Journal of Business Finance & Accounting

WILEY
JBFA

ARTICLE OPEN ACCESS

Lottery Demand and Stock Returns Preceding Earnings Announcements

Harvey Nguyen[1] | Cameron Truong[2]

[1]Massey Business School, Massey University, Auckland, New Zealand | [2]Department of Accounting, Monash University, Caulfield East, Victoria, Australia

Correspondence: Cameron Truong (Cameron.Truong@monash.edu)

Received: 16 January 2020 | **Revised:** 30 June 2025 | **Accepted:** 22 July 2025

Keywords: cross-sectional return predictability | extreme returns | earnings announcements | investor attention | lottery-like payoffs

ABSTRACT

We document a significant positive relation between extreme positive stock returns around past earnings announcements and stock returns in the 10-day window before current earnings announcements. The average of risk-adjusted return differences between stocks with the highest earnings announcement maximum returns and stocks with the lowest earnings announcement maximum returns is 85 basis points in the 10 days leading up to earnings announcements. This is consistent with the argument that investors have a preference for stocks with large payoffs during earnings announcements.

JEL Classification: G10, G11, G12, G14, G17

1 | Introduction

As brokerage firms can offer innovative technological advancements, lower requirements for initial funds, and aggressively reduced transaction costs, there has been significant participation from individual investors in the equity market over recent years (Basak 2020; McCabe 2021; Popper 2020). Researchers have pointed out that when more retail investors engage in attention-based trading and follow past stock returns (Bianchi 2018; Goetzmann and Kumar 2008; Greenwood and Nagel 2009), this trading can create excess volatility and impede market liquidity (Grossman and Miller 1988; Hendershott and Menkveld 2014; Peress and Schmidt 2020). The rise of retail investors and technological innovations in trading platforms has also led to increased unsophisticated trading around earnings announcements, potentially affecting the informativeness of the event (Eaton et al. 2022, Barber et al. 2022; Michels 2021). We contribute to this literature by examining the case in which unsophisticated investors chase past earnings announcement winning stocks and this trading can generate a predictable return pattern around current earnings announcements. Our study, therefore, uncovers evidence of a new predictable return pattern around earnings announcements that is attributable to increased unsophisticated trading.

We draw upon the lottery-like asset pricing conjecture (Akbas and Genc 2020; Bali et al. 2011; Bali et al. 2017; Cheon and Lee 2018) to provide a plausible explanation for this stock return behavior. As large stock price changes can be triggered by their upcoming earnings announcements, stocks that exhibited extreme positive returns from prior earnings announcements can be deemed as lottery-like, and these stocks should attract a high level of lottery demand from unsophisticated investors. This, in turn, results in a sharp price run-up in the current preannouncement period when such investors perceive that the upcoming announcements would continue to provide lotteries.[1] If this is the case, one should observe that stock prices of past earnings announcement winners are being bid up in the period immediately before their current earnings announcements.

Our empirical analysis finds evidence that is consistent with this lottery-demand pricing conjecture. To identify past earnings announcement winners, we first compute the 3-day

market-adjusted stock return for each quarterly earnings announcement in the prior calendar year. Next, for each stock, we take the maximum value out of the set of four past earnings announcement returns. We use this maximum earnings announcement return measure (denoted as EA_MAXRET) as a proxy for earnings announcement lottery payoffs. Stocks with high EA_MAXRET should appeal to investors who have a preference for lottery-type payoffs. We then sort stocks into decile portfolios every quarter based on this EA_MAXRET and examine abnormal stock returns in the 10 days leading to earnings announcements. For the 40-year period from January 1981 through December 2020, we document that market-adjusted returns from portfolios with the highest EA_MAXRET are 107 basis points over the 10-day period leading up to earnings announcements.

We observe a more pronounced return difference between the two extreme EA_MAXRET portfolios of stocks that are popular with retail investors, which is consistent with the idea that retail investors, rather than institutional investors, are more likely to exert price pressures for lottery stocks (Bali et al. 2017; Kumar 2009; Lin and Liu 2018). Motivated by the extant literature suggesting that retail investors can be influenced by psychological factors (Bali et al. 2017; Bali et al. 2011), we test and find that the EA_MAXRET phenomenon is stronger during periods of high aggregate investor sentiment, since retail investors, during such periods, are more prone to overoptimism about the large positive earnings announcement payoffs on lottery stocks. Consistent with the idea that attention is a key factor for lottery trading and overvaluation, we document that the EA_MAX phenomenon is stronger among stocks with a high level of attention, such as high analyst coverage and high media coverage.

The increasing participation of retail investors in equity markets, particularly following the rise of commission-free platforms such as Robinhood, has sparked debate over whether such trading activity enhances or impairs price efficiency. Some argue that the influx of unsophisticated investors may inject noise into markets, obscuring return predictability and weakening the informational content of prices around corporate events (Barber and Odean 2013; Baig et al. 2022). From this view, retail trading, especially around salient events like earnings announcements, could dampen return-based signals by introducing sentiment-driven or random trades that mask fundamental information. In contrast, a growing body of literature suggests that retail investors are disproportionately attracted to lottery-like stocks, particularly those with high skewness, low prices, or extreme recent returns. These preferences are especially salient around earnings announcements, where attention spikes and upside payoffs can be large.[2] Building on this perspective, we contend that the increased coordination of retail investor flows following Robinhood's launch does not necessarily increase noise but may instead amplify predictable mispricing patterns. Specifically, if Robinhood allows more unsophisticated retail investors to be on the same side of earnings lottery events, heightened retail trading should contribute to higher market imbalances and a stronger EA_MAXRET phenomenon.

To test this hypothesis, we treat the establishment of Robinhood as a shock to retail investor participation in earnings lottery events and examine whether return patterns became stronger in the post-Robinhood era. We document two interesting findings that support this contention. First, we find that share turnover increases by 73% for the top EA_MAXRET portfolio in the period after Robinhood gained a significant retail client base, consistent with a rise in the participation of retail trading in lottery-like stocks. Second, we consider the hedge returns between the top and bottom EA_MAXRET deciles and find that hedge returns are significantly higher after the establishment of the Robinhood platform. To the extent that the establishment of the Robinhood trading platform reliably provides a shock that accelerates retail lottery trading, the results suggest causal evidence in support of the retail investor mechanism as a prominent explanation for the phenomenon documented in our study.

Our analysis shows that the EA_MAXRET phenomenon is highly consistent over time. The strategy of going long for the top EA_MAXRET portfolios and short the bottom EA_MAXRET portfolios generates on average 85 basis points and also exhibits positive annualized hedge returns in 33 out of 40 years (around 83%). We note that stocks with high EA_MAXRET are not representative of the overall market. They tend to be smaller in size, have higher idiosyncratic volatility, have higher returns in the 6 months leading up to earnings announcements, have a positive earnings surprise from the prior quarter, and exhibit higher illiquidity. We conduct a battery of tests using bi-variate portfolio sorts and cross-sectional regression analyses at the firm level with a comprehensive list of control variables to ensure that these firm characteristics do not drive the anomalous return differences between high and low earnings announcements maximum return stocks in the pre-earnings announcement period. We document that the hedge pre-earnings announcement stock returns between high and low EA_MAXRET stocks are robust to sorts on size, book-to-market ratio, beta, idiosyncratic volatility, momentum, Amihud illiquidity measure, and prior-quarter standardized unexpected earnings. Results from multivariate regression analyses corroborate this robustness.

We further consider a calendar-time portfolio approach, following the spirit of Barber et al. (2007), Ertimur et al. (2007), Cohen et al. (2010), Coleman et al. (2022), and Pope and Wang (2023). Specifically, at the beginning of each calendar year y, we identify stocks with high and low earnings announcement maximum returns (EA_MAXRET) based on the top and bottom deciles (decides 1 and 10) of the maximum value of 3-day market-adjusted returns around earnings announcements (from day −1 to day +1) from four earnings announcements in the previous year y−1. We then simulate portfolios where we take a long (short) position in high (low) EA_MAXRET stocks. Each day, we estimate the excess portfolio return (in excess of the risk-free rate) as the average of the excess return of stocks in the portfolio on that day. Using the time series of portfolio returns, we find that the average annualized excess return is 3.95%. In addition, the time-series portfolio has earned positive returns in 37 of the 40 years of the sample period. The alpha from this calendar-time portfolio is significant after controlling for the daily Fama and French five factors.

Our additional robustness checks control for a comprehensive list of other variables that have been documented to predict stock returns around earnings announcements. We continue to find that the EA_MAXRET phenomenon is not explained by the autocorrelation in earnings surprises (Foster et al. 1984),

the MAX effect as documented in Bali et al. (2011), the earnings announcement returns by past stock winners as documented in Aboody et al. (2010), the price run-up caused by a divergence in investors' opinion documented in Berkman et al. (2009), short-sales constraints (Nagel 2005), the return reversal ahead of earnings announcements as documented in So and Wang (2014), or the earnings seasonality mispricing as documented in Chang et al. (2016).

We also conduct various additional risk adjustments to investigate whether the EA_MAXRET phenomenon is subject to risks. We find that the return differences between the two extreme EA_MAXRET portfolios are not affected by alternative risk-adjustment procedures or alternative portfolio weightings. Furthermore, to ensure that our results are not sensitive to the period over which EA_MAXRET is measured, we calculate EA_MAXRET using several multiquarter periods (from 1 rolling quarter up to 16 rolling quarters in the past). We document that return differences between the two extreme earnings announcement maximum return portfolios range between 57 and 101 basis points in the 10 days leading up to earnings announcements. These return differences are all statistically significant at the one percent level and robust during the 40-year period in our study.

There is a potential measurement error in our estimates of preannouncement period returns. Specifically, earnings announcements from Compustat are ex-post data recorded based on the actual dates when firms release earnings. Thus, earnings announcement dates that investors expect to occur in the market may not be the same as actual earnings announcement dates, resulting in a potentially noisy measure of preannouncement stock returns.[3] To abstract from this noise, we re-examine our EA_MAXRET strategy for a sample of stocks where we can establish expected earnings announcements following the methodology in Cohen et al. (2007) instead of relying on actual earnings announcements from Compustat. In this subsample, portfolios of our top EA_MAXRET portfolio exhibit 107 basis points in the 10-day period leading up to expected earnings announcements. A hedge EA_MAXRET strategy based on expected earnings announcements exhibits 83 basis points. In addition, using the exact earnings announcement dates from the Wall Street Horizon (WSH) database that were available to market participants ahead of earnings announcements, or using the earlier earnings announcement dates between I/B/E/S and Compustat, does not change our main findings. Furthermore, we follow Engelberg et al. (2018)'s approach and define the day with the highest trading volume among a 3-day window surrounding earnings announcement dates reported from Compustat as the earnings announcement day. This approach minimizes the concern that firms can report earnings after the market closes, hence the information will be reflected in the stock return on the following day (Engelberg et al. 2018). Our results are robust.

We establish that earnings announcement lottery payoff is a highly persistent equity characteristic. We document that earnings announcement maximum return from prior earnings announcements strongly predicts market-adjusted returns surrounding current earnings announcements. In cross-sectional regressions with several control variables, maximum returns from past earnings announcements and idiosyncratic volatility are the strongest predictors of maximum returns in current earnings announcements. In other words, EA_MAXRET exhibits substantial persistence in firm-level cross-sectional regressions, even after controlling for a variety of other firm-level variables. We interpret our findings as errors in investors' probability weighting causing them to overvalue stocks that have a small probability of a large positive return during earnings announcements. This interpretation is consistent with the cumulative prospect theory in Tversky and Kahneman (1992) and the optimal beliefs framework in Brunnermeier et al. (2007).

In our final avenue of inquiry, for a complete investigation of extreme returns, we also consider the effect of minimum returns around earnings announcements by examining EA_MINRET (the minimum past earnings announcement return) and the cross-section of stock returns. While we document some effects of EA_MINRET on stock returns, the effect is not robust. Next, controlling for earnings surprise, we document a reversal of the EA_MAXRET phenomenon in the post-earnings announcement period. Thus, once a lottery outcome is determined from the released earnings, the overpricing of high EA_MAXRET stocks in the preannouncement period is mostly corrected. Furthermore, we find the EA_MAXRET phenomenon exists in 16 out of 20 countries in our international sample, suggesting that the earnings announcement lottery payoff effect is not a US-specific feature but an international phenomenon. In addition, the phenomenon is more pronounced in countries where the general population is more risk-seeking.

The findings in this study add two important insights to the literature. First, we uncover evidence of a predictable return pattern around earnings announcements that is attributable to increased unsophisticated trading. We suggest that retail investors overweight stocks with high past earnings announcement pay-offs, leading to predictable returns in the period leading up to current earnings announcements. Liu et al. (2020) show that demand for lottery stocks is heightened around earnings announcements as evidenced by the outperformance of lottery-like stocks in the 5 days prior to earnings announcements. Our study identifies a new lottery-like feature based on past earnings announcement pay-offs and documents a predictable stock return pattern that cannot be explained by conventional measures of lotteries.[4] Our study, therefore, contributes to the literature (e.g., Bali et al. 2017; Bali et al. 2011; Kumar 2009, Truong et al. 2016), which shows a preference among investors for assets with lottery-like payoffs and also to the strand of literature that examines the role of prior stock returns in explaining the price reaction surrounding earnings announcements.[5]

Second, our study connects to the literature that investigates the effects of retail trading on market quality. There is mixed evidence with one strand of the literature suggesting that aggregate retail trading enhances liquidity provision (e.g., Barrot et al. 2016; Boehmer and Song 2020; Kaniel et al. 2008), while the other strand of the literature reports that retail traders, and their lack of financial sophistication, harm market quality (Greene and Smart 1999; Peress and Schmidt 2020). We highlight that the return predictability documented in this study is largely related to the exposure of stock returns to retail trading and also to the ability of retail investors to engage in lottery trades. In addition, we find strong evidence that the rise of retail investors and technological innovations following the establishment of

the Robinhood trading platform contributes to the reduction in the informativeness of earnings announcement returns in recent years.[6] Notably, unlike conventional lottery-pricing returns that require short-selling, the hedge return documented in our study is predominantly driven by the long leg.[7] Our study, therefore, provides evidence to regulators that heightened retail trading can create significant market imbalances, especially in retail-oriented stocks, when these unsophisticated traders, because of their lottery preference, herd on the same side of long trades.

The remainder of the study is organized as follows. Section 2 presents the related literature and discusses empirical prediction. In Section 3, we discuss the data and methodology utilized in constructing earnings announcement maximum return and other control variables. In Section 4, we present the univariate portfolio analysis, bivariate portfolio analysis, and multivariate regression analysis at the firm level. In Section 5, we provide the findings from various robustness checks and further analyses. Section 6 provides a conclusion and discusses implications for future research.

2 | Related Literature and Empirical Prediction

A growing body of studies suggests the prevalence of gambling in financial markets. In seminal studies, Kumar (2009) and Kumar et al. (2011) show that certain individual investors exhibit a preference for stocks with lottery-type features. Han and Kumar (2013) find that lottery-like assets tend to attract investors with strong gambling propensity. Bali et al. (2011) document that investors have strong demand for stocks that have the highest maximum daily return in the prior trading month. Bali et al. (2017) suggest that this lottery demand is priced in the cross-section of monthly stock returns.[8] Common among these studies is the notion that investors prefer lottery-type stocks and so are poorly diversified, leading to predictable future returns for this type of stock.

In this study, we examine how earnings announcements, an important and regular source of corporate information, trigger demand for assets with lottery-like trading. Our focus on earnings announcements is motivated by two important aspects. First, because quarterly earnings announcements introduce significant movements to stock returns over a short period and are repeated four times over the year, earnings announcements can provide recurrent gambling opportunities for investors who have a strong gambling propensity. Second, given information on the date of earnings announcements is publicly available, investors can systematically establish positions ahead of scheduled earnings announcements to participate in the upcoming lottery events. If investors indeed chase after extreme positive stock returns observed from prior earnings announcements, there should be a high level of lottery demand for such stocks, resulting in a sharp price run-up in the current preannouncement period. Our first and sole hypothesis (in alternative form), is, therefore, as follows:

Hypothesis. *There is a positive relation between extreme positive stock returns observed during past earnings announcements and abnormal stock returns in a short period leading to current earnings announcements.*

Liu et al. (2020) also explore lottery demand using the setting of earnings announcements and document that such demand is stronger ahead of earnings announcements, leading to a price run-up for lottery stocks. A key difference between this study and Liu et al. (2020) is that we propose and test a novel measure of a lottery-like feature that is specific to earnings announcements, while lottery features of stocks in Liu et al. (2020) are conventional measures constructed from periods outside earnings announcements. We contend that our new lottery-like measure should generate heightened lottery demand specifically for the immediate earnings announcement payoffs and it is incremental to the demand for general lottery-like assets. In addition, we investigate whether the earnings announcement lottery-payoff phenomenon is persistent over time (i.e., whether extreme positive returns around past earnings announcements predict extreme positive returns around future earnings announcements), which should serve as a basis for how unsophisticated investors may perceive high versus low earnings announcement lottery pay-off stocks. To better capture investors' perception of earnings announcement lottery payoffs in the presence of limited attention (Hirshleifer and Teoh 2016), we also consider the recency of past earnings announcement lottery events in explaining the rising lottery demand for current earnings announcements.

While it is conceivable that investors may prefer stocks with large upside idiosyncratic volatility and, hence, insert a demand for these stocks in the period leading up to earnings announcements, we also consider the possibility that investors can shun stocks with large negative returns around past earnings announcements if they dislike negative extreme returns. To better elicit the role of retail trading in explaining the lottery demand for earnings announcement payoffs, we utilize the establishment of the Robinhood platform as an exogenous shock that hikes retail trading.[9] To provide a complete empirical analysis, we account for transaction costs and consider several additional analyses that account for the time-variation in lottery demand, different economic states, or alternative identifications of earnings announcement dates.

3 | Lottery Demand, Investor Attention, and Earnings Announcements

3.1 | Data

We use stock return data from CRSP for common stocks (CRSP share codes 10 or 11) of firms listed on the New York Stock Exchange (NYSE), American Stock Exchange, or NASDAQ over the period from 1980 to 2020. We use Compustat to determine the actual quarterly earnings announcement dates. We also define earnings announcement dates using three alternative approaches. First, we compare the earnings announcement dates reported by Compustat and I/B/E/S and follow DellaVigna and Pollet (2009) to assign the earlier date as the correct earnings announcement date. Second, we use daily snapshots of earnings calendar data provided by WSH.[10] Third and finally, we examine firms' trading volume scaled by market trading volume for

each day in a 3-day window surrounding the reported earnings announcement dates from Compustat and follow Engelberg et al. (2018) to define the day with the highest trading volume among these 3 days as the earnings announcement day.

We obtain institutional investors' share holdings from Thompson Reuters Institutional 13F. Analyst coverage is measured using data from I/B/E/S. Daily and monthly market excess returns and risk factor returns are from Kenneth French's data library.[11] We use Baker and Wurgler (2006)'s sentiment index to measure market sentiment.[12] We source media coverage data from Thomson Reuters News Analytics. The other data we use include the business cycle database of the National Bureau of Economic Research, the macroeconomic uncertainty index from Jurado et al. (2015), and the economic policy uncertainty index from Baker et al. (2016).[13]

3.2 | Earnings Announcement Maximum Returns

We propose a novel and direct measure of lottery demand triggered by upcoming earnings announcements using extreme returns surrounding prior earnings announcements. This measure is intuitive, as extreme returns surrounding earnings announcements should catch investors' attention (Barber and Odean 2008; Odean 1999), especially those who exhibit a preference for assets with lottery-like payoffs (Bali et al. 2011). Our construction of earnings-induced lottery demand is as follows. For each quarter in a calendar year, we compute the value of the 3-day market-adjusted stock return around the earnings announcement.[14] Market-adjusted stock return is defined as the difference between a stock return and the CRSP value-weighted index return over the same period. Stocks with a high value of the 3-day market-adjusted stock return are deemed to have high earnings announcement payoffs. We then take the maximum value of this earnings announcement 3-day market-adjusted return across all quarterly earnings announcements in the calendar year $y-1$ and denote this measure as EA_MAXRET. We repeat this procedure on a yearly basis. We use a portfolio sort based on EA_MAXRET to examine stock returns in the period leading up to earnings announcements in year y.

We use several variables to control for risk and other patterns in stock returns. We use the market value of common stocks (SIZE) and book-to-market ratio (BM) to control for the size effect and book-to-market effect (Fama and French 1992; Lakonishok et al. 1994). SIZE and BM are computed at the end of year $y-1$. We compute momentum (MOM) as the stock return in the 6-month period ending on day $t-11$ before earnings announcements. We also compute stock beta (BETA) as the factor loading on the market risk premium from the Fama–French–Carhart four-factor model estimated over the 200 trading days ending on day $t-11$ before earnings announcements. We compute idiosyncratic volatility risk (IVOL) as the standard deviation of residual returns from the four-factor model that estimates beta. We follow Amihud (2002) and compute the illiquidity measure (ILLIQ) as the ratio of daily absolute stock returns to dollar trading volume over the 200 trading days ending on day $t-11$ before earnings announcements.[15] Finally, we compute standardized unexpected earnings from the prior quarter (SUE_{q-1}) as seasonally adjusted quarterly earnings per share divided by the price per share at the end of the quarter to control for post-earnings announcement drift (Bernard and Thomas 1989, 1990).[16]

3.3 | Descriptive Statistics

Panel A of Table 1 presents summary statistics for the 705,970 firm-quarter observations in the overall sample over the period 1981–2020.[17] The mean (median) value for the 3-day market-adjusted stock return around earnings announcements (EA_MAX) is 7.70% (5.31%). This highlights the phenomenon that stock returns are highly volatile in the short window around earnings announcements. The mean value for EXRET[−10,−1] is 0.0042, indicating a positive premium in stock returns in the 10-day period leading up to earnings announcements.[18] The mean (median) market value of firms in the sample is 2.123 billion dollars (220 million dollars). The mean book-to-market ratio is 0.767. In the 6-month period leading up to earnings announcements, the average stock return (MOM) is 8.2%. The average beta (BETA) is 0.906 and the average idiosyncratic volatility (IVOL) is 3.2%. The average Amihud illiquidity measure is 0.568 and the average standardized unexpected earnings from the prior quarter (SUE_{q-1}) is 0.003.

Panel B of Table 1 presents mean values for variables stratified by deciles of EA_MAXRET. There is a striking difference in the earnings announcement maximum return between the extreme EA_MAXRET portfolios. On average, the 3-day market-adjusted stock return surrounding past earnings announcements is −2.84% for the bottom EA_MAXRET portfolio and 27.83% for the top EA_MAXRET portfolio, representing a difference of 30.67% in market-adjusted returns. The average earnings announcement maximum return of the top decile EA_MAXRET portfolio is also nearly four times the average earnings announcement market-adjusted return of the overall sample as reported in Panel A (7.70%). While it may be difficult to interpret the average value for SIZE as market capitalization goes up over time for firms, the relative difference between EA_MAXRET decile 1 and EA_MAXRET decile 10 indicates that a high EA_MAXRET portfolio tends to contain smaller stocks. There is also evidence that the book-to-market ratio is higher in the low EA_MAXRET portfolio and lower in the high EA_MAXRET portfolio. Stocks in the high EA_MAXRET portfolio also appear to have higher price momentum, higher beta, higher general idiosyncratic volatility, and a higher Amihud illiquidity measure. Interestingly, stocks in the high EA_MAXRET portfolio have a more positive earnings surprise from the prior quarter (0.013) than those in the low EA_MAXRET portfolio (0.003).

4 | EA_MAXRET and Pre-Earnings Announcement Market-Adjusted Returns

4.1 | Univariate Portfolio Analysis

Table 2 presents EXRET[−10,−1] for decile portfolios that are formed by sorting stocks based on EA_MAXRET from the prior calendar year. The results are reported based on actual earnings announcement dates from Compustat. Portfolio 1 (low EA_MAXRET) is the portfolio with the lowest

TABLE 1 | Descriptive statistics, 1981–2020.

Panel A: Sample characteristics					
	Mean	**STD**	**P25**	**Median**	**P75**
EA_MAXRET	0.0770	0.1077	0.0217	0.0531	0.1037
EXRET[−10,−1]	0.0042	0.1165	−0.0441	−0.0026	0.0411
SIZE	2.123	6.876	0.054	0.220	1.020
BM	0.767	0.705	0.316	0.578	0.977
MOM	0.082	0.522	−0.163	0.032	0.233
BETA	0.906	0.668	0.516	0.903	1.268
IVOL	0.032	0.024	0.017	0.026	0.040
ILLIQ($\times 10^5$)	0.568	5.363	0.001	0.008	0.102
SUE_{q-1}	0.003	0.099	−0.007	0.001	0.008

Panel B: Sample characteristics across earnings announcement maximum return deciles										
	1 (Low EA_MAXRET)	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10 (High EA_MAXRET)**
EA_MAXRET	−0.0284	0.0060	0.0191	0.0308	0.0432	0.0576	0.0755	0.1000	0.1398	0.2783
SIZE	1.198	2.430	2.925	2.989	2.992	2.791	2.260	1.752	1.278	0.684
BM	0.835	0.846	0.811	0.792	0.763	0.738	0.728	0.714	0.726	0.769
MOM	0.030	0.055	0.065	0.067	0.068	0.079	0.081	0.092	0.107	0.152
BETA	0.889	0.819	0.811	0.833	0.867	0.910	0.933	0.974	0.996	0.993
IVOL	0.040	0.029	0.026	0.026	0.027	0.028	0.030	0.033	0.037	0.046
ILLIQ($\times 10^5$)	0.817	0.572	0.390	0.328	0.322	0.373	0.431	0.523	0.668	1.269
SUE_{q-1}	0.003	0.000	−0.001	0.000	0.000	0.001	0.002	0.002	0.005	0.013

Panel A presents descriptive statistics of the main variables for the overall sample. The sample consists of 705,970 quarterly earnings announcements spanning 1981 through 2020. Panel B presents the mean values of the main variables for the deciles of earnings announcement maximum returns. EA_MAXRET is the maximum value of the 3-day market-adjusted return around earnings announcements (from day −1 to day +1) from four earnings announcements in year y−1. EXRET[−10,−1] is the market-adjusted return in the 10 days leading up to earnings announcements. Market-adjusted return is measured as the difference between stock return and CRSP value-weighted return over the same period. SIZE and BM denote market capitalization and the book-to-market ratio at the end of year y−1. MOM is the firm's return over the 6-month period ending on day t−11 before the earnings announcement. BETA and IVOL are stock beta and standard deviation of residual returns from the 4-factor model estimated over the 200 day period ending on day t−11 before the earnings announcement. ILLIQ is the Amihud illiquidity ratio measured over the 200 trading days ending on day t−11 before the earnings announcement. SUE_{q-1} is standardized unexpected earnings from the prior quarter using the random walk model.

TABLE 2 | EXRET[−10,−1] from portfolios sorted by earnings announcement maximum return.

	Actual announcement date
1 (Low EA_MAXRET)	0.0022
2	0.0010
3	0.0014
4	0.0016
5	0.0020**
6	0.0023**
7	0.0036**
8	0.0041**
9	0.0059***
10 (High EA_MAXRET)	0.0107***
10-1	0.0085***

Decile portfolios are formed every quarter from 1981 to 2020 by sorting stocks based on EA_MAXRET measured from year y−1. Portfolio 1 (10) is the portfolio with the lowest (highest) earnings announcement maximum return in the previous year. EA_MAXRET is the maximum value of the 3-day market-adjusted return around earnings announcements (from day −1 to day +1) from four earnings announcements in year y−1. EXRET[−10,−1] is the market-adjusted return in the 10 days leading to earnings announcements. Market-adjusted return is measured as the difference between stock return and CRSP value-weighted return over the same period. Actual earnings announcements are based on earnings announcement dates from Compustat. ***, **, and * indicate statistical significance at the 1, 5, and 10% levels, respectively.

earnings announcement maximum return and portfolio 10 (high EA_MAXRET) is the portfolio with the highest earnings announcement maximum return.

In Column (1) of Table 2, where EXRET[−10,−1] is measured relative to actual earnings announcement dates, the average market-adjusted return of the top EA_MAXRET portfolio is 1.07% over the 10-day period leading up to earnings announcements and is significant at the 1% level. The average market-adjusted return difference between decile 10 (high EA_MAXRET) and decile 1 (low EA_MAXRET) is 0.85% and is also significant at the one percent level. In unreported tests, we find that the hedge returns from going long decile 10 and short decile 1 of EA_MAXRET in the 10 days leading up to earnings announcements are positive in 123 out of the 160 quarters (77%) in our sample period.[19] Market-adjusted return is increasing monotonically from decile 3 to decile 10. From decile 4 to decile 10, market-adjusted returns are significant at the five percent level or better and the pre-earnings announcement stock returns are especially strong in the two highest EA_MAXRET deciles (deciles 9 and 10). Figure 1 presents the annualized market-adjusted returns based on long-short portfolios sorted by earnings announcement maximum returns (EA_MAXRET) across the 40 years of the sample period (1981–2020). The annualized hedge return is the aggregation of the four quarterly EA_MAXRET hedge returns in a year. The hedge portfolio has earned positive abnormal returns in 33 of the 40 years of the sample period, suggesting that the spread in pre-earnings announcement stock returns is stable.

Overall, the univariate portfolio results in Table 2 document two key findings. First, there is a significant premium in the period immediately before earnings announcements. Second, pre-earnings announcement stock return increases in past earnings announcement maximum return. However, Panel B of Table 1 shows that high EA_MAXRET stocks tend to have characteristics that would potentially demand a premium and, hence, univariate portfolio analysis and market-adjusted return calculation may not account for all firm characteristics that may lead to the pre-earnings announcement stock return pattern. We, therefore, control for firm characteristics in Appendix A3 (Supporting Information).

4.2 | Performance of the Calendar-Time Portfolio

We further consider a calendar-time portfolio based on earnings announcement information, following the spirit of Barber et al. (2007), Cohen et al. (2010), Coleman et al. (2022), and Pope and Wang (2023). Specifically, at the beginning of each calendar year y, we identify stocks with high and low earnings announcement maximum returns (EA_MAXRET) based on the top and bottom deciles (decides 1 and 10) of the maximum value of 3-day market-adjusted returns around earnings announcements (from day −1 to day +1) from four earnings announcements in the previous year y−1. Following the calendar-time portfolio methodology (e.g., Barber et al. 2007; Cohen et al. 2010; and Coleman et al. 2022), we simulate portfolios where we take a long (short) position in high (low) EA_MAXRET stocks.[20] Specifically, for each calendar day in year y, we take a long (short) position in high (low) EA_MAXRET stocks if they are in the 10 days leading up to earnings announcements (from day −10 to day −1).[21] Each day, we estimate the daily excess portfolio return (in excess of the risk-free rate) as the equal-weighted excess return of stocks in the portfolio on that day. We analyze the long and short portfolios, along with the hedge returns. We then construct the time series of portfolio returns and assess the portfolio performance.

Table 3 and Figure 2 present the annualized excess returns based on calendar-time portfolios based on earnings announcement information across the sample period. We find that the average annualized excess return is 3.95%. In addition, the time-series portfolio has earned positive returns in 37 of the 40 years of the sample period, suggesting that its performance is stable.

We then consider the regressions of calendar-time portfolio return on Fama–French five factors and report the results in Table 3. Panel A of Table 3 reports the average returns from the long and short positions as well as the hedge returns (i.e., long minus short). Panel B of Table 3 reports the results for alphas after controlling for the daily factors. We find that the alpha is significant after controlling for the daily Fama and French five factors. In addition, long and short portfolios load positively on SMB (i.e., they are biased toward smaller stocks); all load negatively on RMW (i.e., they are biased toward weaker profitability stocks). The hedge portfolios load positively on SMB (i.e., they are tilted toward smaller stocks) and negatively on RMW (i.e., they are tilted toward less profitable stocks) and CMA (i.e., it is tilted toward more conservative investment growth stocks).[22]

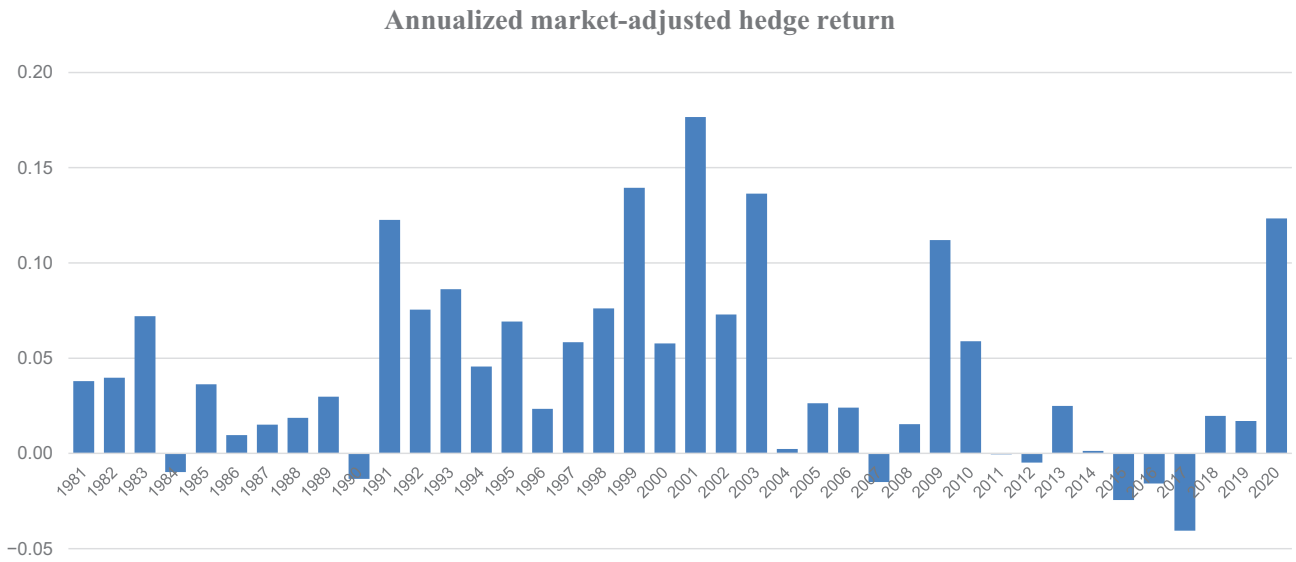

FIGURE 1 | Market-adjusted hedge returns based on portfolios sorted by earnings announcement maximum return. The figure shows the annualized market-adjusted returns based on portfolios sorted by earnings announcement maximum returns (EA_MAXRET) across the 40 years of the sample period (1981–2020). The annualized hedge return is the aggregation of the four quarterly EA_MAXRET hedge returns in a year. EA_MAXRET is the maximum value of the 3-day market-adjusted return around earnings announcements (from day −1 to day +1) from four earnings announcements in year $y-1$. Decile portfolios are formed every quarter from 1981 to 2020 by sorting stocks based on EA_MAXRET measured from year $y-1$. Portfolio 1 (10) is the portfolio with the lowest (highest) earnings announcements maximum return in the previous year. EXRET[−10,−1] is the market-adjusted return in the 10 days leading to earnings announcements. Market-adjusted return is measured as the difference between stock return and CRSP value-weighted return over the same period.

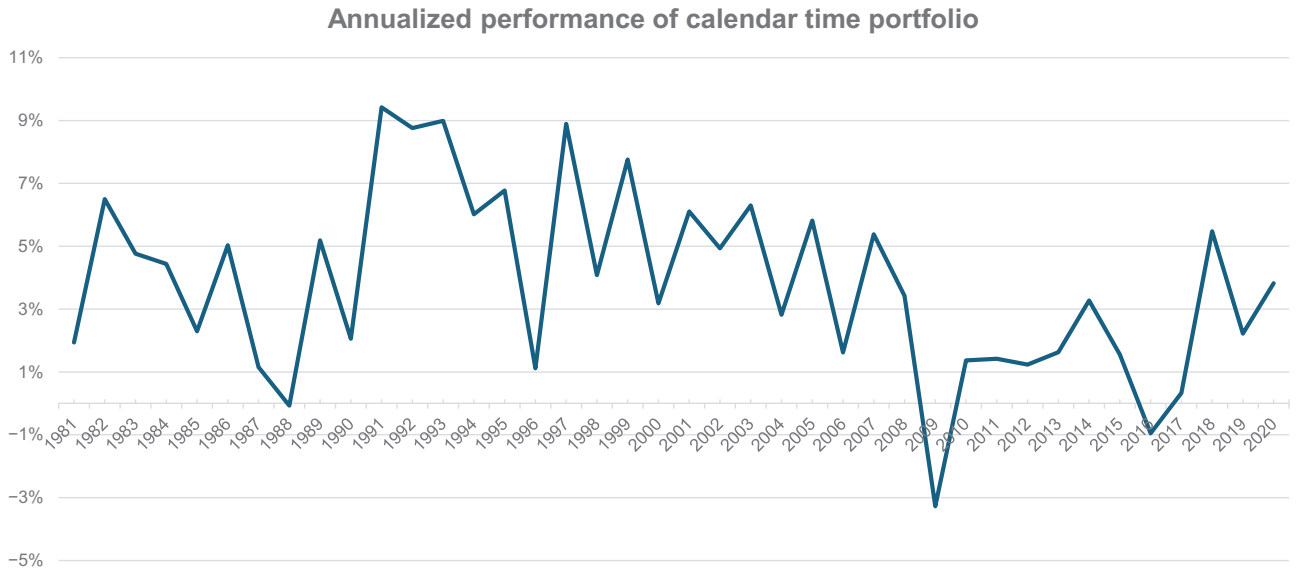

FIGURE 2 | Annualized performance of calendar-time portfolio. The figure shows the annualized excess returns based on calendar-time portfolios based on earnings announcement information across the sample period. Excess returns are measured as the differences between stock returns and the risk-free rate.

4.3 | The Effect of Market Sentiment, Retail Holdings, Attention on EXRET[−10,−1] Sorted by Earnings Announcement Maximum Return

It is conceivable that retail investors, rather than institutional investors, are more likely to exert price pressures for lottery stocks (Bali et al. 2017; Kumar 2009; Lin and Liu 2018). Thus, if lottery demand drives the earnings announcement lottery payoff effect, we should see a more pronounced return difference between the two extreme EA_MAXRET portfolios of stocks that are popular with retail investors. We follow Bali et al. (2017) and Lin and Liu (2018) and use institutional ownership as a proxy for retail holdings.[23] Specifically, to measure retail ownership, we use 1 minus the proportion held by 13F filers (denoted RETAIL_OWNS), with the higher the value of RETAIL_OWNS, the higher the proportion held by retail investors. We conduct

TABLE 3 | Performance of calendar-time portfolio.

Panel A: Annualized performance of calendar-time portfolio				
	Excess returns (%)	***t*-Statistics**	**STD (%)**	**Sharpe ratio**
Long position	7.20	(7.88)	4.60	1.56
Short position	3.25	(4.21)	3.97	0.82
Hedge returns (long–short)	3.95	(9.74)	4.44	0.89
Panel B: Regressions of calendar-time portfolio returns on Fama–French five factors				
	Long position		**Short position**	**Hedge return**
Alpha	0.024***		0.009***	0.015***
	(9.10)		(3.81)	(10.08)
Mkt-Rf	0.160***		0.139***	0.021***
	(17.40)		(17.21)	(6.25)
SMB	0.140***		0.114***	0.026***
	(14.06)		(12.97)	(5.76)
HML	−0.012		−0.002	−0.009
	(-0.78)		(−0.17)	(−1.16)
RMW	−0.062***		−0.036***	−0.026***
	(−4.06)		(−3.02)	(−3.66)
CMA	−0.025		−0.003	−0.022**
	(−1.42)		(−0.24)	(−2.42)
R-squared	0.467		0.428	0.05

Panel A presents the performance of the calendar portfolio based on earnings announcement information. Panel B shows the results from time-series regressions of calendar-time portfolio returns on Fama–French five factors. Alpha is in percentage. *t*-Statistics are reported in parentheses. Newey and West (1987)'s standard errors are used to adjust for serial correlation.

***, **, and * indicate statistical significance at the 1, 5, and 10% levels, respectively.

a two-way portfolio sort. Specifically, for each quarter, we sort all stocks into tertile portfolios based on retail holdings. Then, within each tertile, stocks are independently sorted into decile portfolios based on EA_MAXRET. Stocks with high (low) retail holdings are those in the bottom (top) tertile of retail ownership. In Columns (1) and (2) of Table 4, we observe that the long-short EA_MAXRET portfolio generates a hedge return of 107 basis points among high retail ownership stocks and a hedge return of 84 basis points among low retail ownership stocks, suggesting that the earnings announcement lottery payoff effect is larger among retail stocks.[24]

The extant literature suggests that the level of lottery purchases can be influenced by psychological factors. Studies such as Baker and Wurgler (2006) and Stambaugh et al. (2012) find that investor bias and mispricing are stronger during periods of high market sentiment, while Doran et al. (2012) and Fong and Toh (2014) document that investor sentiment amplifies the overpricing of lottery-like assets. Following this line of inquiry, we examine whether the EA_MAXRET phenomenon varies across different sentiment states. If the lottery demand drives the documented earnings announcement lottery payoffs, we expect the EA_MAXRET phenomenon to be stronger during periods of high aggregate investor sentiment, since investors, during such periods, are more prone to high attention and overoptimism about the large positive earnings announcement payoffs on lottery stocks. To test this prediction, we use the investor sentiment index from Baker and Wurgler (2006, 2007) to measure investor sentiment and report results for this test in Columns (3) and (4) of Table 4. Specifically, Columns (3) and (4) report the return differences between decile 10 and decile 1 of the portfolios sorted based on EA_MAXRET for the period of high sentiment (when the Baker and Wurgler (2006)'s sentiment index is above its sample median) and low sentiment (when the sentiment index is below its sample median). We find that the long-short EA_MAXRET portfolio generates a hedge return of 107 basis points during the high sentiment periods and 53 basis points during the low sentiment periods.[25] This finding is generally consistent with that from Fong and Toh (2014), who show the monthly MAX effect in Bali et al. (2011) is chiefly a high sentiment period phenomenon, and that from DeVault et al. (2019), who show that investors shift from safe to more speculative stocks when sentiment increases.

Recent studies (e.g., Bali et al. 2021) document the role of attention in attracting investors to lottery stocks. We follow this line of inquiry and examine whether the EA_MAXRET phenomenon is amplified by high attention. We follow Chen et al. (2022) and employ the aggregate attention index to capture investor attention. Specifically, the aggregate attention index is constructed based on 12 individual attention proxies, including analyst coverage, media coverage, changes in advertising expenses, Google

TABLE 4 | The effect of market sentiment, retail holdings, analyst and media coverage on EXRET[−10,−1] sorted by earnings announcement maximum return.

	Retail holdings		Sentiment		Aggregate attention	
	High	Low	High	Low	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)
1 (Low EA_MAXRET)	0.0024	0.0001	0.0023	0.0021	0.0010	0.0010
2	0.0027*	0.0000	0.0019**	−0.0003	0.0011	−0.0003
3	0.0031*	0.0010	0.0016	0.0011	0.0013	0.0010
4	0.0026*	0.0000	0.0017*	0.0014	0.0005	0.0011
5	0.0025*	0.0016*	0.0018**	0.0023	0.0013	0.0019*
6	0.0039**	0.0018**	0.0025*	0.0018	0.0018	0.0015
7	0.0051***	0.0019*	0.0050***	0.0014	0.0030	0.0027
8	0.0058***	0.0039***	0.0047***	0.0032	0.0047***	0.0023
9	0.0085***	0.0039***	0.0068***	0.0044	0.0068***	0.0045**
10 (High EA_MAXRET)	0.0130***	0.0085***	0.0129***	0.0074**	0.0119***	0.0071**
10-1	0.0107***	0.0084***	0.0107***	0.0053**	0.0109***	0.0061**

Decile portfolios are formed every quarter from 1981 to 2020 by sorting stocks based on EA_MAXRET measured from year $y-1$. Portfolio 1 (10) is the portfolio with the lowest (highest) earnings announcements maximum return in the previous year. We report the return differences between decile 10 and decile 1 of the portfolios sorted based on EA_MAXRET for subsamples of stocks with high and low retail holdings (Columns 1 and 2). For each quarter, all stocks are sorted into tertile portfolios using each of the aforementioned variables. Then, within each tertile, stocks are independently sorted into decile portfolios based on EA_MAXRET. Stocks with high (low) retail holdings are those in the top (bottom) tertile of retail ownership. To measure retail ownership, we use 1 minus the proportion held by 13F filers, with the higher value of the measure, the higher proportion held by retail investors. We source institutional ownership data from Thompson Reuters Institutional 13F. Columns (3) and (4) report the return differences between decile 10 and decile 1 of the portfolios sorted based on EA_MAXRET for the period of high sentiment (when Baker and Wurgler (2006)'s sentiment index is above its sample median) and low sentiment (when the sentiment index is below its sample median). Columns (5) and (6) report the return differences between decile 10 and decile 1 of the portfolios sorted based on EA_MAXRET for the period of high attention (when the aggregate attention index is above its sample median) and low attention (when the aggregate attention index is below its sample median). We source the aggregate attention index from Chen et al. (2022). EA_MAXRET is the maximum value of the 3-day market-adjusted return around earnings announcements (from day −1 to day +1) from four earnings announcements in year $y-1$. EXRET[−10,−1] is the market-adjusted return in the 10 days leading to earnings announcements. Market-adjusted return is measured as the difference between stock return and CRSP value-weighted return over the same period.
***, **, and * indicate statistical significance at the 1, 5, and 10% levels, respectively.

search volume, abnormal trading volume, past returns, nearness to the Dow 52-week high, nearness to the Dow historical high, mutual fund inflow and outflow, and EDGAR search traffic (Chen et al. 2022).[26] We expect the EA_MAXRET phenomenon to be amplified by high attention since retail investors' attraction to lottery stocks induces overvaluation (Bali et al. 2021). Columns (5) and (6) report the return differences between decile 10 and decile 1 of the portfolios sorted based on EA_MAXRET for the period of high attention (when the aggregate attention index is above its sample median) and low sentiment (when the aggregate attention index is below its sample median). We observe that the long-short EA_MAXRET portfolio generates a hedge return of 109 basis points for the high attention subsample and a hedge return of 61 basis points for the low attention subsample.[27] These findings further suggest that the earnings announcement lottery payoff effect can be attributed to retail investors' attraction to lottery stocks.

4.4 | The Recency of Lottery Events and the Timing of Earnings Announcement Maximum Return

The findings thus far suggest that the earnings announcement lottery payoff effect can be attributed to retail investors' attention to lottery stocks. However, evidence from psychological studies suggests that attention decays over time (Murdock 1962; Wu and Huberman 2007). We therefore further examine whether, and to what extent, attention to earnings announcement maximum returns decaying over time is associated with the magnitude of the earnings announcement lottery payoff effect. We follow Bali et al. (2021) and use the recency of the lottery events to capture the dynamic dimension of attention for limited-attention investors. RECENCY is measured as the inverse of one plus the number of trading days between the quarter when EA_MAXRET is realized and the portfolio formation date. By way of construction, the larger the RECENCY, the more recently the lottery event occurs relative to the portfolio formation and, therefore, is likely to capture greater investor attention.

For each quarter, all stocks are sorted into quartile portfolios based on RECENCY. Then, within each quartile, stocks are independently sorted into decile portfolios based on EA_MAXRET. Stocks with high (low) attention are those in the top (bottom) quartile of RECENCY portfolios. We observe in Panel A of Table 5 that the long-short EA_MAXRET portfolio generates a hedge return of 111 basis points for high RECENCY portfolios and a hedge return of 73 basis points for low RECENCY portfolios. These findings further confirm that the magnitude of the earnings announcement lottery payoff effect can be attributed to retail investors' attention to lottery events.

TABLE 5 | The recency of lottery events and the timing of EA_MAXRET.

Panel A: The recency of lottery events				
	(1) LOW RECENCY	**(2)**	**(3)**	**(4) HIGH RECENCY**
1 (Low EA_MAXRET)	0.0015	0.0030**	0.0042*	0.0027**
2	0.0018**	−0.0007	0.0011	0.0014*
3	0.0015**	0.0011	0.0023**	0.0025**
4	0.0013*	0.0020**	0.0029***	0.0017**
5	0.0017**	0.0013*	0.0020***	0.0023***
6	0.0026***	0.0034***	0.0023***	0.0035***
7	0.0043***	0.0020**	0.0038***	0.0049***
8	0.0046***	0.0041***	0.0033***	0.0060***
9	0.0057***	0.0057***	0.0065***	0.0094***
10 (High EA_MAXRET)	0.0088***	0.0099***	0.0126***	0.0138***
10-1	0.0073***	0.0069***	0.0085***	0.0111***

Panel B: The timing of EA_MAXRET				
	Q1 EA_MAXRET	**Q2 EA_MAXRET**	**Q3 EA_MAXRET**	**Q4 EA_MAXRET**
	(1)	**(2)**	**(3)**	**(4)**
1 (Low EA_MAXRET)	0.0010	0.0046**	0.0039*	0.0008
2	0.0016	−0.0004	0.0008	0.0015
3	0.0008	0.0006	0.0020**	0.0021
4	0.0012	0.0014	0.0017	0.0013
5	0.0017	0.0021**	0.0025**	0.0021**
6	0.0016	0.0021*	0.0024**	0.0025*
7	0.0035**	0.0020	0.0031**	0.0054***
8	0.0045**	0.0041***	0.0029	0.0053***
9	0.0053**	0.0048***	0.0061***	0.0074**
10 (High EA_MAXRET)	0.0084***	0.0089***	0.0132***	0.0127***
10-1	0.0074***	0.0043***	0.0093***	0.0118***

In Panel A, double-sorted decile portfolios are formed every quarter from 1981 to 2020 by sorting stocks based on EA_MAXRET measured from year $y-1$ after controlling for the recency of the lottery events (RECENCY). Stocks are first sorted into quartiles based on RECENCY. Then, within each quartile, stocks are sorted into deciles based on EA_MAXRET. In Panel B, Columns (1)–(4) report the results for decile portfolios that are formed by sorting stocks based on EA_MAXRET that are realized at the first, second, third, or last quarter of the prior year. EA_MAXRET is the maximum value of the 3-day market-adjusted return around earnings announcements (from day −1 to day +1) from four earnings announcements in year $y-1$. Market-adjusted return around earnings announcements is the 3-day market-adjusted return around earnings announcements (from day −1 to day +1). EXRET[−10,−1] is the market-adjusted return in the 10 days leading up to earnings announcements. Market-adjusted return is measured as the difference between stock return and CRSP value-weighted return over the same period. RECENCY is measured as the inverse of one plus the number of trading days between the quarter when EA_MAXRET is realized and the portfolio formation date. ***, **, and * indicate statistical significance at the 1, 5, and 10% levels, respectively.

Panel B of Table 5 presents the earnings announcement lottery payoff effect when EA_MAXRET is realized in the first quarter, second quarter, third quarter, and fourth quarter of the prior calendar year. The effect is strongest when EA_MAXRET is realized in the fourth quarter, with the top decile of EA_MAXRET stocks exhibiting 1.27% and the hedge EA_MAXRET strategy delivering 1.18%. A plausible explanation is that investors pay a lot more attention to the fourth-quarter earnings announcements (generally annual earnings announcements) and, therefore, large payoffs from these announcements attract a higher level of demand from lottery investors.[28]

When EX_MAXRET is realized in the first, second, or third quarter of the prior year, the average return differences between two extreme deciles are, in turn, 0.74, 0.43, and 0.93%, and these returns are all significant at the one percent level. Thus, the results in Panel B of Table 5 suggest that the earnings announcement lottery pay-off effect is robust to controlling for the timing of EA_MAXRET.[29]

We further conduct several additional analyses. First, we examine whether the results of our main analyses are robust to different methods of portfolio weightings and different risk-adjustment

techniques. Panel A of Appendix A1 (Supporting Information) provides results of the earnings announcement lottery payoff effect using alternative portfolio weighting methods. Panel B of Appendix A1 (Supporting Information) provides results of the earnings announcement lottery payoff effect using alternative risk-adjustment techniques. We find that our results are robust.

Second, we construct a pseudo earnings announcement date by subtracting a random number from a uniform distribution between 10 and 40 from the actual earnings announcement date. These pseudo-earnings announcements represent random periods where earnings are not announced. Appendix A2 (Supporting Information) reports the results for these tests. Appendix A2's (Supporting Information) results suggest that the market-adjusted return difference between the two extreme EA_MAXRET portfolios is statistically insignificant, indicating that there is no earnings announcement lottery payoff effect in the period where no earnings news is pending. In addition, the differences in market-adjusted returns between actual earnings versus pseudo earnings announcement dates confirm that the pre-earnings announcement premium is only specific to the period immediately before a pending earnings announcement and that the pre-earnings announcement premium is increasing in past earnings announcement maximum return.

Third, we revisit the earnings announcement lottery payoff effect by using the past earnings announcement minimum return (EA_MINRET) and report the results for these analyses in Appendix A7 (Supporting Information). We find that there is an insignificant relation between EA_MINRET and market-adjusted return.

Fourth, we consider alternative measures of EA_MAXRET. We report the results for these tests in Appendix A8 (Supporting Information) and find that earnings announcement lottery payoff is highly persistent over time.

Fifth, to further understand the nature of the documented pre-earnings announcement premium, we examine: (i) whether earnings announcements are attention-grabbling events; and (ii) whether stock-based lottery demand is particularly strong during earnings announcement periods. Appendix A10 (Supporting Information) reports the results for the analyses. Appendix A10's (Supporting Information) findings indicate that earnings announcements are indeed attention-grabbing events, and that stock-based lottery demand is particularly strong during earnings announcement periods.

4.5 | Robinhood Trading Platform as a Shock to Retail Trading

In this section, we identify the establishment of the Robinhood trading platform that accelerates retail trading and consider this as an exogenous shock to retail investors' ability to engage in these lottery events. This shock allows us to establish more causal evidence in support of the retail investor mechanism.[30] Specifically, Massa (2021) points out that due to commission-free trading, Robinhood nearly doubled its client base in 2018 with total active users reaching 3.3 million and this number climbed quickly to 12 million in 2020. Therefore, we assign the period 2018–2020 as the post-Robinhood period and the period 2015–2017 as the pre Robinhood period. We refer to the later period as the post-establishment of Robinhood trading platform and expect that a significantly higher level of retail trading should lead to a stronger manifestation of the return pattern documented in our study.

We conduct two tests. First, we examine the trading volume of the top EA_MAXRET portfolio. We source the share turnover data from the CRSP database. We focus on 3 years before and after Robinhood gained a significant retail client base to capture the dynamic effect of the shock to retail investors' trading decisions and, at the same time, mitigate confounding effects. We report the results for this test in Panel A of Table 6 in the revised manuscript. We find a significant increase in share turnover before and after the establishment of the Robinhood platform. Specifically, the average share turnover is 0.5018 in the post-establishment period and this is a 73% increase relative to the average share turnover of 0.2903 in the pre-establishment period.

Second, we consider the hedge returns between the top and bottom EA_MAXRET deciles before and after the establishment of the Robinhood platform. Consistent with the previous analyses, we consider 3 years before and after the establishment year to capture the dynamic effect of the shock. We report the results for this test in Panel B of Table 6. Figure 3 presents the hedge returns for the pre- and post-establishment of the Robinhood platform. We find that hedge returns are significantly higher after the establishment (117 bps) of the Robinhood platform compared with the pre-establishment period (8 bps). The results further confirm the roles of retail investors in explaining the return pattern documented in our study.

5 | Further Analyses

5.1 | Expected Earnings Announcement Dates and Precise Earnings Announcement Dates

Our main results are based on the exact knowledge of when actual earnings announcement dates are whereas, in practice, firms may deviate from their scheduled announcement dates. Therefore, actual earnings announcement dates in Compustat may bring about a look-ahead bias in our EA_MAXRET strategy because not knowing the exact time of the earnings release leaves doubt in the measurement of EXRET[−10,−1].[31]

In this section, we examine the relation between EA_MAXRET and market-adjusted stock return in the period leading up to alternative sources of earnings announcement dates. First, we derive expected earnings announcement dates instead of relying on actual earnings announcements from Compustat. We form expected earnings announcement dates for a firm using the approach developed by Cohen et al. (2007), which is based on the distributions of the firm's earnings announcement dates in prior quarters. Specifically, we identify a firm's actual earnings announcement date as one of the 63 days in the quarter. We then use the median quarterly earnings announcement date as identified using earnings announcements from the prior rolling 5 years as the expected earnings announcement date for the current quarterly earnings announcement.

TABLE 6 | The establishment of Robinhood trading platform as a shock to retail investors.

Panel A. Trading turnover before and after the establishment		
	Share turnover in Top EA_MAXRET portfolio	
	Mean	**Median**
Pre-establishment	0.2903	0.1729
Post-establishment	0.5018	0.2208
Difference (post–pre)	0.2115***	0.0479***
(*p* Value)	(0.00)	(0.00)
Panel B: Hedge returns before and after the establishment		
	Hedge returns	
	(Top EA_MAXRET–Bottom EA_MAXRET Portfolios)	
	Mean	**Median**
Pre-establishment	0.0008	0.0008
Post-establishment	0.0117	0.0133
Difference (post–pre)	0.0109**	0.0125**
(*p* Value)	(0.03)	(0.05)

This table reports the results on the impact of the establishment of the Robinhood trading platform on retail investors' ability to engage in lottery earnings events. Panel A reports the results for the trading volume of stocks in the top EA_MAXRET decile portfolio 3 years before and after the establishment of the Robinhood platform in 2018. Panel B reports the results for the hedge returns between the top and bottom EA_MAXRET deciles before and after the establishment of the Robinhood platform. EA_MAXRET is the maximum value of the 3-day market-adjusted return around earnings announcements (from day −1 to day +1) from four earnings announcements in year *y*−1. Pre-establishment: 2015, 2016, and 2017; post-establishment: 2018, 2019, and 2020.
∗, ∗∗, and ∗∗∗ represent significance at the 10, 5, and 1% levels, respectively. Detailed variable definitions are in the Appendix (Supporting Information).

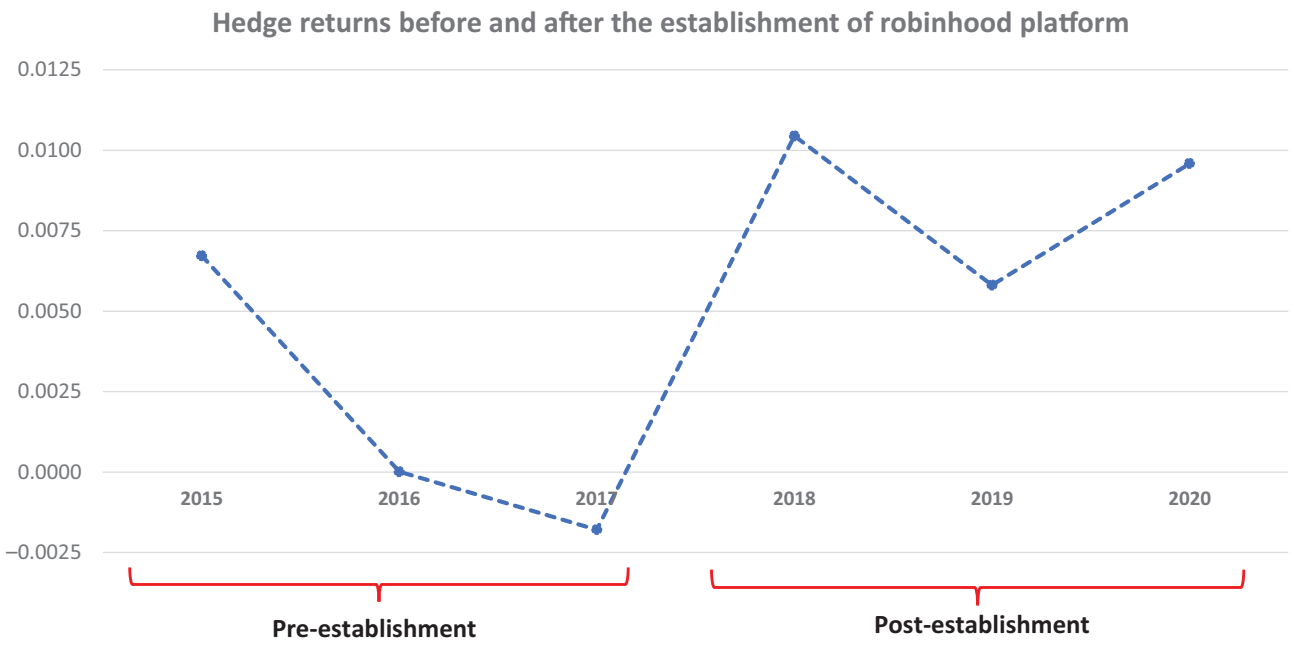

FIGURE 3 | Hedge returns before and after the establishment of the Robinhood platform. The figure shows the hedge returns between the top and bottom earnings announcement maximum returns (EA_MAXRET) deciles before and after the establishment of the Robinhood platform.

Second, to mitigate the potential ambiguities due to investors possibly not knowing the actual earnings announcement dates ahead of time, we turn to the WSH database to get the earnings announcement dates that are available to investors ahead of the announcement time. As WSH provides real-time corporate events, they update their earnings calendars by 4:00 am Eastern Time on each trading day so that users of their service are aware of all forthcoming earnings announcements, together with the exact timing in the trading day.[32]

Third, to reduce measurement error in the identification of earnings announcement dates, we follow DellaVigna and Pollet

TABLE 7 | EXRET[−10,−1] relative to expected announcement dates and precise announcement dates.

	Expected announcement date (1)	Wall Street Horizon announcement date (2)	IBES/Compustat announcement date (3)	Engelberg et al. (2018) announcement date (4)
1 (Low EA_MAXRET)	0.0024	−0.0004	0.0021	0.0017
2	0.0017	0.0003	0.0010	0.0007
3	0.0016	0.0005	0.0012	0.0010
4	0.0012	0.0005	0.0014	0.0009
5	0.0022**	0.0008	0.0017*	0.0013
6	0.0026**	0.0002	0.0020*	0.0024**
7	0.0034**	0.0002	0.0035**	0.0032**
8	0.0045**	0.0011	0.0039**	0.0038**
9	0.0060***	0.0016**	0.0058**	0.0054**
10 (High EA_MAXRET)	0.0107***	0.0059***	0.0101***	0.0106***
10-1	0.0083***	0.0063***	0.0080**	0.0089***

This table presents decile portfolios formed every quarter from 1981 to 2020 by sorting stocks based on EA_MAXRET measured from year y−1. Portfolio 1 (10) is the portfolio with the lowest (highest) earnings announcements maximum returns in the previous year. EA_MAXRET is the average of the absolute value of the 3-day market-adjusted return around earnings announcements (from day −1 to day +1) from four earnings announcements in year y−1. EXRET[−10,−1] is the market-adjusted return in the 10 days leading up to expected earnings announcements. Market-adjusted return is measured as the difference between stock return and CRSP value-weighted return over the same period. In Column (1), expected earnings announcements are estimated using the approach from Cohen et al. (2007) where the expected earnings announcement dates are based on the distributions of firms' earnings announcement dates from the prior 5 years. For each firm quarter, an earnings announcement date is identified as one of the 63 days in the quarter (day 1 to day 63 in the quarter). The median earnings announcement date from the previous rolling 5 years (20 quarters) is the expected earnings announcement date. In Column (2), earnings announcement dates are from the Wall Street Horizon database that provides corporate events to investors ahead of the announcement time. In Column (3), following DellaVigna and Pollet (2009), earnings announcement dates are the earlier dates between earnings announcement dates reported by Compustat and I/B/E/S. In Column (4), following Engelberg, McLean, and Pontiff (2018), we examine firms' trading volume scaled by market trading volume for each day in a 3-day window surrounding the reported earnings announcements date from Compustat and define the day with the highest trading volume among these 3 days as the earnings announcement day.

***, **, and * indicate statistical significance at the 1, 5, and 10% levels, respectively.

(2009). We compare the earnings announcement dates reported by Compustat and I/B/E/S and assign the earlier date as the correct earnings announcement date.

Finally, following Engelberg et al. (2018), we examine firms' trading volume scaled by market trading volume for each day in a 3-day window surrounding the reported earnings announcements date from Compustat and define the day with the highest trading volume among these 3 days as the earnings announcement day. This approach minimizes the concern that firms can report earnings after the market closes, whereby the information will be reflected in the stock return on the following day (Engelberg et al. 2018).

Table 7 presents the results of this analysis. Column (1) of Table 7 presents market-adjusted returns across EA_MAXRET decile portfolios, where EXRET[−10,−1] is measured relative to expected earnings announcement dates instead of actual earnings announcement dates. The results are relatively similar to those reported in Table 2. The market-adjusted return difference between the two extreme portfolios of earnings announcement maximum return is 83 basis points in the 10 days leading to expected earnings announcements.[33]

Column (2) in Table 7 presents market-adjusted returns across EA_MAXRET decile portfolios where EXRET[−10,−1] is measured relative to WSH earnings announcement dates. Here, the hedge return exhibits 63 basis points in the 10 days leading to precise earnings announcement dates. Column (3) in Table 7 repeats our main analysis using the earlier earnings announcement dates recorded between I/B/E/S and Compustat. We also document the hedge EA_MAXRET strategy delivering 80 basis points. Finally, we repeat our main analysis using earnings announcement dates estimated following Engelberg et al. (2018) and find the hedge strategy, reported in Column (4), delivering 89 basis points.

Overall, the results in Table 7 confirm that the earnings announcement lottery payoff effect is still present when we measure market-adjusted stock return in the pre-earnings announcement period relative to expected earnings announcement dates instead of actual earnings announcement dates. The results, albeit smaller in magnitude, also show a significant spread for the WSH sample where earnings announcement dates are known to market participants ahead of time. Finally, the results are almost similar when we use the earlier earnings announcement dates recorded between I/B/E/S and Compustat, or the day with the highest trading volume among a 3-day window surrounding reported earnings announcement dates.

TABLE 8 | Cross-sectional predictability of EA_MAXRET.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
EA_MAXRET	0.1381								0.0654
	(21.03)***								(9.18)***
SIZE		−0.0065							0.0006
		(−19.12)***							(1.19)
BM			0.0089						0.0051
			(5.59)***						(4.24)***
MOM				0.0178					0.0114
				(7.31)***					(5.99)***
BETA					0.0054				0.0023
					(4.67)***				(2.32)**
IVOL						1.475			1.4302
						(26.70)***			(17.89)***
ILLIQ							0.0050		−0.0010
							(6.43)***		(−1.47)
SUE_{q-1}								0.0555	0.0443***
								(7.84)***	(6.89)
R^2	0.019	0.016	0.003	0.008	0.001	0.087	0.008	0.002	0.102

This table presents the analyses of earnings announcement maximum return persistence from a cross-sectional regression framework. EA_MAXRET is the maximum value of the 3-day market-adjusted return around earnings announcements (from day −1 to day +1) from four earnings announcements in year $y-1$. Market-adjusted return is measured as the difference between stock return and CRSP value-weighted return over the same period. SIZE and BM denote market capitalization and book-to-market ratio at the end of year $y-1$. MOM is the firm's return over the 6-month period ending on day $t-11$ before the earnings announcement. BETA and IVOL are stock beta and standard deviation of residual returns from the 4-factor model estimated over the 200 day period ending on day $t-11$ before the earnings announcement. ILLIQ is the Amihud illiquidity ratio measured over the 200 day period ending on day $t-11$ before the earnings announcement. SUE_{q-1} is standardized unexpected earnings from the prior quarter using the random walk model. t-Statistics in parentheses are based on two-way clustered robust standard errors, clustered by firm and quarter (Petersen 2009; Gow et al. 2010).
***, **, and * indicate statistical significance at the 1, 5, and 10% levels, respectively.

5.2 | Cross-Sectional Predictability of Earnings Announcement Maximum Return

So far we have documented a striking phenomenon that stocks with high earnings announcement maximum return, as measured surrounding past earnings announcements, exhibit high market-adjusted returns in the period immediately before current earnings announcements. This is consistent with the idea that investors interpret stocks with high past earnings announcement maximum return as likely to exhibit high earnings announcement maximum return in the future. In this section, we examine the persistence of earnings announcement maximum return, which serves as a basis for how investors may perceive high versus low lottery pay-off stocks when it comes to the earnings announcement period. Table 8 presents the results of this analysis.

Table 8 presents the analyses of earnings announcement maximum return persistence from a cross-sectional regression framework.[34] In Column (1) of Table 8, the relation between future earnings announcement maximum return and EA_MAXRET is 0.1381 with a t-statistic of 21.03. Between Columns (2) and (8) of Table 8, we find that earnings announcement maximum return is negatively related to firm size, while positively related to book-to-market ratio, beta, momentum, idiosyncratic volatility, Amihud illiquidity, and prior quarter standardized unexpected earnings. In the full model in Column (9) of Table 8, we find that the coefficient on EA_MAXRET remains very large and significant. We also notice that idiosyncratic volatility is strongly predictive of future earnings announcement maximum return. The adjusted R-square of the full model is 10%, which indicates substantial cross-sectional explanatory power for future earnings announcement maximum return.

Overall, the results in Table 8 show that earnings announcement maximum return is highly persistent over time, and investors can conveniently identify stocks with high versus low future earnings announcement maximum return from observing how the stock returns behave surrounding past earnings announcements. In other words, stocks with extreme earnings announcement maximum return in the past are likely to exhibit this feature in the future.

5.3 | Discussion of Other Untabulated Results

5.3.1 | Transaction Costs

We investigate whether our results are robust to accounting for transaction costs mainly because the effect we show is most pronounced among smaller firms and more illiquid firms. We

first focus on the bid-ask spread and brokerage commissions as the two main sources of transaction costs (Aboody et al. 2010; Lesmond et al. 2004; Ng et al. 2008). To assess the bid-ask spread's impact on EXRET[−10,−1], we recompute these returns under the assumption that an entry position is at the ask price on day −10 and an exit position is at the bid price on day −1.[35] We source the closing bid and ask prices from the CRSP daily file from 1993 onward.[36] An examination of the data reveals a number of instances where there are large differences between a day's closing bid or ask and the day's closing stock price. To ensure that our results are not driven by outliners, following Aboody et al. (2010), we drop from our full-sample preannouncement return calculations any observation for which either: (1) the day −10 closing ask is greater than 150% of that day's closing stock price, or (2) the day −1 closing bid is less than 50% of that day's closing stock price.

We find that EXRET[−10,−1] for the top EA_MAXRET portfolio remains significantly different from zero even after accounting for the impact of the bid-ask spread. For our sample, where the bid-ask spread can be accounted for, the 10-day preannouncement period market-adjusted return is 0.70%. We further impose a commission of US$10 per 1000 shares traded and find that the market-adjusted return is 0.64%.[37,38] Thus, the market-adjusted return for the top EA_MAXRET portfolio remains significantly different from zero even after accounting for the impact of both bid-ask spread and brokerage commissions.[39]

Second, we emphasize that our strategy involves holding positions for a fixed 10-day period around earnings announcements and trading only once per quarter for each stock. Following Frazzini et al. (2015), we conservatively assume round-trip transaction costs of 36 basis points (bps) for our trading strategy. This estimate reflects realistic costs of executing trades across the full universe of US equities and includes commissions, bid-ask spreads, and market impact.[40] After adjusting our gross hedge returns by this transaction cost, the strategy continues to deliver economically meaningful and statistically significant net returns, confirming the robustness of our findings to implementation frictions. For example, in the S&P 500 subsample, a gross return of 1.2% over 10 days reduces to approximately 0.84% net of 36 bps round-trip costs.

Finally, we also note that our results are robust to excluding stocks with low trading volume or high bid-ask spreads. Taken together, these robustness checks suggest that the documented return pattern is not an artifact of micro-cap stocks or illiquidity and remains of economic interest even after accounting for reasonable transaction costs.

5.3.2 | Aggregate Lottery Pay-off Demand

Time-variation in lottery demand can affect the relation between lottery demand and expected stock returns (Kumar 2009; Kumar et al. 2011). Therefore, we test whether the time-varying feature of aggregate lottery demand drives our main results. We follow Bali et al. (2017) and estimate the aggregate lottery demand in each month as the cross-sectional equal-weighted or value-weighted average value of *MAX* across all stocks in the sample. An annual measure of aggregate lottery demand is measured as an average value of monthly measure across months in a year. Following the literature, we define years with above-median (below-median) aggregate lottery demand as high (low) aggregate lottery demand years. We then examine EXRET[−10,−1] of EA_MAXRET portfolios following high (low) aggregate lottery demand years. We find the average market-adjusted return difference between decile 10 (high EA_MAXRET) and decile 1 (low EA_MAXRET) remains positive and statistically (and economically) significant regardless of the levels of the aggregate lottery demand, albeit there is some evidence that this hedge return is somewhat higher in high aggregate lottery demand periods.[41]

5.3.3 | Economic States

We examine whether the earnings announcement lottery payoff effect varies with economic states given prior evidence that the demand for lottery-type stocks increases during bad economic times (Kumar 2009).[42] Following Blinder and Watson (2016), we define recession and nonrecession states based on the business cycle database of the National Bureau of Economic Research (NBER). Specifically, we define a recession quarter as one if any month in a quarter is in recession. We document a stronger effect during recession periods than nonrecession periods. The average market-adjusted return differences between decile 10 (high EA_MAXRET) and decile 1 (low EA_MAXRET) are 1.10% (0.81%) following the recession (nonrecession) periods.

In our final avenue of inquiry, we further investigate how the rise of retail investors and technological innovations following the establishment of the Robinhood trading platform affects the informativeness of earnings announcement returns. Appendix A11 (Supporting Information) reports the results for these analyses. Appendix A11's (Supporting Information) results suggest that the rise of retail investors and technological innovations following the establishment of the trading platform contributes to the reduction in the informativeness of earnings announcement returns in recent years. Finally, we examine whether the earnings announcement lottery payoff is a US-specific feature or an international phenomenon. Appendix A12's (Supporting Information) results suggest that the earnings announcement lottery payoff effect is not a US-specific feature but an international phenomenon. In addition, the earnings announcement lottery payoff effects are more pronounced in countries in which the general population is more risk-seeking.

6 | Conclusion

Our study highlights a significant relationship between earnings announcement maximum returns from previous periods and market-adjusted stock returns leading up to current earnings announcements. Our findings are robust to various controls and risk-adjustment techniques. We interpret these results as evidence that investors are drawn to stocks with a chance of high earnings announcement payoffs before earnings announcements. We also observe a significant asymmetry in the pricing of these payoffs, where only favorable earnings announcements are priced. This behavior can be attributed to the overweighting of

probability by lottery investors bidding up the prices of these stocks.

Our research has several implications for future studies on the relation between earnings announcements, idiosyncratic volatility, and stock returns. Future research can examine the extent to which preference for earnings lottery payoffs explains the previously documented earnings announcement premium. Researchers can also decompose idiosyncratic volatility into favorable and unfavorable types and study their pricing in the cross-section of expected stock returns. Furthermore, our study suggests that the rise of retail investors and technological innovations in trading platforms has contributed to the reduction in the informativeness of earnings announcement returns in recent years. This finding should be taken into consideration by market participants when incorporating earnings news into their investment decisions. Finally, as the earnings announcement lottery payoffs we observed are an international phenomenon, future research can investigate whether institutional features such as cultural dimensions, country governance, and societal trust affect investor attention to lottery features triggered by earnings announcements.

Acknowledgments

We owe special thanks to Professor Peter Pope (the Editor) and anonymous referees for many valuable comments and suggestions that significantly improved the paper. We are also grateful for helpful comments and suggestions from Henk Berkman, Stephen Brown, Patricia Dechow, Gurmeet Bhabra, Christine Brown, Tarun Chordia, Viet Nga Cao, Daniel Chai, Charles Corrado, Binh Do, Viet Do, Paul Dou, Huu Duong, Robert Faff, Bart Frijns, Philip Gharghori, Philip Gray, Paul Griffin, Xing Han, Wen He, Thanh Huynh, Andrew Jackson, Petko Kalev, John Kose, Hai Lin, Chris Liao, Tse-Chun Lin, Karl Lins, Ben Marshall, Nick Nguyen, Mia Pham, Buhui Qiu, Ghon Rhee, Stephen Taylor, Yulia Veld-Merkoulova, Nuttawat Visaltanachoti, Kathy Walsh, K.C. John Wei, Bohui Zhang, seminar participants at Monash University, Massey University, Deakin University, La Trobe University, University of Adelaide, University of Otago, FMA Annual Conference, JPMorgan Quantitative Investment Symposium, AFAANZ Conference, New Zealand Finance Meetings, EFMA Conference, Financial Markets and Corporate Governance Conference, and Conference on Theories and Practices of Securities and Finance Market. We thank WSH and Thompson Reuters for providing data on earnings announcement timing and news analytics data. Harvey Nguyen wishes to thank the Massey Business School Research Grant (MURF) that supports this project. Cameron Truong wishes to thank the AFAANZ for the AFAANZ Mid-career Research Grant that supports this project.

Open access publishing facilitated by Monash University, as part of the Wiley - Monash University agreement via the Council of Australian University Librarians.

Data Availability Statement

Data are available from the data sources identified in the paper.

Endnotes

[1] Quarterly earnings announcements introduce significant movements to stock returns over a short period and repeatedly four times over the year. On the one hand, price fluctuations around earnings announcements should be irrelevant to investors because idiosyncratic volatility in general is assumed to be diversifiable in a traditional asset pricing framework and, hence, expected stock returns are only determined by the covariance of stock returns with market returns (Lintner, 1965; Mossin, 1966; Sharpe, 1964). On the other hand, because investors are poorly diversified and exhibit a preference for assets with lottery-like payoffs (Kumar, 2009), stock with extreme positive returns surrounding past earnings announcements can attract demand from lottery investors, thereby resulting in predictable price run-ups immediately before current earnings announcements.

[2] Many innovative features of Robinhood such as zero commissions, no account minimum requirements, and gaming features of the mobile application have attracted a large wave of first-time investors who are often characterized as being of low financial sophistication and of a high tendency to herd and chase past stock returns (Barber et al., 2021; Venkateswaran, 2019).

[3] Using expected earnings announcement dates to avoid a selection bias arising from the timing of actual earnings announcement dates, Cohen et al. (2007) report that there are significantly higher stock returns during the earnings announcement period than during the nonearnings announcement period. These authors conclude that the increased returns on earnings announcement dates are related to earnings announcement risk and this risk is nondiversifiable.

[4] Much of the theoretical literature would predict that the effect of EA_MINRET can be the opposite. For example, under the cumulative prospect theory of Barberis and Huang (2008), investors can also overweight small probabilities of large earnings announcement losses and shun these stocks in the period leading to current earnings announcements, resulting in lower returns. We, however, only find predictable pre-earnings announcement returns for stocks with high maximum past earnings announcement returns and no predictable returns for stocks with low minimum past earnings announcement returns. Liu et al. (2020), however, does not investigate the implication of large downside stock returns.

[5] Aboody et al. (2010) document that past stock market winners exhibit a predictable return pattern around their earnings announcements and suggest pre-earnings stock price performance attracts individual investors' attention. So and Wang (2014) document significant reversals of pre-earnings announcement stock returns during earnings announcements and suggest that market makers demand higher expected returns prior to earnings announcements. Our study shows that prior stock return performance, when measured in a short window surrounding past earnings announcements, also attracts individual investors' attention and investment dollars in the period leading to current earnings announcements.

[6] Retail investors are often seen as traders who add noise to prices and hinder efficient reactions to information due to their lack of experience in the capital market. This view is supported by studies such as Barber and Odean (2013). In recent years, retail traders have gained access to real-time public information and affordable trading methods through web-based technologies (Barber et al., 2022; Eaton et al., 2022).

[7] We further consider return differences between the long leg and the market index and find that the hedge position generates a hedge return of 104 basis points, both economically and statistically significant (t-stat = 3.73). The results rule out the possibility that the long position is populated by more liquid stocks. We thank the referee for suggesting this test.

[8] Subsequent studies confirm the pricing of positive extreme returns in many international markets (e.g., Fong & Toh, 2014; Cheon & Lee, 2018; Zhong & Gray, 2016).

[9] We thank the referee for this suggestion. We also investigate whether the demand for earnings announcement lottery-payoffs is robust after controlling for various factors. Specifically, we control for the autocorrelation in earnings surprises, the MAX effect, the earnings announcement returns by past stock winners, the price run-up caused by divergence in investors' opinion, the return reversal ahead of earnings announcements or the earnings seasonality mispricing. We also conduct various additional risk adjustments to investigate whether

the demand for earnings announcement lottery-payoffs may be subject to risks.

[10] WSH provides real-time calendars of major corporate events for about 3000 North American stocks since 2006, including scheduled and actual earnings announcement dates. The database provider updates the calendars by 4:00 am Eastern Time on each trading day so that traders can track corporate events with accuracy in real time. WSH actual earnings announcements database has an accuracy rate of over 99% (DeHaan et al., 2015) and, therefore, provides a more reliable source of earnings announcements for several academic studies including DeHaan et al. (2015), Livnat and Zhang (2015), and Johnson and So (2018).

[11] Data are available online at: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/datalibrary.html.

[12] We thank Malcolm Baker and Jeffrey Wurgler for making their sentiment index available through their websites.

[13] We thank Sydney Ludvigson and Nicholas Bloom for making their uncertainty indices available through their websites.

[14] We find that our findings (untabulated for brevity) are robust when using excess returns (i.e., differences between stock returns and the risk-free rate) instead of market-adjusted returns.

[15] We follow Gao and Ritter (2010) and adjust for institutional features in the way volume is reported on NASDAQ. Specifically, we divide the volume reported in CRSP for stocks that trade on the NASDAQ by 2.0, 1.8, 1.6, and 1.0 for the periods prior to February 2001, between February 2001 and December 2001, between January 2002 and December 2003, and during or subsequent to January 2004, respectively.

[16] An advantage of the earnings surprise measure based on a seasonal random walk model over other more complex time-series models is that it can be estimated for almost every firm-quarter in the Compustat data (Livnat & Mendenhall, 2006), while performing as well as other more complex time-series models in capturing earnings news (Foster et al., 1984). To ensure the robustness of our findings, we repeat our analysis using standardized unexpected earnings based on analyst forecasts. The results, presented in Appendix A5 (Supporting Information), suggest that different measures of earnings surprise have little effect on our findings.

[17] As we use EA_MAXRET in year 1980 to form portfolios in year 1981, the analysis of EA_MAXRET portfolio returns is over the period 1981–2020.

[18] This is consistent with evidence from several prior studies. For example, Aboody et al. (2010) report an average preannouncement market-adjusted return of 0.30%, while Berkman and Truong (2009) report an average preannouncement market-adjusted return of 0.34%.

[19] The strategy earns positive returns in 77% of the quarters in the sample period. The z score of 6.83 from a binomial distribution test rejects the null hypothesis that the proportion of positive hedge returns over the sample period of 160 quarters equals 0.5.

[20] We thank the Editor for suggesting this approach.

[21] We find that 98% of the calendar trading days in our sample have at least one EA_MAXRET stock in the 10 days leading up to earnings announcements (from day −10 to day −1). For the remaining days without earnings information (accounting for 2% of the total trading days in a calendar year), our strategy is to invest in the market index, which is proxied by the S&P 500 index.

[22] We also use the expected earnings announcement dates instead of relying on actual earnings announcements from Compustat. We form expected earnings announcement dates for a firm using the approach developed by Cohen et al. (2007), which is based on the distributions of the firm's earnings announcement dates in prior quarters. We construct a calendar time portfolio using the expected earnings announcement dates and find that the average annualized excess return, reported in Appendix A9 (Supporting Information), is qualitatively unchanged. We thank the Editor for suggesting these analyses.

[23] Studies such as Fong and Toh (2014), Bali et al. (2017), and Nguyen and Truong (2018) suggest institutional ownership of a stock as a reliable proxy for the extent that the stock price may be affected by retail lottery investors. A stock's institutional ownership is computed as the fraction of its outstanding common shares owned by all 13F reporting institutions in a given quarter.

[24] The differences in hedge returns are statistically significant at 10% (t-stat of 1.85).

[25] We conduct a test for the difference in hedge returns between high and low sentiment portfolios and find the differences in hedge returns are statistically significant at 10% (t-stat of 2.66).

[26] We thank Jian Chen, Guohao Tang, Jiaquan Yao, and Guofu Zhou for sharing their attention data.

[27] We conduct a test for the difference in hedge returns between high and low attention subsamples and find the differences in hedge returns are statistically significant at 5% (t-stat of 2.47).

[28] DeHaan et al. (2015) find that abnormal google search volumes and EDGAR 8-K downloads surrounding earnings announcement dates are particularly strong for the fourth quarter, suggesting that the fourth quarter earnings announcements especially catch investor attention and, hence, motivate their trading behavior.

[29] We conduct further analyses and find that if EX_MAXRET is realized in the earliest quarter and there is a negative return in any of three subsequent quarters, the average return differences between two extreme deciles are 0.80%, and these returns are all significant at 1% level. If EX_MAXRET is realized in the earliest quarter, and there are negative returns in all three subsequent quarters, the average return differences between two extreme deciles are 0.64%, and these returns are all significant at 1% level. Thus, while the earnings announcement lottery pay-off effect is persistent across different timings of EA_MAXRET, the magnitude of the effect becomes smaller when extreme positive returns are followed by negative subsequent returns. We thank the referee for suggesting these tests.

[30] We thank the referee for suggesting this analysis. Our empirical tests are designed to adjudicate between two competing views. If retail trading introduces primarily random noise, we would expect the EA_MAXRET signal to weaken post-Robinhood. In contrast, if retail flows are predictably drawn toward the same event-driven opportunities, we would expect stronger hedge returns and more pronounced return patterns.

[31] Implementing a trading strategy based on earnings announcement maximum returns requires knowing the actual earnings announcement dates. It may be more practical to investigate this strategy using expected earnings announcement dates. If late announcing firms are more likely to disclose bad news and the market anticipates this bad news on the expected announcement dates when these firms did not make an announcement, computing stock returns in the period leading up to actual earnings announcement dates may introduce a downward bias to the earnings announcement maximum return premium because expected announcement dates will likely fall in the period immediately before actual earnings announcement dates for late announcers.

[32] Due to data availability, WSH enables us to examine the EA_MAXRET strategy over their coverage period from 2006 to 2015.

[33] In untabulated tests, we also construct bi-variate portfolio results based on EXRET[−10,−1] relative to expected earnings announcement dates. After controlling for size, book-to-market ratio, momentum, beta, idiosyncratic volatility, illiquidity, and prior quarter standardized unexpected earnings, the market-adjusted return differences between the high and low EA_MAXRET portfolios range from 0.60 to 0.90% in the 10-day period leading up to an expected earnings announcement date.

These market-adjusted returns are both economically and statistically significant at the one percent level.

[34] An alternative way to assess earnings announcement maximum return persistence is to examine the average probability that a stock in decile i in year $y-1$ will be in decile j in year y. If earnings announcement maximum return is purely random, the probability would be 10%, as earnings announcement maximum return in year $y-1$ is not informative about earnings announcement maximum return in year y. In an unreported test, we find that the probability of stocks in decile 10 of EA_MAXRET to be in decile 10 again in year y is 17%. Moreover, stocks in decile 10 of EA_MAXRET have a 36% probability of being in deciles 8–10 of EA_MAXRET again in year y. This indicates that lottery payoffs surrounding earnings announcements are not random but persist over time.

[35] We also use opening bid and ask prices as alternatives and find that the results after accounting for bid-ask impact are almost unchanged.

[36] As noted in Chung and Zhang (2014) and Marshall, Nguyen, Nguyen, and Visaltanachoti (2018), between February 1942 and December 1992, CRSP asks and bids series are available only in cases when a closing price is missing. Our analysis, therefore, covers the period from 1993 onward, when the continuous series of bid-ask data are available.

[37] Assuming a commission of $10 per 1000 shares traded, the round-trip cost of a 1000 share trade will be $20. Given the average end-of-quarter share price (untabulated) for the firms in our sample is greater than $35, the brokerage commission does not exceed 0.057% (i.e., $20/($35 × 1000)) of transaction value. Therefore, the after-commission market-adjusted return, after accounting for bid-ask spread, is 0.70–0.057% = 0.64%.

[38] Our approach to measuring transaction costs is consistent with the transaction costs charged by discount brokerage services during the period of our analysis. We also follow Lesmond et al. (2004) and Ng et al. (2008) to examine trading costs in the earlier period. We use the standard commission schedule from CIGNA Financial Service, found in Lesmond et al. (2004). Considering 1000 shares traded with the average end-of-quarter share price for the firms in our sample of $35 (the principal amount = $35,000), the estimated trading costs for the earlier period is 0.50% [i.e., ($99 + 0.22% × $35,000)/$35,000]. Given the market-adjusted returns after accounting for bid-ask spread is 0.70%, the after-commission market-adjusted return is 0.70–0.50% = 0.20%. The market-adjusted returns for the earlier period substantially reduce but remain significantly different from zero.

[39] We repeat the portfolio analyses for subsamples of big and liquid stocks, including S&P 500 stocks, stocks traded in NYSE, or stocks with the beginning-of-quarter price of at least $5. We find the earnings announcements lottery payoff effect is also manifested among these stocks. The hedge returns between two extreme EA_MAXRET deciles from subsamples (ranging from 0.73 to 0.95%) are higher than those from stocks with low price and high skewness. These additional results further confirm that the earnings announcements lottery payoff effect is not limited to small or illiquid stocks.

[40] We draw the transaction cost estimate from Frazzini et al. (2015) who analyze nearly $1 trillion in live institutional trades across 19 developed equity markets from 1998 to 2013. Specifically, we use a market impact cost of 8.92 bps and an implementation shortfall of 9.22 bps for US market trades, based on Table II of Frazzini et al. (2015). Combined, these estimates imply a round-trip transaction cost of approximately 36.28 basis points (2×[8.92 + 9.22]). Their study provides direct, ex-post measures of implementation shortfall and market impact from actual trade execution data rather than theoretical approximations. Thus, this is one of the most reliable and externally valid sources for estimating real-world trading costs in academic strategy evaluation. The study also concludes that the main anomalies to standard asset pricing models are robust, implementable, and sizeable.

[41] The hedge EA_MAXRET strategy delivers 0.90% in high aggregate lottery demand periods and 0.80% in low aggregate lottery demand periods.

[42] The extant literature also suggests that the level of lottery purchases can be influenced by psychological factors. Studies such as Doran et al. (2012) and Fong and Toh (2014) document that investor sentiment amplifies the overpricing of lottery-like assets. Following this line of inquiry, we also examine whether the EA_MAXRET phenomenon varies across different sentiment states. We use three different measures of investor sentiment: (1) the investor sentiment index from Baker and Wurgler (2006, 2007); (2) the Michigan Consumer Sentiment Index (MCSI) compiled by the University of Michigan Survey Research Center; and (3) the VIX index calculated by the CBOE. We document little difference in the EA_MAXRET phenomenon between high and low sentiment periods, suggesting that the overall market sentiment does not play a significant role. This finding is in stark contrast with that from Fong and Toh (2014), who show the monthly MAX effect in Bali et al. (2011) is chiefly a high sentiment period phenomenon.

References

Aboody, D., R. Lehavy, and B. Trueman. 2010. "Limited Attention and the Earnings Announcement Returns of Past Stock Market Winners." *The Review of Accounting Studies* 15, no. 2: 317–344.

Akbas, F., and E. Genc. 2020. "Do Mutual Fund Investors Overweight the Probability of Extreme Payoffs in the Return Distribution?" *Journal of Financial and Quantitative Analysis* 55, no. 1: 223–261.

Amihud, Y. 2002. "Illiquidity and Stock Returns: Cross-section and Time-series Effects." *Journal of Financial Market* 5: 31–56.

Baker, M., and J. Wurgler. 2006. "Investor Sentiment and the Cross-section of Stock Returns." *The Journal of Finance* 61, no. 4: 1645–1680.

Baker, M., and J. Wurgler. 2007. "Investor Sentiment in the Stock Market." *The Journal of Economic Perspectives* 21, no. 2: 129–151.

Baker, S. R., N. Bloom, and S. J. Davis. 2016. "Measuring Economic Policy Uncertainty." *The Quarterly Journal of Economics* 131, no. 4: 1593–1636.

Baig, A. S., B. M. Blau, A. H. Butt, and A. Yasin. 2022. "Do Retail Traders Destabilize Financial Markets? An Investigation Surrounding the COVID-19 Pandemic." *Journal of Banking & Finance* 144: 1–18.

Bali, T. G., S. Brown, S. Murray, and Y. Tang. 2017. "A Lottery Demand-based Explanation of the Beta Anomaly." *Journal of Financial and Quantitative Analysis* 52, no. 6: 2369–2397.

Bali, T. G., N. Cakici, and R. F. Whitelaw. 2011. "Maxing-out: Stocks as Lotteries and the Cross-section of Expected Returns." *Journal of Financial Economics* 99: 427–446.

Bali, T. G., D. Hirshleifer, L. Peng, and Y. Tang. 2021. "Attention, Social Interaction, and Investor Attraction to Lottery Stocks (No. w29543)." *National Bureau of Economic Research*.

Barber, B. M., X. Huang, T. Odean, and C. Schwarz. 2022. "Attention Induced Trading and Returns: Evidence From Robinhood Users." *Journal of Finance* 77, no. 6: 3141–3190.

Barber, B. M., R. Lehavy, and B. Trueman. 2007. "Comparing the Stock Recommendation Performance of Investment Banks and Independent Research Firms." *Journal of Financial Economics* 85, no. 2: 490–517.

Barber, B. M., and T. Odean. 2008. "All That Glitters: the Effect of Attention and News on the Buying Behavior of Individual and Institutional Investors." *The Review of Financial Studies* 21, no. 2: 785–818.

Barber, B. M., and T. Odean. 2013. "The Behavior of Individual investors." In *Handbook of the Economics of Finance*, (2), 1533–1570.

Barberis, N., and M. Huang. 2008. "Stocks as Lotteries: the Implications of Probability Weighting for Security Prices." *The American Economic Review* 98, no. 5: 2066–2100.

Barrot, J. N., R. Kaniel, and D. Sraer. 2016. "Are Retail Traders Compensated for Providing Liquidity?" *Journal of Financial Economics* 120, no. 1: 146–168.

Basak, S. 2020. "Robinhood Blows Past Rivals in Record Retail Trading Year." *Bloomberg*, 10 August. Retrieved from

https://www.bloomberg.com/news/articles/2020-08-10/robinhood-blows-past-rivals-in-record-year-for-retail-investing.

Berkman, H., V. Dimitrov, P. C. Jain, P. D. Koch, and S. Tice. 2009. "Sell on the News: Differences of Opinion, Short-sales Constraints, and Returns Around Earnings Announcements." *Journal of Financial Economics* 92, no. 3: 376–399.

Berkman, H., and C. Truong. 2009. "Event Day 0? After-hours Earnings Announcements." *Journal of Accounting Research* 47, no. 1: 71–103.

Bernard, V. L., and J. K. Thomas. 1989. "Post-earnings Announcement Drift, Delayed Price Response or Risk Premium?" *Journal of Accounting Research* 27: 1–36.

Bernard, V. L., and J. K. Thomas. 1990. "Evidence That Stock Prices Do Not Fully Reflect the Implications of Current Earnings for Future Earnings." *Journal of Accounting and Economics* 13: 305–340.

Bianchi, M. 2018. "Financial Literacy and Portfolio Dynamics." *The Journal of Finance* 73, no. 2: 831–859.

Blinder, A. S., and M. W. Watson. 2016. "Presidents and the US Economy: an Econometric Exploration." *The American Economic Review* 106, no. 4: 1015–1045.

Boehmer, E., and W. Song. 2020. "Smart Retail Traders, Short Sellers, and Stock Returns. Short Sellers, and Stock Returns." *Working Paper. Singapore Management University*.

Brunnermeier, M. K., C. Gollier, and J. A. Parker. 2007. "Optimal Beliefs, Asset Prices, and the Preference for Skewed Returns." *The American Economic Review* 97, no. 2: 159–165.

Chang, T. Y., S. M. Hartzmark, D. H. Solomon, and E. F. Soltes. 2016. "Being Surprised by the Unsurprising: Earnings Seasonality and Stock Returns." *The Review of Financial Studies* 30, no. 1: 281–323.

Cheon, Y. H., and K. H. Lee. 2018. "Maxing out Globally: Individualism, Investor Attention, and the Cross Section of Expected Stock Returns." *Management Science* 64, no. 12: 5807–5831.

Chen, J., G. Tang, J. Yao, and G. Zhou. 2022. "Investor Attention and Stock Returns." *Journal of Financial and Quantitative Analysis* 57, no. 2: 455–484.

Chung, K. H., and H. Zhang. 2014. "A Simple Approximation of Intraday Spreads Using Daily Data." *Journal of Financial Markets* 17: 94–120.

Cohen, D. A., A. Dey, T. Z. Lys, and S. V. Sunder. 2007. "Earnings Announcement Premia and the Limits to Arbitrage." *Journal of Accounting and Economics* 43, no. 2: 153–180.

Cohen, L., A. Frazzini, and C. Malloy. 2010. "Sell-side School Ties." *The Journal of Finance* 65, no. 4: 1409–1437.

Coleman, B., K. Merkley, and J. Pacelli. 2022. "Human versus Machine: a Comparison of Robo-analyst and Traditional Research Analyst Investment Recommendations." *The Accounting Review* 97, no. 5: 221–244.

DellaVigna, S., and J. M. Pollet. 2009. "Investor Inattention and Friday Earnings Announcements." *The Journal of Finance* 64, no. 2: 709–749.

DeVault, L., R. Sias, and L. Starks. 2019. "Sentiment Metrics and Investor Demand." *The Journal of Finance* 74, no. 2: 985–1024.

DeHaan, E., T. Shevlin, and J. Thornock. 2015. "Market (in) Attention and the Strategic Scheduling and Timing of Earnings Announcements." *Journal of Accounting and Economics* 60, no. 1: 36–55.

Doran, J. S., D. Jiang, and D. R. Peterson. 2012. "Gambling Preference and the New Year Effect of Assets With Lottery Features." *Review of Finance* 16, no. 3: 685–731.

Eaton, G. W., T. C. Green, B. S. Roseman, and Y. Wu. 2022. "Retail Trader Sophistication and Stock Market Quality: Evidence From Brokerage Outages." *Journal of Financial Economics* 146, no. 2: 502–528.

Engelberg, J., R. D. McLean, and J. Pontiff. 2018. "Anomalies and News." *The Journal of Finance* 73, no. 5: 1971–2001.

Ertimur, Y., J. Sunder, and S. V. Sunder. 2007. "Measure for Measure: the Relation Between Forecast Accuracy and Recommendation Profitability of Analysts." *Journal of Accounting Research* 45, no. 3: 567–606.

Fama, E. F., and K. R. French. 1992. "Cross-section of Expected Stock Returns." *The Journal of Finance* 47: 427–465.

Frazzini, A., R. Isreal, and T. J. Moskowitz. 2015. Trading costs of asset pricing anomalies. AQR Working Paper.

Fong, W. M., and B. Toh. 2014. "Investor Sentiment and the MAX Effect." *Journal of Banking and Finance* 46: 190–201.

Foster, G., C. Olsen, and T. Shevlin. 1984. "Earnings Releases, Anomalies, and the Behavior of Security Returns." *The Accounting Review* 59: 574–603.

Gao, X., and J. R. Ritter. 2010. "The Marketing of Seasoned Equity Offerings." *Journal of Financial Economics* 97, no. 1: 33–52.

Goetzmann, W. N., and A. Kumar. 2008. "Equity Portfolio Diversification." *The Review of Finance* 12: 433–463.

Gow, I. D., G. Ormazabal, and D. J. Taylor. 2010. "Correcting for Cross-sectional and Time-series Dependence in Accounting Research." *The Accounting Review* 85, no. 2: 483–512.

Greene, J., and S. Smart. 1999. "Liquidity Provision and Noise Trading: Evidence From the "Investment Dartboard" Column." *The Journal of Finance* 54, no. 5: 1885–1899.

Greenwood, R., and S. Nagel. 2009. "Inexperienced Investors and Bubbles." *Journal of Financial Economics* 93, no. 2: 239–258.

Grossman, S. J., and M. H. Miller. 1988. "Liquidity and Market Structure." *The Journal of Finance* 43, no. 3: 617–633.

Han, B., and A. Kumar. 2013. "Speculative Retail Trading and Asset Prices." *Journal of Financial and Quantitative Analysis* 48, no. 02: 377–404.

Hendershott, T., and A. J. Menkveld. 2014. "Price Pressures." *Journal of Financial Economics* 114, no. 3: 405–423.

Hirshleifer, D., and S. H. Teoh. 2003. "Limited Attention, Information Disclosure, and Financial Reporting." *Journal of Accounting and Economics* 36, no. 1: 337–386.

Johnson, T. L., and E. C. So. 2018. "Time Will Tell: Information in the Timing of Scheduled Earnings News." *Journal of Financial and Quantitative Analysis* 53, no. 6: 2431–2464.

Jurado, K., S. C. Ludvigson, and S. Ng. 2015. "Measuring Uncertainty." *The American Economic Review* 105, no. 3: 1177–1216.

Kaniel, R., G. Saar, and S. Titman. 2008. "Individual Investor Trading and Stock Returns." *The Journal of Finance* 63, no. 1: 273–310.

Kumar, A. 2009. "Who Gambles in the Stock Market?" *The Journal of Finance* 64: 1889–1933.

Kumar, A., J. K. Page, and O. G. Spalt. 2011. "Religious Beliefs, Gambling Attitudes, and Financial Market Outcomes." *Journal of Financial Economics* 102, no. 3: 671–708.

Lakonishok, J., A. Shleifer, and R. W. Vishny. 1994. "Contrarian Investment, Extrapolation and Risk." *The Journal of Finance* 49: 1541–1578.

Lesmond, D. A., M. J. Schill, and C. Zhou. 2004. "The Illusory Nature of Momentum Profits." *Journal of Financial Economics* 71, no. 2: 349–380.

Lin, T. C., and X. Liu. 2018. "Skewness, Individual Investor Preference, and the Cross-section of Stock Returns." *The Review of Finance* 22, no. 5: 1841–1876.

Lintner, J. 1965. "The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets." *The Review of Economics and Statistics* 47, no. 1: 13–37.

Liu, B., H. Wang, J. Yu, and S. Zhao. 2020. "Time-varying Demand for Lottery: Speculation Ahead of Earnings Announcements." *Journal of Financial Economics* 138, no. 3: 789–817.

Livnat, J., and R. R. Mendenhall. 2006. "Comparing the Post–earnings Announcement Drift for Surprises Calculated From Analyst and Time Series Forecasts." *Journal of Accounting Research* 44, no. 1: 177–205.

Livnat, J., and L. Zhang. 2015. "Is There News in the Timing of Earnings Announcements?" *The Journal of Investing* 24, no. 4: 17–26.

Marshall, B. R., H. T. Nguyen, N. H. Nguyen, and N. Visaltanachoti. 2018. "Politics and Liquidity." *Journal of Financial Markets* 38: 1–13.

Massa, A. 2021. "The Four Biggest Ways Robinhood Changed Investing." *Bloomberg*, 29 July. Retrieved from https://www.bloomberg.com/news/articles/2021-07-29/robinhood-hood-ipo-four-ways-the-broker-changed-investing.

McCabe, C. 2021. "It Isn't Just AMC. Retail Traders Increase Pull on the Stock Market." *The Wall Street Journal*, 18 June. Retrieved from https://www.wsj.com/articles/it-isnt-just-amc-retail-traders-increase-pull-on-the-stock-market-11624008602.

Michels, J. 2021. "Retail Investor Trade and the Pricing of Earnings." Working paper.

Mossin, J. 1966. "Equilibrium in a Capital Asset Market." *Econometrica* 34, no. 4: 768–783.

Murdock Jr., B. B. 1962. "The Serial Position Effect of Free Recall." *Journal of Experimental Psychology* 64: 482–488.

Nagel, S. 2005. "Short Sales, Institutional Investors, and the Cross-section of Stock Returns." *Journal of Financial Economics* 78, no. 2: 277–309.

Newey, W. K., and K. D. West. 1987. "A Simple, Positive Semi-definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix." *Econometrica* 55: 703–708.

Ng, J., T. O. Rusticus, and R. S. Verdi. 2008. "Implications of Transaction Costs for the post–earnings Announcement Drift." *Journal of Accounting Research* 46, no. 3: 661–696.

Nguyen, H. T., and C. Truong. 2018. "When Are Extreme Daily Returns Not Lottery? At Earnings Announcements!." *Journal of Financial Markets* 41: 92–116.

Odean, T. 1999. "Do Investors Trade Too Much?" *The American Economic Review* 89: 1279–1298.

Peress, J., and D. Schmidt. 2020. "Glued to the TV: Distracted Noise Traders and Stock Market Liquidity." *The Journal of Finance* 75: 1083–1133.

Petersen, M. A. 2009. "Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches." *The Review of Financial Studies* 22, no. 1: 435–480.

Pope, P. F., and T. Wang. 2023. "Analyst Ability and Research Effort: Non-EPS Forecast Provision as a Research Quality Signal." *The Review of Accounting Studies* 28, no. 3: 1263–1315.

Popper, N. 2020. "Robinhood Has Lured Young Traders, Sometimes With Devastating Results." *New York Times*, 8 July. Retrieved from. https://www.nytimes.com/2020/07/08/technology/robinhood-risky-trading.html.

Sharpe, W. F. 1964. "Capital Asset Prices: a Theory of Market Equilibrium Under Conditions of Risk." *The Journal of Finance* 19, no. 3: 425–442.

So, E. C., and S. Wang. 2014. "News-driven Return Reversals: Liquidity Provision Ahead of Earnings Announcements." *Journal of Financial Economics* 114, no. 1: 20–35.

Stambaugh, R. F., J. Yu, and Y. Yuan. 2012. "The Short of It: Investor Sentiment and Anomalies." *Journal of Financial Economics* 104, no. 2: 288–302.

Truong, C., P. B. Shane, and Q. Zhao. 2016. "Information in the Tails of the Distribution of Analysts' quarterly Earnings Forecasts." *Financial Analysts Journal* 72, no. 5: 84–99.

Tversky, A., and D. Kahneman. 1992. "Advances in Prospect Theory: Cumulative Representation of Uncertainty." *Journal of Risk & Uncertainty* 5, no. 4: 297–323.

Venkateswaran, S. 2019. "The Millennial Robinhood: Take From the Poor and Give to the Rich." *Medium.com*, 27 April. Retrieved from https://medium.com/@sidmvenkat/the-millenial-robinhood-take-from-thepoor-and-give-to-the-rich-11634892c4bc.

Wu, F., and B. A. Huberman. 2007. "Novelty and Collective Attention." *Proceedings of the National Academy of Sciences* 104: 17599–17601.

Zhong, A., and P. Gray. 2016. "The MAX effect: An exploration of risk and mispricing explanations." *Journal of Banking & Finance* 65: 76–90.

Supporting Information

Additional supporting information can be found online in the Supporting Information section.

Supplement Appendix A1: Portfolios Sorted by Earnings Announcement Maximum Return Using Alternative Portfolio Weightings and Risk Adjustments. **Supplement Appendix A2**: EXRET[−10,−1] from Portfolios Sorted by Pseudo Announcement Date Return. **Supplement Appendix A3**: EXRET[−10,−1] from Portfolios Sorted by Earnings Announcement Maximum return after Controlling for SIZE, BM, MOM, BETA, IVOL, ILLIQ, and SUE_{q-1}. **Supplement Appendix A4**: Regression Analysis: Interaction Effects in EXRET[−10,−1]. **Supplement Appendix A5**: Additional Regression Analyses. **Supplement Appendix A6**: Multivariate Analyses of EXRET[0,+1], EXRET[+2,+5], and EXRET[−10,+5]. **Supplement Table A7**: Earnings Announcement Minimum Return and EXRET[−10,−1]. **Supplement Table A8**: Portfolio Sorted by EA_MAXRET Measured over Different Multi-Quarter Periods. **Supplement Appendix A9**: Performance of calendar time portfolio based on expected earnings announcements. **Supplement Appendix A10**: Investor Attention and Lottery Demand during Earnings and Non-earnings Periods. **Supplement Appendix A11**: The rise of retail investors and the information content of earnings announcements. **Supplement Appendix A12**: International Evidence.