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Institutional Investors, Analyst Following, and the January Anomaly

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1. INTRODUCTION

Historically average stock returns in January are higher than for the rest of the year. Empirical findings show that the January anomaly is related to firm size and share price, with returns being higher in January for small firms and firms with low stock prices.[1] Although no explanation for the seasonal pattern in stock prices is universally accepted, two hypotheses have received a great deal of attention: the tax-loss selling hypothesis and the gamesmanship hypothesis. According to the tax-loss selling hypothesis, returns are high on some stocks because tax-loss selling diminishes in January (Reinganum, 1983; and Roll, 1983). At year-end, investors sell stocks that have fallen in price over the year in order to realize capital losses. In contrast, the gamesmanship hypothesis suggests that institutions rebalance portfolio holdings in order to 'window dress' or influence performance-based remuneration (Haugen and Lakonishok, 1988). The tax-loss-selling hypothesis centers on how the

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behavior of individual investors affects market dynamics whereas the focus of the gamesmanship explanation is on institutional investors. In either case, the stock of small and risky firms is subject to selling pressure at year-end which reverses in January and is replaced by buying pressure. The two hypotheses have received some empirical support, though it is not clear that investors can profit from the January anomaly because of transactions costs and the bid-ask bias (Bhardwaj and Brooks, 1992).

Both the tax-loss-selling and the gamesmanship hypotheses suggest that average stock returns are higher in January for small, risky firms. However, only the gamesmanship hypothesis further predicts that the average returns for highly visible firms are lower in January as compared to the other months of the year. Although empirical investigations have focused on explaining the seasonal pattern in the stock of small firms or those with low stock prices, seasonality in returns is not a phenomenon observed only for these firms. In this paper we document strong seasonality in excess returns for a sample of widely followed firms, regardless of market capitalization or the degree of uncertainty surrounding the firm. This seasonality, however, is opposite in direction to that reported for small, less visible, low stock price firms. Our sample firms have unusually *low* excess returns in January and returns adjust upward over the remainder of the year. This result holds even for the lowest quartile of sample firms based on market value and provides empirical support for the gamesmanship hypothesis. In addition, the results suggest that firm visibility, instead of firm size or price, drives excess returns in January. Institutions buy lesser-known, risky, or poorly performing stock at the start of the year and rebalance their portfolios near year end to include the stock of more visible, highly followed firms.

The remainder of this paper is organized as follows. The following section provides development of the research hypothesis. The third section discusses the sample selection methods and the fourth section reports the empirical results. The final section provides a discussion of the results and direction for future research.

2. HYPOTHESIS DEVELOPMENT

One of the most puzzling mysteries in Finance is the finding that the average stock return in the month of January is higher than in any other month of the year, the so-called January effect. This seasonal pattern has been documented in the US (Rozeff and Kinney, 1976; and Keim, 1983) and around the world (Gultekin and Gultekin, 1983; and Berges, McConnell and Schlarbaum, 1984). Although many have attempted to explain this empirical finding, no theory is universally accepted. Proposed explanations include the tax-loss selling hypothesis and the gamesmanship hypothesis.

The tax-loss selling hypothesis explains the January effect as follows. Investors sell stock whose prices have already fallen during the year in order to realize capital losses and take advantage of the resulting tax benefits. This selling pressure depresses the prices of these stocks even further. In January selling pressure diminishes and stock prices return to equilibrium values (Roll, 1983).

A second explanation of the observed seasonality in returns is the gamesmanship hypothesis. Some argue that institutional investors systematically rebalance portfolio holdings throughout the year in order to 'window dress' or affect performance-based remuneration (Haugen and Lakonishok, 1988; and Lakonishok, Shleifer, Thaler and Vishny, 1991). Empirical evidence in Canada and the US provides some support for this argument (Athanassakos, 1992; and Cuny, Fedenia and Haugen, 1996). Large institutional investors are net buyers of risky securities at the beginning of the year when they are less concerned about including well-known securities in their portfolios or they are trying to outperform benchmarks. Over the year, portfolios are rebalanced when returns are locked in. Portfolio managers remove lesser-known, risky, or poorly performing stock from their portfolios and replace these stocks with well-known and less risky stocks with solid recent performance. Additional evidence of selling pressure at year-end and buying pressure in January is provided by Ritter (1988).

Previous empirical studies have documented that the January effect is a small firm, low stock price effect. For example, Keim (1983) finds that roughly one-half of the annual small firm premium documented by Banz (1981) occurred during the month of January. Blume and Stambaugh (1983) also report evidence that is consistent with the conclusion that the size effect is concentrated in January. Haugen and Lakonishok (1988) conclude that something causes upward pressure on prices of small firms' stock at the turn of the year which does not seem to affect large capitalization stocks. This small firm, low stock price effect is consistent with both the tax-loss selling and gamesmanship hypotheses.

In this paper, we examine whether seasonality is present in the returns of highly followed firms. If the gamesmanship hypothesis is correct, not only should we observe seasonality in the returns of small firms and low-priced stock, but also in the returns of highly followed firms. As portfolio managers sell lesser-known or poorly performing stock during the year, they buy the stock of firms that are well-known. At the end of the year, managers do not want their clients to see '"marginal" investments in the portfolio they've never heard of before' (Haugen and Lakonishok, 1988, p. 97). Instead, they rebalance the portfolio so that it contains stock in highly visible and less risky firms. Thus, we expect to observe seasonality in returns for a sample of firms that are highly followed but opposite in direction to that reported for samples of small, low stock price firms. Average return in January is expected to be lower than in other months of the year. On the other hand, if the January effect results from tax-loss selling, we expect to find no seasonality in the stock returns of firms with high visibility. Tax-loss-selling is associated with individual investors who tend to hold low capitalization stocks (Ritter, 1988). Institutional investors, on the other hand, concentrate their portfolios on larger, more visible firms (Blume and Friend, 1986). Thus, in general, the stock of highly visible firms should not be subject to any buying or selling pressure for the purposes of tax-loss-selling.

Our research hypothesis is:

H_0: There is no seasonal pattern in the returns of highly visible firms.

The results of our examination of this hypothesis provide insight into why previous studies have reported a positive relationship between seasonality and stock price or seasonality and firm size.

Firms with low stock prices and small capitalization are likely to have little visibility. These are the stocks institutional investors sell at year-end and/or buy after the turn of the year according to the gamesmanship hypothesis.

To test the research hypothesis that there is no seasonality in the returns of highly visible firms, we choose a sample of highly followed firms. We use the number of analysts following the firm in order to differentiate visible firms: if a firm is followed by many professional financial analysts it is likely to be highly visible. Higher analyst following is associated with greater information acquisition (Bhushan, 1989) and reduced adverse selection costs (Brennan and Subrahmanyam, 1995). Because analysts monitor managers' decisions, mismanagement is likely to be less prevalent for highly followed firms. Furthermore, investors are more likely to trade the securities they are familiar with. Thus, in acting as information intermediaries, security analysts promote firm visibility (Chung and Jo, 1996).

3. SAMPLE SELECTION

Analyst following, forecasts, and earnings data are obtained from the Institutional Brokers Estimate System (IBES) for each year of the 1980 through 1996 sample period. The firms included in the final sample passed through several filters. The criteria follow:

(1) The CRSP NYSE/AMEX database includes returns data.
(2) At least three individual forecasts determine the median forecast of earnings per share.
(3) The IBES database includes consensus forecasts for at least nine years starting in 1980 and for twenty consecutive months starting in June of the year prior to the forecast year and ending in January of the subsequent year.
(4) The company's fiscal year ends in December.

The final sample contains 120,369 observations for 455 firms representing 29 industries classified by two-digit Standard Industrial Classification (SIC) code. We compute monthly returns by compounding the daily returns for each firm using holding-period returns and excess return series. We obtain daily raw and beta excess returns from the CRSP database.[2]

In Table 1 we provide sample firm information for the overall sample, as well as quartiles determined by the standard deviation of analysts' earnings forecasts (in Panel A) and quartiles determined by market value (in Panel B). We report sample statistics for these two sets of quartiles in order to shed light on whether there are differences in firm uncertainty or across firm size.[3] Average analyst following is substantial for the overall sample and all quartiles. Consistent with prior research, the mean of the consensus forecasts exceeds the mean of actual earnings suggesting that analysts are optimistic in their earnings predictions for the overall sample (e.g., Ali, Klein and Rosenfeld, 1992). Table 1 also reports the mean of the standard deviation of the individual analysts' forecasts scaled by price used to construct the consensus forecast (σ(FEPS)). Finally, the table reports the

Table 1

Summary Statistics

Panel A: Means for the Full Sample and Quartiles Determined by the Standard Deviation of Analysts' Earnings Forecasts (σ(FEPS)) Scaled by Price

	Overall	*Q1 (Low)*	*Q2*	*Q3*	*Q4 (High)*
Number of analysts	16.7753	18.1711	16.6921	16.6817	15.5542
Forecasted earnings	2.1074	1.8070	2.1211	2.3122	2.1898
Actual earnings	1.7844	1.7694	2.0035	2.0381	1.3267
σ(FEPS)	0.0100	0.0018	0.0040	0.0073	0.0270
Price	24.6631	25.2044	24.9595	25.3624	23.1249
Market Value (in millions)	4,251.8500	6,544.4800	4,037.8000	3,888.2500	2,461.0900

Panel B: Means for Quartiles Determined by Market Value

	MV1 (Low)	*MV2*	*MV3*	*MV4 (High)*
Number of analysts	10.3979	14.7930	18.7075	25.2432
Forecasted earnings	1.2158	1.8937	2.7379	2.4700
Actual earnings	0.7073	1.6367	2.4811	2.2793
σ(FEPS)	0.0166	0.0089	0.0064	0.0055
Price	16.5629	23.1195	33.2246	31.5443
Market Value (in millions)	457.1460	1,194.2300	2,582.0200	12,777.6800

mean price and market value. Given that these firms are very visible and highly followed, many are large. Note, however, that a large number of sample firms are of small to moderate capitalization. We get some perspective on size by considering the size of firms included in small cap indexes. For example, the Wilshire Small Cap Index as of June 30, 1993 included 250 firms with mean market value \$511 million.[4] The smallest firm included in the Wilshire index had market capitalization of \$89 million and the largest \$1,461 million suggesting that many of our sample firms can be classified as small.[5]

4. METHODOLOGY AND EMPIRICAL RESULTS

In order to test our research hypothesis and examine the seasonal pattern in returns for the sample of highly followed firms, we estimate the pooled cross-sectional, time series model:

$$R_{i,t} = \alpha_0 + \sum_{j=2}^{12} \alpha_j D_{j,t} + e_{i,t}$$

where $R_{i,t}$ is the time t (excess or raw) return for firm i and $D_{j,t}$ is a dummy variable taking the value of one for month j and zero otherwise. The constant, α_0, is the average sample return in January and the coefficients of the dummy variables, α_j, measure differences in monthly returns from the January base. Seasonal dummy variables are reported for the overall sample, as well as quartiles determined by the standard deviation of analysts' earnings forecasts scaled by price (σ(FEPS)).[6] This standard deviation is a measure of analysts' uncertainty regarding the firm. Ackert and Athanassakos (1997) show that analysts' optimism regarding a firm's earnings is related to the level of uncertainty surrounding the firm and that portfolio strategies based on these observations can generate abnormal returns. We examine seasonality by quartile to see if a relationship exists between the level of uncertainty and seasonality. We first rank the firms in ascending order according to σ(FEPS) and then divide them into four quartiles of equal size. The first quartile (Q1) contains the firms with the lowest standard deviation and the fourth (Q4) contains those with the highest standard deviation. We partition into quartiles using the standard deviation for June of the year prior to the forecast year, rather than the standard deviation over the entire sample period. As a result, a firm's membership in a quartile can vary from forecast year to forecast year as its standard deviation changes over time.

Table 2 reports the results of Ordinary Least Squares (OLS) regressions for the raw returns series. The table reports ordinary t-statistics below each estimated dummy coefficient. For the overall sample, the typical seasonal pattern in returns is evident. Returns in January are higher than the remainder of the year. The January dummy is positive and significantly different from zero and all other dummies are negative, though not all are significant. The next to last row reports an F-statistic which tests the null hypothesis of no difference across months. The null hypothesis is rejected at the 1% significance level in all cases. The final row of Table 2 reports a nonparametric Brown-Mood median test which provides an approximate χ^2-test and does not rely on normality. Again the null hypothesis of no seasonal pattern is strongly rejected. An examination of the estimates for the quartiles by standard deviation is not suggestive of a relationship between uncertainty and seasonality.[7]

Table 3 reports the results of OLS regressions for excess returns series.[8] Strong seasonality in excess returns is documented: January returns are significantly lower than in all other months. Thus, we reject the null hypothesis that there is no seasonal pattern in the returns of highly visible firms. The pattern holds across the four quartiles, though not every month's dummy differs significantly from zero. This pattern in returns is opposite to that reported for samples of small, low-priced stock. Rather than earning positive abnormal returns in January, the sample of highly-followed firms earned *negative* abnormal returns.

To investigate whether there is a relationship between firm size and seasonality for our sample of highly followed firms, we also estimated dummy variable regressions for each market value quartile. Clearly visibility and firm size are closely related. Thus, our sample contains many large firms. Keim (1983) showed that the average excess return for large firms is negative in January. However, our sample also contains many firms with relatively moderate capitalization as the sample statistics reported in Table 1 suggest.

Table 2

Tests for Monthly Seasonal Effects in Raw Returns

Month	*Overall*	*Q1 (Low)*	*Q2*	*Q3*	*Q4 (High)*
January	0.0262	0.0149	0.0222	0.0262	0.0345
	(24.06)**	(6.30)**	(11.41)**	(13.10)**	(14.58)**
February	−0.0033	0.0068	0.0026	−0.0038	−0.0120
	(−2.14)*	(2.04)*	(0.95)	(−1.35)	(−3.53)**
March	−0.0088	0.0036	−0.0077	−0.0121	−0.0125
	(−5.71)**	(1.11)	(−2.80)**	(−4.21)**	(−3.58)**
April	−0.0189	−0.0084	−0.0128	−0.0193	−0.0283
	(−12.22)**	(−2.67)**	(−4.66)**	(−6.67)**	(−8.06)**
May	−0.0036	0.0103	−0.0007	−0.0050	−0.0117
	(−2.32)*	(3.31)**	(−0.24)	(−1.72)	(−3.32)**
June	−0.0190	0.0014	−0.0133	−0.0206	−0.0362
	(−12.25)**	(0.47)	(−4.87)**	(−7.06)**	(−10.03)**
July	−0.0201	−0.0023	−0.0144	−0.0177	−0.0395
	(−12.95)**	(−0.77)	(−5.27)**	(−6.09)**	(−10.77)**
August	−0.0048	0.0029	0.0005	−0.0034	−0.0120
	(−3.12)**	(0.95)	(0.18)	(−1.15)	(−3.23)**
September	−0.0362	−0.0179	−0.0300	−0.0369	−0.0562
	(−12.37)**	(−6.04)**	(−11.03)**	(−12.54)**	(−14.74)**
October	−0.0276	−0.0041	−0.0208	−0.0298	−0.0552
	(−17.83)**	(−1.38)	(−7.65)**	(−10.03)**	(−14.37)**
November	−0.0127	0.0031	−0.0078	−0.0131	−0.0288
	(−8.18)**	(1.05)	(−2.85)**	(−4.38)**	(−7.42)**
December	−0.0010	0.0151	0.0027	−0.0038	−0.0150
	(−0.62)	(5.28)**	(0.98)	(−1.23)	(−3.73)**
F-statistic	108.93**	23.20**	28.70**	29.07**	42.88**
χ^2-statistic	683.39**	190.63**	165.90**	181.45**	247.36**

Notes:
The table reports the results of dummy OLS regressions for a sample of returns for the 1980 through 1996 time period. Seasonal dummy variables are estimated for the overall sample as well as quartiles determined by the standard deviation of analysts' earnings forecasts scaled by price. The table reports ordinary *t*-statistics in parentheses below each estimated seasonal dummy and, in the final two rows, *F*- and χ^2-tests of the null hypothesis of no differences across months.
** Significant at the 1% level.
* Significant at the 5% level.

Table 3

Tests for Monthly Seasonal Effects in Excess Returns

Month	*Overall*	*Q1 (Low)*	*Q2*	*Q3*	*Q4 (High)*
January	−0.0233	−0.0282	−0.0270	−0.0233	−0.0182
	(−25.99)**	(−15.21)**	(−16.92)**	(−14.02)**	(−9.18)**
February	0.0123	0.0163	0.0167	0.0123	0.0073
	(9.69)**	(6.29)**	(7.42)**	(5.21)**	(2.55)*
March	0.0157	0.0214	0.0161	0.0136	0.0148
	(12.27)**	(8.53)**	(7.13)**	(5.73)**	(5.05)**
April	0.0193	0.0251	0.0252	0.0182	0.0127
	(15.14)**	(10.22)**	(11.20)**	(7.56)**	(4.30)**
May	0.0204	0.0270	0.0238	0.0199	0.0148
	(16.02)**	(11.07)**	(10.61)**	(8.27)**	(4.98)**
June	0.0223	0.0358	0.0274	0.0203	0.0096
	(17.51)**	(15.00)**	(12.19)**	(8.34)**	(3.17)**
July	0.0228	0.0332	0.0275	0.0243	0.0094
	(17.90)**	(14.05)**	(12.21)**	(10.02)**	(3.04)**
August	0.0266	0.0284	0.0322	0.0285	0.0209
	(20.80)**	(12.12)**	(14.42)**	(11.62)**	(6.71)**
September	0.0190	0.0292	0.0238	0.0184	0.0062
	(14.90)**	(12.59)**	(10.66)**	(7.50)**	(1.93)
October	0.0299	0.0466	0.0367	0.0270	0.0069
	(23.42)**	(20.26)**	(16.37)**	(10.92)**	(2.14)*
November	0.0203	0.0290	0.0247	0.0204	0.0082
	(15.86)**	(12.72)**	(10.99)**	(8.15)**	(2.50)*
December	0.0218	0.0306	0.0252	0.0202	0.0111
	(17.03)**	(13.66)**	(11.21)**	(7.94)**	(3.28)**
F-statistic	70.48**	47.10**	33.96**	19.25**	5.76**
χ^2-statistic	514.92**	331.66**	225.43**	125.31**	32.79*

Notes:
The table reports the results of dummy OLS regressions for a sample of excess returns for the 1980 through 1996 time period. Excess returns are calculated using portfolio rankings determined by beta. Seasonal dummy variables are estimated for the overall sample as well as quartiles determined by the standard deviation of analysts' earnings forecasts scaled by price. The table reports ordinary *t*-statistics in parentheses below each estimated seasonal dummy and, in the final two rows, *F*- and χ^2-tests of the null hypothesis of no differences across months.
** Significant at the 1% level.
* Significant at the 5% level.

The results reported in Table 4 indicate that the pattern does not vary across market value quartiles. In addition, within each market value quartile, we estimated the dummy variables regression for each standard deviation quartile. As discussed previously, the standard deviation quartiles are determined by the standard deviation of analysts' forecasts standardized by price which measures the amount of uncertainty surrounding the firm. Tables 5 and 6 report the results for the largest and smallest market value quartiles. For the large firms, the returns pattern discussed previously is observed for each standard deviation quartile: returns in January are lower than the rest of the year. Even for the smallest market value quartile reported in Table 6 the pattern holds, though the nonparametric statistics are not consistently significant for all standard deviation quartiles. The high uncertainty quartile (Q4) is our sample cross-section with the lowest analyst following, smallest market value, and highest uncertainty.[9] Regardless, the seasonal return pattern in Table 6 does not resemble the usual seasonal pattern reported for small firms.

5. DISCUSSION OF RESULTS AND CONCLUSION

This paper documents that seasonality in returns is not a phenomenon observed only for small firms' stock or those with low prices. For a sample of widely-followed firms strong seasonality in excess returns is reported. In contrast to results reported by previous studies of seasonal returns patterns in the stock of small, low stock price firms, the firms in our sample have unusually *low* excess returns in January and returns adjust upward over the remainder of the year. This result holds across uncertainty and market value quartiles. Thus, once we control for visibility, market value and uncertainty do not appear to be important determinants of seasonality.

Explanations for observed seasonal patterns in stock prices can be evaluated in light of these results. The tax-loss-selling hypothesis asserts that high returns in January on small firm, low-priced stock results from selling pressure at year-end. We expect no seasonality in the stock of large firms if this hypothesis explains seasonal patterns. However, under the gamesmanship

Table 4

Tests for Monthly Seasonal Effects in Excess Returns:
Market Value Quartiles

Month	*Overall*	*MV1 (Low)*	*MV2*	*MV3*	*MV4 (High)*
January	−0.0233 (−25.99)**	−0.0186 (−8.23)**	−0.0220 (−10.88)**	−0.0254 (−13.86)**	−0.0264 (−15.59)**
February	0.0123 (9.69)**	0.0113 (3.45)**	0.0090 (3.14)**	0.0109 (4.20)**	0.0072 (3.02)**
March	0.0157 (12.27)**	0.0133 (4.06)**	0.0154 (5.35)**	0.0156 (6.02)**	0.0173 (7.27)**
April	0.0193 (15.14)**	0.0151 (4.59)**	0.0170 (5.93)**	0.0217 (8.34)**	0.0283 (11.86)**
May	0.0204 (16.02)**	0.0223 (6.76)**	0.0188 (6.54)**	0.0243 (9.39)**	0.0299 (12.53)**
June	0.0223 (17.51)**	0.0172 (5.17)**	0.0204 (7.08)**	0.0283 (10.91)**	0.0270 (11.40)**
July	0.0228 (17.90)**	0.0076 (2.29)*	0.0212 (7.38)**	0.0256 (9.87)**	0.0329 (13.93)**
August	0.0266 (20.80)**	0.0153 (4.61)**	0.0233 (8.11)**	0.0247 (9.51)**	0.0278 (11.73)**
September	0.0190 (14.90)**	0.0089 (2.72)**	0.0143 (5.06)**	0.0213 (8.33)**	0.0275 (11.73)**
October	0.0299 (23.42)**	0.0098 (3.02)**	0.0295 (10.43)**	0.0378 (14.77)**	0.0464 (19.81)**
November	0.0203 (15.86)**	0.0121 (3.73)**	0.0226 (7.97)**	0.0284 (11.09)**	0.0268 (11.38)**
December	0.0218 (17.03)**	0.0203 (6.24)**	0.0203 (7.11)**	0.0239 (9.38)**	0.0226 (9.64)**
F-statistic	70.48**	6.59**	14.07**	27.60**	51.82**
χ^2-statistic	514.92**	47.14**	109.86**	168.64**	299.41**

Notes:
The table reports the results of dummy OLS regressions for a sample of returns for the 1980 through 1996 time period. Excess returns are calculated using portfolio rankings determined by beta. Seasonal dummy variables are estimated for the overall sample as well as quartiles determined by market value. The table reports ordinary *t*-statistics in parentheses below each estimated seasonal dummy and, in the final two rows, *F*- and χ^2-tests of the null hypothesis of no differences across months.
** Significant at the 1% level.
* Significant at the 5% level.

Table 5

Tests for Monthly Seasonal Effects in Excess Returns:
Large Firms by Standard Deviation Quartile

Month	*Overall*	*Q1 (Low)*	*Q2*	*Q3*	*Q4 (High)*
January	−0.0259 (−15.50)**	−0.0428 (−10.69)**	−0.0256 (−7.90)**	−0.0237 (−7.37)**	−0.0207 (−6.53)**
February	0.0068 (2.87)**	0.0208 (3.79)**	0.0040 (0.88)	0.0064 (1.40)	0.0034 (0.74)
March	0.0173 (7.32)**	0.0357 (6.79)**	0.0146 (3.18)**	0.0098 (2.13)*	0.0178 (3.82)**
April	0.0277 (11.72)**	0.0380 (7.28)**	0.0218 (4.80)**	0.0251 (5.47)**	0.0325 (6.90)**
May	0.0298 (12.63)**	0.0524 (10.18)**	0.0283 (6.27)**	0.0237 (5.12)**	0.0247 (5.22)**
June	0.0269 (11.43)**	0.0541 (10.82)**	0.0310 (6.92)**	0.0209 (4.49)**	0.0101 (2.08)*
July	0.0323 (13.73)**	0.0521 (10.45)**	0.0330 (7.35)**	0.0278 (6.01)*	0.0252 (5.13)**
August	0.0269 (11.47)**	0.0401 (8.14)**	0.0254 (5.70)**	0.0263 (5.71)**	0.0255 (5.11)**
September	0.0269 (11.59)**	0.0460 (9.47)**	0.0297 (6.78)**	0.0180 (3.90)**	0.0223 (4.42)**
October	0.0458 (19.73)**	0.0730 (15.13)**	0.0454 (10.37)**	0.0409 (8.80)**	0.0284 (5.59)**
November	0.0263 (11.30)**	0.0521 (10.83)**	0.0241 (5.41)**	0.0208 (4.49)**	0.0137 (2.68)**
December	0.0221 (9.51)**	0.0417 (8.84)**	0.0225 (5.05)**	0.0239 (5.16)**	0.0041 (0.75)
F-statistic	51.42**	29.07**	15.91**	10.89**	9.35**
χ^2-statistic	294.73**	186.71**	74.35**	58.32**	52.55**

Notes:
The table reports the results of dummy OLS regressions for a sample of returns for the 1980 through 1996 time period. Excess returns are calculated using portfolio rankings determined by beta. Seasonal dummy variables are estimated for the overall sample as well as quartiles determined by the standard deviation of analysts' earnings forecasts scaled by price. The table reports ordinary *t*-statistics in parentheses below each estimated seasonal dummy and, in the final two rows, *F*- and χ^2-tests of the null hypothesis of no differences across months.
** Significant at the 1% level.
* Significant at the 5% level.

Table 6

Tests for Monthly Seasonal Effects in Excess Returns: Small Firms by Standard Deviation Quartile

Month	*Overall*	*Q1 (Low)*	*Q2*	*Q3*	*Q4 (High)*
January	−0.0190 (−8.20)**	−0.0263 (−6.61)**	−0.0194 (−5.02)**	−0.0174 (−3.95)**	−0.0162 (−2.93)**
February	0.0118 (3.53)**	0.0167 (3.05)**	0.0114 (2.05)*	0.0121 (1.89)	0.0096 (1.18)
March	0.0137 (4.10)**	0.0158 (2.93)**	0.0155 (2.84)**	0.0081 (1.25)	0.0176 (2.10)*
April	0.0150 (4.48)**	0.0269 (5.05)**	0.0173 (3.10)**	0.0156 (2.42)*	0.0042 (0.50)
May	0.0220 (6.51)**	0.0262 (4.94)**	0.0201 (3.64)**	0.0222 (3.37)**	0.0226 (2.63)**
June	0.0176 (5.20)**	0.0319 (6.07)**	0.0203 (3.59)**	0.0009 (0.15)	0.0223 (2.52)*
July	0.0075 (2.20)*	0.0272 (5.19)**	0.0109 (1.97)*	0.0121 (1.81)	−0.0185 (−2.10)*
August	0.0151 (4.45)**	0.0278 (5.32)**	0.0190 (3.36)**	0.0160 (2.42)*	0.0004 (0.05)
September	0.0096 (2.88)**	0.0212 (4.15)**	0.0120 (2.20)*	0.0104 (1.59)	−0.0035 (−0.40)
October	0.0111 (3.34)**	0.0319 (6.28)**	0.0258 (4.74)**	−0.0021 (−0.32)	−0.0130 (−1.47)
November	0.0123 (3.71)**	0.0245 (4.91)**	0.0139 (2.50)*	0.0101 (1.52)	0.0026 (0.30)
December	0.0200 (6.02)**	0.0354 (7.19)**	0.0193 (3.50)**	0.0231 (3.37)**	0.0015 (0.17)
F-statistic	6.04**	6.84**	2.83**	2.82**	3.60**
χ^2-statistic	37.05**	43.87**	22.70	19.42	29.13*

Notes:
The table reports the results of dummy OLS regressions for a sample of returns for the 1980 through 1996 time period. Excess returns are calculated using portfolio rankings determined by beta. Seasonal dummy variables are estimated for the overall sample as well as quartiles determined by the standard deviation of analysts' earnings forecasts scaled by price. The table reports ordinary *t*-statistics in parentheses below each estimated seasonal dummy and, in the final two rows, *F*- and χ^2-tests of the null hypothesis of no differences across months.
** Significant at the 1% level.
* Significant at the 5% level.

hypothesis, we would expect to see the seasonal pattern reported in this paper for highly-followed firms. As financial institutions rebalance their portfolios in January to sell the stock of highly visible firms acquired toward the end of the previous year, there is downward price pressure in January. This downward pressure is alleviated over the year. Our results suggest that gamesmanship is an important determinant of the seasonal pattern in stock returns.

Earlier studies have shown that seasonality in stock returns is related to stock price and firm size. In this paper, we show that it is visibility that may explain why firm size and stock price matter. Firms with little visibility are likely to be firms with small market values and low stock prices, whereas firms with much visibility tend to be those with large market values and high stock prices. Our sample of highly visible and heavily followed firms contains both large firms and those with more moderate capitalization. Our results suggest that stock return seasonality results from the behavior of institutional investors. These investors rebalance their portfolios by increasing investment in the stock of riskier and less visible firms at the beginning of the year and adjusting the portfolio composition to include more visible firms at year-end.

Institutional investors are a large force in the US market and their behavior has a significant impact on stock price movements. The results reported in this paper indicate that institutional investors are the dominant force in the US market, despite the fact that individual investors own more than one-half of US stocks.[10] Future research may investigate other aspects of institutional investors' behavior and whether these investors are the dominant force in other markets.

NOTES

1 The January anomaly has been documented in many studies including Banz (1981), Blume and Stambaugh (1983), Keim (1983), Jaffe, Keim and Westerfield (1989) and Bhardwaj and Brooks (1992).

2 The CRSP daily excess return is the excess of the daily return above the return on a portfolio of stocks with similar risk. Benchmark portfolios are defined using portfolio rankings determined by beta values (beta excess return) for the entire population of firms included in the CRSP database. Recent evidence supports the use of beta as a measure of risk (Pettengill,

Sundaram and Mathur, 1995). The CRSP database also contains a second excess returns series which uses the standard deviation of holding period returns to form benchmark portfolios. The results reported subsequently are similar when this returns series is used.

3 Ackert and Athanassakos (1997) use the standard deviation of analysts' earnings forecasts to proxy for the level of uncertainty associated with a firm. They show that analysts' earnings forecasts are overly-optimistic for firms with a high level of uncertainty but little or no optimism exists when uncertainty is low.

4 See the July 1993 *Chicago Board of Trade Supplement.*

5 Gitman (1996) provides further perspective on size. He classifies firms with capitalization of less than $500 million as small, $500 to $2 or $3 billion as medium, and more than $2 or $3 billion as large. Fifty percent of our sample firms have capitalization less than $2.38 billion at the end of 1992.

6 We divide the firms into quartiles determined by the standard deviation of the individual analysts' earnings estimates (σ(FEPS)) as of June of the year prior to the earnings forecast.

7 We also examined raw returns by market value quartiles and there was no relationship between capitalization and seasonality.

8 As discussed in note 2, the excess return is the excess of the monthly return above the return on a portfolio of stocks with similar risk. Thus, we compare the returns for our sample of highly followed firms to those of the CRSP benchmark which will contain, on average, firms with lower visibility.

9 See quartiles Q4(High) and MV1(Low) in Table 1.

10 See the *Wall Street Journal,* 'Institutional Share of U.S. Equities Slip' (December 8, 1993, p. C1:4 and C21:2).

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