

A Reexamination of Institutions and Individuals at the Turn of the Year

Ken Johnston
Georgia Southern University

Don R. Cox
Appalachian State University

Anthony Barilla
Georgia Southern University

This study reexamines the findings of Sias and Starks (1997). They evaluate the tax-loss selling hypothesis and the window dressing hypothesis as explanations for the turn-of-the-year effect. After controlling for market capitalization, they find that stocks with a greater percentage of individual ownership outperform stocks with a greater percentage of institutional ownership at the turn of the year, consistent with the tax-loss selling explanation. This study reexamines the issue, adjusting for risk and controlling more closely for share price differences, and finds results that support neither hypothesis.

Introduction

Sias and Starks (1997) examine the differences in returns from portfolios dominated by institutional investors and individual investors to distinguish tax-loss selling and the window dressing hypothesis as explanations for the previously documented turn-of-the-year effect. They use two data sets in their study. The first data set consists of return data and the percent of institutional ownership around the turn of the year for firms listed on the NYSE (1978-1992).

Sias and Starks find that, holding size constant, stocks with low institutional ownership have substantially lower returns in the last four days in December and substantially higher returns in the first four days in January than do stocks dominated by institutional investors. These results suggest that tax-loss selling may be a more important influence than window dressing in causing the turn-of-the-year effect. They also break the sample into winner and loser portfolios and find results consistent with previous literature supporting tax-loss selling. They find that loser stocks with low institutional ownership, holding size constant, have substantially lower

returns in the last four days of December and substantially higher returns in the first four days of January than do loser stocks dominated by institutional investors.

Their second data set consists of trader-identified transaction data for the period November 1, 1990 to January 31, 1991. With this data they are able to examine the differences in buying and selling behavior of individuals and institutions. They show that differences in the percentage of institutional and individual ownership are related to differences in marginal (price-setting) trading. Individuals are more important in setting the price for small capitalization-low institutional ownership portfolios and institutions are more important in setting the prices for high institutional ownership portfolios. This is an important result because even if individuals have a higher percent of ownership, institutions could set prices if they have substantially higher turnover. They find that relative institutional holdings is a good proxy for relative institutional trading.

Our extensions to the Sias and Starks research concentrate on three efforts:

- We examine risk-adjusted returns rather than raw returns around the turn-of-the-year,
- We document the existence or absence of significant abnormal January returns, and
- We examine the share price impact on calculated returns (and indirectly, the bid-ask spread).

Previous studies (e.g., Chan 1988) find that extreme winners and losers (tax-loss selling candidates) are subject to risk changes over time. Thus, when examining the January or turn-of-the-year effect, abnormal returns should be employed. This is particularly important to the approach taken by Sias and Starks, because they seek to test if the activities of individual or institutional investors are associated with the systematic movement of prices across the bid-ask spread at the turn of the year. They note that there is evidence that the turn-of-the-year effect is not completely explained by movement across the bid-ask spread. For example, risk changes and information effects may be present (impacting the calculated return) and also may have different impacts on stocks as related to the tax-loss selling and/or window dressing explanations. The use of total (raw) returns does not isolate the bid-ask effect that Sias and Starks are trying to document from other possible explanations for the turn-of-the-year anomaly. Thus, we calculate and examine risk-adjusted abnormal returns, rather than raw returns.

Because both the tax-loss selling and window dressing theories are built around explaining positive abnormal returns in January, it is important to actually demonstrate that these abnormal returns (risk-adjusted) exist. Without specific evidence of risk-adjusted abnormal returns in January, any remaining analysis may have no real significance.

Previous research indicates that the turn-of-the-year effect is influenced by low share price and the effect of the bid-ask spread. The bid-ask spread can impact

returns in two ways—as a real cost of trading, and by imparting a bias to calculated returns. Bid-ask spreads impose a real cost to trading because investors buy at the ask (higher) price and sell at the bid (lower) price. Further, several studies show that bid-ask spreads, as a percent of price, are inversely related to share price.¹ Thus, the spread represents a higher cost for low-priced stocks than it does for high-priced stocks. A bid-ask bias that would overstate calculated returns can result if closing prices are more often recorded at bid prices in December and at ask prices in January. Keim (1989) finds such a pattern around the turn of the year and notes this can result in calculating positive abnormal returns even when prices do not change. This bias is more pronounced for low-priced stocks because, as noted above, the spread represents a larger percentage of the price for low-priced stocks. Consider an example of a stock with a bid price of \$1 and an ask price of \$1 1/8 on December 31. Even with no change in price, a closing December 31 price at the bid and a closing January 2 price at the ask gives the illusion of a 12.5 percent return. If there is a January 2 increase to a bid of \$1 1/8 and an ask of \$1 1/4, the possible bid-ask bounce can give the illusion of a 25 percent return, when nothing at all is really available to investors.

Sias and Starks do not specifically determine if share price is held constant in their market value quintiles to assess if the bid-ask bias of low priced stocks affects their results.² They attempt to address this problem by using price-based quintiles to remove the bid-ask spread bias in small stocks. They then compare returns of securities dominated by individual investors with returns on stocks dominated by institutional investors within each price quintile. It is still possible however, that high institutional ownership stocks in any given price quintile may have different prices from high individual ownership stocks in that price quintile. If so, the influence of the bid-ask bias will not be comparable within that price quintile. Thus, we perform tests to examine whether the price-sorted quintiles truly provide similar price characteristics for both high institutional and high individual ownership portfolios.

Methodology

We reexamine the evidence related to tax loss selling and window dressing as explanations of the turn-of-the-year effect in a manner similar to Sias and Starks, but with adjustments for the items noted above. We select an initial sample of firms from 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 pre-

¹See, for example, Tinic and West (1972), Bhardwaj and Brooks (1992), and Venkatesh (1992).

²In a recent study Johnston and Cox (1998) show that previous research related to tax-loss selling as an explanation for the turn-of-the-year effect may be driven more by market microstructure effect (low priced stocks effect on the bid-ask spread bias) than by economically significant factors.

pared by the Center for Research in Security Prices (CRSP) for the period January 1, 1991 to January 31, 1996. From the CRSP database we collect returns, market value of equity (size), and price data.

January's abnormal return is calculated 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.⁴ The market-and-risk-adjusted abnormal returns are estimated using the market model. The OLS regression parameters for the market model are calculated over two different periods: (1) the last 100 days of the year prior to the January under examination, and (2) the 100 days following the January test period.⁵ Because the results are essentially the same using the different methods of calculating abnormal returns, we only present and discuss results based on the market model returns calculated with the first market model 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.) as of the end of each year. The percent of institutional ownership for each firm is calculated as the total shares owned by institutions divided by the total firm shares outstanding.

Although our study uses five years of data (7,936 firms) instead of the 15 years of data (21,233 firms) in the Sias and Starks study, the sample size of almost 8000 observations is large. Further, on an annual basis our sample is more comprehensive, as we examine companies listed on NYSE and AMEX while Sias and Starks focus on NYSE exclusively. There should not be any systematic bias in this period or between exchanges related to tax-loss selling and window dressing. The turn-of-the-year effect and window dressing hypothesis are active areas of research and investors should be well informed about these potential anomalies.

The data first are sorted into quintiles based on year-end market value. The market value quintiles further are sorted into three portfolios based on the percentage of institutional ownership at year end. Returns are compared for securities dominated by individual investors with returns on stocks dominated by institutional investors within each quintile.⁶ We only examine January's abnormal return, because both the tax-loss selling and the window dressing hypothesis predict positive abnormal

³Previous research indicates that the turn-of-the-year effect is concentrated in the first week of the month.

⁴The results are substantially the same using a value-weighted index and therefore are not shown.

⁵Market model parameters are calculated over two different periods because various research has shown parameters to change substantially around extreme event periods (Chan, 1988). Our results appear robust to different parameter estimation periods.

⁶The middle third is omitted from the analysis.

Table 1—Average Abnormal Return Around the Turn of the Year (Jan. 1, 1991–Jan. 31, 1996)

Sample of firms from companies listed on the New York Stock Exchange (NYSE) and the American Stock Exchange (AMEX). The data first are sorted the quintiles based on market value. These quintiles are further sorted into three portfolios based on the percentage of institutional ownership. The middle third is omitted from the analysis. The returns are compared for securities dominated by individual investors with returns on stocks dominated by institutional investors. January's abnormal return is over the first five days of the month. Abnormal returns are market-and-risk-adjusted returns (t-statistics in parentheses). The market-and-risk-adjusted abnormal returns are estimated using the market model. Institutional ownership data are obtained from *Standard & Poor's Security Owners Stock Guide* as of the end of each year. The percent of institutional ownership for each firm is calculated as the total shares owned by institutions divided by the total firm shares outstanding. In addition, t-tests for differences in mean values for price, market value (MV), and the percent of institutional ownership (Own) are presented.

Size	Institutional Ownership	Jan. Abnormal Return	Price	MV	Own
Smallest	High	-.00080 (-0.20)	9.30	67040.33	.462
Smallest	Low	.04127 (4.14)*	8.97	50561.13	.032
Difference	High-Low	-.04207 (-3.91)*	0.33 (0.58)	16479.20 (8.64)*	.430 (73.39)*
Quintile 2	High	-.01885 (-7.49)*	17.36	217812.50	.634
Quintile 2	Low	-.00181 (-0.71)	16.77	204642.75	.077
Difference	High-Low	-.01704 (-4.76)*	0.59 (0.77)	13169.75 (3.59)*	.557 (97.11)*
Quintile 3	High	-.02618 (-11.59)*	26.45	554137.12	.725
Quintile 3	Low	-.00814 (-3.36)*	23.01	534467.63	.146
Difference	High-Low	-.01804 (-5.45)*	3.44 (4.14)*	19669.49 (2.27)*	.579 (89.05)*
Quintile 4	High	-.02923 (-13.17)*	34.21	1508357.46	.777
Quintile 4	Low	-.01669 (-8.12)*	26.42	1370932.34	.257
Difference	High-Low	-.01254 (-4.15)*	7.79 (8.65)*	137425.12 (4.93)*	.520 (76.94)*
Largest	High	-.02338 (-12.67)*	56.79	6421208.77	.759
Largest	Low	-.02132 (-12.01)*	210.93	11366325.82	.351
Difference	High-Low	-.00206 (-0.81)	-154.14 (-1.84)	-4945117.04 (-7.36)*	.408 (62.71)*

* Significant at the 5 percent level

returns in January. If we find insignificant or negative abnormal returns in the first week of January using both market value and share price to sort the data, that alone puts conclusions of further testing into question.

The data also are sorted into quintiles based on stock price at year end. Again returns are compared for securities dominated by individual investors with returns on stocks dominated by institutional investors. We also test to see if prices within price quintiles are similar, particularly for portfolios dominated by institutional ownership versus portfolios dominated by individual ownership.

Results

Table 1 shows the results when the data first are sorted into quintiles based on market value. Within each quintile, returns are compared for securities dominated by individual investors with returns on stocks dominated by institutional investors. The t-tests for differences in market value are significant in all quintiles. Although significant, these differences are probably not large enough for the small firm effect to cause differences in returns within each size quintile. For all quintiles the t-tests for differences in institutional ownership between low and high institutional portfolios are significant. In these size-based quintiles, price is not held constant, although differences only arise in the larger size quintiles (3 and 4) where small priced stocks are not as prevalent; therefore, microstructure effects should not be a problem here. For both the high and low institutional holdings portfolios, abnormal returns in January are either insignificant or negative. Only in the smallest size sorted quintile do we find any significant positive abnormal returns, in the low institutional ownership subgroup. Although the differences in average price between the high and low institutional ownership subgroups is insignificant, in this quintile, share price still plays a role in generating the positive abnormal return. The smallest size low institutional ownership subgroup has 99 of 529 stocks below \$1. The high institutional ownership subgroup, which has an insignificant abnormal return, has only 17 stocks below \$1. As discussed earlier, the bid-ask bias is more pronounced for low-priced stocks. Removing the stocks with prices below \$1 results in insignificant t-statistics in this quintile. Clearly the bid-ask bias is driving any significance found in the January returns. Because it looks as if there are no actual abnormal positive January returns (and instead only the appearance of an abnormal return being derived from the bid-ask bounce), support for or against either theory is questionable. These results indicate that the support found by Sias and Starks supporting tax-loss selling or window dressing is significantly influenced by their failure to adjust for risk and the bid-ask bias.

To determine if Sias and Starks successfully remove the potential bid-ask bias of low-priced stocks, the data first are sorted into quintiles based on price, and returns are compared for securities dominated by individual investors with returns on stocks dominated by institutional investors. These results are shown in Table 2. Unlike the findings in Table 1, where the significant price differences only occur in the larger size quintiles (3 and 4), the t-tests for differences in price between the high and low institutional ownership groups are significant in all quintiles. Given the prevalence

Table 2—Average Abnormal Return Around the Turn of the Year (Jan. 1, 1991—Jan. 31, 1996)

Sample of firms from companies listed on the New York Stock Exchange (NYSE) and the American Stock Exchange (AMEX). The data are first sorted into quintiles based on price at year end. These quintiles are further sorted into three portfolios based on the percentage of institutional ownership. The middle third is omitted from the analysis. The returns are compared for securities dominated by individual investors with returns on stocks dominated by institutional investors. January's abnormal return is over the first five days of the month. Abnormal returns are market-and-risk-adjusted returns (t-statistics in parentheses). The market-and-risk-adjusted abnormal returns are estimated using the market model. Institutional ownership data is obtained from *Standard & Poor's Security Owners Stock Guide* as of the end of each year. The percent of institutional ownership for each firm is calculated as the total shares owned by institutions divided by the total firm shares outstanding. In addition, t-tests for differences in mean values for price, market value (MV), and the percent of institutional ownership (Own) are presented.

Price	Institutional Ownership	Jan Abnormal Return	Price	MV	Own
Smallest	High	-.00676 (-1.63)	6.21	206730.15	.483
Smallest	Low	.05461 (4.17)*	4.85	161144.71	.038
Difference	High-Low	-.06137 (-4.47)*	1.36 (7.85)*	45585.45 (2.08)*	.445 (74.71)*
Quintile 2	High	-.01033 (-3.98)*	13.80	602516.50	.633
Quintile 2	Low	.00079 (0.37)	12.96	313741.84	.052
Difference	High-Low	-.01113 (-3.30)*	0.84 (5.93)*	288774.66 (7.37)*	.581 (103.25)*
Quintile 3	High	-.02347 (-9.54)*	21.78	1187286.74	.721
Quintile 3	Low	-.01137 (-5.21)*	21.36	1086904.74	.179
Difference	High-Low	-.01211 (-3.68)*	0.42 (2.67)*	100382.00 (0.53)*	.542 (87.84)*
Quintile 4	High	-.02508 (-12.64)*	32.06	2041583.99	.754
Quintile 4	Low	-.02026 (-10.42)*	31.15	1858773.56	.248
Difference	High-Low	-.00482 (-1.73)	0.91 (4.08)*	182810.38 (1.10)	.506 (80.53)*
Largest	High	-.02970 (-15.85)*	61.40	4631222.76	.782
Largest	Low	-.02315 (-13.38)*	224.47	8882068.84	.323
Difference	High-Low	-.00656 (-2.57)*	-163.08 (-1.97)*	-4250846.08 (-5.83)*	.459 (59.54)*

* Significant at the 5 percent level

of small priced stocks in the smallest price quintile, microstructure effects could influence these results. Our findings are consistent with the bid-ask bias in small stocks, because only in the smallest price sorted quintile do we find any significant

positive abnormal returns. Those returns are in the low institutional ownership subgroup.

The smallest price low institutional ownership subgroup has 105 of 529 stocks below \$1 per share, while the high institutional ownership subgroup has only 16. Removing the stocks below \$1 does not eliminate the significance found, but there can still be a significant bid-ask bias affecting stocks greater than \$1 (although at a decreasing rate). One way to try to determine if the bid-ask bias is affecting this subgroup is to group by share price. The average price in the low institutional ownership subgroup is \$4.85 with a maximum price of \$9.625. The average abnormal return of the 105 stocks in the smallest price low institutional ownership subgroup is .2193 and highly significant; the average price is \$0.4193. The average return of the largest 105 stocks in the smallest price low institutional ownership subgroup is .000361 and is insignificant; the average price is \$9.0429. This indicates that the bid-ask bias is driving any significance found in the January returns.

Conclusions

This study reexamines the findings of Sias and Starks (1997). They evaluate the tax-loss selling hypothesis and the window dressing hypothesis as explanations for the tendency for prices to move systematically across the bid-ask spread (turn-of-the-year effect). They find that, after controlling for capitalization, stocks with a greater percentage of individual ownership outperform stocks with a greater percentage of institutional ownership. They state that their results are more consistent with tax-loss selling as an explanation for the turn-of-the-year effect.

This study adds to the methodology of Sias and Starks by examining returns adjusted for risk and by more closely controlling and testing for microstructure effects (bid-ask bias) that may influence the findings. When these problems are addressed, no abnormal returns are found in January, and we find evidence of the large impact of low-price stocks on generating illusory January returns. Because both the tax-loss selling and window dressing hypothesis result in positive abnormal returns in January, the results from these tests do not provide real evidence to support either hypothesis. More broadly, our results suggest that studies that do not completely control for the impact of the bid-ask bias may appear to offer conclusions that are questionable.

References

1. Bhardwaj, R.K., and L.D. Brooks, "The January Anomaly: Effects of Low Share Price, Transaction Costs, and Bid-Ask Bias," *Journal of Finance*, 47 (1992), pp. 553-575.
2. Chan, K.C., "On the Contrarian Investment Strategy," *Journal of Business*, 61 (1988), pp. 147-163.
3. Griffiths, M., and R. White, "Tax-Induced Trading and The Turn of the Year Anomaly: An Intraday Study," *Journal of Finance*, 48, (1993), pp. 575-598.

4. Johnston, K., and D.R. Cox, "The January Effect is Not Driven by Tax Loss Selling," *Journal of Investing*, forthcoming (1998).
5. Keim, D.B., "Trading Patterns, Bid Ask Spreads and Estimated Security Returns: The Case of Common Stocks at Calendar Turning Points," *Journal of Financial Economics*, 18 (1989), pp. 75-97.
6. Sias, R., and L. Starks, "Institutions and Individuals at the Turn-of-the-Year," *Journal of Finance*, 52, no. 4 (1997), pp. 1543-1562.
7. Tinic, S.M., and R. West, "Competition and The Pricing of Dealer Services," *Journal of Financial and Quantitative Analysis*, 7 (1972), pp. 1707-1728.
8. Venkatesh, P.C., "Empirical Evidence on The Impact of The Bid-Ask Spread on The Characteristics of CRSP Daily Returns," *Journal of Financial Research*, 15 (1992), pp. 113-125.