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Insider Trading, Ownership Structure, and the Market Assessment of Corporate Sell-Offs

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ABSTRACT

This paper finds that the generally favorable assessment of corporate sell-off decisions is most apparent for closely held firms where insider net-buy activity is prevalent during the prior six-month period. This suggests that insider trader activity and ownership structure information are used by the market in the characterization of sell-off decisions as favorable or unfavorable for investors.

A NUMBER OF RECENT studies document the generally positive valuation effects of voluntary announcements to sell all or part of a corporation's assets. (See Hite and Owers (1983), Alexander, Benson, and Kampmeyer (1984), and Jain (1985).) Hite, Owers, and Rogers (1987) suggest that these results may be due to inefficiencies in the current operating policies and/or organizational structure of divesting firms. Like Klein (1986), they interpret these findings as supportive of the view that asset sales are associated with the movement of economic resources to higher valued uses. Interestingly, Tehranian, Travlos, and Waegelein (1987) find that divesting firms with long-term compensation plans experience a more favorable sell-off announcement effect than do firms without such methods of compensation. These results support the hypothesis that long-term compensation plans motivate managers to make better sell-off decisions. Tehranian, Travlos, and Waeglein's (1987) results also support the hypothesis that sell-off decisions made by firms employing long-term compensation plans are viewed by the market as more likely to be compatible with stockholder interests.

This paper considers whether investors similarly regard the recent pattern of insider trading activity and the ownership structure of the firm as a useful context or backdrop for evaluating corporate sell-off decisions. We extend research by Penman (1985), for example, who evaluates the information content of managements' earnings forecasts within the context of insider buy/sell decisions. Penman (1985) finds consistently positive daily mean abnormal returns when high management earnings forecasts are accompanied by high levels of insider net-buy activity. High management earnings forecasts unaccompanied by positive insider trading activity result in lower, but still significant, mean returns. Forecasts of low expected earnings have no significant impact on returns, irrespective of the level of concurrent insider trading activity. Penman (1985) interprets these results as suggesting that both the pattern of insider trading activity and the

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nature of management earnings forecasts are used by investors to form earnings expectations. Penman's results suggest that insider trading activity provides a useful backdrop for evaluating the information content of management's favorable earnings forecasts.

We also build on work by Agrawal and Mandelker (1987) and Sicherman and Pettway (1987), who find that the ownership structure of the firm can have important implications for investment and financing decisions. Specifically, Agrawal and Mandelker (1987) report that investment and financing decisions tend to increase the variance of investment returns when managers have significant common stock and option holdings. Conversely, these decisions tend to reduce the variance of returns when managers hold little ownership interest. Sicherman and Pettway (1987) report that purchases of assets with product-line relatedness have the greatest positive impact upon shareholder wealth and that acquiring firms with higher insider stock ownership concentrate on these types of acquisitions. Both studies conclude that executive holdings of common stock, like long-term compensation contracts, work to reduce agency problems related to managerial decisions. (Also see Hirschey (1986).) If investment and financing decisions are indeed more compatible with stockholder interests when managers hold a substantial ownership interest, the market assessment of these decisions could vary according to the ownership structure of the firm. Here we consider the possibility of a differential market assessment of a particular investment decision, the sell-off decision, in closely held rather than widely held firms.

Our hypothesis is that sell-off decisions by closely held firms with recent insider net-buy activity are viewed by the market as likely to be compatible with stockholder interests. As such, a highly positive stock-price reaction is expected following such announcements. Conversely, sell-offs by widely held firms with recent insider net-sell activity are viewed by the market as relatively less likely to be compatible with stockholder interests. As such, these decisions result in a much less positive stock price reaction.

A discussion of our data and methodology is provided in Sections I and II, respectively. Estimation results are the subject of Section III. Conclusions and implications for future research are provided in Section IV.

I. Data

As an initial basis, we consider all sell-off events cited in the "Roster of Mergers and Acquisitions" and "Selloffs" sections of *Mergers and Acquisitions* over the 1975–1982 period. To avoid the confounding influences of more complicated corporate restructuring, we limit our study to a sample of 170 *voluntary* corporate sell-offs. (See Hearth and Zaima (1984).) The firms used in the study must satisfy the following additional criteria. First, we only consider corporate sell-offs involving a change in ownership of at least fifty percent of a divested asset, division, or subsidiary. These are largely cash transactions involving and unambiguous change in control from one corporation to another. Second, an unambiguous sell-off announcement date must be reported in *The Wall Street Journal Index,* and security returns must be available on the daily *Center for Research on Stock Prices* (CRSP) tape. Third, complete insider trading activity and ownership

structure information must be available in *Value Line.* Fourth, we require that no confounding events occur during the event period. These restrictions on data selection result in a sample of sixty-four firms.

Given the relatively recent nature of the boom in sell-off activity, more than half of the sell-offs in our sample occur over the 1980–1982 subperiod. The sell-offs in the sample are scattered over forty-four industries (at the four digit *SIC* level) and vary in size from \$7.6 to \$740.0 million. The sell-off size distribution is somewhat skewed toward large values, as evidenced by a mean sell-off value of \$207.4 million versus a median value of \$80.5 million. While the relative size of sell-offs also varies widely, roughly two thirds of our sample is comprised of sell-offs representing less than thirty percent of the market value of common stock for divesting firms. In terms of both coverage and sample characteristics, our sample is comparable to the samples of prior sell-off studies (e.g., Hite and Owers (1983), Klein (1986), etc.). Importantly, we find no evidence that insider trading and ownership structure data differ systematically according to year of sell-off, industry, and the absolute or relative size of the sell-off. Thus, we have no reason to believe that the insider trading and ownership structure classifications we consider below are proxies for or are correlated with these descriptive variables.

Previous studies adopt a variety of insider trading indicators. Penman (1985), for example, considers four: net insider purchases as a percentage of the average number of common shares outstanding, insider purchases as a percentage of outstanding common stock, the ratio of insider purchases to sales, and net insider purchases as a share of total insider holdings. While Penman (1985) finds little difference in the predictive capability of these alternative measures, problems can be introduced by size weighting. Lorie and Nieferhoffer (1968), for example, find that the relative size of insider trading activity will vary according to the type of insider. Principal stockholders, insiders who hold ten percent or more of outstanding common stock but have no direct voice in management or on the board of directors, tend to make trades that are 3.5 times larger than those of officers and directors. Thus, size weighting gives disproportionate status to insider trading by principal stockholders and possibly obscures the information content of trading by officers and directors. This may explain why popular publications such as the *Insiders' Chronicle* and *Insider Indicator,* for example, compute indicators of the level of insider trading activity based simply on the number of insider buy and sell decisions. Indeed, given this practitioner focus on the number of insider buy and sell decisions, there is reason to believe a priori that investors consider unweighted measures of insider trading useful.

To avoid any potential problems associated with size weighting, insider trading is measured in this study by the net difference between insider purchases and sales, or $(P_i - S_i)$, in the six-month period prior to the sell-off announcement. Our comparison of insider purchases and sales has some similarity to the approach of Rozeff and Zaman (1988), who define an insider trading event as three or more buys (sales) with no opposing sales (buys) in a given month. We expect corporate sell-off decisions made within the context of insider net-buy activity to be regarded favorably by investors. Conversely, we expect sell-off announcements made against a backdrop of insider net-sell activity to be regarded in a less favorable light by the marketplace.

Given our approach, we must be sensitive to the independent influence of insider trading activity on abnormal returns. With no transaction costs and using the market model to measure prediction errors over one-, three-, six-, and twelve-month horizons, Rozeff and Zaman (1988) find insider trading-induced prediction errors in the neighborhood of 0.5 percent per month, or six percent per year . In light of these and earlier findings (e.g., Seyhun (1986), we expect some upward drift in cumulative average prediction errors for insider net-buy firms irrespective of their sell-off activity. However, since Rozeff and Zaman (1988) report that the effects of insider trading activity are diffuse, a sharp "spike" in prediction errors associated with the timing of subsequent sell-off announcements would suggest more than the mere effects of insider trading. Moreover, we rely on insider trading activity data as published in *Value Line* to ensure that this information is widely disseminated in the marketplace. The backdrop of insider trading activity should, therefore, be well known prior to a sell-off decision although the sell-off announcement event itself is surprising. Nevertheless, given the well known independent effects of insider trading on stock prices, it is instructive to compare the effects of sell-offs made against a backdrop of favorable insider trading activity with those made against a backdrop of favorable ownership structure information.

The possible effects of ownership structure are considered in this study using multiple measures of ownership dispersion. Closely held firms are defined to include those firms where insiders control five percent or more of the total common stock outstanding, according to data provided in *Value Line*. Firms are defined as widely held in the event that insiders as a group control less than five percent of outstanding common stock. To learn whether the degree of insider stockownership is important, very closely held firms, where insiders control ten percent or more of outstanding common stock, and moderately closely held firms, where insiders control at least five percent but less than ten percent of outstanding common stock, are considered separately. Sell-off decisions involving closely held firms are expected to be regarded as more favorable to investors. On the other hand, sell-offs announced by widely held firms are expected to be particularly susceptible to agency problems and are thus more likely to be regarded as less favorable to investors.

II. Methodology

We use the event study methodology of Patel (1976) and James (1987) to examine the valuation effects of corporate sell-off decisions. For each security i, the market model is used to calculate a prediction error, or abnormal return, for day t such that

$$PE_{jt} = R_{jt} - (a_j + b_j R_{mt}), \tag{1}$$

where R_{jt} is the continuously compounded rate of return on security j for period t, R_{mt} is the rate of return for period t on the equally weighted CRSP index, and a_j and B_j are the OLS estimates of the intercept and slope, respectively, of the market model regression for the jth security.

Given the prediction errors from the market model, we assess the statistical significance of unexpected-event holding-period returns for each sample, Our 120-day estimation period is from 240 days before to 121 days before the sell-off announcement day ($t = 0$). For comparison purposes, we analyze a variety of multiple-day-event holding periods during the sixteen-day interval "preannouncement period" from day $t = -15$ to day $t = 0$. The null hypothesis is that the sample average of market model prediction errors is equal to zero for a give event holding period.

More formally, for a sample of N securities the daily prediction errors are averaged over all firms to produce a daily portfolio average prediction error:

$$APE_t = \frac{1}{N} \sum_{j=1}^{N} PE_{jt}. \tag{2}$$

To measure market model prediction errors over a specific time interval, we sum the prediction errors from day T_1 to day T_2. This method allows for the possibility that sell-off announcements might have diffuse rather than immediate effects on shareholder returns.

We conduct statistical tests of the average prediction errors on the basis of standardized prediction errors. A standardized prediction error for firm j over the holding period T_1 to T_2 is defined as

$$SPE_j = \sum_{t=T_1}^{T_2} PE_{jt}/S_{jt}, \tag{3}$$

where

$$S_{jt} = \left[2V_j^2 \left[1 + \frac{1}{T} + \frac{(R_{mt} - \bar{R}_m)^2}{\sum_{k=-240}^{-121} (R_{mk} - \bar{R}_m)^2} \right] \right]^{1/2}, \tag{4}$$

and V_j^2 is the residual variance of the market model regression for firm J, T is the number of days in the estimation period (120), and R_m is the average market return over the estimation period ($t = -240$ to $t = -121$).

The average standardized prediction error over holding period T equals

$$ASPE_T = \frac{1}{N} \sum_{j=1}^{N} SPE_{jT}. \tag{5}$$

Assuming that the individual prediction errors are cross-sectionally independent, the following Z-statistic can be computed:

$$Z = \sqrt{N}(ASPE_T),$$

which is asymptomatically distributed unit normal under the hypothesis that the average standardized prediction error equals zero.

III. Estimation Results

As in the case of previous sell-off event studies (e.g., see Tehranian, Travlos, and Waegelein (1987, p. 939), significant valuation effects are most apparent for our

sample of firms in the period immediately surrounding the sell-off announcement date. (See Table I.) The statistically significant average market model prediction error of 1.64 percent (Z-statistic = 4.02) we observe for the day −1 to day 0 announcement period is well within the range of that reported in previous sell-off studies (e.g., Hite and Owers (1983), Klein (1986), etc.). Thus, our overall sample displays sell-off announcement effects that are quite typical of sell-off events in general.

As a first step in our more detailed analysis, we consider the influence of previous insider trading activity on the market assessment of subsequent corporate sell-off decisions. Thus, Table I also shows average prediction errors associated with the sell-off announcements of firms with positive net-buy versus negative net-sell insider trading activity during the six-month period immediately preceding the sell-off announcement date. Returns for both portfolios are positive over both the announcement period and the entire day −15 to day 0 preannouncement period. However, the net-buy portfolio displays positive and significant returns for the announcement period (Z-statistic = 4.07), whereas no such significant sell-off announcement effect is obvious for the net-sell portfolio. This finding provides some modest support for our hypothesis that insider net-buy activity provides a favorable backdrop for subsequent sell-off decisions. It will prove instructive to contrast these findings with sell-off returns made against a favorable backdrop of ownership structure information.

In Table II, we show how the ownership structure of the firm might influence the market assessment of sell-off decisions. Here, we report average prediction errors for various portfolios of closely held versus widely held firms making sell-off announcements. Sell-off decision announcements by firms characterized as very closely held, where insiders enjoy ownership control of ten percent or more

Table I

Average Market Model Prediction Errors for the Overall Sample of Sixty-Four Sell-Offs during the 1975–1982 Period

Results are shown for the overall sample and for subsamples of thirty firms with insider net-buy activity and thirty-four firms with insider net-sell activity during the six-month period preceding the sell-off announcement date (Z-statistics in parentheses).

Time Period	Net-Buy	Net-Sell	Total Sample
$t = -15$ to $t = 0$	0.0315	0.0287	0.0300
	(2.17)*	(2.86)*	(3.57)**
$t = -15$ to $t = -11$	−0.0015	0.0077	0.0034
	(0.08)	(1.36)	(0.94)
$t = -10$ to $t = -6$	0.0078	0.0040	0.0058
	(1.02)	(0.71)	(1.22)
$t = -5$ to $t = -2$	0.0030	0.0055	0.0044
	(0.41)	(1.41)	(1.31)
$t = -1$ to $t = 0$	0.0222	0.0114	0.0164
	(4.07)**	(1.70)*	(4.02)**

* Significant at the five percent level.

** Significant at the one percent level.

Table II

Average Market Model Prediction Errors for 1975–1982 Sell-Offs by Closely Held and Widely Held Firms

The subsample of twenty-six closely held firms is comprised of nineteen very closely held firms, where insiders control ten percent or more of common stock, and seven moderately closely held firms, where insiders control at least five percent but less than ten percent of common stock. In the subsample of thirty-eight widely held firms, insiders control less than five percent of common stock (Z-statistics in parentheses).

	Closely Held			
Time Period	Very Closely Held	Moderately Closely Held	Total	Widely Held
$t = -15$ to $t = 0$	0.0477	0.1049	0.0631	0.0072
	(3.20)**	(2.74)*	(4.16)**	(1.20)
$t = -15$ to $t = -11$	−0.0032	0.0350	0.071	0.0009
	(−0.54)	(1.68)	(0.41)	(0.88)
$t = -10$ to $t = -6$	0.0290	0.0163	0.0255	−0.0077
	(3.33)**	(0.75)	(3.23)**	(−1.09)
$t = -5$ to $t = -2$	0.0012	0.0048	0.0022	0.0058
	(0.62)	(0.19)	(0.63)	(1.18)
$t = -1$ to $t = 0$	0.0207	0.0488	0.0283	0.0082
	(3.79)**	(3.64)**	(5.12)**	(0.98)

* Significant at the five percent level.

** Significant at the one percent level.

of outstanding common stock, and moderately closely held firms, where insiders enjoy at least five percent but less than ten percent ownership control, are separately considered in order to learn the influence, if any, of slight differences in control status definition. Interestingly, sell-off announcements by firms included in the various closely held portfolios generate comparable and statistically significant average cumulative prediction errors in the range from 2.07 to 4.88 percent over the announcement period. In contrast, no significant announcement effect is associated with sell-offs by firms that can be characterized as widely held. This difference in the market assessment of sell-off decisions according to ownership structure also emerges over the entire day −15 to day 0 preannouncement period. Sell-off announcements by closely held firms generate significant event period returns of 4.77–10.49 percent, on average, while those by widely held firms generate insignificant holding period returns of less than 1 percent. These results suggest that investors are somewhat more likely to regard the sell-off decisions of closely held firms as favorable, when compared to sell-off decisions made by widely held firms.

The similarities that emerge in Tables I and II are interesting. Like sell-offs preceded by insider net-buy activity, sell-offs by closely held firms appear to engender a highly favorable market response. Even after accounting for the expected independent influence of positive insider trading activity of roughly 0.5 percent per month (see Rozeff and Zaman (1988)), large positive average prediction errors remain for the net-buy and closely held subsamples. This suggests that data on insider trading and ownership structure convey similar information that is used by investors in their evaluation of subsequent sell-off decisions.

Of course, institutional considerations can limit the ability of investors to infer effectively the capabilities and intentions of management through insider trading or ownership structure information. As a result, both insider trading and ownership structure data provide a "noisy" background for the market's subsequent evaluation of "noisy" sell-off decision announcements. It therefore seems reasonable that investors would evaluate sell-off decision announcements within the joint context of previous insider trading and ownership structure information. Given that both insider net-buy decisions and closely held status are a favorable indication of management's congruent interests with stockholders, it seems reasonable that subsequent sell-off announcements by firms displaying both characteristics would be regarded in an especially favorable light. Conversely, sell-off announcements made by widely held firms against a backdrop of negative insider net-sell activity might be regarded much less favorably.

Table III shows average prediction errors for four sell-off firm portfolios where the construction of each portfolio involves a joint consideration of insider trading and ownership structure information. These portfolios are arrayed from the portfolio of closely held firms displaying insider net-buy activity, the most positive sell-off portfolio, to the portfolio made up of widely held firms displaying insider net-sell activity, the most negative sell-off portfolio. Consistent with our hypothesis, the market reaction to corporate sell-off announcements is most positive in the instance of closely held firms displaying insider net-buy activity during the six-month period immediately preceding the sell-off announcement. Here, a

Table III

Average Market Model Prediction Errors for 1975–1982 Sell-Off Subsamples Defined on the Basis of Insider Trading and Ownership Structure Information

The subsample of thirty sell-offs by firms with insider net-buy activity is further divided into subsamples of nine net-buy/closely held firms, where insiders control at least five percent of common stock, and twenty-one net-buy/widely held firms, where insiders control less than five percent of common stock. The subsample of thirty-four sell-offs by firms with insider net-sell activity is further divided into subsamples of seventeen net-sell/closely held firms, where insiders control at least five percent of common stock, and seventeen net-sell/widely held firms, where insiders control less than five percent of common stock (Z-statistics in parentheses).

Time Period	Net-Buy/ Closely Held	Net-Buy/ Widely Held	Net-Sell/ Closely Held	Net-Sell/ Widely Held
$t = -15$ to $t = 0$	0.1140	−0.0039	0.0361	0.0213
	(3.92)**	(−0.03)	(2.29)*	(1.76)
$t = -15$ to $t = -11$	0.0016	0.0014	0.0117	0.0037
	(−1.57)	(−0.28)	(0.92)	(1.00)
$t = -10$ to $t = -6$	0.0490	−0.0098	0.0131	−0.0051
	(3.62)**	(−1.15)	(1.37)	(−0.36)
$t = -5$ to $t = -2$	0.0140	−0.0017	−0.0041	0.0151
	(0.88)	(−0.08)	(0.14)	(1.86)
$t = -1$ to $t = 0$	0.0526	0.0091	0.0153	0.0075
	(5.04)**	(1.57)	(2.67)**	(0.27)

* Significant at the five percent level.

** Significant at the one percent level.

significant announcement effect of 5.26 percent (Z-statistic = 5.04) contrasts sharply with the insignificant 0.75 percent announcement period effect for widely held firms displaying insider net-sell activity. Similarly, the 11.40 percent return for the net-buy/closely held portfolio over the entire day −15 to day 0 preannouncement period contrasts sharply with the insignificant 2.13 percent return for net-sell/widely held firms over the same period. Taken together, these results suggest that the market reaction to corporate sell-off announcements is influenced at least partly by insider trading and ownership structure information that facilitate the market's assessment of corporate sell-off announcements as favorable or unfavorable for investors.

IV. Conclusions

We argue that the market assessment of corporate sell-off decisions is made within the context of other available information that facilitates the characterization of the sell-off event as favorable or unfavorable for divesting firm shareholders.

Our results support the hypothesis that the market's sorting of good from bad sell-off decisions is made, at least in part, on the basis of previous insider trading activity and ownership structure information. We find a highly positive market reaction to sell-offs by firms with net-buy activity in the six-month period immediately preceding the sell-off announcement. The positive market reaction to sell-offs is less evident for firms displaying insider net-sell activity during the same period. Similarly, the market seems to regard more favorably the sell-off decisions of closely held versus widely held firms. When insider trading activity and ownership structure information are considered together, we find that the market reaction to sell-off announcements runs from very favorable for insider net-buy/closely held firms to neutral for insider net-sell/widely held firms.

These findings offer a new perspective on previous research on the market's assessment of sell-off decisions, insider trading, and ownership structure information. Like insider trading, ownership structure data appear to convey information that is used by investors in their evaluation of sell-off decisions. In future research, it would be interesting to learn whether the market's assessment of other managerial decisions is similarly affected.

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