

The Influence of Tax-Loss Selling by Individual Investors in Explaining the January Effect

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This study provides a direct test of Ritter's (1988) extension of the tax-loss selling hypothesis. We isolate firms that are the most likely candidates for tax-loss selling. For firms that experience the largest declines in the last half of the year, we find evidence of a strong positive relation between the level of individual investor ownership and the abnormal January return in the following year and a significant negative relation between firm size and January returns. Further, firms that do experience a rebound in January are smaller and have a higher proportion of individual ownership than firms that do not rebound. Overall, this evidence is consistent with the tax-loss selling hypothesis as described by Ritter.

INTRODUCTION

Large abnormal returns for stocks in the month of January have been documented and examined by numerous researchers. These returns generally are shown to occur primarily for small firms and accrue mostly during the first five days of January.¹ Despite considerable attention, the cause of this phenomenon remains unresolved. This study provides a unique test of Ritter's (1988) tax-loss selling explanation of the January effect. Ritter proposes that abnormal returns in January are the result of the buying and selling behavior of individual investors who concentrate their investments in smaller firms. Near the end of each year individuals increase their selling of securities that have declined in value in order to realize tax losses. Reinvestment of funds early in the following year pushes up stock prices. Ritter's hypothesis assumes that individual and institutional investors concentrate in different stocks, that short-term buying and selling pressures affect stock prices, and that most individuals, seeing a direct tax benefit from selling of stocks that have incurred capital losses, have a stronger incentive to sell than many institutional investors who are largely unmotivated by such tax incentives. Consistent with his hypothesis, Ritter finds that there is a seasonal pattern in the turn-of-the-year buy/sell ratio of individual investors. Using a database of daily purchases and sales of New York Stock Exchange stocks by cash account customers of Merrill Lynch, he finds a below normal buy/sell ratio in late December and an above normal ratio in early January.

Several additional studies examine other measures of trading activity around the turn of the year and show results that are generally consistent with Ritter. Keim (1989) documents a shift from trades at bid prices to trades at ask prices at the turn of the year. Such a pattern is consistent with individual investors being significant sellers in December and

¹ Key early research in this area includes Rozeff and Kinney (1976), Banz (1981), Reinganum (1983), and Keim (1983).

significant buyers in January. Dyl and Maberly (1992) examine odd-lot trading, as a measure of individual investor trading actions, and find that odd-lot sales are relatively higher in December than in January while odd-lot purchases are relatively higher at the beginning of the year than in December. Both of these changes are related significantly to January returns, but Dyl and Maberly are unable to conclude that the trading patterns are linked strongly to tax considerations. Badrinath and Lewellen (1991) analyze a large sample of actual common stock investment round trips undertaken by individual investor customers at a national brokerage house. They find a distinct seasonal pattern in this trading, with a concentration of loss-taking trades occurring late in the year. Badrinath and Lewellen, however, do not test for a link between this trading pattern and January returns.

Taking a different approach from the above studies that concentrate on proxies of individual trading behavior, Eakins and Sewell (1993) examine Ritter's proposal that there is a link between January abnormal returns and institutional ownership. They find that institutions invest mainly in large firms and that the relation between January abnormal returns and the percentage of institutional holdings is negative. The lower the percentage of stock held by institutions, the higher the abnormal return in January. This implies a positive relationship between individual investors' ownership and the January abnormal returns. When Eakins and Sewell test the relationship within quintiles based on firm size, however, the parameter for the institutional ownership variable is significant only in the large firm quintiles (top two) and insignificant in the small firm quintiles (bottom three). They propose that this is due to most small firms having little or no institutional ownership. Thus, it is the evidence from the larger firms on which they are making inferences, even though the large firm groups should have a lower proportion of the worst performing stocks that are the most likely to be candidates for tax-loss selling. [See Chopra, Lakonishok, and Ritter (1992) for support of this point.]

In this study, rather than examining a cross-section of all firms around the turn of the year, we specifically find and analyze those firms with large price declines that are targets for tax loss selling. In this way, we construct a more direct test of the link between tax-loss selling, individual ownership concentration, and abnormal returns in January.

DESCRIPTION OF DATA

The initial sample of firms includes companies listed on the New York Stock Exchange (NYSE) and the American Stock Exchange (AMEX) that have returns data available from the daily return tapes prepared by the Center for Research in Security Prices (CRSP). In order to examine stocks that have a high potential for tax-loss selling, we isolate those stocks that exhibit large losses prior to the end of the calendar year. For each year, 1988 through 1991, raw returns are cumulated over the last six months of the year for common shares of all firms for which returns data are available.² Raw returns are used because the entire actual loss (negative return) is used in determining the allowable

² As an alternative approach, holding period returns (rather than accumulated returns) are calculated as the basis for selecting the stocks with the largest price decline. While the sample firms included are slightly different, the results from the tests conducted are essentially identical to those reported in the paper. Further, raw returns are cumulated over the entire calendar year, instead of only six months, as another approach for identifying the largest losers. Again the sample reflects minor firm differences, but the results obtained with this sample are also virtually identical to the results shown in this paper.

tax write-off, rather than a market-adjusted or market-and-risk-adjusted return. Stocks are ranked on the basis of these six month raw returns, and the 100 stocks with the lowest returns (largest price declines) are selected from each year. These stocks are referred to as having a high potential for tax-loss selling (high PTS).

Reinganum (1983) and Keim (1983) find that the majority of the January abnormal return occurs in the first five days of the month. Thus, for each of the high PTS firms, the following January's abnormal return is calculated over both the full month and over the first five days of the month.³ Abnormal returns are calculated as market-adjusted returns and as market-and-risk-adjusted returns. Market-adjusted abnormal returns are calculated as the individual security return minus the NYSE/AMEX equally-weighted CRSP index return. The market-and-risk-adjusted abnormal returns are estimated using the market model:

$$(1) AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$$

where:

- AR_{it} = Abnormal return for firm i on day t ;
- R_{it} = Return for firm i on day t ;
- α_i, β_i = OLS estimated regression parameters; and
- R_{mt} = The CRSP equally weighted market portfolio return on day t .

The OLS regression parameters for the market model are calculated over three different time periods:

- The 100 days before the return rank period (i.e., 100 days prior to July of the year in which the PTS calculation is made);
- The last 100 days of the year prior to the January under examination (i.e., during the raw return rank period); and
- The 100 days following the January test period.⁴

Because the results are essentially the same using all four methods, we only present and discuss results based on market-adjusted returns and market model returns calculated with the first method described above.

Institutional ownership data are obtained from *Standard & Poor's Security Owners Stock Guide* (which reports institutional holdings data from Vickers Stock Research Corp.) at the end of each year, 1988 through 1991. The percent of institutional ownership

³ The high PTS firms are selected from the last six months of each year, for the four years 1988 to 1991. The January abnormal returns are calculated in the years 1989 through 1992. Thus, a total of four turn-of-the-year periods are examined.

⁴ Market model parameters are calculated over three different time periods since various research has shown parameters to change substantially around extreme event periods. [See Chan (1988), for example.] Thus, we select time periods before the beginning of the ranking period, during the raw return ranking period, and following the ranking and January return test period. Our results appear robust to different parameter estimation periods.

for each firm is calculated as the total shares owned by institutions divided by the total firm shares outstanding.

From the original 400 firms selected for having high PTS, firms are deleted if data are not available for calculating either market model parameters, abnormal January returns, or the percentage of institutional ownership. As a result, the final sample consists of 364 observations.

ANALYSIS AND FINDINGS

If Ritter's (1988) tax-loss selling explanation is correct, we expect to find a relation between January abnormal returns, the level of individual ownership of a stock, and firm size. In particular, for stocks that have experienced large declines prior to the end of the year (high PTS), the rebound that they experience in January should be larger, the larger the proportion of individual shareholders. Further, for our results to be consistent with historical findings that the January effect concentrates in small firms, January abnormal returns in our sample should also bear a negative relationship to firm size.⁵

To test for these relationships, the following OLS regression is run on the sample of high PTS firms:

$$(2) \text{ CAR}_{it} = \alpha_0 + \alpha_1 \text{ PCTINST}_i + \alpha_2 \text{ SIZE}_i + \varepsilon_{it}$$

where:

CAR_{it} = The cumulative abnormal return (over either the first five days of January or the entire month of January);

PCTINST_i = The percentage of institutional ownership in firm i ; and

SIZE_i = The market value of equity at year end for firm i .⁶

Results of the regressions are presented in Table 1. Using the cumulative abnormal return based on either market-adjusted returns or the market model and calculated over either the first five days of January or the full month of January reveals essentially the same significant relationships.⁷ There is a significant negative relation between the level of institutional ownership and the abnormal return in January. This implies a positive relationship between the level of individual investor ownership and the abnormal return in January. This is consistent with the idea that tax-loss selling, primarily by individuals, and stock repurchases after the first of the year play a key role in the abnormal returns

⁵ Including both the percentage of institutional ownership and size also allows us to distinguish the impact of these two variables. Eakins and Sewell (1993) find both variables to be significant in their study, implying that they are not necessarily proxies for each other.

⁶ In addition to the market value of equity, we also conduct tests using the natural log of the market value of equity as the measure for size. Because results are qualitatively the same for both measures, we report only those using the raw market value of equity.

⁷ To test for multicollinearity in the regression models, variance inflation factors (VIFs) and condition numbers are computed and examined. Neither test suggests any potential estimation problems related to multicollinearity. Multicollinearity generally is considered to be a problem when the VIF is greater than 10 or the condition number exceeds 20. In our sample, the VIF is 1.1444 and the maximum condition number is 3.0307.

Table 1—Regression Results^a

Dependent Variable	Estimated Coefficients (t-statistics in parentheses)			R-Square
	Intercept	Percent Institutional Ownership	Size	
Based on Market-Adjusted Returns				
CAR ₁₋₅	0.174 (7.966)**	-0.266 (-3.140)**	-0.022 (-2.014)**	0.055
CAR _{JAN}	0.242 (7.719)**	-0.449 (-3.754)**	-0.030 (-1.947)*	0.068
Based on Market-Model Returns				
CAR ₁₋₅	0.155 (7.662)**	-0.244 (-3.195)**	-0.019 (-2.051)**	0.057
CAR _{JAN}	0.261 (7.679)**	-0.485 (-3.666)**	-0.033 (-1.950)*	0.066

^a The model estimated is:

$$CAR_{it} = \alpha_0 + \alpha_1 PCTINST_i + \alpha_2 SIZE_i + \varepsilon_{it}$$

where:

- CAR_{it} = The cumulative abnormal return (over either the first five days of January (CAR₁₋₅) or the entire month of January (CAR_{JAN}));
PCTINST_i = The percentage of institutional ownership in firm i; and
SIZE_i = The market value of equity at year end for firm i (n = 364)

* Significant at the 10 percent level

** Significant at the 5 percent level

observed in January. In addition, the significant negative relation between firm size and the January abnormal return is consistent with smaller firms experiencing larger January returns. Most important, because these relations are strongly significant within a sample of firms that experienced large losses in the prior year, we do not have to assume that the relationship is valid for firms likely to be candidates for tax-loss selling. By construction, the firms in this study are those with the greatest potential for tax-loss selling by individuals.

While the regression results confirm a negative relation between size and abnormal returns and a positive relation between the level of individual ownership and abnormal returns, it is possible that the high PTS sample that is examined exhibits the hypothesized directional relationships without experiencing positive January abnormal returns. As a simple direct test of this, we split the sample into firms that reverse in January (i.e., have positive abnormal returns) and firms that do not reverse and examine the average size and level of institutional ownership for these groups. Table 2 presents these results. Using abnormal returns for either the first five days in January or the full month of January provides essentially the same results. On average, the firms that reverse are significantly smaller than those that do not reverse. The mean size of the reversal firms is approximately 60 percent smaller than the nonreversal firms. The reversal firms have a significantly lower level of institutional ownership (i.e., higher level of individual own-

Table 2—Test of Difference Between Means*

Panel A: Firm Size

	No. Of Firms	Mean Value: Firm Size (\$000)	Difference In Means Z-Test Value
Based On $CAR_{1.5}$ Reversal	231	38,517	
No Reversal	133	94,181	3.27**
Based On CAR_{JAN} Reversal	219	35,770	
No Reversal	145	93,724	3.57**

Panel B: Percentage Institutional Ownership

	No. Of Firms	Mean Value: Percentage Institutional Ownership	Difference In Means Z-Test Value
Based On $CAR_{1.5}$ Reversal	231	17.09	
No Reversal	133	27.34	5.04**
Based On CAR_{JAN} Reversal	219	16.46	
No Reversal	145	27.45	6.43**

* Test of difference between mean values of firm size (SIZE) and percentage of institutional ownership (PCTINST) for stocks that reverse in January versus stocks that do not reverse in January. Reversal refers to any positive abnormal return in the January period considered. No reversal refers to zero or continued negative abnormal returns in January. $CAR_{1.5}$ is the cumulative abnormal return over the first five days in January. CAR_{JAN} is the cumulative abnormal return over the full month of January.

** Significant at the 5 percent level

ership) than do the nonreversal firms (roughly 40 percent less institutional ownership). Taken together, these findings are consistent with Ritter's tax-loss selling explanation that suggests that the stocks with the greatest surge in demand in January (and thus the ones most likely to experience a positive return rebound) are stocks of smaller firms with higher levels of individual ownership that have incurred large negative returns in the prior year.

CONCLUSION

This study provides one of the most direct tests to date of Ritter's (1988) extension of the tax-loss selling hypothesis, which holds that tax-loss selling is most likely in small firms because these firms largely are owned by individual investors with stronger tax motivation than institutions. Rather than examining a cross-section of all firms, as was done by Eakins and Sewell (1993), we concentrate only on firms that are candidates for tax-loss selling. For firms that experience the largest declines in the last half of the year, we find robust evidence of a strong positive relationship between the level of indi-

vidual investor ownership and the abnormal January return in the following year and a significant negative relationship between firm size and January returns. Further, firms that do experience a rebound in January and have positive abnormal returns are, on average, significantly smaller and have a significantly higher proportion of individual ownership than do firms that do not rebound in January. Overall, this evidence is strongly consistent with the tax-loss selling hypothesis of Ritter.

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