</sub>	$\frac{\text{Current Assets} - \text{Current Liabilities}}{\text{Total Assets}}$	
X <sub>2</sub>	$\frac{\text{Retained Earnings}}{\text{Total Assets}}$	
X <sub>3</sub>	$\frac{\text{Earnings Before Interest and Taxes}}{\text{Total Assets}}$	
X <sub>4</sub>	$\frac{\text{Book Value of Equity}}{\text{Total Liabilities}}$	

Sources: ALTMAN & HOTCHKISS, *supra* note 2.

Bond rating equivalents (BREs) based on data from 1996 were chosen for our subsequent empirical tests (Figure 7). We have since updated these benchmarks, but for this study, the 1996 standard seemed appropriate. 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-default zones (AAA to CCC-).

**FIGURE 7. U.S. BOND RATING EQUIVALENTS BASED ON Z"-SCORE MODEL**

$Z'' = 3.25 + 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$	
Rating	Average 1996 Z"-Score <sup>a</sup>
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)

<sup>a</sup>Sample size in parentheses.

Sources: Compustat, Company Filings, and S&P.

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, (Figure 8); the other represents those companies that emerged from Chapter 11 and did not file a second time (Figure 9).

FIGURE 8. Z"-SCORES FOR CHAPTER 22s

COMPANY NAME	EFFECTIVE DATE	Z"-SCORE AFTER		Z"-SCORE 1-YEAR		RE-FILING DATE	PERIOD BETWEEN EMERGENCE & SECOND FILING		
		EMERGENCE	BRE	POST	BRE		YEARS	MONTHS	DAYS
1 AMERICAN BANKNOTE	11/21/2000	0.34	D	0.35	D	4/8/2005	4	4	18
2 AMES DEPT STORES	12/18/1992	4.74	BB-	6.31	BBB+	8/20/2001	8	8	2
3 ANACOMP	6/4/1996	3.72	B-	2.93	CCC+	10/19/2001	5	4	15
4 ANCHOR GLASS	11/25/1997	3.62	B-	3.73	B	4/15/2002	4	4	21
5 ANCHOR GLASS	8/9/2002	3.61	B-	4.05	B	8/8/2005	2	11	30
6 AFA HOLDINGS	1/31/2006	3.18	CCC+	3.4	CCC+	4/2/2008	2	2	2
7 BRENDEL'S	12/20/1993	6.65	A	6.6	A	4/16/1996	2	3	27
8 BRUNOS, INC.	12/30/1999	1.33	D	n/a	n/a	2/5/2009	9	1	6
9 COHO ENERGY	3/21/2000	1.71	CCC-	-3.27	D	2/24/2003	2	11	3
10 COMPOSITE TECHNOLOGY CORPORATION	10/31/2005	-1.01	D	-0.86	D	4/10/2011	5	5	10
11 CONSTAR INTERNATIONAL INC	5/14/2009	3.54	CCC+	2.32	CCC-	1/11/2011	1	7	28
12 DEX MEDIA	1/12/2010	2.55	CCC	2.56	CCC	3/17/2013	3	2	5
13 EAGLE FOOD CENTERS	7/10/2000	2.49	CCC	3.45	CCC+	3/25/2004	3	8	15
14 EDISON BROTHERS	9/26/1997	4.19	B	2.85	CCC	3/9/1999	1	5	11
15 EXIDE TECHNOLOGIES	5/4/2004	0.75	D	2.24	CCC-	6/10/2013	9	1	6
16 FILENE'S BASEMENT, LLC (SYMS CORP.)	1/26/2010	8.56	AAA	6.32	BBB+	11/2/2011	1	9	7
17 FOAMEX INTERNATIONAL INC.	2/1/2007	1.50	D	-0.18	D	2/18/2009	2	0	17
18 GALEY & LORD	2/10/2004	-0.66	D	0.28	D	3/5/2004	0	0	24
19 GLOBAL AVIATION HOLDINGS INC.	3/26/2009	3.63	CCC+	3.75	B-	2/5/2012	2	10	10
20 GRAND UNION CO	5/31/1995	2.81	CCC	1.9	CCC-	6/24/1998	3	0	24
21 GRAND UNION CO	8/5/1998	3.41	CCC+	0.76	D	10/3/2000	2	1	28
22 HARVARD INDUSTRIES	8/10/1992	2.38	CCC	1.1	CCC-	5/8/1997	4	8	28
23 HARVARD INDUSTRIES	10/15/1998	1.21	CCC-	0.8	D	1/16/2002	3	3	1
24 HAYES LEMMERZ INTERNATIONAL, INC.	5/12/2003	4.44	B	4.47	B	5/11/2009	5	11	29
25 HEARTLAND WIRELESS	3/15/1999	3.87	B-	5.25	BB+	9/5/2003	4	5	21
26 HOMELAND HOLDING	7/16/1996	4.73	BB-	4.18	B	8/1/2001	5	0	16
27 HOSTESS BRANDS, INC	12/5/2008	-1.47	D	n/a	n/a	1/11/2012	3	1	6
28 INSIGHT HEALTH SERVICES HOLDINGS CORP.	7/10/2007	-0.02	D	0.5	D	12/10/2010	3	5	0
29 ITHACA INDUSTRIES	12/16/1996	7.21	AA/AAA-	6.86	A+	5/9/2000	3	4	23
30 LAMONTS APPARELS	12/18/1997	2.83	CCC	2.16	CCC	1/4/2000	2	0	17
31 LOEHMANN'S, INC.	9/6/2000	1.26	D	n/a	n/a	11/15/2010	10	2	9
32 MCLEOD USA	4/18/2002	-2.77	D	3.42	CCC+	12/16/2005	3	7	28
33 MEMOREX TELEX	2/7/1992	-0.49	D	1.37	CCC-	2/11/1994	2	0	4
34 MEMOREX TELEX	3/14/1994	0.62	D	-1.3	D	10/15/1996	2	7	1
35 ORMET CORPORATION	12/15/2004	4.57	D	0.63	D	2/25/2013	8	2	10
36 PAYLESS CASHWAYS	12/2/1997	5.19	BB+	5.64	BBB-	6/4/2001	3	6	2
37 PENN TRAFFIC CO	5/27/1999	4.39	B+	3.73	B-	3/17/2005	5	9	18
38 PILLOWTEX	5/2/2002	2.78	CCC	n/a	n/a	7/30/2003	1	2	28
39 PLANET HOLLYWOOD	1/21/2000	-8.24	D	-6.77	D	10/19/2001	1	8	28
40 PLIANT CORPORATION	6/23/2006	1.78	CCC-	1.28	D	2/11/2009	2	7	19
41 RYMER FOODS	4/7/1993	4.44	B+	4.14	B	7/8/1997	4	3	1
42 SALANI	7/30/1993	6.52	A-	5.8	BBB	12/29/1998	5	4	29
43 SATELITES MEXICANOS, S.A. DE C.V.	11/13/2006	3.58	CCC+	4.21	B	4/6/2011	4	4	24
44 SILICON GRAPHICS, INC.	9/19/2006	-16.54	D	n/a	n/a	4/1/2009	2	6	13
45 SMITH CORONA	2/28/1997	5.36	BB+	3.92	B-	5/23/2000	3	2	25
46 SOLO SERVE	7/6/1995	2.98	CCC+	1.5	CCC-	1/20/1999	3	6	14
47 SPIEGEL, INC.	5/25/2005	5.10	BB	3.88	B-	6/17/2009	4	0	23
48 STEAKHOUSE PTNRS	12/19/2003	1.41	CCC-	1.19	CCC-	5/15/2008	4	4	26
49 SUPERMEDIA, INC.	12/22/2009	3.26	CCC+	3.38	CCC+	3/18/2013	3	2	24
50 TBS INTERNATIONAL PLC	10/12/2000	4.57	B+	7.10	AA-	2/6/2012	11	3	25
51 TODAY'S MAN	12/12/1997	7.24	AA-	9.12	AAA	5/6/2004	6	4	24
52 TOKHEIM	10/9/2000	3.9	B-	-0.57	D	11/21/2002	2	1	12
53 TRANS WORLD AIR	8/11/1993	-1.33	D	1.98	CCC-	6/30/1995	1	10	19
54 TRANS WORLD AIR	8/4/1995	3.05	CCC+	2.09	CCC-	1/10/2001	5	5	6
55 TRICO MARINE SERVICES, INC.	1/19/2005	6.98	A+	10.69	AAA	8/25/2010	5	7	6
56 TRISM	12/9/1999	-2.06	D	-1.02	D	12/18/2001	2	0	9
57 UNITED MERCHANTS	8/16/1991	-1.51	D	0.63	D	2/22/1996	4	6	6
58 US AIRWAYS GROUP	3/18/2003	2.63	CCC	1.84	CCC-	9/16/2005	2	5	29
59 USG	4/23/1993	3.48	CCC+	3.82	B-	6/25/2001	8	2	2
60 WESTMORELAND COAL	12/22/1994	2.18	CCC	-4.36	D	12/23/1996	2	0	1
61 WHEREHOUSE	12/16/1996	7.59	AA/AAA-	7.95	AA+	1/20/2003	6	1	4
NUMBER OF BANKRUPTCIES		60		56			YEARS	MONTHS	DAYS
AVERAGE Z"-SCORE		2.39	CCC	2.68	CCC	AVERAGE	4	1	29
MEDIAN Z"-SCORE		3.02	CCC+	2.70	CCC				
STANDARD DEVIATION		3.81		3.13					

Sources: Author's compilation from Capital IQ data and Bloomberg.



FIGURE 9. Z"-SCORES FOR CHAPTER 11s

	COMPANY NAME	EFFECTIVE DATE	Z"-SCORE AFTER EMERGENCE	BRE	Z"-SCORE 1-YEAR POST	BRE
1	AMERCO	3/15/2004	4.78	BB-	4.39	B+
2	AMERICAN COMMERCIAL LINES, LLC	1/10/2005	5.02	BB	6.89	AA+
3	ASARCO, INC.	12/9/2009	7.45	AA	7.62	AA+
4	ATLAS AIR WORLDWIDE HOLDINGS, INC.	7/27/2004	5.58	BBB-	6.61	A
5	AURORA OIL & GAS CORP.	12/22/2009	5.72	BBB-	18.70	AAA
6	AVADO BRANDS, INC.	5/19/2005	8.58	AAA	22.26	AAA
7	BAYOU STEEL CORP.	2/18/2004	n/a	n/a	-13.06	D
8	BOONTON ELECTRONICS	11/18/1994	7.67	AAA/AA+	7.63	AA
9	CAI WIRELESS SYSTEMS INC	10/14/1998	3.04	CCC+	n/a	n/a
10	CALPINE CORP.	1/31/2008	3.20	CCC+	3.03	CCC+
11	CARBIDE/GRAPHITE GROUP, INC.	1/10/2005	4.98	BB	4.27	B
12	CHARTER COMMUNICATIONS, INC.	11/30/2009	n/a	n/a	3.45	CCC+
13	CHEROKEE CORP.	6/1/1993	4.00	B	2.09	CCC-
14	CONSOLIDATED HYDROINC	11/7/1997	3.90	B-	4.81	BB-
15	CORNERSTONE PROPANE PARTNERS LP	12/20/2004	n/a	n/a	4.57	B+
16	DELTA AIR LINES, INC.	4/30/2007	3.74	B-	2.05	CCC-
17	EL PASO ELECTRONIC	2/12/1996	4.36	B+	4.75	BB-
18	ELSINORE CORPORATION	2/28/1997	3.65	B-	4.18	B
19	EMCOR	10/3/1994	4.03	B	4.38	B+
20	EMERSON RADIO	8/9/1994	5.42	BB+	4.08	B
21	ENERGY PARTNERS LTD.	9/21/2009	4.82	BB-	6.55	A
22	ENERGY NEW ORLEANS, INC.	5/8/2007	5.35	BB+	5.88	BBB
23	FANSTEEL INC	12/22/2003	3.21	CCC+	2.83	CCC
24	FEDERAL MOGUL CORP.	12/27/2007	5.21	BB+	4.55	B+
25	FLAGSTAR COMPANIES INC	1/7/1998	2.90	CCC+	-0.44	D
26	FOOTSTAR, INC.	2/7/2006	6.35	A-	4.41	B+
27	GANTOS	3/7/1995	6.58	A	6.17	BBB+
28	GENTERINC	10/7/2003	4.51	B+	2.19	CC
29	GLOBAL POWER EQUIPMENT GROUP	1/21/2008	6.92	A+	6.77	A+
30	GLOBALSTAR, LP	6/29/2004	7.48	AA	9.40	AAA
31	GRANT GEOPHYSICAL	9/30/1997	4.49	B+	4.14	B
32	HANCOCK FABRICS, INC.	8/1/2008	6.88	A+	5.88	BBB
33	HARNISCHFEGE INDUSTRIES INC	7/13/2001	5.70	BBB-	5.30	BB+
34	HAYES LEMMERZ INTERNATIONAL, INC.	12/16/2009	-3.18	D	n/a	n/a
35	HEARTLAND WIRELESS INC	4/5/1999	6.11	BBB+	5.01	BB
36	HEXCEL CORPORATION	1/12/1995	4.83	BB-	4.45	B+
37	HVIDEMARINEINC	12/15/1999	3.69	B-	3.64	B-
38	IMPERIALSUGARCOTX	8/29/2001	3.98	B	5.00	BB
39	INTEGRATED ELECTRICAL SERVICES, INC.	5/15/2006	6.57	A	7.01	AA-
40	INTERNATIONAL WIRE GROUP, INC.	10/20/2004	n/a	n/a	6.32	BBB+
41	IPCS, INC.	7/20/2004	4.35	B+	4.30	B
42	KAISER ALUMINUM CORP.	7/6/2006	6.62	A	10.36	AAA
43	KAISER GROUP INTERNATIONAL INC	12/18/2000	6.94	A+	4.23	B
44	KASH N'KARRY	12/12/1994	4.20	B	4.60	B+
45	KEYSTONE CONSOLIDATED INDUSTRIES, INC.	9/1/2005	4.31	B	6.25	BBB+
46	KITTY HAWK INC	9/30/2002	6.19	BBB+	7.39	AA
47	KRYSTAL COMPANY	4/22/1997	3.46	CCC+	9.41	AAA
48	LAIDLAW INC	2/28/2003	4.40	B+	5.55	BBB-
49	LEAP WIRELESS INTERNATIONAL, INC.	8/16/2004	6.07	BBB+	5.67	BBB-
50	LEAR CORP.	11/9/2009	5.23	BB+	6.18	BBB+
51	LOEIMANN'S HOLDINGS INC DE	10/31/2000	5.48	BBB-	6.24	BBB+
52	LOEWEN GROUP INT'L INC	1/2/2002	3.09	CCC+	3.62	B-
53	LONE STAR INDUSTRIES	3/1/1994	5.16	BB+	6.19	BBB+
54	LORAL SPACE & COMMUNICATIONS LTD.	11/22/2005	4.75	BB-	4.86	BB
55	MAGELLAN HEALTH SERVICES, INC.	1/5/2004	6.09	BBB+	7.89	AA+
56	MAGNACHIP SEMICONDUCTOR, LLC	11/9/2009	6.25	BBB+	7.84	AA+
57	MTS, INC.	3/19/2004	6.76	A+	6.14	BBB+
58	NORTHWESTERN CORP.	11/2/2004	4.10	B	3.86	B-
59	NRG ENERGY	11/24/2003	3.75	B-	1.22	CCC-
60	NTK HOLDINGS, INC. (NORTEK, INC.)	12/17/2009	n/a	n/a	4.66	BB-
61	OGLEBAY NORTON CO.	1/31/2005	4.22	B	5.30	BB+
62	ONEIDA LTD.	8/30/2006	-0.95	D	n/a	n/a
63	OWENS CORNING	10/31/2006	4.41	B+	5.09	BB
64	PACIFIC GAS & ELECTRIC CO.	4/12/2004	4.15	B	3.88	B-
65	PARAGON TRADE BRANDS INC	1/28/2000	5.72	BBB-	n/a	n/a
66	PATHMARK STORES INC	9/18/2000	4.12	B	2.47	CCC
67	PEREGRINE SYSTEMS INC	7/18/2003	4.28	B	3.47	CCC+
68	PETROLEUM GEO SERVICES ASA	10/21/2003	4.32	B	5.48	BBB-
69	PHONE TEL	11/18/1999	3.54	B-	4.30	B
70	PILGRIM'S PRIDE CORP.	12/28/2009	4.79	BB-	5.92	BBB
71	POLYMRE GROUP INC	1/3/2003	2.35	CCC	2.09	CCC-
72	PRIMUS TELECOMMUNICATION GROUP, INC.	7/1/2009	3.75	B-	3.57	B-
73	RCN CORP.	12/22/2004	n/a	n/a	3.64	B-
74	REDBACK NETWORKS, INC.	1/2/2004	6.49	A-	6.27	BBB+
75	REGUS PLC	1/12/2004	2.42	CCC	3.22	CCC+
76	SAFETY COMPONENTS INT'L	10/11/2000	6.13	BBB+	5.13	BB+
77	SEITEL, INC.	7/2/2004	3.68	B-	5.38	BB+
78	SOLUTIA, INC.	2/28/2008	3.93	B-	3.86	B-
79	SOUTHERN MINERAL CORP	8/1/2000	5.38	BB+	n/a	n/a
80	SPECTRUM BRANDS, INC.	8/28/2009	4.68	BB-	4.65	BB-
81	STAGE STORES INC NV	8/24/2001	9.98	AAA	11.78	AAA
82	STERLING CHEMICALS INC	12/19/2002	4.98	BB	3.58	B-
83	STRATOSPHERE CORPORATION	10/4/1998	8.16	AAA	8.56	AAA
84	TELEMUNDO	7/20/1994	5.00	BB	4.98	BB
85	TELETRAC INC	9/15/1999	3.82	B-	2.54	CCC
86	VISTA EYECARE INC	5/31/2001	3.41	CCC+	3.34	CCC+
87	WARNACO GROUP INC	1/16/2003	4.27	B	4.62	B+
NUMBER OF BANKRUPTCIES			81		82	
AVERAGE Z"-SCORE			4.84	BB-	5.21	BB+
MEDIAN Z"-SCORE			4.75	BB-	4.78	BB-
STANDARD DEVIATION			1.83		3.74	

Sources: Author's compilation from Capital IQ data and Bloomberg.

Since both categories comprise companies that have undergone an extensive restructuring, 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 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 eighty-one Chapter 11s was between 1993–2009 (Figure 9). These companies were chosen based on data availability for calculating the Z"-Score distress prediction. Our objective here 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 the same data period as our Chapter 22 sample. Our data source is New Generation Research for determining the Chapter 22, 33, or 44 status and the effective emergence date.<sup>46</sup> For the sixty-one Chapter 22 firms in Figure 8, the effective date of emergence from their first bankruptcy was between 2003–10. The average time between emergence and the second filing was about four years and two months, and the median time was 3.5 years (Figure 8). The firms in both the Chapter 11 and 22 samples represent a broad cross-section of industries and asset sizes.

#### A. POST-BANKRUPTCY DISTRESS PREDICTION RESULTS

We can observe from Figures 8 and 10 that the average Z"-Score for our sample of sixty multi-filers just after emerging from Chapter 11 (one firm did not have sufficient data) was 2.39 (CCC BRE), and the median Z"-Score was 3.02 (CCC+ BRE). The average score was slightly higher at 2.68 (CCC) one year later (emerged +1). For the non-multi-filer sample of Chapter 11s, the average Z"-Score was 4.84 (BB- BRE) at emergence (t) and 5.21 (BB+) at t+1. The median was very close, at 4.75 at emergence and 4.78 at t+1, both at BB- BREs. These results are very similar to our earlier study's, but our sample size was about 50% greater for our Chapter 22s (60 versus 41) and much more than 50% greater for the list of Chapter 11s (81 versus 45).<sup>47</sup> For the sample of sixty Chapter 22s, 33s and 44s, sixteen had a financial profile upon emergence consistent with a "D" (default) rating equivalent, twenty-two with a CCC, and only twenty-two with a profile better than CCC; the latter two categories accounted for about 37% of the sample.

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46. *New Generation Research, Inc.*, *supra* note 22.

47. *See Altman et al.*, *supra* note 6.

**FIGURE 10. Z"-SCORES FOR CHAPTER 22s –  
SUMMARY OF RESULTS**

	Emerge		Emerge +1		Time After Emergence to Next Filing		
					Years	Months	Days
<b>Number of Bankruptcies</b>	60		56				
<b>Average Z"-Score</b>	2.39	CCC	2.68	CCC	Avg.	4	1
<b>Median Z"-Score</b>	3.02	CCC+	2.70	CCC			29
<b>Standard Deviation</b>	3.81		3.13				

Sources: Author's compilation from Capital IQ data and Bloomberg.

**FIGURE 11. Z"-SCORES FOR CHAPTER 11s –  
SUMMARY OF RESULTS**

	Emerge	BRE	Emerge + 1	BRE
<b>Number of Bankruptcies</b>	81		82	
<b>Average Z"-Score</b>	<b>4.84</b>	BB-	<b>5.21</b>	BB+
<b>Median Z"-Score</b>	4.75	BB-	4.78	BB-
<b>Standard Deviation</b>	1.83		3.74	

Sources: Author's compilation from Capital IQ data and Bloomberg.

### B. SIGNIFICANCE TEST RESULTS

To examine more rigorously the statistical significance and importance of our average results for the two samples of post-bankruptcy performance, we performed a "difference in means t-test," indicated in Figure 12. The two samples' financial profiles were easily significant at the one-percent (.01) level ( $t=4.6$  at emergence and  $4.31$  at  $t+1$ ). So, these results had a very small likelihood of occurring by chance and are even more significant than the test results in our earlier study.

**FIGURE 12. DIFFERENCE IN MEANS TEST –  
CHAPTER 22 VERSUS CHAPTER 11 RESULTS**

	Z"-Score after Emergence	Z"-Score 1-Year Post Emergence
<b>Chapter 11 Mean</b>	4.84	5.21
<b>(Chapter 11 Standard Deviation)</b>	(1.83)	(3.74)
<b>Chapter 22 Mean</b>	2.39	2.68
<b>(Chapter 22 Standard Deviation)</b>	(3.81)	(3.13)
<b>t-test*</b>	<b>4.61</b>	<b>4.31</b>

$$* t = \frac{\bar{X}_{11} - \bar{X}_{22}}{\sqrt{\frac{Var_{11} + Var_{22}}{n_{11} + n_{22}}}}$$

Sources: Figures 8 and 9.

### C. IMPORTANCE OF A CCC (OR D) BRE

If the post-emergence test indicates a D or CCC rating profile, we have major concerns about the feasibility of the POR. While skeptics could point out that about 37% of the Chapter 22 sample did not appear to be heading back to another bankruptcy, still almost two-thirds of the sample did, and a prudent analyst should be curious as to why these firms are likely to survive in the post-emergence period. About one-third or more of the Chapter 22 sample had a CCC- rated profile upon emergence, and that could mean a survival experience. But, inspecting the mortality rates of CCC companies, as shown in the updated Mortality Rate calculations in Figure 13,<sup>48</sup> a newly rated CCC bond has a greater than 50% (53.8% to be exact) likelihood of defaulting by the sixth year after the rating assignment date. These results are based on well over 2700 defaulting issues observations, covering the period of 1971–2013. Hence, again, a seemingly reasonable action is to raise the question of feasibility to those proposing the POR for firms with a CCC or D BRE.

**FIGURE 13. MORTALITY RATES BY ORIGINAL RATING – ALL RATED CORPORATE BONDS<sup>a</sup> (1971–2013)**

		Years After Issuance									
		1	2	3	4	5	6	7	8	9	10
AAA	Marginal	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%	0.01%	0.00%	0.00%	0.00%
	Cumulative	0.00%	0.00%	0.00%	0.00%	0.01%	0.03%	0.04%	0.04%	0.04%	0.04%
AA	Marginal	0.00%	0.00%	0.23%	0.09%	0.02%	0.01%	0.01%	0.01%	0.02%	0.01%
	Cumulative	0.00%	0.00%	0.23%	0.32%	0.34%	0.35%	0.36%	0.37%	0.39%	0.40%
A	Marginal	0.01%	0.04%	0.14%	0.15%	0.12%	0.08%	0.02%	0.27%	0.09%	0.06%
	Cumulative	0.01%	0.05%	0.19%	0.34%	0.46%	0.54%	0.56%	0.83%	0.92%	0.98%
BBB	Marginal	0.35%	2.40%	1.30%	1.02%	0.52%	0.25%	0.28%	0.16%	0.16%	0.34%
	Cumulative	0.35%	2.74%	4.01%	4.99%	5.48%	5.72%	5.98%	6.13%	6.28%	6.60%
BB	Marginal	0.96%	2.05%	3.92%	1.98%	2.35%	1.50%	1.48%	1.13%	1.47%	3.16%
	Cumulative	0.96%	2.99%	6.79%	8.64%	10.79%	12.12%	13.42%	14.40%	15.66%	18.33%
B	Marginal	2.88%	7.75%	7.88%	7.82%	5.72%	4.48%	3.58%	2.10%	1.78%	0.78%
	Cumulative	2.88%	10.41%	17.47%	23.92%	28.27%	31.49%	33.94%	35.33%	36.48%	36.97%
CCC	Marginal	8.20%	12.45%	17.95%	16.30%	4.70%	11.55%	5.40%	4.86%	0.70%	4.32%
	Cumulative	8.20%	19.63%	34.06%	44.80%	47.40%	53.47%	55.99%	58.13%	58.42%	60.22%

<sup>a</sup> Rated by S&P at issuance. Based on 2644 issues.

Sources: S&P and NYU Salomon Center

### D. WHAT ARE THE IMPEDIMENTS TO A SUCCESSFUL RESTRUCTURING?

Skeptics to our statistically oriented proposal for post-emergence feasibility can point out that a myriad of uncontrollable events and exogenous factors may lead to recidivism. However, while these factors

48. Edward I. Altman, *Measuring Corporate Bond Mortality and Performance*, 44 J. FIN. 909 (1989).

could materialize—such as a major economic downturn, industrial and product obsolescence, or political and regulatory changes, especially as the time from the initial emergence date increases beyond, say, five years—there are still some obvious candidates to observe at the time of emergence to posit some prescriptive changes. Indeed, we observe two prime factors to question if the financial profile implicit in a POR looks out of line: initial profitability and leverage.

Figure 14 shows the four Z"-Score variables' averages for Chapter 22 versus 11 filers upon emergence. Two of these four, the EBIT/TA and book equity/total liabilities, are significantly worse for our multi-filing sample of Chapter 22s than those for the Chapter 11 filing sample. Indeed, EBIT/TA remains negative (-0.05) for Chapter 22s, while it is slightly positive for Chapter 11s (Figure 14). While it is debatable whether the debtor firm can truly turn around operating results immediately after emerging, there is little question that post-emergence leverage can be adjusted. Our empirical results showed that creditors must continue to prefer debt in a post-Chapter 11 scenario despite its burden to the debtor. We find that the equity/liability ratio of Chapter 22s was still quite leveraged at 0.24 versus 0.76 for the healthier Chapter 11 sample.<sup>49</sup> So, while multiple-filers had debt/equity ratios of about 4.2:1, the single-filer Chapter 11 ratio was much lower at 1.3:1. The results are even more significantly different than what we found in an earlier study on much smaller samples of Chapter 11 and 22 firms.<sup>50</sup> Despite a much more recent sample than what Gilson observed, results from this study are still consistent with his important findings.<sup>51</sup>

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49. t-tests were significant at the .01 level for  $X_2$ ,  $X_3$ , and  $X_4$  for our two samples.

50. See Altman et al., *supra* note 6.

51. See Gilson, *supra* note 32.

**FIGURE 14. DIFFERENCE IN MEANS TEST OF SPECIFIC PERFORMANCE AND RISK LEVELS: CHAPTER 22 FIRMS VERSUS CHAPTER 11**

	Chapter 11 Sample (87)	Standard Error	Chapter 22 Sample (61)	Standard Error	Difference in Means Test (t-test)
$X_1 = \text{Working Capital/TA}$	0.15	0.16	0.08	0.28	1.75*
$X_2 = \text{Retained Earnings/ TA}$	-0.14	0.22	-0.36	0.39	4.00**
$X_3 = \text{EBIT/TA}$	0.01	0.07	-0.05	0.19	2.40**
$X_4 = \text{Book Equity / Total Liabilities}$	0.76	1.08	0.24	0.39	4.16**

Sources: Author's calculations from firms listed in Figures 8 and 9 and Capital IQ.

\*Significant at .10 level

\*\*Significant at .01 level

#### D. COMPARING POST-EMERGENCE SCORES AFTER ONE YEAR

I thought it interesting to compare  $Z^*$ -Scores just after emergence with the firms' scores one year later to see if there was a high correlation. As expected, there was, with a multiple correlation of 74% and an  $R^2$  of 55% (0.546). So, not surprisingly, scores of companies just after emergence are highly consistent with later results.

Finally, it was found that the higher the  $Z^*$ -Score for firms that did refile, the longer it took for the second filing to take place. Those results were only mildly significant, however. The  $R^2$ s were only 0.06 based on scores at  $t$ , and 0.20 (20%) based on scores at  $t+1$ , but in both cases the sign of the regression coefficient was positive—i.e., the higher the score, the longer it took for the second filing to take place.

### III. SUMMARY CONCLUSIONS AND STATEMENT

We find that about 15% of all debtors who emerge from Chapter 11 bankruptcy reorganization or are acquired during the process ultimately file again, highlighting the significant recidivism problem of our Chapter 11 system. If one observes only the group that emerges as a continuing independent entity, the recidivism rate is more than 18%. While the majority of bankruptcy filings are initially successful (emerged or acquired), only in a little more than half of emergences, where the outcome is ultimately known, could one reasonably conclude that the result was truly successful. This is considerably less than the 65% success rate if one does not count the recidivism rate. I find the dismissal of these facts by many members of the bankruptcy community perhaps shortsighted, and to ignore the high recidivism rate is potentially dangerous to the very existence of the

system. Some meaningful analysis, and a constructive approach to limiting recidivism, would seem to be called for. We make one possible proposal to be considered.

Using the Z"-Score model, I find that a large proportion of debtors filing a subsequent bankruptcy petition, usually another Chapter 11 but also a Chapter 7 liquidation, had a significantly worse financial profile upon emergence from the initial filing than those emerging as going concerns and not filing again. Indeed, the average financial profile and bond rating equivalent of the Z"-scores of the firms in the Chapter 22, 33, and 44 sample, on emerging from their prior bankruptcy, were fairly similar to the way defaulting companies look just prior to default, i.e., with a CCC rating equivalent profile.

We believe that a credible distress-prediction technique 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 assessing the feasibility of a reorganization plan—a responsibility that is imbedded in the Bankruptcy Code. It could also be used by those responsible for devising the plan, especially if in identifying signs of continuing distress, they can make modifications. Creditors of the “old” company can use this technique, in addition to expected value metrics, in assessing the value of the new package of securities, including equity, offered in the plan. Finally, professional turnaround specialists can use this early-warning approach, or other distress prediction models, to assess the likelihood of their efforts succeeding.

**APPENDIX A. CHAPTER 33s AND 44s**

<b>Company</b>	<b>Bankruptcy Date</b>	<b>Confirmation Date</b>	<b>Assets (\$mm)</b>
Anchor Glass Container Corporation (2005)	08/08/05	04/18/06	657
Anchor Glass Container Corporation (2002)	04/15/02	unknown	unknown
Anchor Glass Container Corporation (1996)	09/13/96	pending	unknown
Global Aviation Holdings, Inc. (2013)	11/12/13	pending	500
Global Aviation Holdings, Inc. (2012)	02/05/12	12/10/12	690
ATA Airlines, Inc. (2008)	04/02/08	03/26/09	250
ATA Holdings Corp. (2004)	10/26/04	01/31/06	870
Samuels Jewelers, Inc. (2003)	08/04/03	03/30/04	49
Barry's Jewelers, Inc. (1997)	05/11/97	12/22/98	146
Barry's Jewelers, Inc. (1992)	02/26/92	06/19/92	159
Constar International Holdings, LLC (2013)	12/19/13	pending	50
Constar International, Inc. (2011)	01/11/11	05/20/11	406
Constar International, Inc. (2008)	12/30/08	05/14/09	472
Filene's Basement, LLC (Syms Corp.) (2011)	11/02/11	08/30/12	271
Filene's Basement, Inc. (2009)	05/04/09	01/26/10	80
Filene's Basement Corp. (1999)	08/23/99	10/23/00	203
Grand Union Company, The (2000)	10/03/00	10/08/02	793
Grand Union Company, The (1998)	06/24/98	08/05/98	1061
Grand Union Company, The (1995)	01/25/95	05/31/95	1394
Harvard Industries, Inc. (2002)	01/15/02	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
Harvard Industries, Inc. (1972)	1972	unknown	unknown
PLVTZ, Inc. (Levitz Furniture) (2007)	11/08/07	pending	178
Levitz Home Furnishings, Inc. (2005)	10/11/05	12/15/05	245
Levitz Furniture, Inc. (1997)	09/05/97	12/15/00	934
Loehmann's Holdings, Inc. (2013)	12/15/13	pending	unknown
Loehmann's Holdings, Inc. (2010)	11/15/10	02/09/11	204
Loehmann's, Inc. (1999)	05/18/99	09/06/00	189
Memorex Telex Corporation (1996)	10/15/96	10/09/98	269
Memorex Telex N.V. (1994)	02/11/94	03/14/94	1139
Memorex Telex N.V. (1992)	01/06/92	02/07/92	1643
Penn Traffic Company, The (2009)	11/18/09	10/27/10	194
Penn Traffic Company, The (2003)	05/30/03	03/17/05	806
Penn Traffic Company, The (1999)	03/01/99	05/27/99	1564
Salant Corporation (1998)	12/29/98	04/16/99	233
Salant Corporation (1990)	06/27/90	07/30/93	333
Salant Corporation (1985)	02/22/85	05/19/87	95
Sierra-Rockies Corporation (2003)	01/02/03	11/19/03	2
Sierra-Rockies Corporation (2001)	02/02/01	unknown	unknown
Sierra-Rockies Corporation (1998)	05/28/98	unknown	unknown



Sunshine Precious Metals, Inc. (2003)	05/27/03	unknown	unknown
Sunshine Mining and Refining Co. (2000)	08/23/00	12/05/00	37
Sunshine Mining Company (1992)	03/09/92	08/26/92	222
TerreStar Corporation (2011)	02/16/11	10/24/12	1376
TerreStar Networks Inc. (2010)	10/19/10	02/15/12	1402
Motient Corp. (2002)	01/10/02	04/26/02	1572
Tetragenex Pharmaceuticals, Inc. (2010)	10/26/10	01/06/11	0.2
Tetragenex Pharmaceuticals, Inc. (2009)	08/09/09	unknown	1
Innapharma, Inc. (2003)	04/15/03	06/24/04	2
Trans World Airlines, Inc. (2001)	01/10/01	06/18/02	2137
Trans World Airlines, Inc. (1995)	06/30/95	08/04/95	2495
Trans World Airlines, Inc. (1992)	01/31/92	08/11/93	2865
Trump Entertainment Resorts, Inc. (2009)	02/17/09	05/07/10	2231
Trump Hotels & Casino Resorts, Inc. (2004)	11/21/04	04/04/05	2031
Trump Plaza Associates, LLC (1992)	03/09/92	05/05/92	396
Trump Taj Mahal Associates, LLC (1991)	07/16/91	08/29/91	846
Vertis Holdings, Inc. (2012)	10/10/12	pending	838
Vertis Holdings, Inc. (2010)	11/17/10	12/16/10	1492
Vertis, Inc. (2008)	07/15/08	08/26/08	528

Sources: THE BANKRUPTCY YEARBOOK & ALMANAC, *supra* fig. 1; *New Generation Research, Inc.*, *supra* note 22; compilation by E. Altman, NYU Salomon Center.

**APPENDIX B. 2013 CHAPTER 22s: SIZE AND DURATION**

Company	Bankruptcy Date	Assets (\$ mm)	Confirm Date	Time Between Confirm & Second Filing	Public/Private
Atlantic Express Transportation Corp. (2013)	11/04/13	100	n/a	10 years, 2 months	n/a
Atlantic Express Transportation Corp. (2002)	08/16/02	346.1	09/03/03		n/a
Dex One Corp. (2013)	03/17/2013	2,835.4	04/29/13	3 years, 2 months	Public
R.H. Donnelley Corp. (2009)	05/28/2009	11,880.7	01/12/10		Public
Eurofresh, Inc. (2013)	01/27/13	10.0	n/a	3 years, 3 months	n/a
Eurofresh, Inc. (2009)	04/21/09	172.7	10/27/09		Private
Exide Technologies (2013)	06/10/13	2,195.0	n/a	9 years, 2 months	n/a
Exide Technologies, Inc. (2002)	04/14/02	2,298.9	04/21/04		Public
FriendFinder Networks, Inc. (2013)	09/17/13	452.2	n/a	9 years, 1 month	n/a
General Media, Inc. (2003)	08/12/03	15.5	08/12/04		Private
Furniture Brands Int'l, Inc. (2013)	09/09/13	618.4	n/a	21 years, 3 months	n/a
Interco, Inc. (1991)	01/24/91	1,148.3	6/25/92		Private
Ormet Corp. (2013)	02/25/13	435.9	n/a	8 years, 3 months	n/a
Ormet Corp. (2004)	01/30/04	382.5	12/15/04		Public
Pac-West Telecomm, Inc. (2013)	03/28/13	10.0	n/a	5 years, 4 months	n/a
Pac-West Telecomm, Inc. (2007)	04/30/07	79.3	11/19/07		Private
Prologic Management Systems, Inc. (2013)	07/24/13	0.2		9 years, 5 months	n/a
Prologic Management Systems, Inc. (2004)	02/02/04	5.4	2/13/04		n/a
RDA Holding Co. (Reader's Digest) (2013)	02/17/13	1,564.1	n/a	3 years, 1 month	Private
Reader's Digest Association, Inc., The (2009)	08/24/09	3,966.1	01/15/10		Private
SuperMedia, Inc. (2013)	03/18/13	1,410.0	4/29/13	3 years, 3 months	Public
Idearc, Inc. (2009)	03/31/09	1,815.0	12/22/09		Public

Source: *New Generation Research, Inc., supra* note 22.