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VOLUNTARY CORPORATE LIQUIDATIONS*

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ABSTRACT

This paper examines possible motives for and consequences of voluntary corporate liquidations. Specifically, the procedural and tax differences between voluntary liquidations and other control-changing transaction devices are analyzed. An empirical investigation of successful liquidations shows that the announcement of liquidation reduces the risk of liquidating shares, that the shareholders receive substantial gains from successful liquidations, and that the average gains to the acquiring shareholders are not significantly different from zero. These findings suggest that the liquidating firms' assets have been under-utilized prior to liquidation and that voluntary liquidations lead to higher-valued reallocations of corporate resources.

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VOLUNTARY CORPORATE LIQUIDATIONS

Corporate liquidations represent cessations of corporate entities; the assets are sold, the proceeds are used to retire existing debt, and any remaining funds are distributed to the stockholders as liquidating dividends. While involuntary liquidations often result from bankruptcy proceedings and hence have a negative connotation, voluntary liquidations represent managerial decisions to disinvest the firm. Managers acting in the best interests of the shareholders will voluntarily liquidate only if the liquidation value exceeds both the firm's going-concern value and the face value of outstanding debt. In this paper we present evidence to support this interpretation of decisions to liquidate. Our evidence is similar to that of authors who examine other ways to sell a firms assets; namely, mergers and partial sell-offs.[1]

Section I analyzes procedural and tax motivations for voluntary liquidations. The data are described in Section II. Section III investigates the effects of voluntary liquidations on share betas of firms being liquidated, on the wealth of the stockholders of the liquidating and acquiring firms, and on potential wealth transfers between bondholders and shareholders. The final section contains a summary and conclusions.

I. VOLUNTARY LIQUIDATIONS VS. OTHER CONTROL-CHANGING DEVICES

Of the alternative devices through which corporations can effect changes in control, mergers and partial sell-offs are most closely related to liquidations. However, there are important procedural and tax differences among the three control-changing devices.

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[1]Most of these studies are summarized in Jensen and Ruback (1983) and Smith (1986). See Chen (1986) and Hite, Owers, and Rogers (1987) for additional evidence on the impacts of partial sell-offs on shareholder wealth.

A. Procedural Differences

Liquidation allows the selling firm to partition its assets among several acquirers. It can generate higher sales proceeds than a merger if multiple acquirers can redeploy the assets into higher-valued uses than can a single acquirer. Partitioning the assets among several users can also be accomplished with a merger if the acquiring firm subsequently sells off the assets. The difference between the two methods is that, with a voluntary liquidation, the managers of the selling rather than the buying firm determine what sets of assets are to be sold together.[2]

Another difference between liquidation and merger is that liquidations create the potential for transferring wealth between creditors and stockholders. In a merger, the acquiring firm assumes the outstanding debt of the acquired firm, and the existing evidence indicates that mergers have no significant effect on the bondholders' wealth [e.g., Kim and McConnell (1977), Asquith and Kim (1982), and Dennis and McConnell (1986)]. In a liquidation, the selling firm must retire its debt prior to maturity at face value, or at a slight premium if the debt indentures require prepayment penalties. Thus, if the market value of the outstanding debt is substantially higher than its face value, this provision may enable the selling firm to create wealth transfers from bondholders to stockholders.[3] Under current corporate law, however, bondholders can sue the acquiring firm and ask the court to invoke the Defacto Merger Doctrine, claiming that the liquidation was chosen in order to retire

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[2]Out of 73 liquidating firms in our sample, 30 sold their assets in piecemeal fashion to multiple acquirers.

[3]See Smith and Warner (1979) for an analysis of bond covenants on mergers and asset maintenance.

debt at below its market value.[4] If the bondholders prevail, the acquiring firm must assume the selling firm's outstanding debt as if the acquisition took the form of a merger.[5] However, to the extent that litigation is a costly action with an uncertain outcome, it is possible that liquidations create wealth transfers from bondholders to stockholders. In Section III.C we examine this issue by comparing the face value of the liquidating firm's debt with its market value.

Finally, a partial sell-off is similar to a liquidation in that multiple acquirers are feasible. However, the selling firm continues to exist as a corporate entity after a partial sell-off, and the debt retirement provision does not apply unless it has been specified in the debt covenants. If the firm pays liquidating dividends from the sales proceeds, the combined transactions become a partial liquidation.

B. Taxation Issues

There are four important tax-related differences among liquidations, mergers, and partial sell-offs.[6] First, when a liquidation or a stock-for-cash (and debt) merger takes place, the stockholders of the selling firm are required to recognize any gain or loss. In contrast, when the payment for a

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[4]See Winthrop (1978).

[5]If the selling firm has a liability to former employees arising from a past wrongful action, the liability must be assumed by the acquiring firm in a merger, whereas in a liquidation, the liability does not get transferred automatically to the acquiring firm. However, if a former employee can prove that liquidation was chosen in order to avoid compensation for employee claims, the liability will be shifted to the acquiring firm through the Defacto Merger Doctrine.

[6]Although tax laws are continually changing, the basic provisions have remained relatively stable throughout the period of our study (1963 through 1982). See the next footnote (footnote 7) for major changes in the Tax Reform Act of 1986 concerning liquidations and mergers.

merger takes the form of the acquiring firm's equity, the gain or loss is deferred until the sale of the securities. Thus there exists a personal tax benefit if the transaction qualifies as a "nontaxable" merger. Second, in a nontaxable merger, the post-merger firm can use unused tax credits and losses belonging to either of the pre-merger firms, whereas these are lost in a liquidation or a taxable merger. Third, a liquidation or a taxable merger allows the acquiring firm to step up the bases of the selling firm's assets for depreciation purposes; this is not permissible with a nontaxable merger. Fourth, the tax consequences of a partial sell-off are similar to those of a liquidation or a taxable merger in that they enable the acquiring firm to step up the bases of depreciable assets and disallow the transfer of loss carry-overs and unused tax credits. Unlike a liquidation or a taxable merger, however, the shareholders are not subject to personal taxes unless the firm pays out the sales proceeds as dividends.[7]

Thus, tax considerations favor a liquidation or a taxable merger over a nontaxable merger, (1) the greater the ability to increase the depreciation base of the selling firm's assets, (2) the smaller the taxable gains to the shareholders of the selling firm, and (3) the smaller the unused tax credits and loss carry-overs. This prediction is generally supported by the empirical

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[7]Thus, partial sell-offs provide the benefit of deferring personal capital gains taxes. However, corporate capital gains arising in partial sell-offs are taxable, whereas those in liquidations were not taxable before the Tax Reform Act of 1986. Thus during our sample period, a complete liquidation was preferred to a partial sell-off if the potential corporate capital gains taxes were greater than the potential personal capital gains taxes. When we examine statements reported in the Wall Street Journal concerning our sample of liquidating firms, we identify five liquidations which appear to be motivated by this tax consideration.

The Tax Reform Act of 1986 elimiated the tax free status of corporate capital gains with both liquidations and taxable mergers. The other relevant major change in the Tax Reform Act is the reduction of the benefits derived from the transfer of loss carry-overs in nontaxable mergers.

results reported by Crawford (1986) and Niden (1986) who examined the role of taxes on the choice between taxable and nontaxable mergers. Both investigators found that taxable acquisitions are associated with large potential step-ups of depreciable assets and small personal capital gains.

II. DATA

Our sample is comprised of all New York and American Stock Exchange firms that made liquidation announcements after July 1, 1963 and paid liquidating dividends before December 31, 1982.[8] From the Standard and Poor's Annual Dividend Record we identify 73 such firms, none of which made liquidation announcements after 1981. To obtain a sample of acquiring firms, we examine news reported in the Wall Street Journal concerning the liquidating firms. From this source we identify 26 potential acquiring firms listed on either the NYSE or AMEX.

The date of primary interest is that of the initial announcement relating specifically to the liquidation, which we define as the "press date." This announcement is either an agreement in principle to sell the firm's assets to a specified buyer(s) or a statement of the intention to liquidate.

Approximately one-third of the press dates are preceded by other announcements concerning potential mergers, tender offers, or partial sell-offs. Thus a significant fraction of liquidation announcements are preceded either by unsuccessful attempts to transfer control or by successful partial sell-offs that were the initial step(s) toward complete liquidations. We believe that these prior announcements cause investors to attach a positive probability to the firms' eventual liquidation; hence, the share price revaluations associated

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[8]We require that the announcements occur after July 1, 1963 because the CRSP daily file begins July 1, 1962 and we need a minimum of 1 year of data for estimation purposes.

with the prior announcements are included in our estimate of the total gains (losses) from the liquidation process.

To identify the prior announcements, all news reported in the Wall Street Journal regarding the liquidating firm is examined until a complete calendar year is found with no news concerning mergers, tender offers, or partial sell-offs. The date of the earliest announcement after a year of no relevant news is defined as the pre-press date. If no relevant announcements are found, the event is defined as having no pre-press date.

A third date of interest is that of shareholder confirmation. As with the press date announcements, in some cases the shareholder ratification specifies an acquiring firm and a price, while in others it merely confirms the intention to solicit offers. Subsequent to this confirmation date, most of the sample firms pay liquidating dividends in a piecemeal fashion with the final payment announced well after the firm stops trading. Table 1 lists the types of announcements observed for each announcement day and provides a frequency distribution.

III. ECONOMIC EFFECTS OF LIQUIDATIONS

We hypothesize that the decision to liquidate arises from management's belief that the firm's liquidation value exceeds its value as a going concern. We also hypothesize that managers of acquiring firms perceive the acquisitions to be positive net present value projects. Hence, we expect average returns to liquidating and acquiring shareholders to be positive. To test these hypotheses, we examine stock price reactions to pre-press announcements, liquidation announcements, and announcements of stockholder confirmations. In addition, we estimate the total gains earned by the stockholders of the liquidating and acquiring firms from the earliest available announcement date until the last available announcement.

Table 1

All successful voluntary liquidations of firms listed on the New York Stock Exchange and the American Stock Exchange which made liquidation announcements during the period July 1963 through December 1981. Frequency distribution of 73 liquidations by type of announcement.[1]

Announcement Type	Frequency
Pre-Press Announcements:	
Sell-off Announcements	13
Merger Talks	8
Tender Offers	4
Total	25
Press Announcements:	
Sale Awaiting Stockholder Confirmation	22
Preliminary Negotiations	19
Announcement Considering Liquidation	32
Total	73
Stockholder Confirmation:	
Announcement Covered in the Wall Street Journal	51

[1]The press announcement is the initial announcement relating specifically to the liquidation, and the pre-press announcement is the earliest prior announcement concerning a potential sale of the firm's assets.

The gains to shareholders are measured by Market Model prediction errors. In using the Market Model, we recognize that by announcing its intention to liquidate, the firm potentially changes its risk. Where formerly the firm sold the outputs of its production, it now is selling the means of production. Furthermore, if the sales price can be estimated from the liquidation announcement, general market movements will have little effect on the liquidating firm's share price. Consequently, we expect a significant drop in the beta of the liquidating firm subsequent to the press date.

A. Shareholder Risk

To investigate the impact of the announcements of liquidation on the risk of the participating firms' shareholders, Market Model parameters are estimated using the following specification:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \qquad (1)$$

where

R_{it} = the daily continuously compounded rate of return for the common stock of firm i on relative day t,

R_{mt} = the continuously compounded rate of return for the CRSP equally weighted market index on event day t for firm i,

α_i, β_i = regression coefficients, and

ε_{it} = the disturbance term of security i at time t, assumed to be normally distributed with mean zero and variance σ^2.

Separate estimates for α and β are obtained from each of three non-overlapping periods. The first period, the control period, is defined as the 250-day interval ending 11 days prior to the pre-press date. The second period, the pre-press period, is defined as extending from 11 days after the

pre-press date until 11 days before the press date.[9] The third period, the post-press period, extends from day +11 (relative to the press date) to the day of delisting or day +419, whichever occurs first.[10,11]

Table 2 reports the average alphas and betas of both the liquidating and acquiring firms during the control, the pre-press, and the post-press periods. The table shows a dramatic drop in the beta estimate of the liquidating firms subsequent to the press date. The average beta falls from .86 in the pre-press period to .36 in the post-press period. For the acquiring firm, there are no noticeable changes in either alphas or betas.

The table also shows that of the 70 liquidating firms with sufficient data to estimate the market model parameters during both the control and post-press periods, 54 show a decrease in beta. Using a sign test, the null hypothesis of an equal number of increases and decreases is rejected at the 1% level. Furthermore, of the 54 decreases in beta, 28 are significant at the 5% level; in contrast, only 2 of the 16 increases are significant at the 5% level.[12] These

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[9]For firms which do not have pre-press announcements, the control and the pre-press periods are defined as day -510 through day -261 and day -260 through day -11, respectively, relative to the press date.

[10]The 21-day intervals centered around the pre-press and press dates are not used so that our estimates will be free of any price effects due to the announcements. Also, whenever the return is missing from the CRSP file, both the missing day and the subsequent day are deleted. This procedure is necessary because the first return following missing data is a multiple day return and hence should not be matched with a single day market return.

[11]The average interval between the press date and delisting is 283 days with a standard deviation of 219. The minimum number of days is 17 and the maximum is 979.

[12]For each firm, a t statistic is calculated by dividing the difference in beta by the estimated standard error of that difference. The standard error, which assumes independence between periods, is calculated as the square root of the sum of the estimated beta variances for each period.

Table 2

Average Market Model estimates for the intercept ($\bar{\alpha}$) and the slope ($\bar{\beta}$) over the control, the pre-press, and the post-press periods, and the number of firms with decreases and increases in the β estimate from the control period for firms involved in 73 voluntary liquidations between 1963-1981.

Period	N[2]	$\bar{\alpha}$[1]	$\bar{\beta}$[1]	Decreases[3]	Increases[3]
Liquidating Firms					
Control	73	-.0002 (.0014)	.8842 (.6242)		
Pre-Press	69	.0002 (.0017)	.8582 (.5945)	42 [11]	27 [4]
Post-Press	70	.0005 (.0012)	.3571 (.4960)	54 [28]	16 [2]
Acquiring Firms					
Control	25	-.0002 (.0010)	1.1790 (.5996)		
Pre-Press	23	-.0005 (.0010)	.9875 (.5026)	15 [6]	8 [0]
Post-Press	25	-.0003 (.0009)	1.1552 (.6494)	11 [4]	14 [0]

[1]Cross-sectional standard errors are in parentheses.

[2]A minimum of 40 returns in each period is required for estimation. This accounts for the varying sample size (N) across periods.

[3]Items in brackets refer to the number of firms with significant changes in beta at the 5% level.

results suggest that the market has a greater impact on the return of a going concern than on that of a firm soon to be liquidated.

To examine whether the observed changes in beta are related to the likelihood of a successful liquidation and to the completeness of information released on the press date, the sample of liquidating firms is divided into the following four groups: sales price known; agreement in principle without specifying the sales price; preliminary negotiations; and management recommendation to consider liquidation. Table 3 reports the average beta estimates during the control, the pre-press, and the post-press periods for each of the four groups. The last column of the table shows the percentage of firms remaining on the CRSP tape one hundred days after the press date. The average beta estimate for each of the four groups decreases substantially subsequent to the press date. Moreover, the firms with the most complete information (sales price known) drop from the CRSP tape the earliest and have the lowest beta estimate after the press date.[13]

B. Shareholder Wealth Effects

To explicitly account for the change in beta subsequent to the announcement of liquidation, the prediction error (PE) for the common stock of firm i on day t is defined as follows:

$$PE_{it} = R_{it} - E(\tilde{R}_{it}) \tag{2}$$

where

$$E(\tilde{R}_{it}) = \hat{\alpha}_{i0} + \hat{\beta}_{iT} R_{mt},$$

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[13]One firm in the subsample of "agreements in principle with unknown price" entered into a liquidation agreement with the sales price contingent upon future performance. The beta estimate of this firm increased from .8 in the control period to 2.8 in the post-press period. This outlier, along with the sample size of 4, is responsible for the relatively high post-press average beta of .87 for this subsample.

Table 3

The mean beta ($\bar{\beta}$) estimate and the cross-sectional standard error of the beta estimates (s_β) of 73 liquidating firms between 1963-1981 in each of the control, pre-press, and post-press periods broken down by the level of information contained in the press date announcement. N refers to the sample size.

Information Level	N	$\bar{\beta}$	s_β	% Remaining 100 Days After The Press Date
Control Period				
Sales Price Known	18	.74	.58	n/a[2]
Agreement[1] In Principle	4	.70	.53	n/a
Preliminary Negotiations	19	1.18	.71	n/a
Management Recommendation	32	.82	.57	n/a
Pre-Press Period				
Sales Price Known	18	.71	.48	n/a
Agreement[1] In Principle	4	1.21	.68	n/a
Preliminary Negotiations	18	1.13	.65	n/a
Management Recommendation	29	.73	.57	n/a
Post-Press Period				
Sales Price Known	16	.18	.18	50
Agreement[1] In Principle	4	.87	1.33	75
Preliminary Negotiations	19	.33	.51	84
Management Recommendation	31	.40	.40	88

[1]Sales price unknown.

[2]Not applicable.

$\hat{\alpha}_{i0}$ = the alpha for firm i estimated from the control period, and

$\hat{\beta}_{iT}$ = the beta for firm i estimated from the test period.

We use different periods to estimate alphas and betas in order to obtain measures of normal returns which account for the shift in betas while allowing for nonzero (cumulative) prediction errors.

Prediction errors for each firm are averaged to yield the average prediction error (APE) for each relative day:

$$APE_t = \frac{1}{N_t} \sum_{i=1}^{N_t} PE_{it} \tag{3}$$

where N_t is the number of observations with reported returns on relative day t.[14] Firms with the same calendar announcement dates are formed into equally weighted portfolios and treated as a single observation. The APE_t's are cumulated over event time to yield a cumulative average prediction error (CAPE):

$$CAPE = \sum_{t=K}^{T} APE_t \tag{4}$$

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[14]When there are missing data during a test period, a multiple day expected return is calculated as:

$$E(\tilde{R}_{it}) = \sum_{k=\tau}^{n} E(\tilde{R}_{ik})$$

where

τ = the first relative trading day in the interval of missing data,
n = the last relative trading day in the interval of missing data.

This expected return is subtracted from the multiple day reported return to estimate a measure of abnormal performance. For the liquidating firms, missing data occur almost exclusively around the pre-press and press dates and seem to be largely due to trading suspensions triggered by the announcements made on those days. (For the acquiring firms, missing data are practically nonexistent.) We assign each multiple day measure of abnormal performance to the first day of missing data. For example, if days 0 and 1 are missing, a multiple day expected return is calculated on day 2. This measure is then subtracted from the reported return on day 2 and the difference is assigned to day 0. Days 1 and 2 are then classified as missing.

where K and T are, respectively, the initial and final days of the period under investigation.

Tests of significance for the APE's are based on standardized prediction errors. The average standardized prediction error (ASPE) for each relative day is calculated as:

$$ASPE_t = \frac{1}{N_t} \sum_{i=1}^{N_t} SPE_{it} \tag{5}$$

where

$$SPE_{it} = \frac{PE_{it}}{s(PE_{it})} \tag{6}$$

and $s(PE_{it})$ = the standard error of the prediction error for firm i on day t.[15] The $ASPE_t$'s, assuming cross-sectional independence, are approximately normally distributed with variance $\frac{1}{N_t}$.[16] Hence,

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[15]Because of the nonstationarity of the return generating process documented in the previous section, both the test period and the control period are used to obtain an estimate of the standard error of the prediction error. This statistic, which assumes independence between periods, is estimated as:

$$s(PE_{it}) = \left[\sigma^2(\hat{\alpha}_{iO}) + R_{mt}^2\, \sigma^2(\hat{\beta}_{iT}) + V_{iT}^2\right]^{1/2} \tag{7}$$

where

$\sigma^2(\hat{\alpha}_{iO})$ = the variance of the alpha estimate for firm i calculated during the control period,

$\sigma^2(\hat{\beta}_{iT})$ = the variance of the beta estimate for firm i calculated during the test period, and

V_{iT}^2 = the residual variance of the market model regression for firm i calculated during the test period.

[16]Brown and Warner (1985) demonstrate that, for a sample of 50 securities, the mean excess return is approximately normally distributed. They also demonstrate that when events are not clustered in calendar time, which is the case with our sample, the assumption of cross-sectional independence leads to more powerful tests than alternative procedures which do not make this assumption.

$$Z_t = \sqrt{N_t}\ (ASPE_t) \tag{8}$$

produces a standard normal random variable given the null hypothesis of a zero mean.

B.1. Liquidating Firms

Table 4 presents statistics of daily prediction errors centered on the pre-press date, the press date, and the confirmation date. For each announcement the table shows the daily average prediction errors (APE), the cumulative average prediction errors (CAPE), the sample size (N), and the proportion of positive prediction errors (% Pos). The results indicate significant gains to shareholders for each of the announcements, with the largest gains occurring around the press date.[17]

The announcement day is defined as the day the news is reported in the Wall Street Journal, and hence, it is not clear whether the announcement is made before or after the close of trading on the previous day. To account for this ambiguity and for potential information leakages immediately before the announcement, we compute three-day announcement period prediction errors for each firm ending on the publication date (from day -2 through day 0). The (cross-sectional) averages of these excess returns are 9.48% (z = 13.28) for

[17]By construction, our significance tests are sensitive to the individual standard errors used in the standardization process. Our method applies greater weight to abnormal returns which have lower standard errors. Hence, some mean prediction errors which appear relatively small (large) may be statistically significant (insignificant).

Table 4

Daily average prediction errors (APE), cumulative average prediction errors (CAPE), sample size (N), and proportions of positive prediction errors (% pos) surrounding the pre-press date, the press date, and the confirmation date for 73 liquidating firms between 1963-1981.[1]

	Pre-Press Date				Press Date				Confirmation Date			
Day	APE[2]	CAPE	N	%Pos[3]	APE[2]	CAPE	N	%Pos[3]	APE[2]	CAPE	N	%Pos[3]
-100	-0.20	-0.20	24	.50	0.28	0.28	72	.53	-0.35	-0.35	51	.39
-80	-0.09	2.60	24	.46	-0.12	2.06	72	.50	0.38	0.77	51	.47
-60	0.0	1.47	24	.25	-0.25	3.27	71	.46	-0.22	5.34	51	.45
-40	0.50	7.07	24	.50	-0.17	5.30	72	.46	-0.49	9.29	51	.57
-20	-0.03	6.82	24	.38	-0.47	8.16	72	.38	-0.14	11.85	50	.40
-15	-0.43	7.40	24	.33	-0.02	8.20	72	.44	0.09	11.44	51	.49
-10	0.44	8.99	24	.54	-0.01	7.78	72	.49	0.01	11.05	51	.57
-9	0.18	9.17	24	.42	0.09	7.87	71	.46	0.26	11.31	51	.59
-8	0.03	9.21	24	.29	0.34**	8.21	72	.44	-0.41	10.90	51	.45
-7	-0.44	8.76	24	.38	0.70**	8.90	72	.46	-0.02	10.88	51	.53
-6	0.53	9.29	24	.46	0.34	9.24	72	.49	-0.04	10.84	51	.39
-5	0.53	9.82	23	.43	0.75**	9.99	72	.54	-0.13	10.71	51	.45
-4	0.78*	10.60	24	.50	1.14**	11.13	72	.61*	-0.12	10.59	51	.53
-3	-0.71	9.89	24	.38	0.24	11.37	71	.45	0.39	10.98	51	.53
-2	-0.07	9.82	24	.46	3.03**	14.40	70	.64*	0.82**	11.80	51	.53
-1	5.66**	15.48	24	.71*	7.62**	22.02	68	.78**	1.42**	13.22	51	.69*
0	3.89**	19.37	24	.79**	3.82**	25.84	64	.61	0.61**	13.82	51	.59
1	-0.15	19.22	22	.45	-0.05	25.79	70	.46	-0.60	13.22	51	.41
2	0.36	19.58	23	.52	0.27	26.06	71	.46	0.51	13.73	48	.56
3	-0.40	19.18	23	.43	0.03	26.08	71	.44	0.08	13.81	47	.51
4	-0.37	18.81	24	.38	-0.05	26.03	71	.45	0.03	13.83	47	.53
5	0.81*	19.62	24	.63	-0.35	25.68	72	.40	0.06	13.89	48	.48
6	-0.21	19.41	24	.46	-0.71	24.98	72	.40	-0.12	13.77	48	.46
7	-0.92	18.49	24	.42	-0.54	24.44	72	.39	0.04	13.81	46	.48
8	-0.66	17.83	24	.33	1.19**	25.62	72	.56	-0.04	13.77	46	.57
9	0.14	17.97	24	.50	0.18	25.80	72	.50	0.51	14.28	46	.57
10	-0.69	17.28	24	.33	0.35	26.15	72	.46	-0.06	14.22	46	.43
15	-0.28	16.12	23	.48	0.20	26.25	72	.46	0.39	14.69	42	.55
20	0.39	16.53	24	.42	-0.02	26.68	71	.48	0.27	15.00	41	.56
40	0.16	18.11	23	.61	-0.16	28.11	69	.43	0.31	15.92	35	.54
60	-0.09	18.09	24	.54	0.23	30.04	66	.50	-0.12	17.39	32	.53
80	1.27	21.32	24	.58	0.07	31.74	61	.52	0.12	18.33	30	.53
100	1.46*	23.55	23	.52	-0.09	34.53	35	.45	-0.50	18.53	27	.26

[1]Firms having the same calender announcement dates are formed into equally weighted portfolios.

[2]The null hypothesis for each day is that the average standardized prediction error is less than or equal to zero.

[3]The null hypothesis for each day is that the proportion of positive prediction errors is less than or equal to .50.

*Significant at the .05 level.

**Significant at the .01 level.

the pre-press date, 13.53% (z = 50.07) for the press date, and 2.84% (z = 7.95) for the stockholder confirmation date.[18,19]

To investigate possible cross-sectional variations in the market's reaction to announcements of liquidation, we divide the sample according to (1) whether or not the event has a pre-press date and (2) whether the firm is sold to a single acquirer or to multiple acquirers. Using the rank-sum test, in neither case can we reject the null hypothesis that the observations come from the same distribution.

Finally, to incorporate the resolution of uncertainty over time, we compute holding period prediction errors, HPPE's, for each firm for three time intervals: pre-press to press date; pre-press to confirmation date; and press to confirmation date. Each interval extends from 2 trading days before the first announcement date to 2 trading days after the second announcement date.

Table 5 reports the average HPPE for each of the three intervals. The sample size varies across intervals because a number of firms do not have

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[18]To measure the significance of the announcement period prediction errors, we use the procedure outlined in equations (5) through (8) with the following modification: the standard error for each firm's 3-day prediction error is estimated as the square root of the summation of the variances of the daily prediction errors from day -2 through day 0. Due to missing data around the press date, the (cross-sectional) average of the 3-day prediction errors for this date does not correspond exactly to the 3-day CAPE which can be inferred from Table 4.

[19]To check whether the findings are sensitive to alternative methodologies, we also examine raw returns in the manner of Dann (1981). This approach tests the null hypothesis that the mean announcement period return does not differ from that of a prior control period. Using a three-day announcement period from day -2 through day 0 and a control period from day -60 through day -11, we are able to reject the null hypothesis at the 1% level for each announcement. As expected, the cumulative three-day (day -2 to day 0) raw returns are similar in magnitude to the prediction errors. These raw returns are 10.46% (t=5.52) for the pre-press period, 14.69% (t=12.51) for the press period, and 3.00% (t=5.19) for the confirmation period.

Table 5

Average risk adjusted holding period prediction errors (HPPE) for 73 liquidating firms between 1963-1981 from the pre-press to the press date, the pre-press to the confirmation date, and the press to the confirmation date. Each interval extends from two trading days before the first date to two trading days after the second date. N is the number of firms which possess the necessary announcements to construct the interval.

Ave Interval Length (days)	Ave HPPE(%)[1]	N	N[2] Pos	N Neg
Pre-Press to Press Date[3]				
203	20.86 (5.82)	24	18 [2.25]	6
Pre-Press to Confirmation Date[3]				
355	33.87 (4.61)	18	12 [1.18]	6
Press to Confirmation Date[4]				
157	30.09 (13.15)	50	36 [2.97]	14

[1]Numbers in parentheses are z statistics obtained from the product of the average standardized holding period prediction error and the square root of the sample size. The standard error for each firm's holding period prediction error, which is used for standardization, is estimated as the square root of the summation of the variances of the daily prediction errors over the measured interval.

[2]Numbers in brackets are z statistics from a sign test employing the normal approximation to the binomial distribution, which is adjusted for the small sample correction factor.

[3]Two firms with pre-press date announcements occurring on identical calendar days are formed into an equally weighted portfolio.

[4]Two firms with press date announcements occurring on identical calendar days are formed into an equally weighted portfolio.

pre-press or stockholder confirmation dates. The data show that the total gains are large and significant. From the liquidation announcement to the stockholder confirmation, the stockholders on average experience a positive revaluation of their shares by 30%; from the pre-press announcement to the stockholder confirmation, the average gain is 34%.[20]

B.2. Acquiring Firms

From the liquidating firms' press announcements reported in the Wall Street Journal, we identify 26 potential acquirers. Only three were involved in the pre-press activities of the liquidating firms. Hence, we examine the share price behavior of the acquiring firms around the press and confirmation dates only. Of the 26 potential acquirers, one firm does not satisfy the requirements of the estimation procedure and two firms, with the same calendar press date, are formed into an equally weighted portfolio. Furthermore, one sale was blocked by the Justice Department, two firms terminated negotiations, one firm was outbid, and four firms did not have shareholder confirmation dates. This reduces the number of observations on the press date and on the confirmation date to 24 and 17, respectively.

Table 6 presents the daily average prediction errors (APE) and other statistics centered on the press and confirmation dates. The prediction error of 1.19% on the day before the press date is significantly positive, which

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[20]The gains from liquidations are consistent with the results reported by Brauer (1984) on open-ending closed-end funds. The closed-end fund shares are not redeemable for their net asset values, a fact which gives rise to the possibility of the fund's selling at a discount [e.g., Malkiel (1977) and Thompson (1978)]. A firm can be viewed as a closed-end fund which holds real assets, and liquidation can be viewed as the removal of the constraint on share redemption. The results reported by Brauer suggest that announcements of open-endings of closed-end funds have on average resulted in positive revaluations of approximately 30% to 32% by the time all uncertainties regarding the success of open-ending have been resolved.

Table 6

Daily percentage average prediction errors (APE), cumulative average prediction errors (CAPE), sample size (N), and proportions of positive prediction errors (% pos) surrounding the press date and the confirmation date for 25 acquiring firms between 1963-1981.[1]

	Press Date				Confirmation Date			
Day	APE[2]	CAPE	N	%Pos[3]	APE[2]	CAPE	N	%Pos[3]
-100	0.52	0.52	24	.63	0.04	0.04	17	.53
-80	0.10	0.81	24	.58	0.15	-0.71	17	.53
-60	-0.28	1.54	24	.33	-0.06	2.30	17	.53
-40	0.11	-1.17	24	.50	-0.37	5.84	17	.41
-20	-0.21	-2.64	24	.46	0.30	6.76	17	.47
-15	0.51	-1.91	24	.54	-0.12	6.76	17	.29
-10	0.33	-2.07	24	.67	0.47	7.91	17	.59
-9	0.50*	-1.57	24	.58	0.21	8.12	17	.47
-8	-0.05	-1.62	24	.46	0.43	8.55	17	.59
-7	0.53	-1.09	24	.63	-0.39	8.16	17	.35
-6	-0.26	-1.35	24	.33	-1.00	7.16	17	.29
-5	-0.08	-1.43	24	.46	-0.30	6.86	17	.47
-4	0.54	-0.88	24	.63	-0.16	6.70	17	.35
-3	-0.77	-1.65	24	.33	-0.46	6.24	17	.41
-2	0.41	-1.24	24	.50	-0.38	5.86	17	.35
-1	1.19*	-0.05	24	.54	-0.21	5.65	17	.41
0	-0.51	-0.56	24	.42	-0.68	4.97	17	.41
1	-0.17	-0.73	24	.42	-0.05	4.92	17	.47
2	-0.41	-1.14	24	.33	0.13	5.05	17	.65
3	-0.04	-1.17	24	.42	0.08	5.13	17	.47
4	0.09	-1.09	24	.54	-0.25	4.88	17	.29
5	0.16	-0.92	24	.50	-1.66	3.22	17	.53
6	-0.78	-1.70	24	.33	1.01	4.23	17	.24
7	-0.14	-1.85	24	.46	0.14	4.37	17	.53
8	-0.06	-1.91	24	.42	-0.69	3.68	17	.35
9	0.05	-1.86	24	.46	0.12	3.80	17	.29
10	0.49	-1.37	24	.63	-0.01	3.79	17	.59
15	0.12	-0.34	24	.46	0.56	3.68	17	.59
20	0.45	0.82	24	.54	0.05	3.21	17	.41
40	-0.48	1.97	24	.50	0.34	2.02	17	.59
60	0.56	2.70	24	.46	0.25	-0.59	17	.47
80	-0.08	-0.14	24	.58	0.27	-2.64	17	.71
100	-0.03	-2.55	24	.50	-0.30	-1.72	17	.18

[1]Two firms having the same calender press date are formed into an equally weighted portfolio.

[2]The null hypothesis for each day is that the average standardized prediction error is less than or equal to zero.

[3]The null hypothesis for each day is that the proportion of positive prediction errors is less than or equal to .50.

*Significant at the .05 level.

suggests that the acquisition is a value-increasing event. However, the average three-day announcement period (day -2 through day 0) prediction errors are 1.09% (z = 1.14) for the press date and -1.27% (z = -1.50) for the confirmation date. Although these three-day prediction errors are not significantly different from zero, tests based on raw returns provide somewhat stronger results.[21] These findings raise the perplexing possibility that when a firm is identified as a potential acquirer in the liquidation announcement, the news is received favorably; but when it becomes certain that the firm will be the successful acquirer, the market reevaluates the situation and reacts as if the acquisition is a negative net present value project. However, the results are only marginally significant and the sample size is too small to draw strong inferences. The only conclusion that can be safely drawn is that, on average, the net gain from these two announcements is zero.

To incorporate the effect of the resolution of uncertainty over time, HPPE's are computed for each firm from two days before the press date until two days after the confirmation date. The average HPPE is small (2.43%) and is not significantly different from zero (z = .32). The sign test also fails to reveal any significant differences between the number of positive and negative returns. Based on these results, we conclude that, on average, the acquisition has no significant effect on shareholder wealth.

C. Wealth Transfers Between Stockholders and Bondholders

As discussed in Section I, the debt retirement provision of liquidation raises the issue of potential wealth transfers between bondholders and stockholders. To investigate this issue, we examine whether the debt of the

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[21]The three-day announcement period raw returns are 2.01% (t=2.59) and -1.33% (t=-1.98) for the press and confirmation dates, respectively. See footnote 19 for a description of the significance test employed.

liquidating firms was valued at a premium or at a discount prior to the liquidation announcement.

Of the 73 liquidating firms in our sample, 49 have long-term debt outstanding. However, only three have publicly traded debt.[22] Thus we estimate the total market value for the outstanding debt of firm i, D_i, as:

$$D_i = C_i \cdot F_i/Y_i \qquad (9)$$

where

C_i = the value-weighted coupon (calculated with face value weights) for the debt issues of firm i,

F_i = the book value of firm i's outstanding debt at the close of the fiscal year prior to the announcement of liquidation, and

Y_i = the concurrent average yield of new twenty-year corporate bonds.

Yields on bonds rated Aa by Moody's Investors Service (reported in the U.S. Treasury Bulletin) are used as a proxy for the market yield (Y_i). Since the liquidating firms are relatively small (the average market value of equity is $59 million) and are unlikely to obtain such a high rating, D_i in equation (9) overestimates the market value of outstanding debt.

Even with such a built-in bias, the resulting estimate of the average market value of debt ($23.8 million) is less than the average book value ($25.8 million). Of the 49 firms with long-term debt outstanding, 30 have debt with an estimated market value below book value. Since we obtain these results in spite of the upward bias in the estimation procedure, we conclude that on average bondholders have benefited from the debt retirement provision.

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[22] Of the 3 firms with publicly traded debt, only 1 firm has nonconvertible debt issues. Upon the announcement of liquidation, these nonconvertible issues show an average three-day return of 44%; for the two firms with the convertible debt issues, the three-day returns are +3.18% and -.1%.

IV. SUMMARY AND CONCLUSIONS

This study examines the motives for and consequences of voluntary liquidations. To analyze the motives, we compare liquidations with mergers and partial sell-offs in terms of procedural and tax differences. Although the tax analysis identifies the situations in which liquidations provide advantages over nontaxable mergers and partial sell-offs, it does not reveal any substantive differences between liquidations and taxable mergers.

Our investigation of the procedural differences between liquidations and mergers focuses on two distinguishing features. The first is that liquidations enable the selling firm to partition its assets among multiple acquirers. This attribute is of value if multiple acquirers can redeploy the assets into higher-valued uses than can a single acquirer. Although the assets can also be partitioned with a merger and subsequent sell-off, a voluntary liquidation would be preferred if the existing management can reallocate its resources more efficiently than can an alternative management.

The second distinguishing feature of voluntary liquidations is that outstanding debt is retired prior to maturity at its face value (or at a slight premium if the debt indenture requires a pre-payment penalty). This provision can either benefit or hurt the shareholders, depending on whether the debt is valued at a premium or at a discount prior to the liquidation announcement. For the majority of the firms in our sample, we find that the estimated market value of debt is below its face value, and hence, the debt retirement provision has imposed an additional cost on the liquidating shareholders. This may partially explain the relative infrequency of voluntary liquidations in comparison to mergers and partial sell-offs during the sample period.

When we examine the stock price reaction to liquidation announcements, we observe a significant drop in the average beta of the shares of firms being

liquidated. Furthermore, the drop in beta is positively related to the likelihood of a successful liquidation and to the completeness of information released in the announcement of liquidation.

We find that liquidation announcements are value-increasing events for the shareholders of the liquidating firms. The announcement generates an average three-day excess return of 14%, with another 3% added upon stockholder confirmation. Prior announcements concerning mergers, tender offers, and partial sell-offs also generate an average excess return of 9%.

Our estimates of the total excess returns from the liquidation process include the effect of the resolution of uncertainty over time. Specifically, estimates of gains measured from the liquidation announcement to the stockholder confirmation average 30 percent. For firms with prior related announcements, the average gain from the earliest announcement to the confirmation is 34%.

Finally, our analysis shows that, on average, the stockholders of the acquiring firms neither gain nor lose. This suggests that in general the market for corporate acquisitions is highly competitive on the buyers' side and that the entire gains from voluntary liquidations accrue to the stockholders of the selling firm.

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