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The Equity Performance of Firms Emerging from Bankruptcy

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ABSTRACT

This study assesses the stock return performance of 131 firms emerging from Chapter 11. Using differing estimates of expected returns, we consistently find evidence of large, positive excess returns in 200 days of returns following emergence. We also examine the reaction of our sample firms' equity returns to their earnings announcements after emergence from Chapter 11. The positive and significant reactions suggest that our results are driven by the market's expectational errors, not mismeasurement of risk. The results provide an interesting contrast, but not a contradiction, to previous work that has documented poor operating performance for firms emerging from Chapter 11.

WITH LARGE CORPORATE BANKRUPTCIES being commonplace during the late 1980s and early 1990s, there has been a notable increase in the number of firms emerging from bankruptcy (Altman (1991, 1993)). When firms emerge from bankruptcy, they often cancel the old stock and distribute an entirely new issue of common stock.

The stocks of firms emerging from a Chapter 11 bankruptcy are often called "orphan" equities among practitioners and there have been reports in the popular press about spectacular returns in this market. For example, as Sandler (1991, p. C1) states:

> While initial public offerings have been grabbing all the glory, there's a shadow market for new stocks that is doing nicely too. It's where people trade shares of companies coming out of bankruptcy or reorganization.

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> In recent months, some investors have made 50% to 100% on their money by trading the new shares of Republic Health, Southland Corp. and Maxicare Health Plans after those companies finished reorganizing their business.

The primary purpose of this paper is to test the efficiency of the market for stocks of firms emerging from Chapter 11. Our sample includes 131 firms emerging from Chapter 11 between 1980 and 1993 and we test whether the long-term—that is, the first 200 days of returns after emergence—average cumulative abnormal returns (ACARs) are significantly different from zero. We find significant ACARs that—depending on how the expected returns are estimated—have a lower bound of 24.6 percent (the median CARs, though lower, are also positive and significant).[1]

We investigate several explanations for these findings. Since our tests are joint tests of efficiency and the model we use to estimate expected returns, our results may reflect a mismeasurement of the stocks' riskiness rather than an inefficient market. The results' robustness with respect to different ways of estimating expected returns casts doubt on this explanation, however.

We also examine the reaction of our sample firms to their earnings announcements after emergence. La Porta et al. (1995) argue that the positive excess returns on "value" stocks are due to expectational errors made by the market. Consistent with this assertion, they find that value stocks have unexpectedly good earnings as shown by the positive abnormal returns around their earnings announcements. For our sample, the average and median excess returns are positive and significant around the sample firms' earnings announcements, providing more evidence that our results are driven by expectational errors made by the market, not a mismeasurement of risk.

We also analyze cross-sectional differences in the returns. Specifically, we examine the firms' stock prices upon emergence, changes in their primary line of business, whether the firm had a prepackaged bankruptcy and the willingness of institutional investors to accept only equity in the reorganized firm (in exchange for their old claims).

Low-priced stocks often have higher transaction costs and may have higher estimation risks than captured by our estimates of expected returns.[2] We find no evidence, however, that our positive excess returns are concentrated in low-priced stocks.

Firms that change their primary line of business in bankruptcy may also have higher estimation risks because the historical information on the firm

[1] The emergence of a firm from bankruptcy is loosely analogous to an IPO. In contrast to our long-term positive excess returns, Aggarwal and Rivoli (1990) and Ritter (1991) report long-term negative excess returns for IPOs. Field (1997) finds that IPOs with larger institutional holdings do not underperform a control sample in the long run, ceteris paribus.

[2] Barry and Brown (1984) argue that small firms have higher estimation risk and this explains much, though not all, of the small-firm effect identified by Banz (1981). For our sample, the correlation between the log of price at emergence and the log of equity capitalization at emergence is 0.73.

is less helpful in predicting the firm's future performance. Our results, though, show no consistent difference in returns between firms that change their primary line of business and those that do not.

Because of their shorter duration, prepackaged bankruptcies may have risk characteristics that differ from the nonprepackaged bankruptcies. However, we find no consistent evidence of a significant relation between returns and a dummy variable equal to one if the firm had a prepackaged bankruptcy and zero otherwise.

Finally, Brown, James, and Mooradian (1993) argue that the acceptance of equity in a reorganized firm by informed investors, such as banks, conveys favorable private information. We find some evidence that when institutional investors accept only equity (including warrants) in exchange for their claims, the long-term returns are higher.[3]

Our results are of broad interest for two main reasons. First, they cast doubt on the informational efficiency of this market and are consistent with recent studies documenting long-term abnormal returns (e.g., Loughran and Ritter (1995), Spiess and Affleck-Graves (1995)). Second, the results provide an interesting contrast, but not a contradiction, to prior work that suggests the Chapter 11 process does not efficiently screen out economically inefficient firms (e.g., Hotchkiss (1995)). Our results suggest that, although these firms may not achieve strong operating performance, their performance is better than the market expected at the time they emerged from Chapter 11. Most firms emerging from bankruptcy, however, do not emerge with stock trading on the NYSE/AMEX or Nasdaq and the sample in Hotchkiss includes some of these firms. Therefore, direct comparisons with the sample in Hotchkiss must be tempered by this caveat.

A brief review of the bankruptcy process and related literature is presented in the next section. The data and methods are discussed in Section II. The empirical results are presented in Section III and the summary in Section IV.

I. The Bankruptcy Process and Related Work

Often, as noted earlier, when the formerly bankrupt firm emerges as a public company the old stock is canceled and new stock is issued. If the value of the debt claims exceeds the value of the firm and the absolute priority rule (APR) is followed, then the old shareholders' claim is worthless. In approximately 75 percent of corporate bankruptcy cases, however, the APR is violated (e.g., Eberhart, Moore, and Roenfeldt (1990), Eberhart and Sweeney (1992), Weiss (1990)). Nevertheless, Altman and Eberhart (1994) show that,

[3] Brown et al. (1993) focus on the valuation effects around offer announcements. Therefore, they do not explicitly predict that the market fails to fully account for this information in the stock price after it is publicly known. Nevertheless, their model provides a useful motivation for our test of the market's ability to efficiently incorporate this information.

on average, higher seniority still implies higher payoffs upon emergence from bankruptcy. Creditors usually receive part of their payoff as new stock in the firm, frequently giving them majority ownership.

During the bankruptcy process, the estimate of the firm's going concern value that will be used to set the payoffs to each class of claimants is debated. Depending on its priority, each class of claimants has an incentive to present a biased estimate of firm value. It is in the interest of junior claimants to argue for upwardly biased estimates of firm value because this increases the proportion of firm value they receive. Conversely, senior claimants—who are often the institutional investors—usually push for a lower estimate of firm value so that they can retain a greater portion of the firm and reap the rewards if the firm's subsequent equity value is higher than would be expected given the riskiness of the stock. Perhaps most important is the bias of management; they have an incentive to value the firm above its liquidation value (to maintain their jobs) but below its true value, assuming its true value is above the estimate of its liquidation value. Therefore, if the market is persuaded by the manager's forecast, the postemergence stock performance of the firm will seem superior relative to the equilibrium expected returns and the manager's performance will look abnormally good.

Hotchkiss (1995) documents the operating performance of firms emerging from bankruptcy that filed for Chapter 11 between October 1979 and September 1988. Overall, she finds the median operating performance to be positive. More than 40 percent of the firms, however, continue to experience operating losses in the three years after emergence and 32 percent subsequently file for bankruptcy again or restructure their debt. Moreover, the median industry-adjusted operating performance is negative.

More recent evidence by Alderson and Betker (1996) suggests that the operating performance of firms is abnormally positive following emergence from Chapter 11. They examine 89 firms emerging between 1983 and 1993. In contrast to the focus by Hotchkiss (1995) on accounting measures of performance, they focus on the total cash flows provided by the firm. They report that the total cash flow returns for their sample are significantly higher than the returns on the S&P 500 index.

In summary, the results in Hotchkiss (1995) suggest that the bankruptcy code is biased toward letting economically inefficient, or poorly restructured, firms reorganize instead of liquidating. Alderson and Betker argue that total cash flow measures and comparisons to the alternative of liquidation are better means of assessing the success of firms emerging from Chapter 11. By their metrics, the Chapter 11 process looks more efficient.[4] Though the focus of this paper is on the efficiency of the stock market, our results are indirectly supportive of Alderson and Betker (1996).

[4] See Gilson (1997) for some additional evidence on the efficiency of Chapter 11. Andrade and Kaplan (1998) also examine 20 stocks of firms emerging from bankruptcy or financial distress and find that they perform abnormally well after emergence.

II. Data and Methods

Our primary source of information on firms emerging from bankruptcy is New Generation Research (Boston). New Generation is a firm that specializes in collecting bankruptcy data. Because New Generation's list of firms emerging from bankruptcy becomes more thorough in the 1990s, we construct our sample in two phases.

The first phase is for a list of firms, provided by New Generation, that file and complete a Chapter 11 bankruptcy between January 1980 and December 1989. We supplement this list with a search on the *Dow Jones News Retrieval* using the keywords "bankruptcy" and "emerge." There are 350 firms in this sample. For the second phase, we use a more comprehensive list provided by New Generation. This list contains 196 firms that emerge from Chapter 11 between January 1990 and December 1993, bringing the total sample to 546 firms.

Among the 546 firms, 131 emerge with equity trading on the NYSE, AMEX, or Nasdaq.[5] When the firms emerge from bankruptcy, 71 begin trading on the Nasdaq, 37 on the NYSE, and 23 on the AMEX; 76 of the stocks trade throughout the bankruptcy process. Though we cannot rule out the possibility that our sample is less than the population, we are confident that we have assembled the vast majority of firms.[6]

The average closing price on the first day of trading (postemergence day 0) following emergence is $6.32 and the median is $3.75. Similar to other studies (e.g., Altman (1993)), we find that the average time spent in bankruptcy (measured, in our case, from the bankruptcy announcement date through the first trading date after emergence) is close to two years, with an average of 22.39 months and a median of 20.17 months.

There are 78 firms for which we have some information provided by New Generation on the payoffs to each claimant in the formerly bankrupt firms. Over the past several years, New Generation has gathered information on the payoffs from disclosure statements, discussions with attorneys, and other sources. With this information, we can distinguish between cases where institutional investors accept only equity (including warrants) in the newly emerged firm and cases where they demand another form of payment; 10 firms had their institutional investors accept only equity.

[5] Two firms in our sample stop trading during the 200 days of returns following emergence. As a robustness check, we assume that these stocks are worthless on the last trading day and find qualitatively similar results to those reported below (see Shumway (1997) for a discussion of the delisting bias in CRSP data).

[6] Hotchkiss (1995) has an overall sample that is larger than our sample but, in an earlier version of her paper, she reports that only 41 of the firms in her sample have sufficient data on CRSP (Center for Research in Security Prices) to compute returns for the first year following bankruptcy. Moreover, Alderson and Betker (1996) require some market data for their tests and their sample size is 89 firms (we have 126 firms over the 1983 to 1993 period covered in the Alderson and Betker sample).

A. Definition of the First Trading Date

Because the emergence procedure varies across firms, so does the appropriate starting point for our efficiency tests. For example, as mentioned earlier, 76 of the sample firms' stocks trade throughout the Chapter 11 period. The stock may trade up to the day the new stock is issued and the old stock is then canceled. Alternatively, additional shares may or may not be issued and the "new" stock often trades under the old name. If the old stock is canceled and new stock is issued, then the first trading date is simply the first day the new stock trades following emergence. If additional stock is issued, then the first trading day is the first day the "new" stock (i.e., with the additional shares) trades following emergence. If no new stock is issued, then the first trading date is defined as the emergence date for the firm (recall that the first return day is for the second day of trading). Our sources for the emergence dates include New Generation, *Capital Changes Reporter*, *Wall Street Journal Index* (if we do not have information from the *Dow Jones News Retrieval)*, and *Bloomberg*.

There are only two firms where we know the shareholders retain their shares in the old firm and no additional stock is issued. As noted above, the other two categories are where the shareholders retain their shares and additional stock is issued to pay the debtholders or the old stock is canceled and new stock is issued. The difference between these two categories is not substantive; the old shareholders can have their ownership diluted equally by retaining their shares and having the firm issue additional stock to the old debtholders or by having the firm cancel the old stock and giving the old shareholders a fraction of the new stock.

The Center for Research in Security Prices (CRSP) does not always pick up the stock when it first begins trading. So, we hand-collect data from the *Standard and Poor's Daily Stock Price Record* (SPDSPR) for the 28 firms where the first trading date in the SPDSPR precedes the first trading date on CRSP. The reason for this gap is that all these firms begin trading on a "when-issued" basis (i.e., trading of stock before it is issued). When-issued trading begins after the reorganization plan is confirmed. The exchanges and Nasdaq allow when-issued trading when they are certain the shares will be mailed out by the firm and it will be possible to settle shortly afterward.[7] Therefore, though there can be some liquidity and settlement day differences between when-issued and "regular" stock trading (e.g., Lamoureux and Wansley (1989)), the first trading date can be for when-issued or

[7] The stock is listed when it first begins trading, whether on a when-issued or "regular" basis. For an analysis of the listing effect, see Dharan and Ikenberry (1995). Our sample differs substantially from the sample in Dharan and Ikenberry because our firms typically have restructured their operating and financial structure in a way that firms do not do when they just change their listing. Moreover, many firms in our sample trade continuously and do not change their listing.

regular trading, whichever comes first.[8] To check if the 28 firms with SPDSPR prices (preceding the CRSP prices) perform differently from the other 103 firms, we compare the average and median excess returns of the two subsamples over the 200-day period and find that they are insignificantly different.

B. Estimation of Expected Returns

Our primary method of estimating expected returns is to use matched firms.[9] For each sample firm, we choose a matched firm that has the same primary two-digit SIC code as the sample firm and is closest in equity capitalization as of the first trading date for the sample firm. We call this sample the size- and industry-matched (SIM) sample.

We also match firms in the same industry by size and book-to-market ratios. First, we form size deciles within the two-digit primary SIC code for each sample firm, where size is defined above. Next, we choose the firm in the same size decile as the sample firm that has the closest book-to-market ratio. Seven of the matched firms delist during the 200-day period following emergence from Chapter 11 for our sample firms. In these cases, we fill in the remaining days with the next closest matched firm (where the matching is done as of the first trading day for the sample firm).

Because our sample firms have often undergone dramatic restructurings, their book values reported before their emergence cannot be used. Therefore, we use the book values reported in the first annual report following emergence;[10] for the sake of consistency, we use book values for the matched firms as reported in their first annual reports following the emergence dates for the sample firms. We call this the book-to-market, size- and industry-matched (BMSIM) sample. Because six of our sample firms do not report book values during the 200-day period following emergence, these firms are not included in the sample. As a robustness check, we compute the median book-to-market ratio for our sample firms and match firms to these six firms using this median ratio. The excess returns with this full sample are qualitatively very similar to those reported below.

Finally, as an additional robustness check, we use the market model to estimate expected returns with the NYSE/AMEX and Nasdaq value-weighted indices as the market returns. We estimate the market model parameters over days 201 through 274.

[8] In one case (Maxicare Health Plans, Inc.), the *Capital Changes Reporter* states the firm began trading on a when-issued basis on December 19, 1990 at $4 per share. However, the SPDSPR and CRSP do not note any trading until April 30, 1991 and this is the date we use. The price on April 30 was $8.875. If the *Capital Changes Reporter* is correct, then we have biased downward our estimate of the excess returns.

[9] Spiess and Affleck-Graves (1995) employ the use of matched firms in their study of the performance of stocks subsequent to seasoned equity offerings. Barber and Lyon (1997) also recommend the use of matched firms.

[10] Because of this estimation problem, we perform this test merely as a robustness check.

C. Efficiency Tests

Our first efficiency test is the well-known test of whether the average cumulative abnormal return (ACAR) is significantly different from zero. The ACAR tests whether the average actual return equals the average expected rate of return.

$$\begin{aligned}\text{ACAR} = &\left(\frac{1}{N}\right)\sum_{i=1}^{N}\left(\left(\prod_{t=1}^{T}(1+r_{it})\right)-1\right)\\ &-\left(\frac{1}{N}\right)\sum_{i=1}^{N}\left(\left(\prod_{t=1}^{T}(1+E(r_{it}))\right)-1\right)=\left(\frac{1}{N}\right)\sum_{i=1}^{N}\text{CAR}_i,\end{aligned} \tag{1}$$

where r_{it} = the actual rate of return for stock i on day t, $E(r_{it})$ = the expected rate of return for stock i on day t (see Section II.B), T = the number of days in the event period, N = the number of stocks, and CAR_i = the cumulative abnormal return for stock i.

We also compute a closely related measure of abnormal performance called the wealth relative (WR) (e.g., Ritter (1991)):

$$\text{WR} = \left(\sum_{i=1}^{N}\frac{\left(\prod_{t=1}^{200}(1+r_{it})\right)}{\left(\prod_{t=1}^{200}(1+E(r_{it}))\right)}\right)\Bigg/N. \tag{2}$$

A WR greater than one implies that the sample firms earned abnormal profits and a WR less than one implies abnormal losses.

D. Cross-Sectional Tests

Recall that firms with low stock prices may have higher returns because of estimation risk (e.g., Barry and Brown (1984)) or transaction costs. Firms that change their primary two-digit SIC code may have greater estimation risk because the historical information on the firm is less helpful in predicting the firm's future performance and prepackaged bankruptcies may have different risk characteristics from the more lengthy nonprepackaged bankruptcies. Finally, the willingness of institutional investors to accept only equity in the new firm—in exchange for their old claim—may portend good future performance that is not fully reflected in the stock price upon emergence.

We use the four variables described above (that are known at the close of the first trading day upon emergence from Chapter 11) and the estimate of expected returns in our cross-sectional tests,

$$\begin{aligned}R_i = &\beta_0+\beta_1E(R_i)+\beta_2P_{i0}+\beta_3\text{SICCH}_i\\ &+\beta_4\text{PREPACK}_i+\beta_5\text{ISTKDUM}_i+\epsilon_i,\end{aligned} \tag{3}$$

where R_i = the compounded actual rate of return for stock i ($\prod(1 + r_{it}) - 1$); $E(R_i)$ = the compounded expected rate of return for stock i ($\prod(1 + E(r_{it})) - 1$); P_{i0} = the (log of) price of stock i at the close of the first trading day upon emergence from Chapter 11 (day 0); SICCH_i = the dummy variable equal to one if the firm changes its primary two-digit SIC code during the bankruptcy process, zero otherwise; PREPACK_i = the dummy variable equal to one if the firm's Chapter 11 filing is a prepackaged bankruptcy, zero otherwise;[11] and ISTKDUM_i = the dummy variable equal to one if institutional investors accept only equity in the emerging firm (in exchange for their old claim), zero otherwise.

E. Earnings Announcement Tests

There are 99 firms with at least one earnings announcement during the 200-day period following emergence. To check if this subsample is biased toward the better-performing firms, we compute the long-term excess returns for the 32 firms without an earnings announcement and find that they do not have a significantly lower ACAR and median CAR than the stocks with at least one earnings announcement. On average, there are 2.6 earnings announcements for each firm with an announcement.

For the earnings announcement tests, the (compounded) CARs—using the matched firms—are computed over the 21-day period surrounding the announcement (−10 to +10; where day 0 is the earnings announcement date). The CARs are computed for up to four earnings announcements over the 200-day period for each firm that had an announcement.

The ACARs are computed two ways. First, we assume independence among CARs computed for the same firm and average all the CARs; we call this the "All Firm Announcement Effects" sample. Second, we average the CARs for each firm with multiple announcements and use this average to compute the ACAR; this method assumes that CARs from the same firm are perfectly correlated and we call this the "Average Firm Announcement Effects" sample. We also compute median CARs for both samples.

III. Empirical Results

The ACAR results are presented in Table I. For the first two days of returns following emergence—the postemergence period (1, 2)—the ACAR ranges from 3.0 percent to 3.8 percent but the statistical significance is weak. Moreover, the median CARs are smaller (0 percent to 0.3 percent) and insignificant.

[11] We have 25 prepackaged bankruptcies. The median time in Chapter 11 is 7.237 months for our prepackaged bankruptcies and 22.83 for our nonprepackaged bankruptcies (recall that we measure time in Chapter 11 from the bankruptcy announcement date through the first trading date). The samples in Betker (1995) and Chatterjee, Dhillon, and Ramirez (1996) are helpful in identifying which of our sample firms are prepackaged bankruptcies.

Table I

Average Cumulative Abnormal Returns

Average cumulative abnormal returns (ACARs) are computed for the sample of 131 firms emerging from Chapter 11 from 1980 through 1993. Postemergence day 0 is defined as the first trading day upon emergence from Chapter 11. The size- and industry-matched (SIM) sample is the sample with matching firms that have the same two-digit SIC code as the formerly bankrupt firms and are closest in size (i.e., equity capitalization). The book-to-market, size- and industry-matched (BMSIM) sample is the sample with matching firms that have the same two-digit SIC code as the formerly bankrupt firm, are within the same (industry) size decile, and are closest in the book-to-market ratio. The market model adjusted returns are based on alpha and beta coefficients estimated in the (201, 274) interval using the NYSE/AMEX market index and the Nasdaq index. The ACAR and median cumulative abnormal return (CAR) are based on daily compounded returns. The Wealth Relative is the average of the daily compounded actual rate of return divided by the daily compounded expected rate of return. *p*-values are in parentheses.

Event Period	Matched Firm Sample	ACAR	Wealth Relative	Median CAR
(1, 2)	SIM	0.038***	1.038	0.000
		(0.059)		(0.184)
(1, 200)	SIM	0.246*	1.249	0.063**
		(0.004)		(0.025)
(1, 2)	BMSIM	0.030	1.030	0.000
		(0.150)		(0.671)
(1, 200)	BMSIM	0.600**	1.603	0.084**
		(0.050)		(0.022)
(1, 2)	Mkt. model	0.033	1.033	0.002
	(NYSE/AMEX)	(0.112)		(0.112)
(1, 200)	Mkt. model	1.385**	2.384	0.072*
	(NYSE/AMEX)	(0.016)		(0.009)
(1, 2)	Mkt. model	0.033	1.033	0.003
	(Nasdaq)	(0.114)		(0.497)
(1, 200)	Mkt. model	1.388**	2.387	0.051**
	(Nasdaq)	(0.028)		(0.013)

*, **, and *** indicate significant difference from zero at the 1-, 5-, and 10-percent levels, respectively.

The results become unambiguous when the postemergence period is extended to day 200. Under every method of estimating expected returns, the ACARs are large, positive, and significant (from 24.6 percent to 138.8 percent). Though lower, the median CARs are also positive and significant (from 5.1 percent to 8.4 percent). The wealth relatives are greater than unity every time.

Table II shows the excess returns around the earnings announcements. In each case, the ACAR is large, positive, and significant. The median CARs are also positive and significant, though the median CAR is marginally significant for the "All Firm Announcement Effects" sample using the size- and industry-matched firm sample. These results suggest that the market is surprised by the performance of our sample firms over the 200-day period following emergence.

Table II

Earnings Announcement Tests

Average cumulative average returns (ACARs) are calculated around earnings announcement dates. The (compounded) cumulative abnormal returns (CARs)—using the matched firms—are computed over the 21-day period surrounding the announcement (−10 to +10; where day 0 is the earnings announcement date). The CARs are computed for up to four earnings announcements over a 200-day period for each firm that had an announcement. The ACARs are computed two ways. First, we assume independence among CARs computed for the same firm; we call this the "All Firm Announcement Effects" sample. Second, we average the CARs for each firm with multiple announcements and use this average to compute the average CAR across firms; this method assumes that CARs from the same firm are perfectly correlated and we call this the "Average Firm Announcement Effects" sample. The size- and industry-matched (SIM) sample is the sample with matching firms that have the same two-digit SIC code as the formerly bankrupt firms and are closest in size (i.e., equity capitalization). The book-to-market, size- and industry-matched (BMSIM) sample is the sample with matching firms that have the same two-digit SIC code as the formerly bankrupt firm, are within the same (industry) size decile, and are closest in the book-to-market ratio. *p*-values are in parentheses.

Matched Firm Sample	ACAR	Median CAR
All firm announcement effects		
SIM	0.068**	0.009
	(0.043)	(0.136)
BMSIM	0.079*	0.023*
	(0.010)	(0.004)
Average firm announcement effects		
SIM	0.045***	0.026***
	(0.100)	(0.095)
BMSIM	0.062**	0.032*
	(0.013)	(0.003)

*, **, and *** indicate significant difference from zero at the 1-, 5-, and 10-percent levels, respectively.

The cross-sectional results are shown in Table III (the standard errors are corrected using White's (1980) method). For the first two return days, there is no variable that consistently explains the cross-sectional differences in returns; therefore, the excess returns do not appear to be concentrated in stocks with higher estimation risks or transaction costs. Because our primary method of estimating expected returns is to use a matched firm of similar size to the sample firm, the transaction costs and estimation risks for these matched firms are likely to be similar anyway.

The variable ISTKDUM_i is positive but only marginally significant. With the 200-day return regressions, ISTKDUM_i is positive and significant with the BMSIM sample. On the other hand, with the SIM sample, this variable—though positive—is not significant. Therefore, we find mixed evidence that the willingness of institutional investors to accept only equity in exchange for their old claims on the formerly bankrupt firm portends abnormally good long-term performance that is not fully reflected in the stock prices upon emergence. More generally, we find no consistent evidence that any of the

Table III

Cross-Sectional Tests

Regression estimates of the models,

$$R_i = \beta_0 + \beta_1 E(R_i) + \beta_2 P_{i0} + \beta_3 \text{SICCH}_i + \beta_4 \text{PREPACK}_i + \epsilon_i$$

and

$$R_i = \beta_0 + \beta_1 E(R_i) + \beta_2 P_{i0} + \beta_3 \text{SICCH}_i + \beta_4 \text{PREPACK}_i + \beta_5 \text{ISTKDUM}_i + \epsilon_i,$$

where R_i is the compounded rate of return for firm i; $E(R_i)$ is the compounded expected rate of return for firm i; P_{i0} is the log of the closing price on day 0 for firm i; SICCH_i is a dummy variable that equals one if the firm changes its primary two-digit SIC code during the bankruptcy process, zero otherwise; PREPACK_i is a dummy variable that equals one if the firm's Chapter 11 is a prepackaged bankruptcy, zero otherwise; ISTKDUM_i is a dummy variable equal to one if institutional investors accept only equity (including warrants) in the firm emerging from bankruptcy, zero otherwise. The size- and industry-matched (SIM) sample (columns A through D) is the sample with matching firms that have the same two-digit SIC code as the formerly bankrupt firms and are closest in size (i.e., equity capitalization). The book-to-market, size- and industry-matched (BMSIM) sample (columns E through H) is the sample with matching firms that have the same two-digit SIC code as the formerly bankrupt firm, are within the same (industry) size decile, and are closest in the book-to-market ratio. The *p*-values of the coefficient estimates are shown in parentheses. (1, 2) is for the first two return days following emergence from Chapter 11; (1, 200) is for the first two hundred returns days following emergence.

	SIM				BMSIM			
	A	B	C	D	E	F	G	H
Variable	(1, 2)	(1, 2)	(1, 200)	(1, 200)	(1, 2)	(1, 2)	(1, 200)	(1, 200)
Intercept	0.036	−0.041	0.227	0.331	0.036	−0.036	0.326***	0.381
	(0.261)	(0.297)	(0.103)	(0.144)	(0.260)	(0.328)	(0.066)	(0.192)
$E(R_i)$	0.287**	0.068*	0.295*	0.359**	0.572	0.566	0.429***	0.588
	(0.016)	(0.000)	(0.000)	(0.030)	(0.162)	(0.169)	(0.036)	(0.192)
P_{i0}	−0.020	0.009	−0.091	−0.095	−0.020	0.010	−0.121	−0.121
	(0.222)	(0.617)	(0.209)	(0.346)	(0.206)	(0.540)	(0.158)	(0.337)
PREPACK_i	0.169**	−0.088	0.045	0.233	0.160**	−0.108***	0.035	0.215
	(0.026)	(0.140)	(0.770)	(0.312)	(0.031)	(0.080)	(0.824)	(0.582)
SICCH_i	−0.095**	0.097***	0.163	−0.188	−0.106*	0.094***	0.111	−0.235
	(0.017)	(0.072)	(0.305)	(0.276)	(0.008)	(0.075)	(0.590)	(0.224)
ISTKDUM_i		0.115		0.147		0.089		0.406***
		(0.249)		(0.704)		(0.360)		(0.034)
Adj. R^2	0.083	0.088	0.118	0.107	0.118	0.107	0.060	0.104

*, **, and *** indicate significant difference from zero at the 1-, 5-, and 10-percent levels, respectively.

other variables that may be associated with risks or transaction costs not fully captured in our expected return estimates explain our long-term excess returns.[12]

IV. Summary and Conclusions

We investigate the efficiency of the market for stocks of firms emerging from bankruptcy. We find weak evidence of positive excess returns in the short-term and strong evidence of positive excess returns in the long-term. Specifically, over the first 200 days of returns after emergence, the ACAR varies from 24.6 percent to 138.8 percent depending on how the expected returns are estimated. The median CARs, though lower, are significant and range from 5.1 to 8.4 percent.

Transaction costs or risk characteristics not captured in our expected return estimates could explain the results. We investigate these possibilities using differing estimates of expected returns and check for whether other risk or transaction cost proxies explain the excess returns. We continue to find excess returns after conducting these investigations. There is some evidence, however, that the willingness of institutional investors to accept only equity (in exchange for their old claims on the formerly bankrupt firm) in the newly emerged firm is positively associated with long-term excess returns. This result suggests the type of securities accepted by these informed investors may reflect information on the stock's intrinsic value that is not fully reflected in the stock price upon emergence from Chapter 11.

We also find the average and median excess returns are positive when our sample firms make their earnings announcements. These results are consistent with La Porta et al. (1997) and suggest that our findings are the result of the market being surprised by the postemergence performance of our sample firms.

In summary, our results cast doubt on the informational efficiency of this market. The results also present an interesting contrast, but not a contradiction, to the poor operating results of firms emerging from bankruptcy as reported in previous work. Our results suggest that, although these firms may not do well in their post-Chapter 11 accounting performance, they appear to do better than the market had expected at the time of emergence from Chapter 11.

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[12] To check further whether our long-term positive excess returns are concentrated among low-priced stocks, we compute the 200-day average and median excess returns (with the SIM and BMSIM sample) for stocks with a first trading day price of $4 or less and for stocks with a price of more than $4; the average and median excess returns for the low-price stocks are not significantly higher than for the high-price stocks.

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