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THE JANUARY ANOMALY AND ANOMALIES IN JANUARY

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Abstract

Prior research finds that stocks earn significantly higher returns in January compared to other months, with the effect most often attributed to tax-motivated selloffs in December leading to price reversion in January. We examine how patterns in turn-of-the-year performance impact prominent return anomalies. We find that short-term reversals strengthen while momentum changes sign at the turn of the year, and such patterns are more pronounced following years of recession and poor market performance, consistent with tax-loss selling playing a key role. Although additional factors are likely to contribute to the overall effect, no significant change in anomaly performance occurs midyear, casting doubt on window dressing as a primary driving force.

Keywords: January effect, market efficiency, stock market anomalies, tax-loss selling

JEL Codes: G10, G14

1. Introduction

A large body of literature documents significantly higher abnormal stock returns in January, with researchers offering several possible explanations. The "January effect" is most frequently attributed to tax-motivated selloffs in December leading to price reversion in January (see, e.g., Chen and Singal, 2004; D'Mello et al., 2003; Gultekin & Gultekin, 1983; Ligon, 1997; Schultz, 1985). Yet, other studies suggest additional factors may play a significant role, such as institutional window dressing (Kang, 2010; Ng & Wang, 2004), market microstructure (Bhardwaj & Brooks, 1992; Griffiths & White, 1993), or some combination of factors (Berges et al., 1984; Dyl & Maberly, 1992; Haug & Hirschey, 2006). While our evidence is most consistent with a tax-loss harvesting explanation, we focus primarily on the impact of return seasonality on prominent investing styles and anomaly-based strategies.

The January effect is characterized by strong January returns to stocks with poor prior-year performance, and the investment holdings for several of the most well-known anomaly portfolios are also heavily influenced by past performance. For example, momentum strategies buy companies with strong prior year returns and short or avoid firms with poor past returns. Despite the strong empirical support for return momentum (Jegadeesh & Titman, 1993), such strategies run counter to the January effect, which predicts that past loser stocks will outperform in January. By contrast, value strategies invest in stocks with high book-to-market ratios that are likely to have experienced poor prior-year returns on average and whose performance may be augmented by any January rebound. Thus, we aim to address an open question: whether common anomaly strategies maintain their profitability throughout the year or exhibit significant return seasonality.

We explore the January effect's impact on many of the most prevalent anomaly investment strategies, including return-based anomalies whose performance is directly related to year-end tax considerations, such as momentum and short-term reversal, as well as other prominent anomalies, including size, value, profitability, and investment. Our work is most closely related to prior studies documenting the January effect's concentration among certain stocks. For instance, several prior studies find higher January returns to small-cap stocks with gains concentrated at the start of the month (e.g., Berges et al., 1984; Haug & Hirschey, 2006; Roll, 1983; Thaler, 1987). Additionally, Chou et al. (2011) provide evidence that large-cap stocks only earn a value premium in January, while Mashruwala and Mashruwala (2011) find that high-accruals quality stocks outperform low-accruals quality stocks in January but underperform in other months. The findings of Haug and Hirschey (2006) are particularly relevant to our study, as they show a strong and persistent pattern in the size, value, and momentum factor returns in January.

Our paper makes two main contributions to this literature. First, we use both time series and cross-sectional tests to show that while some anomalies are more pronounced during January, such as investment and short-term return reversals, others, such as size, profitability, and momentum change signs for January relative to all other months. Our time series portfolio-level tests measure the abnormal returns to the top, bottom, and long-short anomaly decile portfolios in January and all other months. Our stock-level tests allow us to assess the marginal effect of each anomaly variable while controlling for the others. Second, we perform subsample analyses to shed additional light on the driving force of the January effect's impact on anomaly performance. Notably, while small-cap stocks exhibit significant January abnormal returns across all subsamples, momentum experiences more significant losses, and short-term reversals have more significant gains following recessions and years with below-median stock market performance. Although this does not rule out the possibility of other factors playing an important contributing role, such evidence is consistent with the year-end tax-loss selling explanation and highlights that the January effect is most pronounced following market downturns when many stocks end the year with significant losses.

The rest of the paper is organized as follows. Section 2 describes our dataset, anomaly variables, and methodology; Section 3 reports the results of our empirical tests; and Section 4 concludes.

2. Data and methodology

2.1 Anomaly variables and summary statistics

The anomalies literature contains a growing number of proposed return predictors, yet data mining concerns and lack of out-of-sample replicability cast doubt on the usefulness of many variables (Harvey et al., 2016; Hou et al., 2020). Thus, we limit our focus to a set of predictors that have withstood years of academic scrutiny and remain ubiquitous across the finance literature. Specifically, we include the characteristics for size, value, profitability, and investment that are used to capture patterns in average stock returns in Fama and French (2015). We then add momentum (Asness et al., 2013; Jegadeesh & Titman, 1993; Jegadeesh and Titman, 2001) and short-term reversal (Jegadeesh, 1990; Lehmann, 1990) given their prevalence and ability to capture prior-year return performance, and we winsorize all anomaly variables at their respective 1st and 99th percentiles to limit the influence of outliers. The outcome variable throughout our analyses, EXRET, is defined as the monthly stock return minus the risk-free rate, and we define a time-series variable, JAN, which is set equal to one for observations in the month of January and zero for all other months. Table 1 provides variable definitions.

Our sample period spans from January 1981 to December 2020, and we combine data from CRSP and Compustat to construct our variables. Following prior studies, we match accounting data from fiscal year-end financials in year t-1 with returns from July of year t through June of year t+1 to prevent potential look-ahead bias. We then retain only common equity securities (share codes 10 and 11) for firms traded on NYSE, NASDAQ, or AMEX, and we remove financial firms (SIC codes 6000 to 6999), utility companies (SIC codes 4900 to 4999), and firms with share prices below $1.

Table 1: Variable Definitions

SIZE	Natural log of shares outstanding (SHROUT) times the share price (PRC)
BM	Natural log of the book value of common equity divided by the market value of common equity, where market value equals SHROUT times PRC
ROE	Net income (NI) divided by the book value of equity
INV	Total asset growth from year *t-1* to year *t*, defined as the change in the Compustat total assets variable (AT) scaled by its lagged value
MOM	Cumulative stock return from month *t-12* to *t-2* relative to the period of performance measurement
REV	Stock return (RET) in month *t-1* relative to the period of performance measurement
EXRET	Investment return in excess of the monthly risk-free rate (in percent)
JAN	Indicator variable equal to one if the investment return is measured in January and zero otherwise

Table 2 provides summary statistics for our key variables of interest. Because we winsorize the anomaly variables, the values for the 1st and 99th percentiles reflect the minimums and maximums for each anomaly variable, respectively. The only variables that are not winsorized are EXRET, which represents our dependent variable that captures the actual stock performance in excess of the risk-free rate, and the indicator variable JAN which has a mean value close to one-twelfth by construction. Our full sample's average monthly excess return is 0.726% but with considerable variation at the individual stock level.

Table 2: Summary Statistics

Variable	Mean	Median	Stdev	P1	P5	P95	P99
SIZE	12.401	12.235	2.011	8.507	9.369	16.022	17.651
BM	-7.734	-7.669	0.961	-10.581	-9.463	-6.250	-5.531
ROE	-0.028	0.084	0.561	-3.314	-0.874	0.350	1.813
INV	0.165	0.071	0.421	-0.473	-0.242	0.898	2.512
MOM	0.141	0.066	0.550	-0.789	-0.574	1.130	2.632
REV	0.012	0.003	0.147	-0.385	-0.216	0.263	0.563
EXRET	0.726	-0.009	16.78	-39.65	-22.36	24.99	52.00
JAN	0.086	0.000	0.281	0.000	0.000	1.000	1.000

Note: This table presents summary statistics for our primary variables of interest over the sample period from January 1981 to December 2020. Statistics are reported at the individual stock/company level and include the mean, median, standard deviation, 1st percentile, 5th percentile, 95th percentile, and 99th percentile. All anomaly variables are winsorized at their 1st and 99th percentiles, and only EXRET is reported in percent per month.

2.2 Methodology

To test whether each anomaly exhibits a January seasonality, we first conduct univariate portfolio sorts by dividing all publicly traded firms into deciles by the values of each of our anomaly variables: size (*SIZE*), book-to-market (*BM*), profitability (*ROE*), investment (*INV*), momentum (*MOM*), and short-term reversal (*REV*). Fama French three-factor model alphas to long-short portfolios that buy stocks in the top decile and short stocks in the bottom decile are then used to measure whether a given variable produces an abnormal return. We conduct this analysis separately for the full sample, January months only, and all non-January months only, and we repeat the tests using both value-weighted and equal-weighted portfolios to confirm robustness. Our primary focus is on how each anomaly strategy's abnormal returns vary across the year, as reflected by the alphas (α_i) from Equation 1.

$$EXRET_{i,t} = \alpha_i + b_i MKTRF_t + c_i SMB_t + d_i HML_t + \varepsilon_{i,t} \tag{1}$$

Our second set of tests is performed at the individual stock level, and we test for differential January performance using both cross-sectional and panel regressions. These analyses measure the incremental contribution of each anomaly variable while allowing for different January and non-January coefficients and controlling for other return predictors. In the cross-sectional analysis, we estimate Fama and MacBeth (1973) regressions as shown below in Equation 2,

$$EXRET_{i,t+1} = \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 BM_{i,t} + \beta_3 ROE_{i,t} + \beta_4 INV_{i,t} + \beta_5 MOM_{i,t} + \beta_6 REV_{i,t} + e_{i,t+1} \tag{2}$$

where the regression is estimated separately for all January and non-January months. This allows us to evaluate the average marginal effect of each variable and observe whether there is a change in the sign and strength of its association with future returns.

To test for significant differences between each variable's January and non-January coefficient, we estimate a panel regression that includes an interaction term for each anomaly variable multiplied by the January indicator, *JAN*. We include time-fixed effects to control for period-specific factors that influence the returns of all stocks and use two-way clustered standard errors by firm and month to account for potential residual correlation. Equation 3 presents our panel regression which includes the six anomaly variables and six interaction terms.

$$EXRET_{i,t+1} = \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 SIZE_{i,t} * JAN_{i,t+1} + \beta_3 BM_{i,t} + \beta_4 BM_{i,t} * JAN_{i,t+1} + \beta_5 ROE_{i,t} + \beta_6 ROE_{i,t} * JAN_{i,t+1} + \beta_7 INV_{i,t} + \beta_8 INV_{i,t} * JAN_{i,t+1} + \beta_9 MOM_{i,t} + \beta_{10} MOM_{i,t} * JAN_{i,t+1} + \beta_{11} REV_{i,t} + \beta_{12} REV_{i,t} * JAN_{i,t+1} + \mu_{t+1} + e_{i,t+1} \tag{3}$$

Our primary focus is on the six interaction coefficients, which capture whether each variable has a significantly different association with future returns in January compared to other months. If year-end tax-loss selling and other correlated factors play a key role, then we expect a negative β_{10} indicating an attenuation or reversal of momentum and a negative β_{12} implying a stronger short-term reversal effect in January. We also predict a negative β_2, since prior studies find that the January rebound is concentrated among more volatile small-cap stocks in earlier sample periods (Haug & Hirschey, 2006; Keim, 1983). Last, although their effects are less directly impacted by prior return performance, we expect a positive interaction for value (β_4), negative interaction for profitability (β_6), and the sign of the investment interaction is ambiguous (β_8).

3. Empirical Results

Table 3 presents the results from our univariate portfolio sorts on the individual anomaly variables, with Panel A reporting value-weighted 3-factor alphas and Panel B reporting equal-weighted 3-factor alphas. Focusing first on the value-weighted tests, we find several meaningful differences between the January and non-January subsamples. For instance, although size has an insignificant return spread overall, it yields a highly significant negative alpha of -5.945% (t = -9.98) in Januarys but a significant positive alpha across the remainder of the year of 0.616% (t = 3.87). Such evidence highlights the continued outperformance of small-cap stocks during January (Haug & Hirschey, 2006; Roll, 1983) and documents large-cap outperformance in non-January months. The book-to-market long-short portfolio also yields a small and insignificant alpha across the full sample, but its abnormal returns are not statistically significant within the January and non-January subsamples. Although we expected high book-to-market ratio stocks to outperform in January, given potentially greater tax-loss selling incentives and prior evidence of strong January returns to the value factor (Haug & Hirschey, 2006), there are two primary explanations for the lack of significant alpha. First, several studies document much lower value premiums in recent decades, so there may be less of a return spread between value and growth stocks during our sample period compared to earlier periods (Fama & French, 2021; Linnainmaa & Roberts, 2018). Second, because we report Fama-French (1993) three-factor model alphas, the smaller alphas also reflect that the HML factor is relatively successful in explaining the returns to the book-to-market decile portfolios.[1]

Table 3: Anomalies in January versus Non-January Months

Panel A: Value-weighted 3-factor alphas										
Portfolio:	**D1**	**D10**	**D10-D1**	**D1**	**D10**	**D10-D1**	**D1**	**D10**	**D10-D1**	**Long – Short**
	All Months			**January Only**			**Non-January Months**			
Size (SIZE)	0.000	0.025*	0.025	5.955***	0.010	-5.945***	-0.587***	0.029**	0.616***	Big – Small
	(0.00)	(1.87)	(0.14)	(9.76)	(0.18)	(-9.98)	(-3.79)	(2.06)	(3.87)	
Book-to-Market (BM)	0.142	-0.082	-0.224	-0.240	1.390	1.630	0.185**	-0.251	-0.436*	Value – Growth
	(1.62)	(-0.42)	(-0.98)	(-0.72)	(1.68)	(1.59)	(2.06)	(-1.29)	(-1.93)	
Profitability (ROE)	-0.115	0.216***	0.331*	1.800***	-0.123	-1.922***	-0.296*	0.238***	0.534***	Robust – Weak
	(-0.73)	(2.93)	(1.77)	(4.51)	(-0.45)	(-3.52)	(-1.79)	(3.12)	(2.74)	
Investment (INV)	0.077	-0.341***	-0.419**	1.129*	-0.665	-1.794**	-0.012	-0.315**	-0.304	Aggressive –
	(0.55)	(-2.93)	(-2.19)	(1.83)	(-1.42)	(-2.27)	(-0.08)	(-2.62)	(-1.55)	Conservative
Momentum (MOM)	-1.458***	0.509***	1.966***	0.423	-0.081	-0.504	-1.679***	0.590***	2.269***	Winner – Loser
	(-5.28)	(3.27)	(5.28)	(0.40)	(-0.12)	(-0.32)	(-5.94)	(3.77)	(6.06)	
ST Reversal (REV)	-0.607***	-0.182	0.425	0.625	-1.553***	-2.178**	-0.744***	-0.036	0.707**	ST Winner – Loser
	(-3.16)	(-1.00)	(1.38)	(0.87)	(-2.98)	(-2.10)	(-3.77)	(-0.19)	(2.22)	
Panel B: Equal-weighted 3-factor alphas										
	All Months			**January Only**			**Non-January Months**			
Size (SIZE)	0.242	0.009	-0.233	6.612***	-0.024	-6.636***	-0.386**	0.013	0.399**	Big – Small
	(1.26)	(0.26)	(-1.18)	(10.23)	(-0.18)	(-9.80)	(-2.28)	(0.38)	(2.27)	
Book-to-Market (BM)	-0.313***	0.315	0.628***	0.258	4.634***	4.376***	-0.369***	-0.135	0.234	Value – Growth
	(-3.37)	(1.56)	(2.81)	(0.72)	(7.43)	(5.47)	(-3.85)	(-0.69)	(1.06)	
Profitability (ROE)	-0.291	-0.127	0.164	4.611***	0.773***	-3.837***	-0.779***	-0.232***	0.547***	Robust – Weak
	(-1.58)	(-1.60)	(0.92)	(6.25)	(3.11)	(-4.75)	(-4.58)	(-2.90)	(3.25)	
Investment (INV)	0.259	-0.905***	-1.164***	4.439***	0.590	-3.849***	-0.152	-1.082***	-0.930***	Aggressive –
	(1.65)	(-7.31)	(-7.31)	(8.12)	(1.22)	(-6.36)	(-1.02)	(-8.93)	(-5.80)	Conservative
Momentum (MOM)	-1.453***	0.478***	1.932***	3.286***	1.075**	-2.211	-1.959***	0.431***	2.390***	Winner – Loser
	(-5.83)	(4.03)	(6.30)	(3.01)	(2.04)	(-1.55)	(-8.34)	(3.58)	(8.08)	
ST Reversal (REV)	0.087	-0.746***	-0.834***	4.983***	-0.790*	-5.773***	-0.419**	-0.744***	-0.325	ST Winner – Loser
	(0.45)	(-5.34)	(-3.26)	(5.04)	(-1.75)	(-4.65)	(-2.44)	(-5.04)	(-1.36)	

Note: Panel A reports value-weighted Fama-French 3-factor alphas for the highest and lowest decile portfolios ranked by each anomaly variable across all months, January only months, and non-January months. The reported values reflect that alphas in percent per month for the following regression: $EXRET_{i,t} = \alpha_i + b_i MKTRF_t + c_i SMB_t + d_i HML_t + \varepsilon_{i,t}$. Panel B repeats these tests using equal-weighted portfolio returns. *t*-statistics are reported in parentheses, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The sample period is January 1981 to December 2020.

The profitability portfolios exhibit substantial seasonality in which the long-short alpha is significantly positive in non-January months but significantly negative in Januarys, consistent with firms that

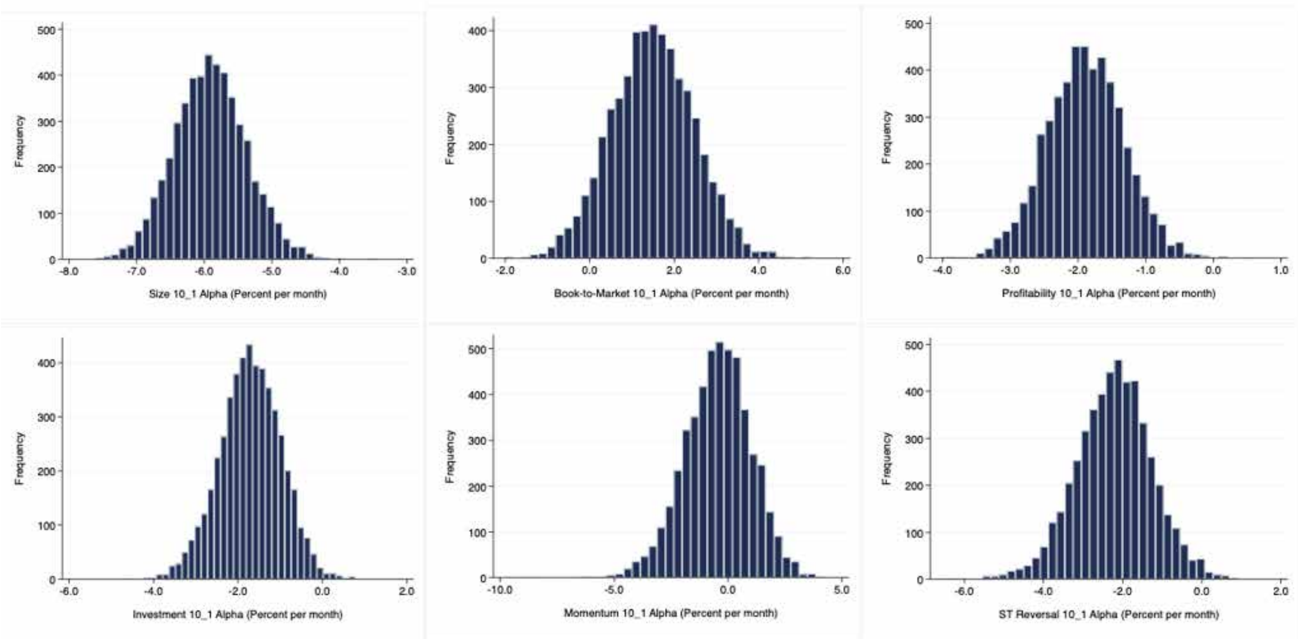
[1]In unreported results, we find the average return spread between the top and bottom book-to-market decile portfolios is 2.48% (t = 1.78) per month in January compared to only 0.06% (t = 0.20) in other months. By comparison, the reported alphas are 1.63% (t = 1.59) and -0.44% (t = -1.93) in Januarys and non-Januarys, respectively. In both instances, high return volatility also contributes to the lack of statistical significance.

struggled in the prior year being oversold late in the year before rebounding in January. By contrast, the abnormal returns to the investment long-short portfolio are negative across both subsamples, but both the magnitude and statistical significance suggest a more pronounced underperformance of high investment firms in January (-1.794%, t = -2.27) with small and insignificant abnormal returns in other months (-0.304%, t = -1.55).

Consistent with the tax explanation, we also find large seasonalities in anomalies based on past performance. While momentum generates the largest alpha across the full sample (1.966%, t = 5.28), the estimated long-short alpha is negative albeit insignificant in January (-0.504%, t = -0.32) but large and positive in Januarys (2.269%, t = 6.06). This confirms that the year-end reversal effect is sufficiently robust to counteract and prevent potential gains to momentum strategies in January. Likewise, sorts on the short-term reversal variable reveal a significant reversal effect in January, but the long-short alpha is positive in all other months, thus, reflecting return continuation rather than reversal. The equal-weighted test results produce similar findings, although the short-term reversal long-short abnormal return becomes negative and insignificant in non-January months while strengthening in January, and the book-to-market abnormal return becomes significantly positive. Overall, this evidence suggests that the January effect contributes to a large return seasonality in many of the most well-documented anomalies.

Given the smaller number of January observations, we also assess the bootstrapped distribution of *January Only* alphas to each anomaly long-short portfolio from Table 3, Panel A. Figure 1 displays the estimated alpha distributions across 5,000 bootstrap trials for each long-short portfolio. Overall, the results highlight that our findings are robust and unlikely to be driven by outliers. For instance, the value-weighted *SIZE* long-short portfolio yielded a *January Only* alpha of -5.945% in Table 3, and its monthly alpha never exceeded -3.460% across the 5,000 bootstrap replications with 5th and 95th percentile values of -6.926% and -4.837%, respectively. Similarly, the profitability, investment, and short-term reversal portfolios yield alpha estimates that appear reliably negative in January.

Figure 1: Bootstrapped January-Only Portfolio Alphas



Note: This figure illustrates the bootstrapped distribution of Fama-French 3-Factor model alphas for anomaly long-short portfolios using January only subsamples. The histograms present the frequency distribution for alpha across 5,000 trials for each long-short portfolio. The figures for Size, Book-to-market, and Profitability are shown across the top row, while Investment, Momentum, and Short-term reversal are displayed across the bottom row. Reported alphas are in percent per month.

Table 4: Cross-Sectional and Panel Regressions Exploring January Return Performance

	Dependent Variable: EXRETi,t+1			
	(1)	(2)	(3)	(4)
SIZEi,t	-0.755***	0.028	-0.037	0.04
	(-5.36)	(0.85)	(-0.92)	(1.04)
BMi,t	0.372*	0.274***	0.362***	0.350***
	(1.80)	(4.24)	(4.22)	(3.83)
ROEi,t	-1.949***	0.408***	0.083	0.296**
	(-4.74)	(4.19)	(0.55)	(1.98)
INVi,t	-0.846**	-0.747***	-0.845***	-0.838***
	(-2.42)	(-9.21)	(-6.96)	(-6.73)
MOMi,t	-0.800	0.820***	0.838***	0.942***
	(-1.46)	(5.85)	(4.21)	(4.61)
REVi,t	-10.644***	-2.469***	-2.433***	-1.417*
	(-7.73)	(-6.20)	(-2.84)	(-1.68)
SIZEi,t x JANi,t+1	N/A	N/A	N/A	-0.879***
				(-5.21)
BMi,t x JANi,t+1	N/A	N/A	N/A	0.028
				(0.12)
ROEi,t x JANi,t+1	N/A	N/A	N/A	-2.627***
				(-4.15)
INVi,t x JANi,t+1	N/A	N/A	N/A	-0.073
				(-0.14)
MOMi,t x JANi,t+1	N/A	N/A	N/A	-1.271*
				(-1.72)
REVi,t x JANi t+1	N/A	N/A	N/A	-11.147***
				(-3.24)
Constanti,t+1	15.029***	2.444***	N/A	N/A
	(6.57)	(3.94)		
Regression Type	Fama-MacBeth	Fama-MacBeth	Panel	Panel
Firm-months	January Only	Non-January	All	All
R-Squared	0.0637	0.0342	0.1313	0.1339
Within R-Squared	N/A	N/A	0.0021	0.0050
Number of Months	40	440	480	480
Observations	95,026	1,029,852	1,124,878	1,124,878

Note: The dependent variable is the monthly stock return in excess of the risk-free rate (*EXRET*) in month *t+1*. Specifications (1) and (2) are estimated using a series of monthly cross-sectional regressions following the Fama-MacBeth (1973) regression procedure. Specifications (3) and (4) include time fixed effects which prevents the inclusion of *JAN* as a separate independent variable due to collinearity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4 subsequently presents our cross-sectional and panel regression results which are conducted at the individual stock level and allow us to measure the marginal effect of each anomaly variable while controlling for the others. Adding support to our prior results, we observe a sign change for size, profitability, and momentum in our cross-sectional tests with negative coefficients in January and positive coefficients in non-January months. The panel regression results in column (4) also corroborate this finding using interaction terms. In addition to a highly significant negative coefficient on the short-term reversal interaction variable that indicates a much stronger short-term reversal from December to January relative to other months; the size, profitability, and momentum interactions also enter with negative and significant coefficients. Such evidence adds support to the tax-loss selling explanation and indicates that several anomaly variables independently have a pronounced effect on January performance. By contrast, none of the interaction coefficients are statistically significant when we repeat our tests using a July indicator variable, thereby casting doubt on the effect being driven by window-dressing since similar incentives would exist midyear (Chen and Singal, 2004).[2]

Table 5 reports subsample test results to shed additional light on the potential drivers of the January effect's impact on anomaly performance. We repeat our value-weighted portfolio tests with only Januarys included, but we partition the sample period into expansion and recession, first half and second half, and Januarys following years of above versus below median stock market performance. We find that the *SIZE* abnormal return is negative and highly significant across all subsamples, highlighting the robustness of the turn-of-the-year effect in small-cap stocks. We also observe the greatest variation across subsamples for momentum (*MOM*) and short-term reversal (*REV*). Both long-short portfolios show a strong reversal effect following years of recession and below median market returns but are generally insignificant following years of expansion or above median market returns. Such evidence is consistent with the tax-loss harvesting explanation, as tax-loss selling incentives are likely to be present for fewer stocks and with smaller economic magnitude following years of strong economic and stock market growth. Although correlated variation in other factors cannot be ruled out as contributing to this phenomenon, our results highlight that January returns are most highly dependent on prior-year performance for return-based anomalies such as momentum and short-term reversal.

Table 5: Subsample Tests

Average Three-Factor Model Residual in January						
Portfolio	Expansion	Recession	1st Half	2nd Half	High_MktRet	Low_MktRet
SIZE (10-1)	-6.058***	-7.440***	-6.605***	-6.064***	-7.104***	-5.565***
	(-7.87)	(-4.71)	(-7.96)	(-5.42)	(-8.35)	(-5.17)
BM (10-1)	1.320	5.902*	2.214**	2.259	1.600	2.873
	(1.25)	(1.98)	(2.14)	(1.20)	(1.26)	(1.68)
ROE (10-1)	-2.057***	-2.408	-2.684***	-1.571**	-3.009***	-1.245
	(-3.78)	(-1.47)	(-3.19)	(-2.41)	(-4.38)	(-1.59)
INV (10-1)	-0.618	-3.946*	-0.638	-1.929	-1.394	-1.173
	(-0.80)	(-2.00)	(-0.75)	(-1.54)	(-1.41)	(-1.01)
MOM (10-1)	-1.971	-6.307*	-1.260	-4.416	0.342	-6.018**
	(-1.05)	(-1.90)	(-0.96)	(-1.46)	(0.24)	(-2.14)
REV (10-1)	-2.107*	-5.106**	-1.735	-3.680**	-1.313	-4.101**
	(-1.70)	(-2.69)	(-1.33)	(-2.18)	(-0.92)	(-2.63)

Note: This table reports the average 3-factor model residual from value-weighted regressions estimated across all Januarys during our sample period from 1981 to 2020 for three sets of subsamples. We estimate $EXRET_{i,t} = \alpha_i + b_i MKTRF_t + c_i SMB_t + d_i HML_t + \varepsilon_{i,t}$ across all months and then test the average January value of $\varepsilon_{i,t}$. The value-weighted test portfolios are long the decile of stocks with the highest values of the given anomaly variable and short the decile of stocks with the lowest values. We partition the sample into Expansions versus Recessions based on whether part or all of the prior year was defined as Recessionary per the NBER. We then divide the sample into halves chronologically (1981 to 2000 and 2001 to 2020) as well as by whether the value-weighted market index had an above (High_MktRet) or below median return (Low_MktRet) during the prior year.

4. Conclusion

Prior research documents a January effect in which underperforming stocks from the prior year subsequently exhibit a strong rebound in January. Given that many anomaly variables are heavily influenced by past performance, we explore the January effect's impact on several of the most well-

[2]Tests repeated with the July interaction are omitted for brevity but are available upon request.

studied anomalies. We show that the size, profitability, and momentum anomalies change signs in January, with small, unprofitable, and low prior return stocks outperforming in January but large, profitable, and high prior return stocks outperforming across the rest of the year. Additionally, there is limited evidence of a short-term reversal effect across the full year, but the effect is highly pronounced at the turn of the year. Our cross-sectional and panel regressions further highlight that several of the anomaly variables contribute significant independent explanatory power in predicting January returns. For instance, after controlling for firm size, less profitable companies with lower prior month returns still tend to outperform in January. Such evidence is relevant both from a market efficiency standpoint as well as for investors using anomaly-based investing strategies which have grown in prominence. Even in instances where market frictions make it difficult to fully exploit patterns in turn-of-the-year returns, investors may benefit by being cognizant of return seasonality, strategically adjusting portfolio weights, and avoiding poorly timed investments.

Using subsample tests to better understand the January effect, we show that return-based anomalies such as momentum and short-term reversal both display evidence of a strong reversal effect in January that is concentrated in years following recessions and poor stock market performance. Thus, in addition to the presence of return seasonality during the year, we document that the strength of the January effect and its relationship with return anomalies varies across years and is most pronounced for anomalies based on past performance when prior year investment losses are more widespread. Overall, our findings are consistent with the tax-loss harvesting explanation though additional research is needed to assess the role of other contributing factors.

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