Does misvaluation leads to more informative prices?

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ABSTRACT

I hypothesize and show that misvaluation, depending on the direction, has an asymmetric effect on price informativeness (PI). Corporate under-(over-)valuation signals lead to an increase (decrease) in PI. While PI decreases more in firms with worse investment opportunities, poor corporate governance, more entrenched managers, and higher short-sale constraints, it increases more in firms with better investment opportunities and higher investment-to-Q ratios. Results imply that market over-valuations are corrected slower than under-valuations and are stickier and more prevalent in the economy. Persistent and long-lasting performances of short-legs of anomaly portfolios could result from such a phenomenon.

Keywords: Misvaluation, Price Informativeness, Price Efficiency, Feedback Effect, Information Acquisition, Corporate Investments

JEL Classification: G10, G14, G30

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One of the most important questions in financial economics is how security prices in secondary markets affect real economic efficiency. Prices in secondary market play two primary roles - accurately predicting the future value of a security, and revealing the information to the real decision makers about the optimal actions they could take. The finance literature proposes and finds evidence that security prices affect real efficiency by revealing the information necessary for decision makers to take value-maximizing actions (E.g., Luo (2005)). If prices are inefficient in the sense that they don't inform real decision makers, that automatically translates into real inefficiency. But prices not rightfully predicting future value of the security, misvaluation in traditional sense, does not necessarily cause real inefficiency unless the misvaluation translates into prices being uninformative to real decision makers. In another words, security price misvaluations in the secondary market only cause real inefficiency if the misvaluation also hampers the informational role of prices. But, the relation between misvaluation and informativeness of prices is not clear (e.g.,Bond, Edmans, and Goldstein (2012), Dow and Gorton (1997)). In this paper, I empirically show that misvaluation, depending on the direction, can both increase or decrease price informativeness.

The theoretical literature in corporate finance has argued that managers can learn from the information in stock prices about the prospects of their own firms[1]. The idea behind the theory is that stock prices aggregate information from many different participants who do not have channels for communication with the firm outside the trading process. Investors privately collect information and trade based on their findings, making the prices informative. However, each information collector has limited resources and cannot collect information on all the firms in the economy. She optimizes her resources to maximize expected informed trading profits. Hence, the expected profitability of her informed trades has a direct relation with the price informativeness (PI) of a security as more private information collection means higher price informativeness.

In this paper, I hypothesize and show that corporate misvaluation signals, by changing

[1]See Tobin (1969), Dow and Gorton (1997), Subrahmanyam and Titman (1999), Subrahmanyam and Titman (2001), Dye and Sridhar (2002), Dow and Rahi (2003), and Goldstein and Guembel (2008)

the expected profitability of informed trades, change the information collection behavior of the investors and consequently price informativeness. While price informativeness increases after a corporate undervaluation signal, it decreases after an overvaluation one. Results suggest that the persistent performance of short-leg anomaly portfolios found by papers such as Dong, Li, Rapach, and Zhou (2022) maybe the result of such a phenomenon.

I argue that corporate events that signal the managers' private information about misvaluation to market change the expected profitability of informed trades, and hence the information collection behavior of informed traders post the corporate events. An abundance of finance literature shows that corporate events send misvaluation signals to the market (more on this in the literature review section). For example, share repurchases are followed by undervaluation, and secondary equity offerings are followed by overvaluation.

As it always increases a firm value, the feedback effect (a manager's value maximization action given the new information on prices) increases an informed investor's profits on buys while decreasing profits on sells (Edmans, Goldstein, and Jiang (2015)). Hence, assuming some feedback effect, *ex-ante* information collection, all else equal, an informed investor prefers to find a piece of positive information and be a buyer rather than to find a piece of negative information and be a seller. Asymmetry between the expected profitability of informed sell trades vs buy trades leads to increase (decrease) in information collection by informed traders after corporate under-(over-)valuation signals.

By providing misvaluation information to the market, corporate events tell the investor whether a positive or a negative piece of information is more likely to be found if additional information (e.g., the precision of the signal) is collected. My assumption here is that all else equal, a positive (negative) piece of information is more likely to be found in an under(over)valued firm. As a result, undervaluation signals (Under-Value events) increase the expected profitability of informed trades there by encouraging an information collector to allocate *more* efforts to collect private information on the firm. Whereas, overvaluation signals (Over-Value events) decrease the expected profitability of informed trades there by encour-

aging an information collector to allocate *fewer* efforts to collect private information on the firm. After corporate events, an investor, a profit maximizer, employs more information collection resources to the firms in which the investor is most likely to find positive information and fewer resources to the firms where she is most likely to find negative information.

Using four corporate events as the events that signal misvaluation information to the market, I find that PI increases(decreases) significantly after the under(over)valuation signals.

In financial markets, as long as information collection costs are not too prohibitive, in equilibrium, investors collect information about firms and trade based on their findings, and profit (Dow and Gorton (1997)). Still, as pointed out by Edmans et al. (2015), what real decision-makers, such as managers or Boards of Directors, do with that information has an asymmetric effect on the profitability of informed investors, depending on whether the investors are buyers or sellers. Let us look at one very recent real-life example.

On October 11, 2019, when the news about the departure of CEO Bill McDermott was released, stock prices of SAP SE went up by nearly 10%. Even though the firm had done tremendously well during his tenure, the consensus in the media post-event was that McDermott's skill-set was no longer a good match when the firm was trying to shift its focus to cloud business and experiencing slowing demand in that sector. The board's optimization action, while increasing the profits of stock owners by $13.5B in a single day, was extremely painful for short-sellers even though the private information about the CEO's skill mismatch on which short-sellers probably have traded was correct.

In the above example, the information collected by informed investors on the CEO's incompatibility and incorporation of such information into prices, so the Board could be informed about the need to replace the incompetent CEO was very important to obtain real efficiency. However, an investor would have refrained from spending resources to collect information on the CEO's skills had she known *ex-ante* that she will likely to go short on the stock post her information collection, and the Board of SAP could then act to remove the

CEO partially based on her privately collected information that is now baked into the prices through trading. By signaling, before hand, to an investor whether a positive or negative piece of information is more likely to be found if additional information is collected, misvaluation signals coming from a corporate event change her information collection behavior *ex-post* the event.

This paper develops its testable predictions using a simple hypothesis development arguments on the informed investor's expected profit on her information collection effort, where the effort is a function of feedback effect and market misvaluation. Based on the insights of Edmans et al. (2015), the feedback effect is one of the drivers of an informed investor's profit in my argument, and, based on the insights of Dow, Goldstein, and Guembel (2017) (hereinafter DGG), the feedback effect is further a function of the profitability of a firm's investment opportunities.

The main prediction coming out of the hypothesis development is that post an Over-Value (Under-Value) event, an informed investor decreases (increases) her information collection effort on a firm. The reason is that post an Over-Value (Under-Value) event, her expected profitability for her trades in the firm goes down (up) because of the asymmetry in the expected profitability of informed buy versus sell trades (Edmans et al. (2015)).

Other predictions provide more or less robustness to the main prediction. Finance, as well as management research, have found a very strong link between firm-specific characteristics such as profitability and the type of corporate events that firms perform, and the characteristics of the industry in which they operate [2]. Studies have also found ample evidence of investors' learning from a firm's peers. Hence, if the main prediction is true, one can hypothesize that corporate events performed by a firm's peers will also have a similar effect on the stock's price informativeness.

Dow et al. (2017) show that information collection goes up with higher investment opportunities. I argue that better investment opportunities increase the price impact of the

[2]Please refer to Prediction 2 in Section II for supporting literature

feedback effect, which increases profits for buys but reduces for sells. Hence, the third prediction is that firms with better (worse) investment opportunities that also perform an Under-Value (Over-Value) event will receive an even higher (lower) allocation of information collection resources from investors.

If we think about investors' learning, corporate events are not the only source of information at investors' disposal to gauge a firm's misvaluation. Finance research has used both Tobin's Q (e.g., Baker, Stein, and Wurgler (2003a)), price-to-value (P/V), and price-to-book (P/B) (e.g.,Dong, Hirshleifer, Richardson, and Teoh (2006), Dong, Hirshleifer, and Teoh (2012)) to identify under- and over-valuation. If the direction of misvaluation suggested by a corporate event and by these other measures match, we should see even stronger results of the main prediction.

The feedback effect, when combined with the additional risks and costs particular to the sells (e.g.,Engelberg, Reed, and Ringgenberg (2018)), can further increase the asymmetry between informed investor's expected profitability of her buy versus sell trades as the short selling costs further push the expected profitability of sell trader down. However, short selling costs do not necessarily impact the expected buy profits. My last prediction says that among the firms that perform Over-Value events, information collection decreases more (less) for those firms with higher (lower) short-sell constraints.

To test my testable predictions, first, I need a reliable evidence of misvaluation in a stock price at a point in time, and second, I prefer to study the effect in an environment where informed investors are more likely to be actively collecting information.

In the finance literature, it is almost unanimously found that share repurchases are followed by under-valuations, and SEOs are followed by over-valuations. Furthermore, it is also overwhelmingly found that, in an M&A transaction, targets are generally undervalued and acquirers are generally overvalued. Managers have superior access to internal information of a firm and hence are more informed about firm-specific information than an outside speculator and often they signal the market about their private information (e.g.,Leland and Pyle

(1977), John and Mishra (1990), Constantinides and Grundy (1989), Oded (2005)). Corporate events are one of the major tools that managers use to signal firm-specific and often also industry-specific information to the market; The evidence of market misvaluation-driven corporate events is very abundant. Time and time again, finance research has found strong evidence that these corporate events strongly predict the direction of a firm's future stock prices, establishing high credibility of managers' signals. Hence, we can reliably say that at the point in time of corporate events that are most likely driven by over- or under-valuations, the prices are very likely misvalued.

Second, the time of major corporate decisions represents major investment opportunities for information collectors to produce information (Dow et al. (2017)), and hence the timing of the corporate events satisfies my second criterion.

I define share repurchases (SREP) and M&A transactions where a firm is a target (TGT) as Under-Value and secondary equity offerings (SEO) and M&A transactions in which a firm is an acquirer (ACQ) as Over-Value events [3]. The main variables of interest are the log of the number of times a firm performs ACQ, TGT, SEOs, or SREPs over the past 12 months. While these variables are coarse measures, they do make the aggregation to the industry level both easy and intuitive. Second, simply the occurrence of these events should be enough for an informed investor to read the view of the managers on the direction of misvaluation of their firms.

Even though informed investors' information collection efforts could not be observed, we can expect to see the outcome of their information collection efforts in their trades, consequently impacting price informativeness. Here, I am interested in the information that is revealed to managers through the informed trades following the informed investors' information collection.Chen, Goldstein, and Jiang (2007) find that return non-synchronicity and PIN (Probability of Informed Trades) capture such private information of informed traders. Dow et al. (2017) also suggest that return non-synchronicity and PIN can be used

[3]Please refer to Section I for supporting evidences for these assumptions

to capture such private information new to managers. Based on the insights of these papers and following studies that examine price informativeness (e.g., Ferreira, Ferreira, and Raposo (2011), Ferreira and Laux (2007), Easley, Hvidkjaer, and O'hara (2002), Vega (2006)), I use three proxies for price informativeness, namely, the probability of informed trade of Easley, Kiefer, O'hara, and Paperman (1996) (PIN_EKOP) and that of Venter and De Jongh (2006) (PIN_VDJ), and return non-synchronicity (Roll (1988)). However, controlling for insiders' private information using the proxies used by Chen et al. (2007) does not change my results.

Overall, the empirical results strongly support all the predictions. In my sample, for each of the events - ACQ, SEO, TGT, and SREP - given that a firm performed at least 1 of those events in the prior 12 months, the median cumulative event count over a rolling 12-month window is 1. If a firm's last 12 months' cumulative count of the number of events jumps from 0 to 1 for ACQ or SEO, at month $t-1$, then, in the next 12 months, the firm's PIN_VDJ decreases by 22.9% or 45.3%, respectively[4]. Whereas, if those events were to be TGT or SREP, then the firm's PIN_VDJ increases by 9.1% or 17.3%, respectively. I also find that misvaluation information signaled by the corporate events performed by a firm's peer also have similar but slightly weaker effects on the PI of a firm.

Because investors prefer to collect information on firms where investments are ex-ante more profitable (DGG), if Over-Value event is performed by the high ROA firm, the negative effect of performing an Over-Value event on PI is counteracted by the fact that the firm belongs to the high ROA group. My empirical results suggest that the aversion effect of the Over-Value events is so strong that, post such events, PIN_VDJ actually goes down even for the firms that belong to the high ROA (proxy for ex-ante investments profitability) group in the previous quarter. On the other hand, the intersection of an Over-Value event and worse investment opportunities (lower ROA) is the least preferable group of firms for information collectors; hence PIN_VDJ goes down the most for the firms that belong to the low ROA group in the previous quarter that also performed Over-Value events.

[4]I get similar results if I use only M&A transactions in which at least some part of the transaction was paid using acquirer's stock to define my ACQ and TGT variables.

If a misvaluation signal coming out of a corporate event affects investors' information collection behavior, I hypothesize that we should expect to see stronger results when other misvaluation matrices, such as Tobin's Q and P/V, align with the signal coming out of corporate events. My results overwhelmingly support this hypothesis. Similarly, empirical results also strongly support other predictions.

This paper contributes to the broader question of price formation and the informational role of prices. The findings of this paper have much bigger and broader implications for the financial markets as well. As the information collection resources of investors fly away from over-valued firms to under-valued firms, under-valuations get corrected faster than over-valuations do. That suggests that over-valuations are stickier and longer-lasting; Hence at any point in time, it becomes more likely that the market is over-valued than under-valued or fairly-valued. It is also more likely that the short-leg of any anomaly portfolio should contain more over-valued stocks. Hence, the fact that short-leg of anomaly portfolios earn more consistent negative returns for a longer period of time, as found by Dong et al. (2022), probably is the result of such phenomena where under- and over-valuations are corrected asymmetrically.

Further still, the literature is mostly silent about the drivers of the information collection process and only examines the outcomes of information collection. In reality, each individual investor has limited resources and hence cannot collect information on every single firm in the economy. The evidence in this paper suggests that firm and even industry-level over- and under-valuation information signaled by corporate events probably is one of the guiding factors used in the allocations of investors' information collection efforts.

Lastly, this paper shows the evidence of complementarity between the information set of managers and that of investors and the evidence of two-way information flow in the market. The evidence suggests that managers perform corporate events to signal their private insider information. Given the information coming to market through corporate events, investors collect more information and incorporate that information into prices through trading. Then,

the managers update their information set. Using the newly acquired information set they make real decisions such as those on investments.

The remainder of this paper is organized as follows. Section I describes the primary contribution of the paper and the related literature. Section II presents the theoretical argument, its implications, and the testable predictions driven by those implications. Section III summarizes the data and the variables. Section IV presents the empirical findings on market learning from corporate events. Section V studies investors' information collection and firm managers' characteristics. Section VI provides further evidence supporting the main findings. Finally, section VII concludes the paper.

I. Related Literature

The two important assumptions that motivate the hypothesis offered in this paper are that corporate events signal stock misvaluation information to the market and feedback effects produce the asymmetric expected trade profits of informed trading. The assumption that corporate events provide credible misvaluation signals is very well supported by both theoretical and empirical finance literature. On the theory side, papers such as Leland and Pyle (1977), John and Mishra (1990), Constantinides and Grundy (1989), and Oded (2005) support the notion that managers signal to the market about their private information. And, on the empirical side, event study literature provides ample evidence that managers issue equity when share prices are overvalued and will repurchase shares when they are undervalued[5]. There is also a vast literature in the finance field that examines M&A announcement returns. The overwhelming evidence in the literature shows that target firms earn substantial positive announcement returns while acquiring firms mostly earn negative announcement returns[6]. These strands of literature confirm that managers signal their private information

[5]E.g.,Asquith and Mullins (1986), Choe, Masulis, and Nanda (1993), Stephens and Weisbach (1998), D'mello and Shroff (2000),Loughran and Ritter (1995),Ikenberry, Lakonishok, and Vermaelen (1995)

[6]Jensen and Ruback (1983), Jarrell, Brickley, and Netter (1988), Andrade, Mitchell, and Stafford (2001),Betton, Eckbo, and Thorburn (2008)

through corporate events and those are very credible signals.

While looking at the market learning from industry-wide corporate events, this paper assumes that firms operating in the same industry not only share similarities in their characteristics but also are similarly impacted by industry-wide macro-economic shocks, meaning there are close ties between a firm and the industry in which it operates. Again, the finance literature supports this assumption[7]. The neoclassical theory also suggests that mergers are a response to industry shocks[8]. In short, the literature supports the view that firms operating within the same industry have similarities in terms of their characteristics.

This paper lies at the intersection of literature on information production in financial markets and corporate finance. While there is humongous literature that mentioned above studied corporate events and market efficiency, incentives of traders in financial markets to collect information are studied by seminal papers such as Grossman and Stiglitz (1980), Glosten and Milgrom (1985), and Holmström and Tirole (1993). On the theoretical front, numerous papers (e.g., Bond, Goldstein, and Prescott (2010), Goldstein and Guembel (2008)) have looked at the feedback from market prices to real decisions by firm managers [9]. On the empirical side, studies have also found a very strong relation between stock prices and real decisions and financial efficiency[10]. Numerous papers have shown the effect of PI on real efficiency, so it is important to understand the drivers of PI [11]

II. Hypotheses Development

I provide a very elaborate exercise on developments of my testable predictions using theoretical arguments in Appendix C, but this section explains my hypotheses development very concisely. First, let's assume an informed investor's information collection costs in

[7]See McGahan and Porter (1997),Cool and Dierickx (1993),Mitchell and Mulherin (1996)

[8]Ahern and Harford (2014),Harford (2005),Otchere and Ross (2002),Song and Walkling (2000),Cai, Song, and Walkling (2011)

[9]See also Goldstein, Ozdenoren, and Yuan (2013), Subrahmanyam and Titman (1999), Ozdenoren and Yuan (2008) , Edmans et al. (2015), Boot and Thakor (1997), Fishman and Hagerty (1989)

[10]Chen et al. (2007), Bakke and Whited (2010), Baker, Stein, and Wurgler (2003b), Turley (2012)

[11]e.g., Dow and Gorton (1997), Faure-Grimaud (2002), Singh and Yerramilli (2014)

the market are not too prohibitive (as in Dow and Gorton (1997)) so that in equilibrium collecting information and trading based on her private information gives her positive profits. She optimizes her information collection efforts based on the expected profitability of her trades, so as new information that changes the expected profitability of her trades comes to market, she reallocates her information collection efforts from low expected profitability opportunities to high expected profitability opportunities. Post information collection, she trades based on her findings, and consequently, the prices reflect her private information.

Research shows that managers incorporate at least some of the information revealed by prices into their decisions(Edmans et al. (2015), Dow and Gorton (1997), Luo (2005)). This feedback effect increases (decreases) the profitability of buying (selling) on good (bad) news (Edmans et al. (2015)). Managers optimize firm value given the information provided by prices regardless of whether the information is positive or negative. Hence the feedback effect, if present, always has a positive effect on firm value, the phenomenon that helps buyers but hurts short-sellers of the firm. Hence, in the presence of feedback effect, informed traders' expected profitability of her buy trades on positive information is always higher than of her sell trades on negative information.

As expected profitability of buy trades on positive information is higher than the expected profitability of sell trades on bad news, *ex-ante* information collection, an informed trader will prefer to find positive information than to find negative information. But, in expectation, all firms are fairly valued and hence the information collector do not have a reason to allocate more of her scare resource to one firm versus the other.

Now, imagine that a piece of information from a reliable source tells her that the probability of finding a positive (negative) piece of information is higher on a firm than others, then it is optimal for her to allocate more (less) of her information collection resources to the firm compared to what she was allocating before the release of such information. I argue in this paper that corporate events can provide such information to the investors and hence change investors' the information collection behavior.

The assumption that corporate events provide credible misvaluation signals is very well supported by both theoretical and empirical finance literature. On the theory side, papers such as Leland and Pyle (1977), John and Mishra (1990), Constantinides and Grundy (1989), and Oded (2005) support the notion that managers signal to the market about their private information. And, on the empirical side, event study literature provides ample evidence that managers issue equity when share prices are overvalued and will repurchase shares when they are undervalued[12]. There is also a vast literature in the finance that examines M&A announcement returns. The overwhelming evidence in the literature shows that target firms earn substantial positive announcement returns while acquiring firms mostly earn negative announcement returns[13]. The findings imply that targets are generally undervalued while acquirers are generally overvalued at the time of M&A transaction. I call a corporate event typically motivated by over-valuation (under-valuation), an Over-Value (Under-Value) event.

My assumption here is that if more information is collected on a firm, likelihood of finding positive (negative) information is higher on a firm that just sent a signal through a corporate event that it is under-valued (over-valued). Hence, these corporate events change the traders' expected profitability of their informed trades, causing the change in their allocation of their scare information collection resource. Combining the insights from corporate event literature and the insights from the feedback effect literature, I get my first hypothesis.

Hypothesis 1: *Investors increase (decrease) information production on a firm after Under-(Over-)Value event.*

To summarize, investors can profit more when they trade on positive information than on negative information, because revealing negative information might lead managers to cancel the project or reason behind the negative information. A signal of undervaluation

[12]E.g.,Asquith and Mullins (1986), Choe et al. (1993), Stephens and Weisbach (1998), D'mello and Shroff (2000), Loughran and Ritter (1995), Ikenberry et al. (1995)

[13]Jensen and Ruback (1983), Jarrell et al. (1988), Andrade et al. (2001),Betton et al. (2008)

(overvaluation) suggests that positive (negative) information is more likely. This then predicts that more (less) information production is likely following the signal of undervaluation (overvaluation).

With the assumption that higher the information collection, higher the informed trading and consequently higher the PI, the above hypothesis gives following testable predictions.

Testable Prediction 1: *Stock's PI goes up (down) for a firm that performs Under-Value (Over-Value) event.*

Finance, as well as management research, have found a very strong link between firm-specific characteristics such as profitability, the type of corporate events that firms perform, and the characteristics of the industry in which they operate. Firms operating in the same industry not only share similarities in their characteristics but also are similarly impacted by industry-wide macro-economic shocks, meaning there are close ties between a firm and the industry in which it operates. The neoclassical theory also suggests that mergers are a response to industry shocks[14]. Furthermore, the finance literature supports that investors learn from the information released not only by a firm but also by its peers.[15]. This leads to my second testable prediction.

Testable Prediction 2: *Stock's PI goes up (down) for a firm whose industry-peers perform Under-Value (Over-Value) event.*

Other market frictions such as short-sale constraints also asymmetrically affect an informed traders' expected profitability (more on this on testable prediction 5), but unlike short-sale constraints, feedback effect affects both the expected profitability of buy and sell

[14]Ahern and Harford (2014), Harford (2005), Otchere and Ross (2002), Song and Walkling (2000),Cai et al. (2011)

[15]See McGahan and Porter (1997),Cool and Dierickx (1993),Mitchell and Mulherin (1996)

trades. Since feedback effects affect both types of trades, it is intuitive that the wedge between the expected profitability of buy (on positive information) and sell (on negative information) trades increases as the impact of feedback effects on firm value increases. This gives me the second hypothesis.

Hypothesis 2: *Higher the impact of feedback effects on a firm value higher the change in information collection resources after the corporate event.*

One of the insights of DGG is that information collection goes up with better investment opportunities. Where there are better investment opportunities, information collected by informed trades is more valuable to managers when taking value maximizing decisions. And, hence, feedback effects contributes more to the value of the firm. If we combine the hypothesis 2 with testable prediction 1, that gives me the testable prediction 3.

Testable Prediction 3: *An increase (decrease) in PI for the firms that perform Under-Value (Over-Value) events is higher for those firms with higher (lower) ex-ante investment profitability.*

Besides the misvaluation signal coming out from the corporate events, investors can also use other matrices to gauge a firm's misvaluation. Finance research has used both Tobin's Q (e.g., Baker et al. (2003a)) and price-to-value (P/V) (e.g.,Dong et al. (2006),Dong et al. (2012)) to identify under- and over-valuation. This gives me the testable prediction 4.

Testable Prediction 4: *The change in PI after a misvaluation signal is higher (lower) when the direction of misvaluation implied by other misvaluation proxies matches (mismatches) with the misvaluation signaled by the corporate events.*

Because short-sell constraints, costs, and risks further reduce an informed trader's profits of her sell trades, everything else being equal, given that there is a higher likelihood that she will be a seller post information collection, she prefers to collect information on firms with lower short-sell constraints vs firms with higher short sell constraints. This gives me the final testable prediction.

Testable Prediction 5: *The decrease in PI for the firms that perform Over-Value events is higher for the firms with higher(lower) short-sale constraints or costs.*

Next, I empirically test all my testable predictions.

III. Data & Measurements

Corporate events information is from SDC platinum - Thomson Reuters. M&A transactions include all completed M&A transactions in which the acquirer firm is a US public firm. M&A transactions include transactions such as stock or asset mergers, stock or asset acquisitions, or the acquisition of majority interest in a stock. Other information such as firm fundamental data come from WRDS data services. For my primary results, I don't apply any filter while selecting corporate events. However, results are robust to selecting only material events (e.g., a deal value greater than 2.5% of the market cap).

The corporate events variables "ACQ", "SEO", "TGT", and "SREP" are simply the count of the number of M&A transactions in which a firm is an acquirer, the number of times the firm performed secondary equity offerings, number of M&A transactions in which a firm is a target, and number of times firm performed share repurchases in last 12 months, respectively. I use the natural logarithm of those variables as the independent variables. My sample includes 108,847 M&A announcements in which a firm is an acquirer (ACQ), 60,498 M&A announcements in which a firm is a target (TGT), 76,134 secondary equity offerings

(SEO) announcements, and 24,909 share repurchase (SREP) announcements.

To obtain the industry-level corporate events variable, I aggregate the number of corporate events - "ACQ", "SEO", "TGT", and "SREP" - performed by a firm's peers (excluding the firm) at Fama French 30 industries. For industry-level variables, I aggregate the number of corporate events before taking the natural logarithm.

I use three proxies of PI - the probability of informed trade of Easley et al. (1996) (PIN_EKOP) and of Venter and De Jongh (2006) (PIN_VDJ), and return non-synchronicity (Roll (1988)). The sample period goes from January 1993 to December 2017.

One of the reasons why I use coarse event count is because I look at market learning not only at the firm level but also at the industry level and coarse event count is easy and intuitive to aggregate to the industry level. Second, since I am interested in the information signaled by corporate events, I reasoned that just the occurrence of a certain type of event regardless of the dollar value of the transaction is good enough for informed investors to learn the managers' view on whether the firm is over- or under-valued - probably the size of the transaction giving the strength of the signal.

IV. Results

A. Testable Prediction 1: Market Learning from Firm-Level Corporate Events

When an informed investor collects private information and buys or sells stocks based on the findings, her goal is to maximize profits on her information collection efforts. Hence, it is very rational to invest more information collection efforts in a firm in which the *ex-ante* expected profitability is high compared to a firm where the *ex-ante* expected profitability is low. Concerning the expected profitability of an informed trader, the primary finding of Edmans et al. (2015) is that the feedback effect increases (decreases) the profitability of buying (selling) on good (bad) news. The asymmetric impact of feedback effect on the profitability of an informed trader implies that the *ex-ante* an informed investor will prefer

to find positive information and be a buyer rather than find negative information and be a seller when collecting information on a firm. Hence, here I hypothesize that if a signal comes to market that tells an informed investor whether positive or negative information is more likely to be found if more information (e.g., the precision of the signal) is collected on a firm, such signal will change the information collection behavior of the investor.

In this paper, based on the results of finance literature on event studies, I also hypothesize that one very reliable source of misvaluation information is the corporate events performed by a firm. The findings in finance literature are very consistent with the message that corporate events are driven by stock misvaluations. As I summarize in the literature review section, the finance literature has found convincing evidence that share repurchases are driven by under-valuations whereas secondary equity offerings are driven by over-valuations. Furthermore, M&A literature has also found consistently that acquirers are mostly over-valued while targets are mostly under-valued firms.

When we combine the findings of the corporate events literature about the patterns of abnormal returns after the events and the insight about the asymmetric impact of feedback effect on the expected profitability of an informed investor, I predict, in this paper, that post-corporate events, depending on whether the event is driven by under- or over-valuation, an informed investor's information collection efforts for the firm will either decrease (in the case of Over-Value events) or increase (in the case of Under-Value events).

A simple theoretical argument on the profit of an informed trader on the information collection efforts, which is a function of stock misvaluation and feedback effect, supports the above prediction.

As the amount of effort or the number of resources that informed investors allocate to collect information on a particular firm is unobservable, I assume the quantity of information collection efforts an informed investors spend on a firm is proportional to the number of trades driven by the private information. As the number of trades driven by private information increases so does the PIN. Hence, the three proxies that I use for PI are the probability of

informed trade of Easley et al. (1996) (PIN_EKOP) and that of Venter and De Jongh (2006) (PIN_VDJ), and also return non-synchronicity (Roll (1988)).

Based on the finance literature mentioned in the literature review, the corporate events ACQ and SEO are assumed to be the events driven by over-valuation, and the events TGT and SREP are the events driven by under-valuation. Therefore, the independent variables are natural logarithms of each of those corporate events. Following previous papers (e.g., Dasgupta, Gan, and Gao (2010), Gorton, Huang, and Kang (2016)), I control for other variables such as market-to-book ratio, volatility, log of total assets, firm leverage, firm profits, Tobin's Q, institutional holdings, log of the number of analysts covering the firm, log of firm age, turnover, industry returns, the firm's past returns, and the slope coefficients for each of the Fama-French six factors.

I present my primary results in Table 2, Panel, A, B, and C, where the dependent variables are PIN_VDJ, PIN_EKOP, and return non-synchronicity, respectively. Results not only perfectly aligned with the predictions as laid out in the theoretical argument section, but are very economically and statistically significant. For example, assuming a firm did not perform any SEO in the past 12 months, a firm performing one single SEO will lower the firm's PIN_VDJ score from median to below 25th percentile in the next 12 months (Table 2 Panel A Column (2)). Also, controlling for insider's private information using a proxy suggested by Chen et al. (2007) does not alter my results (Table BI in Appendix B).

Concerning PIN_VDJ (PIN_EKOP and PIN_VDJ have 77% correlation and all my results hold with either PIN), the results in Table 2 Panel A (Columns (3) and (4)) tell us that if a firm performs one SREP or TGT (assuming it performed zero events of the same type in months $t-13$ through $t-2$) at month $t-1$, its PIN_VDJ increases by 4.1 [{*ln(1+1) - ln(0+1)* } ** (0.0049) * 12*] and 2.1 percentage points in the next 12 months. Furthermore, the results in Columns (1) and (2) tell us that if a firm performs one SEO or one ACQ (assuming it performed zero events of the same type in months $t-13$ through $t-2$) at month $t-1$, its PIN_VDJ decreases by 10.6 and 5.4 percentage points per month, respectively, in 12

months. Considering that the average value of PIN_VDJ across samples is about 23.5%, these coefficients are very significant. The cumulative long-horizon, such as one to five years, effect on PIN is even more drastic[16].

Overall, results strongly suggest that the misvaluation information signaled by the corporate events will significantly change the information collection behavior of informed investors and hence significantly change a firm's PI. The results suggest that the information flow between the informed investors and managers is bi-directional and the information of each party complements each other. The information signaled to the market through corporate events is one of the major guiding factors that affect informed investors' resource allocation decisions concerning private information collection on a firm.

B. Testable Prediction 2: Market Learning from Industry-Level Corporate Events

Firms operating within the same industry not only compete within the same product and service markets but also are prone to the same industry-wide economic shocks. As I mention in the literature review section, industry characteristics are also one of the drivers of corporate event waves. Otchere and Ross (2002) found that a firm's share buyback program signals the under-valuation signal also of its rival firms. Mitchell and Mulherin (1996) found that the economic shocks borne by a particular industry are related to inter-industry patterns in terms of the rate of takeover and restructuring.

Further, firms' specific characteristics such as profitability and leverage are also dependent on the level of competition within the industry and the capital intensity of the industry. As the firms operating within one industry are similar in nature, it is plausible that an investor can infer the misvaluation of one firm given that he knows about the misvaluation of its peer firm within the same industry. With that reasoning, here, I hypothesize that if misvaluation information signaled by a firm truly changes the information collection behavior

[16]Please refer to Figure I

of an informed investor, the misvaluation information signaled by not only the firm but also by its peers should also have a similar effect on the information collection behavior of the informed investor.

To look at the relationship between the investors' information collection behavior (and hence PI) on a firm and the information signaled by its peers through the corporate events, I aggregate the number of each corporate event - ACQ, TGT, SEO, SREP - performed by a firm's peer group (excluding the events performed by the firm itself) within Fama French thirty industries in previous 12 months. My variables of interest, then, are the natural logarithms of those aggregate counts of the corporate events. I present the results of this analysis in Table 3; the results are very much consistent with my hypothesis here.

The results in Columns (3) and (4) of Table 3 tell us that if a firm's peers perform one SREP or TGT (assuming the firm's peers performed zero events of the same type in months $t-13$ through $t-2$) at month $t-1$, its PIN_VDJ increases by 4.5 [$\{ln(1+1) - ln(0+1)\} * (0.00542) * 12$] and 0.3 percentage points in the next 12 months. Furthermore, the results in Columns (1) and (2) tell us that if a firm's peers perform one ACQ or SEO (assuming the firm's peers performed zero events of the same type in months $t-13$ through $t-2$) at month $t-1$, its PIN_VDJ decreases by 6.5 and 7.5 percentage points per month, respectively, in 12 months. Again, considering that the average value of PIN_VDJ across the sample is about 23.5%, these coefficients are very significant.

Considering firms in the same industry are affected similarly by economic shocks and compete in similar product and service markets, the change in PI after industry-level corporate Over- and Under-Value events support the main prediction of the paper that the misvaluation information signaled by managers to the market change the information collection behavior of informed investors and hence the firm's PI.

C. *Testable Prediction 3: Corporate Events, Profitability of Investment Opportunities, and Information Collection*

One of the insights of DGG is that investors prefer to collect information for firms with better investment opportunities. And, the asymmetric effect of feedback effects on profitability tells us that investors prefer to be a buyer post information collection. Hence, among the firms that perform Under-Value events, an increase in resource allocation should be higher for the firms with better investment opportunities than for the firms with worse investment opportunities. And, among the firms that perform Over-Value events, decrease resource allocation should be higher for the firms with worse investment opportunities than firms with better investment opportunities. To test these hypotheses, I use ROA as a proxy for better investment opportunities; the higher the ROA, the better the investment opportunities.

I present the results of this analysis in Table 4 and all results are consistent with the above hypotheses. The first four columns are the results in a sample of firms that performed Over-Value events and the second four columns are the results in the sample of firms that performed Under-Value events. Conditioning variable ROA is of the previous quarter. Even though in general investors prefer to collect information on higher ROA firms (DGG), the impact of over-valuation information signaled by the corporate events is so strong that information collection goes down significantly even for the high ROA group of firms post such events. However, within the firms that performed Over-Value events, the decrease is less for high ROA firms compare to low ROA firms.

Within the firms that were categorized as high ROA firms based on their previous quarter's ROA, if a firm performs 1 (assuming it performed zero events of the same type in months $t-13$ through $t-2$) ACQ or SEO (Over-Value events) at $t-1$, the coefficients in Columns (1) and (3) imply that the firm's PIN_VDJ decreases by 6.1 [{*ln(1+1) - ln(0+1)* } ** (-0.00730) * 12*] and 11.6 percentage points, respectively, in the next 12 months. But, if the same firm performs 1 (assuming it performed zero events of the same type in months $t-13$ through $t-2$) TGT or SREP (Under-Value events) at $t-1$, the coefficients in Columns

(5) and (7) imply that the firm's PIN_VDJ increases by 2.3 [{*ln(1+1) - ln(0+1)* } ** 0.00272 * 12*] and 7.5 percentage points, respectively, in the next 12 months.

The results also are consistent with DGG's model that investors prefer high-investment profitability firms over low-investment profitability firms for information collection. Within the sample of firms that performed Under-Value events, the re-allocation of information collection efforts post-corporate events is more positive for high ROA firms than for the low ROA firms. For example, given that a firm performed 1 (assuming it performed zero events of the same type in months $t-13$ through $t-2$) SREP at $t-1$, if the firm was a high ROA firm last quarter, the firm's PIN_VDJ increases by 7.5 percentage points in the next 12 months. However, if the firm was a low ROA firm last quarter, the increase is only 3.2 percentage points within the same period; the two coefficients are statistically different at a 5% level

Furthermore, within the sample of firms that performed Over-Value events, the re-allocation of information collection resources is more negative for low ROA firms than for high ROA firms. For example, given that a firm performed 1 (assuming it performed zero events of the same type in months $t-13$ through $t-2$) ACQ at $t-1$, if the firm was a low ROA firm last quarter, the firm's PIN_VDJ decreases by 6.1 percentage points in the next 12 months. However, if the firm was a high ROA firm last quarter, the decrease is only 3.7 percentage points within the same period; the two coefficients are statistically different at the 5% level. Similar results are there if I use the book-to-market ratio as a proxy for ex-ante investment opportunities (Table BII).

Overall, results support the main findings that stock misvaluation information signaled by corporate events changes the information collection behavior of informed investors and hence changes the PI of the stock. The results are also in line with the insights provided by the model of DGG.

D. *Testable Prediction 4: Corporate Events Performed When a Firm has High/Low Q or P/V*

In addition to the misvaluation signal sent by managers, investors can use other publicly available information to assess a stock's misvaluation. If the misvaluation signal sent by firm managers to the market indeed changes the information collection behavior of informed investors, I hypothesize that those signals should have stronger effects where the direction of misvaluation suggested by the signals is consistent with that suggested by additional misvaluation measures.

I use Tobin's Q and P/V ratio as additional measures. I calculate Tobin's Q as the market value of equity plus total assets minus book equity divided by total assets, where book equity is calculated following Davis, Fama, and French (2000) and P/V following D'mello and Shroff (2000) and Dong et al. (2006) (see Appendix).

In this section, I hypothesize that Under-Value events that coincide with a low Tobin's Q or a low P/V environment should increase PIN more in the future than those that coincide with a high Tobin's Q or a high P/V environment, and vice versa for Over-Value events. My empirical results strongly support my hypothesis.

At the beginning of each year, I divide each of the four corporate events into two mutually exclusive groups: one with high Tobin's Q and one with low Tobin's Q. I then calculate each of my four corporate event variables - Ln_ACQ, Ln_TGT, Ln_SEO, and Ln_SREP - separately for each group. If a firm has Tobin's Q greater than the median for the previous year, it is considered a high Tobin's Q firm, and vice versa. I perform a similar analysis using P/V. Table 5 shows the results for the sub-samples that are divided using Tobin's Q and Table 6 for sub-samples that are divided using P/V.

Table 5 tells us that decreases in PIN after Over-Value events exclusively come from events in a high Tobin's Q environment, whereas increases in PIN after Under-Value events exclusively come from events in a low Tobin's Q environment. The table strongly supports the main finding of the paper that misvaluations affect PI - over-valuations decrease and

under-valuations increase PI. With regard to each of the corporate events - ACQ, SEO, TGT, and SREP - the differences in slope coefficients between events performed in a high Q vs low Q environment are statistically significant, with a $t-stat$ of 16.56, 11.07, 15.61, and 10.64, respectively.

Within the corporate events performed within High Tobin's Q environment, coefficients for over-value events are significantly more negative than those of under-value events. However, within the corporate events performed within Low Tobin's Q environment, coefficients for under-value events are significantly more positive than those of over-value events. Differences in slope coefficients between ACQ and TGT and between SEO and SREP have $t-stat$ of 3.74 and 6.65, respectively, within high Tobin's Q samples. And, those are 5.51 and 7.80, respectively, within low Tobin's Q samples. I obtain very much the same results in the sub-samples divided using P/V. In the results not shown in the paper, I also get similar results using the price-to-book (P/B) ratio.

Overall, results in Tables 5 and 6 strongly support the main results of the paper: that misvaluation signals coming out of corporate events change the information collection behavior of informed investors and hence the PI of the stock.

E. Testable Prediction 5: Corporate Events, Short-Sale Constraints, and Information Collection

As pointed out by Engelberg et al. (2018), there are certain types of risks particular to short-selling. Due to factors such as share borrowing costs, early share recall risks, and regulatory constraints, an informed investor's expected profitability of sells is smaller than that of buys. The prediction here is that post Over-Value events we should see more (less) resource allocation taken away from the firms with higher (lower) short-sell constraints. Or, the effect of feedback effect on information collection behavior should be stronger among firms with higher short-sell constraints.

To test this prediction, following Chen, Hong, and Stein (2002), I use the breadth of

ownership calculated using mutual fund holdings only and the breadth of ownership using all institutions (S12) of stock as proxies for short-sell constraints. I present the results of this analysis in Table 7 in which conditioning variable breadth is calculated using S12 data for the first 4 Columns and calculated using only mutual fund holdings for the last 4 Columns. Stock's breadth in month $t-12$ is used to split the sample into two groups: high breath (low short-sell constraints) and low breadth (high short-sell constraints).

Results are consistent with the hypothesis that when investors learn from Over-Value corporate events that they will more likely to be a seller when they trade after the information collection, they take the information collection resources away from the firm. Second, even within the firms that did Over-Value events, they take away more resources from the firms that have higher short-sell constraints.

Within the sample of firms that performed Over-Value events, when I use the breadth calculated using S12 information at the month $t-12$ as my conditioning variable if a firm with high short-sell constraints performs 1 (assuming it performed zero events of the same type in months $t-13$ through $t-2$) ACQ or SEO (Over-Value events) at $t=0$, the coefficients in Columns (1) and (3) imply that the firm's PIN_VDJ decreases by 6.1 [*{ln(1+1) - ln(0+1) } * (-0.00738) * 12*] and 15.0 percentage points, respectively, in the next 12 months. But, if a firm with low short-sell constraints performs 1 (assuming it performed zero events of the same type in months $t-13$ through $t-2$) TGT or SREP (Under-Value events) at $t=0$, the coefficients in Columns (2) and (4) imply that the firm's PIN_VDJ decreases only by 2.9 [*{ln(1+1) - ln(0+1) } * (-0.00345) * 12*] and 5.0 percentage points, respectively, in the next 12 months. The coefficients for AGQ and SEO in low and high cases are statistically different with a t-stat of 3.702 and 7.256, respectively.

Overall, empirical results are very strong and consistent in telling us that misvaluation information coming out through corporate events very much impacts the information collection behavior of investors and hence PI, meaning one of the ways misvaluations affect PI is by changing investors' information collection behavior. Results also suggest that information

flow in financial markets not only goes from investors to managers but also from managers to investors and in fact information provided by managers guides investors' behaviors.

V. Other Tests of Hypothesis 2: Information Collection & Manager Characteristics

Investors' private information about the investments not yet made is only valuable if managers are willing to learn from it and use it in their decision-making. Hence, whether the managers tend to listen to prices is a major factor impacting investors' information collection behavior in the first place. In this section, I study the effect of interaction between managers' tendency to listen to prices and the misvaluation signal coming out of corporate events on the investors' information collection.

A. Managers' listening to stock prices and investors' information collection behavior

As I mentioned before, the insight of Edmans et al. (2015) is that selling on bad news reduces an informed investor's expected trading profit, whereas buying on good news increases it. Since the feedback effect always increases a firm's value, everything else equal, an informed investor who is expected to be a buyer should always prefer managers who listen more to the information in prices.

However, if an informed investor is expected to be a seller, whether she prefers managers who listen to prices more is not straightforward. On one hand, since the feedback effect reduces her sells profits, she prefers managers who listen to prices less and hence are less likely to take value-maximizing actions suggested by the prices. But on the other hand, the feedback effect also encourages manipulative short-selling (e.g., Goldstein and Guembel (2008)). When an investor short-sells a firm's stock, the short-selling distorts the firm's investment

because the managers listen to the prices; this then helps the short-seller earn positive trading profits. If an investor expects to be influential in distorting a firm's investments, she prefers managers who listen to prices more.

Here, I study whether managers' listening to prices changes the information collection behavior of investors after corporate events. First, I hypothesize that after the Under-Value event, investors' information collection efforts should increase more for firms whose managers have a greater tendency to listen to the prices.

Recent finance research uses investment-to-Q sensitivity as a measure of managers' tendency to listen to the information in prices when making a real investment (e.g., Rösch, Subrahmanyam, and Van Dijk (2019)). As I mentioned before, Tobin's Q is calculated as the market value of equity plus total assets minus book equity divided by total assets. Investment is calculated as capital spending plus research and development divided by the previous year's total assets. Investment-to-Q is then investment divided by Tobin's Q.

At the beginning of each year, I assign each of the four corporate events to one of two mutually exclusive groups: those with high investment-to-Q and those with low investment-to-Q. I then calculate each of my four corporate event variables - Ln_ACQ, Ln_TGT, Ln_SEO, and Ln_SREP - separately for each group. If a firm has investment-to-Q greater than the median for the previous year, its managers are considered to have a greater tendency to listen to prices, and vice versa.

I present the results of this analysis in Table 8. Concerning the Under-Value events Ln_TGT and Ln_SREP, the increase in PIN after corporate events is positive and very statistically significant for firms with managers that tend to listen to prices more; results are positive but statistically insignificant for firms with managers that tend to listen to prices less. The differences in slope coefficients in the two sub-samples are statistically significant with a $t - stat$ of 2.55 for Ln_TGT and 2.29 for Ln_ SREP.

Concerning Over-Value events, the impact of speculative trading or distortions of investments effects seems to slightly dominate the impact of the feedback effect; the decrease in

PIN after the events seems to be lower in firms where managers listen to the prices more. The difference in slope coefficients in the two sub-samples is statistically significant only for Ln_ACQ.

Overall, results support the main findings that over- and under-valuation signals from corporate events change the expected profitability of an informed trader and hence the trader's information collection efforts, consequently affecting the stock's PI.

B. Corporate Events, Corporate Governance, and Information Collection

Ferreira et al. (2011) found a negative relation between PI and Board independence. They hypothesized and found evidence that PI and Board monitoring are substitutes. According to Gorton et al. (2016), since the disciplining role of security prices, for example, removing incompetent CEOs, reduces the profitability of an informed investor, investors will prefer to collect information where managers are more entrenched or where corporate governance is weak. In my context, the impact of disciplining or not disciplining a CEO is more relevant for the expected profitability of sell trades.

An informed investor who short-sold a stock on negative information does not want managers to optimize the firm value by learning from prices. Since the managers in firms with better corporate governance and/or with less entrenched managers are more likely to act on the information reflected in prices, the informed investors who are more likely to find negative information and hence will be a seller if they were to collect more information do not prefer to collect information on such firms in the first place. Here, I hypothesized that within the firms that perform Over-Value events we should see a higher (lower) decrease in information collection in firms with strong (poor) corporate governance or less (more) entrenched managers.

For this prediction, I use E-Index developed by Bebchuk, Cohen, and Ferrell (2008) and G-Index developed by Gompers, Ishii, and Metrick (2003) as proxies for manager entrenchment and corporate governance, respectively. Higher (lower) E-Index values signify

more (less) entrenched managers and higher (lower) G-Index values signify poor (strong) corporate governance. I present the results of these analyses in Table 9.

Within the sample of firms that performed Over-Value events, if a firm with strong corporate governance in the previous year (lower E-Index) performs 1 (assuming it performed no SEO in the past 12 months) SEO at $t-1$, the coefficient in Columns (5) implies that the firm's PIN_VDJ decreases by 1.9 [{*ln(1+1) - ln(0+1)* } * *(-0.00229)* * *12*] percentage points in the next 12 months. But, if a firm with poor corporate governance in the previous year performs 1 (assuming it performed no SEO in the past 12 months) SEO at $t-1$, the coefficient in Columns (6) implies that the firm's PIN_VDJ actually increases by 2.2 percentage points in the next 12 months. Results that use the value of G-Index as conditioning variables (Columns (7) and (8)) are directionally consistent.

Overall, results are not only consistent with my hypothesis above but also support the main prediction and finding that the stock over- and under-valuation information coming out to market from corporate events changes the PI of the stock. And, changes in the information collection behavior of an informed investor that I find here are also in line with the findings of Gorton et al. (2016) and Ferreira et al. (2011).

VI. Further Supporting Evidence

A. Abnormal announcement returns of corporate events and investors' information collection behavior

The main finding of this paper is as follows: because informed investors' expected profit is lower for sell trades than that of buy trades due to feedback effects, *ex-ante* the investor prefers to collect more information on a firm that sent an Under-Value signal and less on a firm that sent an Over-Value signal. Furthermore, results from the previous section (Tables 5 and 6) tell us that Over-Value events performed when a firm is highly over-valued, as measured by Q to P/V, and Under-Value events performed by a firm when it is highly

under-valued, also measured by Q to P/V, gives stronger effects in terms of changing the informed investors' information collection behavior.

As evidenced by the empirical findings of numerous papers, over- or under-value signals sent by managers who have superior access to firm information are credible, reliable, and can be traded on. If the stock price of a firm that recently performed an Over-Value event continues to increase, the over-valuation is exacerbated and it should be relatively unattractive to informed investors with regard to collecting information on the firm. Similarly, if the stock price of a firm that recently performed an Under-Value event keeps decreasing, the under-valuation is exacerbated and it should be relatively attractive to informed investors with regard to collecting information on the firm. This notion is similar to the notion that if an investor receives a positive signal and the stock price recently has gone down, she is more confident about the novelty of her signal and more likely to trade aggressively (Peress and Schmidt (2019), Treynor and Ferguson (1985)). In this section, I test that intuition using the announcement returns of the four corporate events that I study in this paper.

First, I calculate daily abnormal return as the raw return minus the daily return of a benchmark portfolio of firms matched on size and book-to-market ratio. I form benchmark portfolios following Fama and French (1992). Using those abnormal returns, I then calculate $BHAR_{i,t}^{20days}$, which is the 20-day (-2 to 17) buy-and-hold returns for the firm i that performed a corporate event at time t.

At the beginning of each year, I assign each of the four corporate events to one of two mutually exclusive groups: those with high $BHAR_{i,t}^{20days}$ and those with low $BHAR_{i,t}^{20days}$. I then calculate each corporate event variable - Ln_ACQ, Ln_TGT, Ln_SEO, and Ln_SREP - separately for each group. I present the regression results of each of those sub-samples in Table 10.

Consistent with the intuition above, the decrease in PIN is higher after Over-Value events with high announcement returns than after Over-Value events with low announcement returns. Similarly, the increase in PIN is higher after Under-Value events with low announce-

ment returns than after Under-Value events with high announcement returns. For the corporate events ACQ, SEO, TGT, and SREP, the differences in slope coefficients between the two groups of events are statistically significant with a $t-stat$ of 4.79, 3.09, 3.59, and 2.74, respectively.

B. Corporate events as binary over- or under-valuation signals

The signaling literature (e.g., Leland and Pyle (1977), John and Mishra (1990), Babenko, Tserlukevich, and Vedrashko (2012)) generally assume that managers have superior information compared to outside investors. Abnormal return patterns such as negative abnormal returns after an over-valuation signal (e.g., SEOs) and positive abnormal returns after an under-valuation signal (e.g., share repurchases), found often in the finance literature, suggest that managers indeed are more informed about the internal information of a firm.

In this section, I hypothesize that if managers' signals about over- and under-valuation are very credible to investors, then these signals, regardless of their frequency (within a short period), are sufficient to change investors' information collection behavior. Frequency should provide only marginal additional information. For example, performing an SEO signals to investors as much about a firm's over-valuation as performing two SEOs within a short period (e.g., a year) does.

To test my hypothesis, I generated corporate event dummies - ACQ_D, TGT_D, SEO_D, and SREP_D - that are equal to 1 if a firm has performed at least one acquisition as an acquirer, acquisition as a target, secondary equity offerings, or share repurchases, respectively, in last 12 months and 0 otherwise. Table 11 presents the results of the regressions that use those dummy variables as corporate events variables. The results are exactly in line with my hypothesis.

In short, over- and under-valuation signals sent by managers through corporate events are credible to investors and hence change the investors' information collection behavior.

C. Corporate events and Weak and Semi-Strong Form Market Efficiency

As mentioned before, the finance literature has found that corporate events are misvaluation-driven, and price and return patterns after corporate events support that notion as well. As managers signal their private information about misvaluation concerning a firm's fundamental value to market participants, prices adjust. Hence, it is very plausible that price efficiency improves and that is exactly what the evidence in Table 12 confirms.

I measure the weak-form market efficiency using the variance ratio of Lo and MacKinlay (1988) and measure the semi-strong-form market efficiency using the D1 measure of Hou and Moskowitz (2005). The D1 of Hou and Moskowitz (2005) measures the information delay of US market-specific information as the RHS variables of their extended model include lagged US market returns. To expand the scope of the D1 measure, I calculated the D1 measure with lagged US market returns and with the lagged market as well as individual firm returns. Results are robust to either D1 measure.

Concerning weak form market efficiency, all four corporate events variables predict the increase of market efficiency with statistical significance at a 1% level. And concerning semi-strong form market efficiency, three of four corporate events variables predict the increase of market efficiency with statistical significance at a 1% level. Results support the conjecture that price efficiency improves post corporate events that signal misvaluation signals to the market.

VII. Conclusions

In this paper, I show that misvaluation, depending on the direction, affect price informativeness oppositely. I combine the insights from the feedback effect and corporate event study literature to derive my hypotheses and testable predictions. In summary, investors can profit more when they trade on positive information than on negative information, because revealing negative information might lead managers to cancel the project or reason behind

the negative information. A signal of undervaluation (overvaluation) suggests that positive (negative) information is more likely. This then predicts that more (less) information production is likely following the signal of undervaluation (overvaluation). The main prediction is that after an Under-Value (Over-Value) event, a firm's PI goes up. The reason is that post an Under-Value (Over-Value) event, the expected profitability of informed trades in the firm goes up (down), consequently leading to higher (lower) information collection and higher (lower) PI.

I find strong evidence that (1) post ACQ or SEO (Over-Value events) performed by a firm or its peers, PI decreases significantly, and (2) post TGT or SREP (Under-Value events) performed by a firm or its peers, PI increases significantly. Within the firms that perform Over-Value events, PI decreases more for firms with worse investment opportunities, poor corporate governance, more entrenched managers, and higher short-sale constraints. Within the firms that perform Under-Value events, PI increases more for firms with better investment opportunities and with managers who tend to listen to prices more. Results are stronger if a firm performs Over-Value events when it has high Q or high Price-to-Value (P/V) or performs Under-Value events when it has low Q or low P/V.

This paper makes three primary contributions to the literature. First, the paper shows that while stock over-valuation affects PI negatively, under-valuation affects PI positively. Second, the paper shows evidence that the information coming out to market through corporate events is one of the guiding factors in investors' decisions with regard to their information collection resource allocations. As investors have limited resources and cannot collect information on every single firm, the question of what factors do they consider when deciding about their resource allocation is important to understand the information generation process in the market. Third, unlike feedback effect theory work in which information flow is mostly unidirectional - from investors (thorough prices) to managers - or general finance theory, especially capital budgeting theory, work in which information flow is again mostly unidirectional - from managers to investors, this paper shows the evidence of bi-directional

information flow - from managers to investors and vice-versa.

The findings of this paper have much bigger and broader implications concerning how financial markets function; results suggest that as investors collect more information on under-valued firms compared to over-valued firms, under-valuations are corrected faster than over-valuations do. This signifies that over-valuations are stickier and more prominent in the economy. Compare to long-legs, short-legs of anomaly portfolios producing consistent and bigger absolute abnormal returns for a longer period Dong et al. (2022) may be the result of such asymmetric information collection phenomena.

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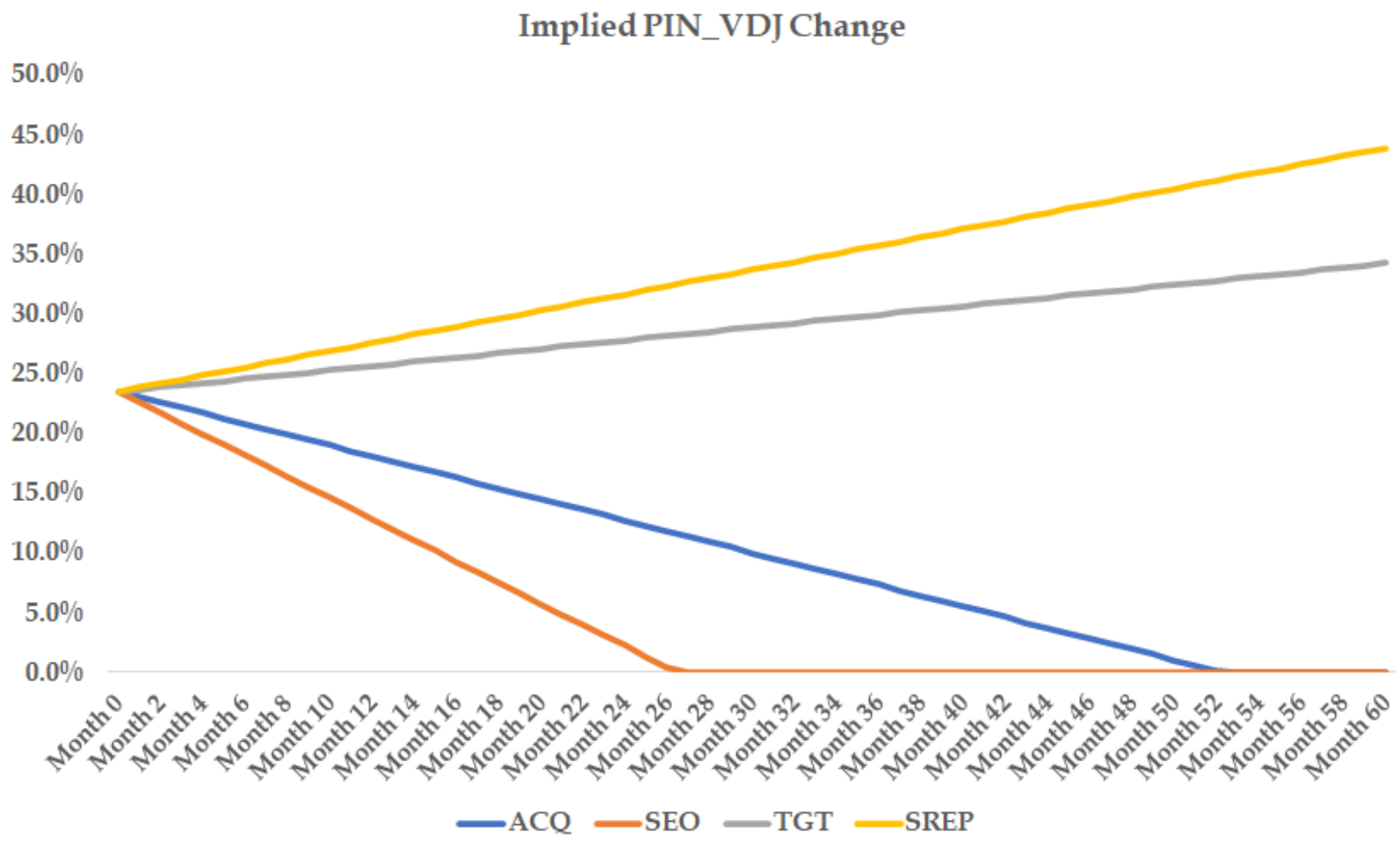

Figure I: Implied Change in Probability of Informed Trade. Using the coefficients of the events Ln_ACQ, Ln_SEO, Ln_TGT, and Ln_SREP from Table 2 Panel A, this figure shows the expected change in PIN_VDJ if a firm performs no events from month -12 to -1 and performs each of the events exactly once on month 0, 12, 24, 36, and month 48. The effect of Over-Value event SEO on PIN_VDJ is so strong that the coefficient in Column 2 of Table 2 Panel A implies that only after performing the event twice in a row for two years (in months 0 and 24) decreases the PIN by more than 90%.

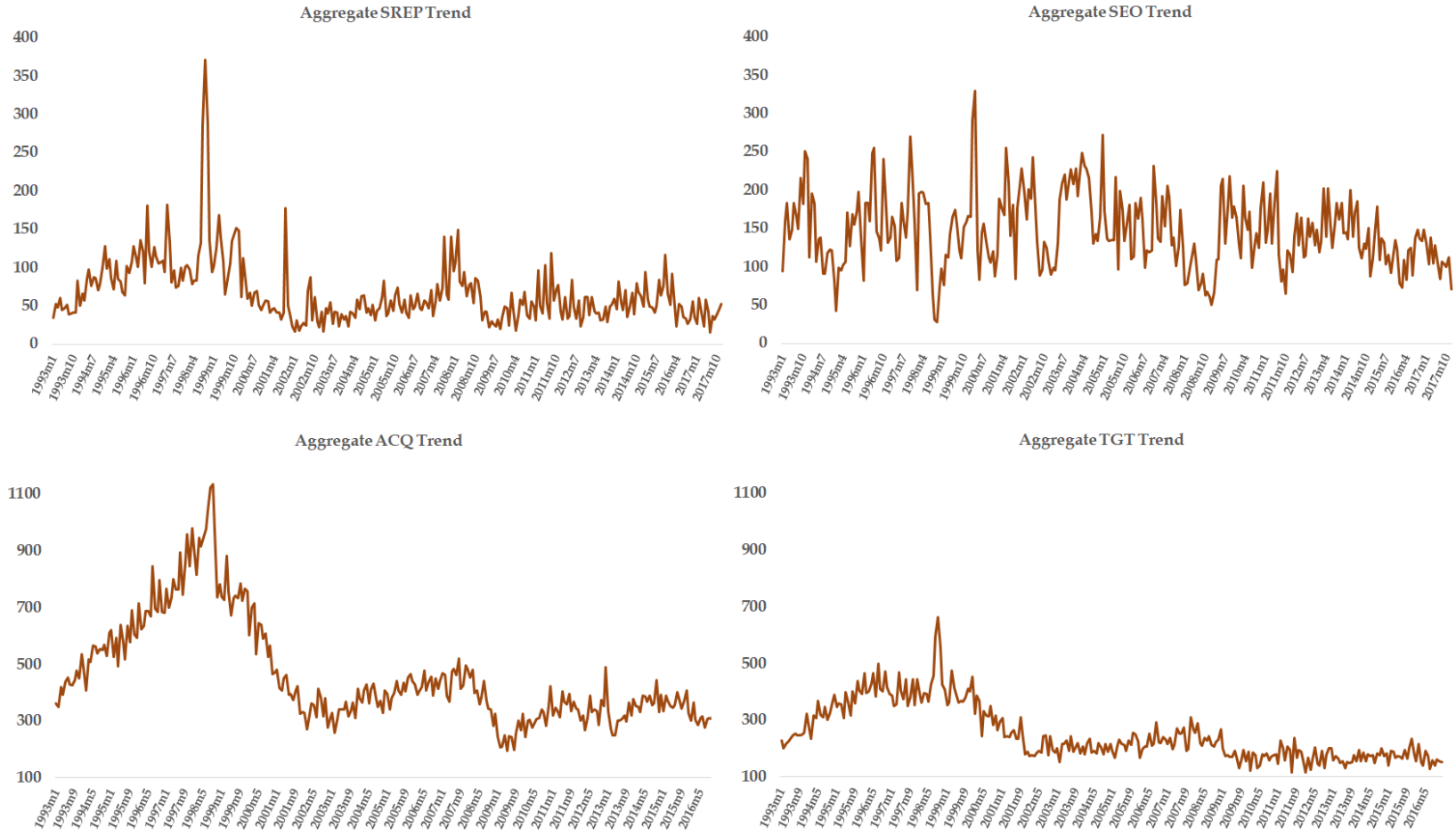

Figure II: Aggregate Number of Corporate Events by US Firms by Month.

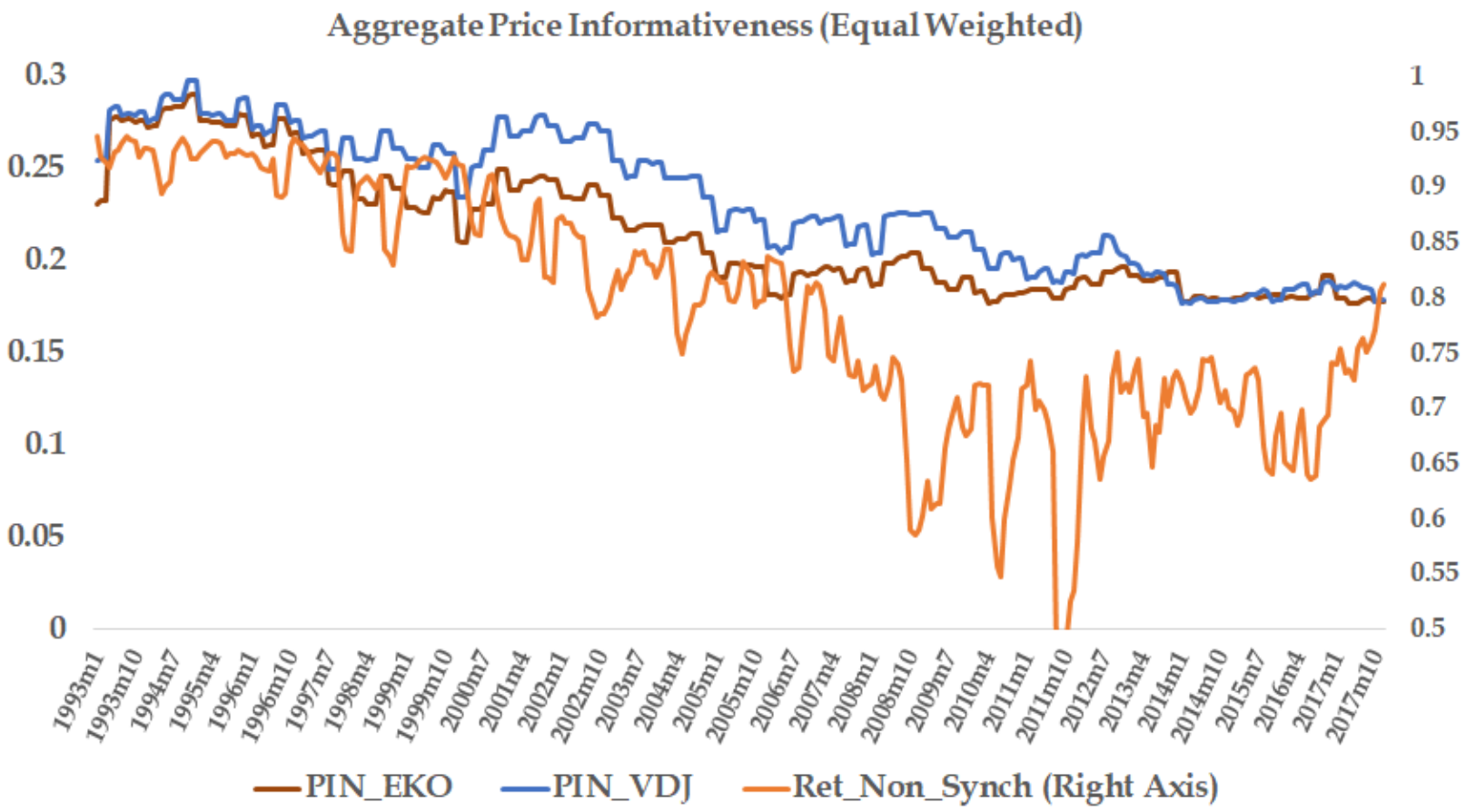

Figure III: Equal Weighted Aggregate PI of US Firms.

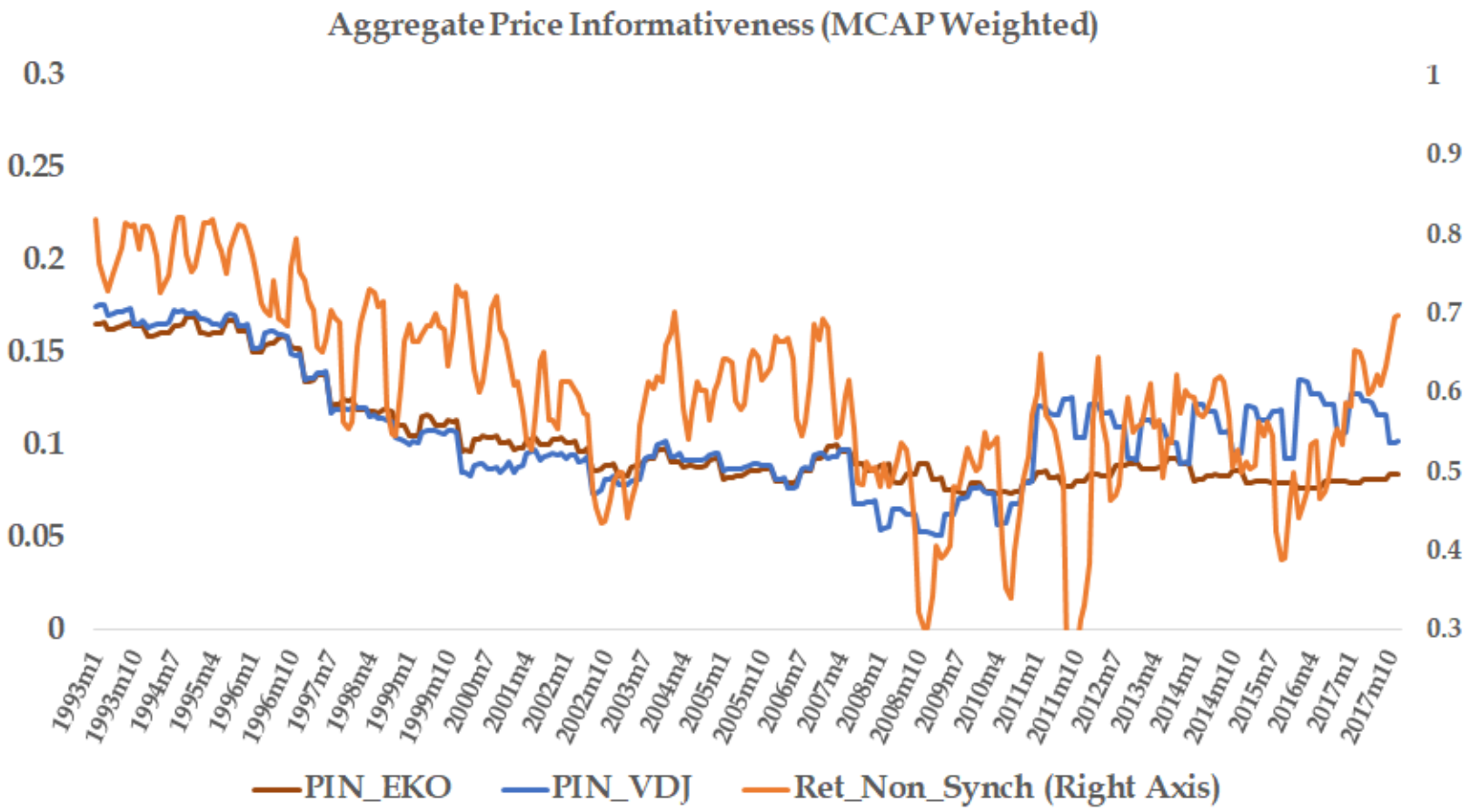

Figure IV: Value Weighted Aggregate PI of US Firms.

Table 1:
Summary Statistics

This table shows the mean, median, standard deviation, and different percentiles of corporate events variables, proxies of the probability of informed trading, and other control variables. The corporate events variables "ACQ", "SEO", "TGT", and "SREP" are simply the cumulative count of the number of M&A transactions in which a firm is an acquirer, the number of times firm performed secondary equity offerings, the number of M&A transactions in which a firm is a target, and the number of times firm performed share repurchases in last twelve months, respectively. Based on the findings of numerous research papers, corporate events "ACQ" and "SEO" are considered the events that signal firm over-valuation, and the corporate events "TGT" and "SREP" are considered the events that signal firm under-valuation. The summary statistics of ACQ, SEO, TGT, SREP, and ANLST_Count are limited to the sample in which each of those variables is greater than zero. I use three proxies of price informativeness - the probability of informed trade of Easley et al. (1996) (PIN_EKO) and of Venter and De Jongh (2006) (PIN_VDJ), and return non-synchronicity (Roll (1988)). The sample period runs from January 1993 through December 2017. All variables are defined in Appendix A.

	Mean	Std. Dev	1 %ile	25 %ile	Median	75 %ile	99 %ile	N
ACQ	2.237	2.667	1	1	1	2	12	566,048
SEO	1.430	0.904	1	1	1	2	4	248,830
TGT	1.572	1.285	1	1	1	2	7	410,898
SREP	1.139	0.403	1	1	1	1	3	162,548
PIN_EKO	0.228	0.145	0	0.133	0.206	0.289	0.769	1,506,902
PIN_VDJ	0.249	0.159	0	0.137	0.213	0.322	0.791	1,517,051
RET_NSYNCH	0.833	0.200	0.161	0.762	0.920	0.973	0.999	1,553,945
MB	1.585	7.995	0.0873	0.554	0.972	1.646	10.34	1,062,613
Volatility	0.00175	0.00694	1.47e-05	0.000232	0.000636	0.00170	0.0162	1,590,109
Assets	7,051	64,204	3.738	69.02	315.0	1,449	111,815	1,321,728
Leverage	0.177	1.671	0	0.00425	0.0981	0.273	0.856	1,299,334
Profit	0.0949	15.78	-1.264	0.0235	0.106	0.186	0.637	949,921
Total Q	0.00489	0.114	-0.00399	0.000332	0.000769	0.00167	0.0380	1,108,038
INST_HOLD	0.346	1.147	0.000209	0.0742	0.262	0.553	1.044	1,541,490
ANLST_Count	5.684	4.805	2	2	4	7	24	359,698
Firm_Age	150.0	162.5	4	40	97	198	851	1,554,393
Turnover	1.747	15.83	0.0154	0.283	0.674	1.560	13.30	1,582,098

Table 2:
Over- and Under-Valuations Signals from a Firm's Corporate Events and Price Informativeness

This table shows the results of a pooled regression of corporate events variables on the measure of price informativeness while controlling for several firm characteristics. The corporate events variables "Ln_ACQ", "Ln_SEO", "Ln_TGT", and "Ln_SREP" are simply the natural logarithms of a cumulative count of the number of M&A transactions in which a firm is an acquirer, the number of times the firm performed secondary equity offerings, the number of M&A transactions in which a firm is a target, and the number of times the firm performed share repurchases in the last twelve months, respectively. Based on the findings of numerous research papers, corporate events "Ln_ACQ" and "Ln_SEO" are considered to be events that signal stock over-valuation. And, the corporate events "Ln_TGT" and "Ln_SREP" are considered to be events that signal stock under-valuation. The sample period is from January 1993 through December 2017. All variables are defined in Appendix A. *, **, and *** indicate the statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

Panel A: Dependent Variable PIN (Venter & De Jongh 2006)

	Over-Value Events		Under-Value Events	
	(1)	(2)	(3)	(4)
Ln_ACQ_{t-3}	-0.00648***			
	(-10.176)			
Ln_SEO_{t-3}		-0.0128***		
		(-12.799)		
Ln_TGT_{t-3}			0.00258***	
			(3.547)	
Ln_SREP_{t-3}				0.00490***
				(4.224)
MB_{t-12}	-0.0000279	-0.0000326	-0.0000304	-0.0000308
	(-0.915)	(-1.132)	(-0.999)	(-1.022)
Volatility_{t-1}	0.00259	0.00287	0.00334	0.00368
	(0.210)	(0.234)	(0.271)	(0.299)
Ln_Assets_{t-12}	-0.0262***	-0.0268***	-0.0270***	-0.0270***
	(-26.017)	(-26.696)	(-26.746)	(-26.757)
Leverage_{t-12}	0.0316***	0.0334***	0.0329***	0.0331***
	(9.560)	(10.060)	(9.924)	(9.988)
Profit_{t-12}	-0.000315	-0.000291	-0.000305	-0.000307
	(-1.182)	(-0.973)	(-1.113)	(-1.116)
Tobin's Q_{t-12}	-0.0000276	-0.0000242	-0.0000267	-0.0000262
	(-0.588)	(-0.535)	(-0.570)	(-0.561)
Inst_hold_{t-3}	-0.00226*	-0.00225*	-0.00227*	-0.00227*
	(-1.678)	(-1.692)	(-1.678)	(-1.677)
Ln_Anlst_{t-12}	-0.00516***	-0.00533***	-0.00520***	-0.00524***
	(-10.213)	(-10.560)	(-10.271)	(-10.338)
Firm_Age_{t-1}	0.00997***	0.00891***	0.0100***	0.0101***
	(4.553)	(4.053)	(4.558)	(4.583)
Turnover_{t-1}	-0.00753	-0.00743	-0.00752	-0.00752
	(-1.471)	(-1.471)	(-1.468)	(-1.469)
Ind_Returns_{t-1}	-0.00327	-0.00347	-0.00317	-0.00317
	(-0.397)	(-0.428)	(-0.386)	(-0.387)
Returns_{t-1}	-0.0252***	-0.0253***	-0.0250***	-0.0250***
	(-11.966)	(-12.076)	(-11.892)	(-11.899)
$\text{MKT\_}\beta_{t-12}$	-0.00311***	-0.00306***	-0.00309***	-0.00309***
	(-11.151)	(-11.051)	(-11.125)	(-11.117)
$\text{SMB\_}\beta_{t-12}$	-0.00255***	-0.00253***	-0.00254***	-0.00254***
	(-10.455)	(-10.445)	(-10.432)	(-10.425)
$\text{HML\_}\beta_{t-12}$	0.00155***	0.00155***	0.00155***	0.00155***
	(7.874)	(7.973)	(7.867)	(7.875)
$\text{RMW\_}\beta_{t-12}$	0.000786***	0.000759***	0.000781***	0.000777***
	(4.573)	(4.475)	(4.541)	(4.521)
$\text{CMA\_}\beta_{t-12}$	0.000433***	0.000433***	0.000428***	0.000430***
	(2.817)	(2.845)	(2.779)	(2.787)
$\text{MOM\_}\beta_{t-12}$	-0.000852***	-0.000834***	-0.000879***	-0.000882***
	(-3.016)	(-2.993)	(-3.114)	(-3.123)
Constant	0.351***	0.356***	0.352***	0.352***
	(48.313)	(48.871)	(48.413)	(48.421)
Firm, Mo. FE	YES	YES	YES	YES
Observations	1,027,669	1,027,669	1,027,669	1,027,669

Panel B: Dependent Variable PIN (Easley et. al., (1996))

	Over-Value Events		Under-Value Events	
	(1)	(2)	(3)	(4)
Ln_ACQ$_{t-3}$	-0.00456***			
	(-9.249)			
Ln_SEO$_{t-3}$		-0.0106***		
		(-13.338)		
Ln_TGT$_{t-3}$			0.00163***	
			(2.878)	
Ln_SREP$_{t-3}$				0.00355***
				(3.907)
MB$_{t-12}$	-0.0000295**	-0.0000331**	-0.0000313**	-0.0000316**
	(-1.997)	(-2.430)	(-2.114)	(-2.162)
Volatility$_{t-1}$	-0.00870	-0.00857	-0.00817	-0.00793
	(-0.729)	(-0.726)	(-0.694)	(-0.678)
Ln_Assets$_{t-12}$	-0.0226***	-0.0230***	-0.0232***	-0.0232***
	(-33.490)	(-34.256)	(-34.156)	(-34.211)
Leverage$_{t-12}$	0.0229***	0.0242***	0.0237***	0.0239***
	(8.677)	(9.097)	(8.969)	(9.024)
Profit$_{t-12}$	-0.000794***	-0.000775***	-0.000787***	-0.000789***
	(-8.374)	(-9.241)	(-8.278)	(-8.361)
Tobin's Q$_{t-12}$	-0.0000190	-0.0000163	-0.0000184	-0.0000180
	(-0.669)	(-0.605)	(-0.648)	(-0.638)
Inst_Hold$_{t-3}$	-0.00172*	-0.00171*	-0.00173*	-0.00173*
	(-1.715)	(-1.732)	(-1.715)	(-1.714)
Ln_Anlst$_{t-12}$	-0.00395***	-0.00409***	-0.00399***	-0.00401***
	(-11.805)	(-12.206)	(-11.850)	(-11.927)
Ln_Age$_{t-1}$	0.00712***	0.00621***	0.00716***	0.00719***
	(5.041)	(4.389)	(5.054)	(5.074)
Turnover$_{t-1}$	-0.00522	-0.00514	-0.00522	-0.00521
	(-1.322)	(-1.320)	(-1.320)	(-1.320)
Ind_Returns$_{t-1}$	0.000466	0.000283	0.000541	0.000538
	(0.074)	(0.046)	(0.086)	(0.086)
Returns$_{t-1}$	-0.0140***	-0.0141***	-0.0139***	-0.0139***
	(-9.149)	(-9.278)	(-9.076)	(-9.084)
MKT_β_{t-12}	-0.00245***	-0.00241***	-0.00245***	-0.00244***
	(-10.507)	(-10.399)	(-10.485)	(-10.474)
SMB_β_$t-12$	-0.00186***	-0.00184***	-0.00185***	-0.00185***
	(-9.450)	(-9.429)	(-9.433)	(-9.429)
HML_β_{t-12}	0.00107***	0.00108***	0.00107***	0.00107***
	(6.647)	(6.736)	(6.642)	(6.647)
RMW_β_{t-12}	0.000742***	0.000719***	0.000738***	0.000735***
	(5.095)	(5.010)	(5.067)	(5.049)
CMA_β_{t-12}	0.000222*	0.000222*	0.000219*	0.000220*
	(1.823)	(1.842)	(1.792)	(1.800)
MOM_β_{t-12}	-0.000630***	-0.000611***	-0.000649***	-0.000651***
	(-2.764)	(-2.721)	(-2.853)	(-2.861)
Constant	0.326***	0.330***	0.327***	0.327***
	(63.785)	(64.511)	(63.762)	(63.796)
Firm, Mo. FE	YES	YES	YES	YES
Observations	1,027,669	1,027,669	1,027,669	1,027,669

Panel C: Dependent Variable Return Non-Synchronicity

	Ovar-Value Events		Under-Value Events	
	(1)	(2)	(3)	(4)
Ln-ACQ$_{t-1}$	-0.00488***			
	(-5.108)			
Ln_SEO$_{t-1}$		-0.00484***		
		(-3.007)		
Ln_TGT$_{t-1}$			0.00832***	
			(7.850)	
Ln_SREP$_{t-1}$				0.00221
				(1.318)
MB$_{t-12}$	-0.0000410	-0.0000439	-0.0000434	-0.0000428
	(-1.225)	(-1.347)	(-1.316)	(-1.286)
Volatility$_{t-1}$	0.0500*	0.0504*	0.0503*	0.0507*
	(1.943)	(1.943)	(1.942)	(1.943)
Ln_Assets$_{t-12}$	-0.0384***	-0.0389***	-0.0393***	-0.0389***
	(-27.004)	(-27.181)	(-27.466)	(-27.214)
Leverage$_{t-12}$	0.0463***	0.0477***	0.0479***	0.0476***
	(11.324)	(11.532)	(11.579)	(11.523)
Profit$_{t-12}$	-0.000354*	-0.000346*	-0.000333	-0.000344*
	(-1.787)	(-1.844)	(-1.627)	(-1.774)
Tobin's Q$_{t-12}$	-0.0000210	-0.0000192	-0.0000204	-0.0000203
	(-0.367)	(-0.340)	(-0.360)	(-0.355)
Inst_Hold$_{t-3}$	-0.00246	-0.00246	-0.00247	-0.00247
	(-1.200)	(-1.203)	(-1.202)	(-1.201)
Ln_Anlst$_{t-12}$	-0.00825***	-0.00831***	-0.00828***	-0.00829***
	(-9.328)	(-9.402)	(-9.397)	(-9.375)
Ln_Age$_{t-1}$	0.0313***	0.0312***	0.0311***	0.0314***
	(10.410)	(10.350)	(10.317)	(10.438)
Turnover$_{t-1}$	-0.00293	-0.00288	-0.00293	-0.00293
	(-1.372)	(-1.370)	(-1.364)	(-1.369)
Ind_Returns$_{t-1}$	0.0315**	0.0316**	0.0317**	0.0317**
	(2.225)	(2.235)	(2.236)	(2.235)
Returns$_{t-1}$	0.00244	0.00236	0.00236	0.00248
	(0.714)	(0.693)	(0.695)	(0.728)
MKT_β_{t-12}	-0.00448***	-0.00446***	-0.00446***	-0.00447***
	(-12.355)	(-12.328)	(-12.349)	(-12.334)
SMB_β_{t-12}	-0.00348***	-0.00348***	-0.00346***	-0.00348***
	(-9.798)	(-9.784)	(-9.780)	(-9.766)
HML_β_{t-12}	0.00218***	0.00218***	0.00217***	0.00217***
	(8.119)	(8.121)	(8.083)	(8.084)
RMW_β_{t-12}	0.00119***	0.00118***	0.00118***	0.00118***
	(5.520)	(5.487)	(5.503)	(5.491)
CMA_β_{t-12}	0.000543**	0.000542**	0.000532**	0.000541**
	(2.579)	(2.571)	(2.531)	(2.556)
MOM_β_$t-12$	-0.00193***	-0.00194***	-0.00194***	-0.00195***
	(-4.706)	(-4.735)	(-4.752)	(-4.753)
Constant	0.976***	0.977***	0.978***	0.976***
	(92.135)	(92.127)	(92.375)	(92.219)
Firm, Mo. FE	YES	YES	YES	YES
Observations	1,027,669	1,027,669	1,027,669	1,027,669

Table 3:
Over- and Under-Valuations Signals from a Peer Group's Corporate Events and Information Collection

This table shows the results of a pooled regression of industry-level corporate events variables on the measure of price informativeness controlling for several firm characteristics. The corporate events variables "Ln_ACQ_IND", "Ln_SEO_IND", "Ln_TGT_IND", and "Ln_SREP_IND" are simply the natural logarithms of a cumulative count of the number of M&A transactions in which a firm's peers are acquirer, the number of times the firm's peers performed secondary equity offerings, the number of M&A transactions in which the firm's peers are targets, and the number of times the firm's peers performed share repurchases in the last twelve months, respectively, within the firm's Fama-French thirty industries excluding the events performed by the firm. Based on the findings of numerous research papers, corporate events "Ln_ACQ_IND" and "Ln_SEO_IND" are considered to be events that signal stock over-valuation. The corporate events "Ln_TGT_IND" and "Ln_SREP_IND" are considered to be events that signal stock under-valuation. The sample period runs from January 1993 through December 2017. All variables are defined in Appendix A. *, **, and *** indicate statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

	Over-Value Events		Under-Value Events	
	(1)	(2)	(3)	(4)
Ln_ACQ_IND_{t-3}	-0.00787***			
	(-4.394)			
Ln_SEO_IND_{t-3}		-0.00903***		
		(-9.167)		
Ln_TGT_IND_{t-3}			0.000306	
			(0.174)	
Ln_SREP_IND_{t-3}				0.00542***
				(4.262)
MB_{t-12}	-0.0000303	-0.0000261	-0.0000302	-0.0000308
	(-0.975)	(-0.883)	(-0.995)	(-1.027)
$\text{L.Volatility}_{t-1}$	0.00339	0.00479	0.00338	0.00368
	(0.275)	(0.395)	(0.275)	(0.299)
Ln_Asset_{t-12}	-0.0267***	-0.0263***	-0.0269***	-0.0270***
	(-26.456)	(-26.298)	(-26.592)	(-26.748)
Leverage_{t-12}	0.0323***	0.0324***	0.0328***	0.0330***
	(9.758)	(9.804)	(9.882)	(9.958)
Profit_{t-12}	-0.000324	-0.000341	-0.000309	-0.000301
	(-1.115)	(-1.101)	(-1.111)	(-1.120)
Tobin's Q_{t-12}	-0.0000264	-0.0000281	-0.0000267	-0.0000260
	(-0.561)	(-0.608)	(-0.568)	(-0.560)
Inst_Hold_{t-3}	-0.00227*	-0.00227*	-0.00227*	-0.00227*
	(-1.677)	(-1.674)	(-1.677)	(-1.678)
Ln_Anlst_{t-12}	-0.00518***	-0.00505***	-0.00520***	-0.00522***
	(-10.235)	(-9.977)	(-10.283)	(-10.300)
Ln_Age_{t-1}	0.0100***	0.00967***	0.0101***	0.00997***
	(4.574)	(4.404)	(4.614)	(4.542)
Turnover_{t-1}	-0.00752	-0.00744	-0.00753	-0.00750
	(-1.468)	(-1.468)	(-1.469)	(-1.468)
Ind_Returns_{t-1}	-0.00480	-0.00702	-0.00312	-0.00293
	(-0.606)	(-1.016)	(-0.379)	(-0.366)
Returns_{t-1}	-0.0250***	-0.0251***	-0.0250***	-0.0250***
	(-11.850)	(-12.008)	(-11.879)	(-11.925)
$\text{MKT\_}\beta_{t-12}$	-0.00307***	-0.00305***	-0.00310***	-0.00309***
	(-11.061)	(-11.067)	(-11.136)	(-11.124)
$\text{SMB\_}\beta_{t-12}$	-0.00253***	-0.00251***	-0.00255***	-0.00255***
	(-10.386)	(-10.411)	(-10.440)	(-10.448)
$\text{HML\_}\beta_{t-12}$	0.00154***	0.00154***	0.00155***	0.00155***
	(7.833)	(7.886)	(7.871)	(7.905)
$\text{RMW\_}\beta_{t-12}$	0.000764***	0.000744***	0.000782***	0.000777***
	(4.463)	(4.400)	(4.547)	(4.521)
$\text{CMA\_}\beta_{t-12}$	0.000431***	0.000417***	0.000431***	0.000431***
	(2.797)	(2.731)	(2.791)	(2.797)
$\text{MOM\_}\beta_{t-12}$	-0.000865***	-0.000853***	-0.000883***	-0.000884***
	(-3.068)	(-3.071)	(-3.119)	(-3.126)
Constant	0.395***	0.389***	0.350***	0.333***
	(33.172)	(47.525)	(32.011)	(39.051)
Firm, Mo. FE	YES	YES	YES	YES
Observations	1,027,669	1,027,669	1,027,669	1,027,669

Table 4:
Corporate Events, Profitability, and Information Collection

This table shows the results of a pooled regression of corporate events variables on the measure of price informativeness while controlling for several firm characteristics within several sub-samples created using ROA (a proxy for the profitability of investment opportunities) from the previous quarter. The corporate events variables "Ln_ACQ", "Ln_SEO", "Ln_TGT", and "Ln_SREP" are simply the natural logarithms of a cumulative count of the number of M&A transactions in which a firm is an acquirer, the number of times the firm performed secondary equity offerings, the number of M&A transactions in which a firm is a target, and the number of times the firm performed share repurchases in the last twelve months, respectively. Based on the findings of numerous research papers, corporate events "Ln_ACQ" and "Ln_SEO" are considered to be events that signal firm over-valuation. The corporate events "Ln_TGT" and "Ln_SREP" are considered to be events that signal firm under-valuation. Using a firm's ROA from the previous quarter, I split the sample of firms into two groups - high ROA firms and low ROA firms - and run a pool regression on each sub-sample. The sample period is from January 1993 through December 2017. All variables are defined in Appendix A. *, **, and *** indicate the statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

	Over-Value Events				Under-Value Events			
	High ROA (1)	Low ROA (2)	High ROA (3)	Low ROA (4)	High ROA (5)	Low ROA (6)	High ROA (7)	Low ROA (8)
Ln_ACQ_{t-3}	-0.00730***	-0.00451***						
	(-7.204)	(-6.490)						
Ln_SEO_{t-3}			-0.0139***	-0.0107***				
			(-10.439)	(-10.163)				
Ln_TGT_{t-3}					0.00272**	0.00173**		
					(2.324)	(2.085)		
Ln_SREP_{t-3}							0.00906***	0.00385***
							(4.488)	(3.097)
MB_{t-12}	-0.00000748**	0.00000495	-0.0000117**	0.000000400	-0.00000832**	0.00000288	-0.00000893**	0.00000234
	(-2.069)	(0.072)	(-2.255)	(0.006)	(-2.203)	(0.042)	(-2.117)	(0.034)
$Volatility_{t-1}$	-0.0165	0.0501	-0.0165	0.0513	-0.0153	0.0541	-0.0144	0.0555
	(-0.703)	(0.782)	(-0.706)	(0.805)	(-0.650)	(0.846)	(-0.616)	(0.868)
Ln_Assets_{t-12}	-0.0317***	-0.0203***	-0.0321***	-0.0206***	-0.0324***	-0.0210***	-0.0324***	-0.0209***
	(-25.656)	(-15.307)	(-26.076)	(-15.578)	(-26.218)	(-15.723)	(-26.244)	(-15.721)
$Leverage_{t-12}$	0.0200***	0.0432***	0.0209***	0.0453***	0.0206***	0.0446***	0.0208***	0.0449***
	(4.485)	(9.390)	(4.711)	(9.834)	(4.634)	(9.681)	(4.686)	(9.731)
$Profit_{t-12}$	0.00000629	0.00141	0.0000412	0.00264	0.0000199	0.00135	0.0000179	0.00143
	(0.043)	(0.107)	(0.336)	(0.204)	(0.137)	(0.101)	(0.124)	(0.107)
Tobin's Q_{t-12}	-0.0000253	-0.000106	-0.0000223	-0.000102	-0.0000254	-0.000105	-0.0000248	-0.000105
	(-0.990)	(-0.884)	(-0.962)	(-0.871)	(-0.996)	(-0.884)	(-0.983)	(-0.883)
$Inst\_Hold_{t-3}$	-0.00105	-0.00717	-0.00105	-0.00710*	-0.00106	-0.00720	-0.00106	-0.00721
	(-1.388)	(-1.639)	(-1.397)	(-1.655)	(-1.391)	(-1.638)	(-1.391)	(-1.638)
Ln_Anlst_{t-12}	-0.00620***	-0.00355***	-0.00642***	-0.00366***	-0.00622***	-0.00358***	-0.00628***	-0.00360***
	(-8.917)	(-6.512)	(-9.235)	(-6.719)	(-8.929)	(-6.541)	(-9.004)	(-6.588)
Ln_Age_{t-1}	0.0197***	-0.00622**	0.0191***	-0.00765***	0.0198***	-0.00620**	0.0199***	-0.00621**
	(6.541)	(-2.372)	(6.341)	(-2.901)	(6.559)	(-2.364)	(6.582)	(-2.365)
$Turnover_{t-1}$	-0.00420	-0.0404***	-0.00413	-0.0400***	-0.00419	-0.0405***	-0.00419	-0.0404***
	(-1.527)	(-4.930)	(-1.532)	(-4.925)	(-1.521)	(-4.930)	(-1.523)	(-4.929)
$Ind\_Returns_{t-1}$	-0.00357	-0.00305	-0.00368	-0.00323	-0.00341	-0.00305	-0.00337	-0.00306
	(-0.291)	(-0.563)	(-0.303)	(-0.606)	(-0.280)	(-0.562)	(-0.278)	(-0.567)
$Returns_{t-1}$	-0.0230***	-0.0167***	-0.0231***	-0.0168***	-0.0228***	-0.0165***	-0.0228***	-0.0165***
	(-11.752)	(-8.377)	(-11.830)	(-8.483)	(-11.692)	(-8.268)	(-11.728)	(-8.264)
MKT_β_{t-12}	-0.00245***	-0.00346***	-0.00240***	-0.00342***	-0.00243***	-0.00346***	-0.00242***	-0.00345***
	(-8.184)	(-8.486)	(-8.117)	(-8.422)	(-8.155)	(-8.497)	(-8.133)	(-8.484)
SMB_β_{t-12}	-0.00204***	-0.00290***	-0.00202***	-0.00287***	-0.00203***	-0.00290***	-0.00202***	-0.00290***
	(-7.842)	(-9.689)	(-7.840)	(-9.640)	(-7.799)	(-9.700)	(-7.775)	(-9.694)
HML_β_{t-12}	0.000789***	0.00189***	0.000802***	0.00189***	0.000793***	0.00189***	0.000794***	0.00189***
	(3.710)	(9.204)	(3.780)	(9.229)	(3.680)	(9.178)	(3.683)	(9.160)
RMW_β_{t-12}	0.000650***	0.000650***	0.000627***	0.000636***	0.000649***	0.000646***	0.000642***	0.000641***
	(3.367)	(3.209)	(3.288)	(3.151)	(3.358)	(3.187)	(3.330)	(3.160)
CMA_β_{t-12}	-0.0000122	0.000698***	-0.0000127	0.000704***	-0.0000149	0.000696***	-0.0000138	0.000698***
	(-0.076)	(4.248)	(-0.080)	(4.315)	(-0.092)	(4.243)	(-0.085)	(4.254)
MOM_β_{t-12}	-0.000262	-0.00143***	-0.000271	-0.00138***	-0.000289	-0.00145***	-0.000291	-0.00146***
	(-0.823)	(-4.989)	(-0.860)	(-4.844)	(-0.908)	(-5.058)	(-0.916)	(-5.067)
Constant	0.379***	0.337***	0.382***	0.341***	0.379***	0.338***	0.379***	0.338***
	(41.082)	(37.072)	(41.278)	(37.472)	(41.130)	(37.145)	(41.148)	(37.130)
Firm, Mo. FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	406,356	517,809	406,356	517,809	406,356	517,809	406,356	517,809

Table 5:
Over- and Under-Value Corporate Events and Tobin's Q

This table shows the results of a pooled regression of corporate events variables on the measure of price informativeness while controlling for several firm characteristics in a sub-sample of events divided using Tobin's Q. The corporate events variables "Ln_ACQ", "Ln_SEO", "Ln_TGT", and "Ln_SREP" are simply the natural logarithms of a cumulative count of the number of M&A transactions in which a firm is an acquirer, the number of times the firm performed secondary equity offerings, the number of M&A transactions in which a firm is a target, and the number of times the firm performed share repurchases in the last twelve months, respectively. In high Q and low Q columns, event counts exclude an event if the event performing firm's Tobin's Q is less than the median and more than the median, respectively (please see section V for more detail). Based on the findings of numerous research papers, corporate events "Ln_ACQ" and "Ln_SEO" are considered to be events that signal firm over-valuation. The corporate events "Ln_TGT" and "Ln_SREP" are considered to be events that signal firm under-valuation. All variables are defined in Appendix A. *, **, and *** indicate the statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

	High Tobin's Q				Low Tobin's Q			
	Over-Value		Under-Value		Over-Value		Under-Value	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln_ACQ_{t-3}	-0.0133***				0.00496***			
	(-17.219)				(6.304)			
Ln_SEO_{t-3}		-0.0181***				0.000242		
		(-15.901)				(0.201)		
Ln_TGT_{t-3}			-0.00884***				0.0118***	
			(-9.726)				(12.285)	
Ln_SREP_{t-3}				-0.00638***				0.0159***
				(-4.743)				(9.990)
MB_{t-12}	-0.0000307	-0.0000355	-0.0000310	-0.0000297	-0.0000321	-0.0000301	-0.0000326	-0.0000314
	(-1.031)	(-1.272)	(-1.026)	(-0.967)	(-1.065)	(-0.989)	(-1.085)	(-1.044)
$L.Volatility_{t-1}$	0.00157	0.00158	0.00299	0.00324	0.00340	0.00344	0.00251	0.00368
	(0.127)	(0.128)	(0.243)	(0.263)	(0.277)	(0.279)	(0.203)	(0.299)
Ln_Assets_{t-12}	-0.0267***	-0.0271***	-0.0269***	-0.0269***	-0.0274***	-0.0269***	-0.0276***	-0.0272***
	(-26.430)	(-27.028)	(-26.698)	(-26.631)	(-26.956)	(-26.622)	(-27.290)	(-26.944)
$Leverage_{t-12}$	0.0306***	0.0335***	0.0324***	0.0324***	0.0329***	0.0328***	0.0328***	0.0331***
	(9.253)	(10.067)	(9.775)	(9.780)	(9.917)	(9.882)	(9.928)	(9.985)
$Profit_{t-12}$	-0.000276	-0.000330	-0.000314	-0.000309	-0.000292	-0.000309	-0.000299	-0.000304
	(-1.152)	(-1.142)	(-1.112)	(-1.108)	(-1.075)	(-1.114)	(-1.119)	(-1.119)
Tobin's Q_{t-12}	-0.0000249	-0.0000218	-0.0000254	-0.0000270	-0.0000253	-0.0000267	-0.0000249	-0.0000257
	(-0.548)	(-0.496)	(-0.543)	(-0.573)	(-0.546)	(-0.568)	(-0.540)	(-0.553)
$Inst\_Hold_{t-3}$	-0.00224*	-0.00225*	-0.00226*	-0.00227*	-0.00227*	-0.00227*	-0.00226*	-0.00227*
	(-1.686)	(-1.694)	(-1.679)	(-1.677)	(-1.679)	(-1.676)	(-1.685)	(-1.678)
Ln_Anlst_{t-12}	-0.00504***	-0.00530***	-0.00516***	-0.00516***	-0.00518***	-0.00520***	-0.00516***	-0.00524***
	(-10.091)	(-10.524)	(-10.229)	(-10.203)	(-10.250)	(-10.267)	(-10.245)	(-10.386)
Ln_Age_{t-1}	0.0102***	0.00880***	0.0105***	0.0102***	0.0103***	0.0101***	0.0101***	0.0102***
	(4.669)	(4.007)	(4.799)	(4.662)	(4.697)	(4.614)	(4.594)	(4.635)
$Turnover_{t-1}$	-0.00748	-0.00742	-0.00752	-0.00753	-0.00751	-0.00753	-0.00750	-0.00751
	(-1.471)	(-1.472)	(-1.470)	(-1.469)	(-1.468)	(-1.469)	(-1.467)	(-1.469)
$Ind\_Returns_{t-1}$	-0.00345	-0.00346	-0.00314	-0.00310	-0.00313	-0.00313	-0.00328	-0.00314
	(-0.420)	(-0.427)	(-0.380)	(-0.375)	(-0.380)	(-0.380)	(-0.400)	(-0.384)
$Returns_{t-1}$	-0.0251***	-0.0253***	-0.0250***	-0.0250***	-0.0249***	-0.0250***	-0.0250***	-0.0250***
	(-12.014)	(-12.074)	(-11.872)	(-11.870)	(-11.862)	(-11.885)	(-11.922)	(-11.915)
MKT_β_{t-12}	-0.00308***	-0.00307***	-0.00309***	-0.00310***	-0.00308***	-0.00310***	-0.00307***	-0.00308***
	(-11.108)	(-11.081)	(-11.118)	(-11.145)	(-11.118)	(-11.133)	(-11.095)	(-11.109)
SMB_β_{t-12}	-0.00254***	-0.00254***	-0.00255***	-0.00255***	-0.00254***	-0.00255***	-0.00252***	-0.00254***
	(-10.475)	(-10.500)	(-10.446)	(-10.460)	(-10.449)	(-10.449)	(-10.434)	(-10.444)
HML_β_{t-12}	0.00153***	0.00156***	0.00155***	0.00155***	0.00154***	0.00155***	0.00153***	0.00154***
	(7.775)	(8.017)	(7.824)	(7.849)	(7.821)	(7.860)	(7.797)	(7.851)
RMW_β_{t-12}	0.000771***	0.000760***	0.000777***	0.000783***	0.000774***	0.000779***	0.000770***	0.000770***
	(4.508)	(4.479)	(4.511)	(4.539)	(4.497)	(4.521)	(4.500)	(4.486)
CMA_β_{t-12}	0.000431***	0.000436***	0.000434***	0.000430***	0.000428***	0.000429***	0.000422***	0.000428***
	(2.842)	(2.893)	(2.814)	(2.789)	(2.779)	(2.783)	(2.761)	(2.784)
MOM_β_{t-12}	-0.000785***	-0.000804***	-0.000869***	-0.000876***	-0.000869***	-0.000879***	-0.000845***	-0.000866***
	(-2.806)	(-2.896)	(-3.077)	(-3.099)	(-3.084)	(-3.112)	(-3.026)	(-3.083)
Constant	0.354***	0.358***	0.352***	0.352***	0.353***	0.352***	0.354***	0.353***
	(48.812)	(49.037)	(48.534)	(48.356)	(48.502)	(48.368)	(48.807)	(48.531)
Firm, Mo. FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854

Table 6:
Over- and Under-Value Corporate Events and Price-to-Value Ratio

This table shows the results of a pooled regression of corporate events variables on the measure of price informativeness while controlling for several firm characteristics in a sub-sample of events divided using the price-to-value ratio. The corporate events variables "Ln_ACQ", "Ln_SEO", "Ln_TGT", and "Ln_SREP" are simply the natural logarithms of a cumulative count of the number of M&A transactions in which a firm is an acquirer, the number of times the firm performed secondary equity offerings, the number of M&A transactions in which a firm is a target, and the number of times the firm performed share repurchases in the last twelve months, respectively. In high PV and low PV columns, event counts exclude an event if the event-performing firm's price-to-value ratio is less than the median and more than the median, respectively (please see section V for more detail). Based on the findings of numerous research papers, corporate events "Ln_ACQ" and "Ln_SEO" are considered to be events that signal firm over-valuation. The corporate events "Ln_TGT" and "Ln_SREP" are considered to be events that signal firm under-valuation. All variables are defined in Appendix A. *, **, and *** indicate the statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

	High P/V				Low P/V			
	Over-Value		Under-Value		Over-Value		Under-Value	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln_ACQ_{t-3}	-0.0120***				0.00178*			
	(-14.519)				(1.899)			
Ln_SEO_{t-3}		-0.0179***				-0.00724***		
		(-13.513)				(-4.378)		
Ln_TGT_{t-3}			-0.00772***				0.00593***	
			(-6.905)				(5.231)	
Ln_SREP_{t-3}				-0.00701***				0.0127***
				(-4.820)				(6.075)
MBP_{t-12}	-0.0000259	-0.0000296	-0.0000286	-0.0000293	-0.0000302	-0.0000307	-0.0000302	-0.0000304
	(-0.840)	(-0.987)	(-0.938)	(-0.957)	(-0.991)	(-1.022)	(-0.989)	(-1.001)
$\text{L.VolatilityP}_{t-1}$	0.00348	0.00323	0.00356	0.00342	0.00356	0.00304	0.00354	0.00372
	(0.283)	(0.263)	(0.289)	(0.278)	(0.289)	(0.246)	(0.287)	(0.302)
Ln_AssetsP_{t-12}	-0.0261***	-0.0266***	-0.0266***	-0.0268***	-0.0269***	-0.0269***	-0.0270***	-0.0269***
	(-25.802)	(-26.526)	(-26.287)	(-26.559)	(-26.703)	(-26.724)	(-26.742)	(-26.728)
LeverageP_{t-12}	0.0310***	0.0330***	0.0323***	0.0324***	0.0328***	0.0332***	0.0327***	0.0329***
	(9.387)	(9.941)	(9.739)	(9.789)	(9.889)	(9.993)	(9.852)	(9.925)
ProfitP_{t-12}	-0.000305	-0.000306	-0.000308	-0.000308	-0.000308	-0.000311	-0.000309	-0.000308
	(-1.109)	(-1.114)	(-1.111)	(-1.111)	(-1.111)	(-1.113)	(-1.110)	(-1.113)
Tobin's QP_{t-12}	-0.0000290	-0.0000267	-0.0000276	-0.0000272	-0.0000266	-0.0000262	-0.0000266	-0.0000264
	(-0.612)	(-0.573)	(-0.584)	(-0.577)	(-0.567)	(-0.561)	(-0.567)	(-0.564)
Inst_HoldP_{t-3}	-0.00225*	-0.00225*	-0.00226*	-0.00227*	-0.00227*	-0.00227*	-0.00227*	-0.00227*
	(-1.679)	(-1.687)	(-1.677)	(-1.677)	(-1.677)	(-1.679)	(-1.678)	(-1.677)
Ln_AnlstP_{t-12}	-0.00510***	-0.00517***	-0.00519***	-0.00517***	-0.00519***	-0.00522***	-0.00517***	-0.00520***
	(-10.199)	(-10.258)	(-10.283)	(-10.209)	(-10.241)	(-10.306)	(-10.207)	(-10.294)
Ln_AgeP_{t-1}	0.0131***	0.0110***	0.0112***	0.0105***	0.00991***	0.0105***	0.00965***	0.00977***
	(6.053)	(4.996)	(5.184)	(4.773)	(4.478)	(4.760)	(4.378)	(4.438)
TurnoverP_{t-1}	-0.00751	-0.00748	-0.00753	-0.00753	-0.00753	-0.00751	-0.00752	-0.00752
	(-1.470)	(-1.471)	(-1.469)	(-1.469)	(-1.469)	(-1.469)	(-1.468)	(-1.469)
$\text{Ind\_ReturnsP}_{t-1}$	-0.00335	-0.00334	-0.00318	-0.00312	-0.00314	-0.00317	-0.00323	-0.00315
	(-0.407)	(-0.408)	(-0.386)	(-0.378)	(-0.382)	(-0.386)	(-0.393)	(-0.385)
ReturnsP_{t-1}	-0.0253***	-0.0252***	-0.0251***	-0.0250***	-0.0250***	-0.0250***	-0.0251***	-0.0251***
	(-12.034)	(-11.988)	(-11.912)	(-11.895)	(-11.896)	(-11.876)	(-11.932)	(-11.929)
$\text{MKT\_}\beta_{t-12}$	-0.00309***	-0.00307***	-0.00310***	-0.00310***	-0.00310***	-0.00310***	-0.00309***	-0.00309***
	(-11.128)	(-11.100)	(-11.139)	(-11.145)	(-11.137)	(-11.139)	(-11.129)	(-11.129)
$\text{SMB\_}\beta_{t-12}$	-0.00254***	-0.00253***	-0.00255***	-0.00255***	-0.00255***	-0.00255***	-0.00254***	-0.00255***
	(-10.458)	(-10.457)	(-10.451)	(-10.456)	(-10.453)	(-10.458)	(-10.449)	(-10.450)
$\text{HML\_}\beta_{t-12}$	0.00153***	0.00155***	0.00155***	0.00155***	0.00155***	0.00155***	0.00154***	0.00155***
	(7.795)	(7.886)	(7.853)	(7.852)	(7.856)	(7.882)	(7.833)	(7.852)
$\text{RMW\_}\beta_{t-12}$	0.000779***	0.000760***	0.000781***	0.000782***	0.000779***	0.000776***	0.000776***	0.000774***
	(4.534)	(4.452)	(4.526)	(4.533)	(4.520)	(4.515)	(4.507)	(4.502)
$\text{CMA\_}\beta_{t-12}$	0.000425***	0.000429***	0.000429***	0.000428***	0.000428***	0.000431***	0.000423***	0.000426***
	(2.774)	(2.801)	(2.781)	(2.777)	(2.779)	(2.796)	(2.753)	(2.769)
$\text{MOM\_}\beta_{t-12}$	-0.000856***	-0.000839***	-0.000882***	-0.000880***	-0.000878***	-0.000876***	-0.000871***	-0.000877***
	(-3.043)	(-3.003)	(-3.121)	(-3.116)	(-3.110)	(-3.108)	(-3.094)	(-3.109)
Constant	0.342***	0.349***	0.348***	0.351***	0.352***	0.351***	0.353***	0.353***
	(46.994)	(47.986)	(48.087)	(48.180)	(48.332)	(48.276)	(48.453)	(48.485)
Firm, Mo. FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854

Table 7:
Corporate Events, Short-Sale Constraints, and Information Collection

This table shows the results of a pooled regression of corporate events variables on the measure of price informativeness while controlling for several firm characteristics within several subsamples created using Entrenchment/Corporate Governance Indexes. The corporate events variables "Ln_ACQ", and "Ln_SEO" are simply the natural logarithms of a cumulative count of the number of M&A transactions in which a firm is an acquirer, and the number of times the firm performed secondary equity offerings in the last twelve months, respectively. Based on the findings of numerous research papers, corporate events "Ln_ACQ" and "Ln_SEO" are considered to be events that signal firm over-valuation. Following Chen et al. (2002), I use the breadth of ownership calculated using mutual fund holdings only and the breadth of ownership using all institutions (S12) of stock as proxies for short-sell constraints. The sample period is from January 1993 through December 2007 due to the availability of G- and E-Index data. All variables are defined in Appendix A. *, **, and *** indicate the statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

	Breadth - S12 Holdings				Breadth - Mutual Funds Holdings			
	Low (1)	High (2)	Low (3)	High (4)	Low (5)	High (6)	Low (7)	High (8)
Ln_ACQ_{t-3}			-0.00738***	-0.00345***			-0.00479***	-0.00204***
			(-8.274)	(-5.995)			(-3.076)	(-2.747)
Ln_SEO_{t-3}	-0.0180***	-0.00602***			-0.0156***	-0.00197*		
	(-13.396)	(-6.274)			(-8.059)	(-1.715)		
MB_{t-12}	-0.0000417	0.000102	-0.0000385	0.000162	-0.0000454*	-0.00219***	-0.0000438*	-0.00210***
	(-1.524)	(0.280)	(-1.380)	(0.446)	(-1.898)	(-3.574)	(-1.816)	(-3.437)
$Volatility_{t-1}$	-0.0296	0.470***	-0.0294	0.463***	0.170***	0.573***	0.175***	0.573***
	(-0.799)	(2.950)	(-0.781)	(2.899)	(2.973)	(4.122)	(3.055)	(4.134)
Ln_Assets_{t-12}	-0.0334***	-0.00989***	-0.0330***	-0.00947***	-0.0328***	-0.0133***	-0.0325***	-0.0131***
	(-27.448)	(-6.450)	(-27.101)	(-6.207)	(-15.618)	(-6.070)	(-15.296)	(-5.995)
$Leverage_{t-12}$	0.0299***	0.0346***	0.0293***	0.0325***	0.0264***	0.0208***	0.0264***	0.0198***
	(7.700)	(8.541)	(7.638)	(8.024)	(4.168)	(4.727)	(4.177)	(4.528)
$Profit_{t-12}$	-0.000212	0.00956***	-0.000262*	0.00964***	-0.000124***	-1.817***	-0.000184***	-1.756***
	(-1.263)	(2.974)	(-1.780)	(3.147)	(-3.099)	(-3.743)	(-4.786)	(-3.694)
Tobin's Q_{t-12}	-0.00000299	-0.000334	-0.00000522	-0.000386	0.0000108	-0.00504***	0.0000100	-0.00510***
	(-0.117)	(-1.072)	(-0.196)	(-1.219)	(0.651)	(-8.564)	(0.591)	(-8.641)
$Inst\_Hold_{t-3}$	-0.00132**	-0.0365***	-0.00134**	-0.0370***	-0.00485**	-0.0218***	-0.00491**	-0.0220***
	(-2.375)	(-9.939)	(-2.323)	(-9.998)	(-2.066)	(-5.775)	(-2.036)	(-5.811)
Ln_Anlst_{t-12}	-0.00755***	-0.00132***	-0.00723***	-0.00129***	-0.00558***	0.0000606	-0.00541***	0.0000732
	(-13.328)	(-2.687)	(-12.777)	(-2.628)	(-8.022)	(0.166)	(-7.702)	(0.200)
Ln_Age_{t-1}	0.0167***	-0.0122***	0.0181***	-0.0112***	-0.00189	-0.0303***	-0.000482	-0.0299***
	(6.493)	(-4.200)	(7.053)	(-3.833)	(-0.406)	(-7.426)	(-0.103)	(-7.357)
$Turnover_{t-1}$	-0.00680	-0.0350***	-0.00691	-0.0356***	-0.0337***	-0.0218***	-0.0341***	-0.0219***
	(-1.446)	(-6.526)	(-1.444)	(-6.556)	(-6.028)	(-6.492)	(-6.041)	(-6.523)
$Ind\_Returns_{t-1}$	-0.00480	0.000751	-0.00471	0.000961	0.0235**	0.00749	0.0233**	0.00768
	(-0.463)	(0.130)	(-0.451)	(0.164)	(2.343)	(1.324)	(2.317)	(1.353)
$Returns_{t-1}$	-0.0267***	-0.00470**	-0.0263***	-0.00474**	-0.0182***	-0.00930***	-0.0177***	-0.00937***
	(-11.221)	(-2.178)	(-11.045)	(-2.184)	(-6.602)	(-3.340)	(-6.367)	(-3.359)
MKT_β_{t-12}	-0.00313***	-0.00102***	-0.00317***	-0.00108***	-0.00345***	-0.000121	-0.00350***	-0.000152
	(-9.847)	(-2.995)	(-9.834)	(-3.152)	(-7.149)	(-0.316)	(-7.229)	(-0.397)
SMB_β_{t-12}	-0.00272***	-0.000788***	-0.00273***	-0.000828***	-0.00305***	-0.0000794	-0.00307***	-0.000114
	(-10.370)	(-2.642)	(-10.339)	(-2.763)	(-7.227)	(-0.225)	(-7.249)	(-0.322)
HML_β_{t-12}	0.00147***	0.00215***	0.00146***	0.00212***	0.000472*	0.00101***	0.000452*	0.000983***
	(6.542)	(8.867)	(6.474)	(8.729)	(1.893)	(3.610)	(1.801)	(3.534)
RMW_β_{t-12}	0.000766***	-0.0000559	0.000788***	-0.0000310	0.000883***	-0.000373	0.000917***	-0.000363
	(4.004)	(-0.235)	(3.979)	(-0.130)	(3.176)	(-1.229)	(3.298)	(-1.200)
CMA_β_{t-12}	0.000429***	0.000923***	0.000429***	0.000913***	-0.000449**	-0.0000122	-0.000465***	-0.0000162
	(2.823)	(5.416)	(2.793)	(5.317)	(-2.558)	(-0.075)	(-2.637)	(-0.099)
MOM_β_{t-12}	-0.00108***	-0.00155***	-0.00113***	-0.00152***	-0.00120***	-0.000156	-0.00124***	-0.000134
	(-3.425)	(-4.621)	(-3.506)	(-4.513)	(-2.676)	(-0.379)	(-2.768)	(-0.328)
Constant	0.391***	0.262***	0.386***	0.258***	0.432***	0.317***	0.425***	0.315***
	(46.238)	(22.949)	(45.647)	(22.617)	(27.750)	(16.258)	(27.146)	(16.221)
Firm, Mo. FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	357,637	408,010	357,637	408,010	170,469	239,848	170,469	239,848

Table 8:
Over- and Under-Value Corporate Events and Investment-to-Q Ratio

This table shows the results of a pooled regression of corporate events variables on the measure of price informativeness while controlling for several firm characteristics in a sub-sample of events divided using the investment-to-Q ratio. The corporate events variables "Ln_ACQ", "Ln_SEO", "Ln_TGT", and "Ln_SREP" are simply the natural logarithms of a cumulative count of the number of M&A transactions in which a firm is an acquirer, the number of times the firm performed secondary equity offerings, the number of M&A transactions in which a firm is a target, and the number of times the firm performed share repurchases in the last twelve months, respectively. In high Inv-Q and low Inv-Q columns, event counts exclude an event if the event-performing firm's investment-to-Q is less than the median and more than the median, respectively (please see section VI.A for more detail). Based on the findings of numerous research papers, corporate events "Ln_ACQ" and "Ln_SEO" are considered to be events that signal firm over-valuation. The corporate events "Ln_TGT" and "Ln_SREP" are considered to be events that signal firm under-valuation. All variables are defined in Appendix A. *, **, and *** indicate the statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

	Over-Value Events				Under-Value Events			
	High Inv-Q (1)	Low Inv-Q (2)	High Inv-Q (3)	Low Inv-Q (4)	High Inv-Q (5)	Low Inv-Q (6)	High Inv-Q (7)	Low Inv-Q (8)
Ln_ACQ_{t-3}	-0.00240***	-0.00526***						
	(-3.019)	(-6.472)						
Ln_SEO_{t-3}			-0.0102***	-0.0107***				
			(-8.696)	(-8.422)				
Ln_TGT_{t-3}					0.00519***	0.00121		
					(4.994)	(1.275)		
Ln_SREP_{t-3}							0.00890***	0.000834
							(5.332)	(0.535)
MB_{t-12}	-0.0000295	-0.0000304	-0.0000304	-0.0000322	-0.0000308	-0.0000301	-0.0000307	-0.0000301
	(-0.964)	(-1.014)	(-1.012)	(-1.096)	(-1.017)	(-0.986)	(-1.019)	(-0.990)
$Volatility_{t-1}$	0.00338	0.00303	0.00305	0.00321	0.00337	0.00345	0.00359	0.00347
	(0.274)	(0.245)	(0.247)	(0.261)	(0.273)	(0.279)	(0.291)	(0.282)
Ln_Assets_{t-12}	-0.0268***	-0.0267***	-0.0268***	-0.0269***	-0.0270***	-0.0269***	-0.0270***	-0.0269***
	(-26.604)	(-26.458)	(-26.665)	(-26.694)	(-26.789)	(-26.704)	(-26.762)	(-26.676)
$Leverage_{t-12}$	0.0326***	0.0325***	0.0327***	0.0334***	0.0329***	0.0328***	0.0331***	0.0328***
	(9.834)	(9.807)	(9.849)	(10.033)	(9.943)	(9.883)	(9.973)	(9.886)
$Profit_{t-12}$	-0.000311	-0.000323	-0.000320	-0.000277	-0.000307	-0.000308	-0.000308	-0.000309
	(-1.111)	(-1.143)	(-1.115)	(-0.976)	(-1.114)	(-1.113)	(-1.115)	(-1.112)
Tobin's Q_{t-12}	-0.0000271	-0.0000260	-0.0000262	-0.0000249	-0.0000262	-0.0000268	-0.0000262	-0.0000267
	(-0.575)	(-0.561)	(-0.563)	(-0.544)	(-0.561)	(-0.569)	(-0.561)	(-0.568)
$Inst\_Hold_{t-3}$	-0.00227*	-0.00226*	-0.00226*	-0.00226*	-0.00227*	-0.00227*	-0.00227*	-0.00227*
	(-1.676)	(-1.677)	(-1.681)	(-1.681)	(-1.678)	(-1.677)	(-1.677)	(-1.677)
Ln_Anlst_{t-12}	-0.00519***	-0.00519***	-0.00525***	-0.00524***	-0.00522***	-0.00520***	-0.00524***	-0.00520***
	(-10.251)	(-10.260)	(-10.375)	(-10.366)	(-10.305)	(-10.263)	(-10.349)	(-10.270)
Ln_Age_{t-1}	0.0101***	0.0101***	0.00968***	0.00994***	0.0100***	0.0101***	0.0101***	0.0101***
	(4.608)	(4.610)	(4.407)	(4.524)	(4.568)	(4.590)	(4.585)	(4.609)
$Turnover_{t-1}$	-0.00753	-0.00753	-0.00749	-0.00749	-0.00753	-0.00753	-0.00752	-0.00753
	(-1.469)	(-1.469)	(-1.470)	(-1.470)	(-1.469)	(-1.469)	(-1.469)	(-1.469)
$Ind\_Returns_{t-1}$	-0.00315	-0.00326	-0.00326	-0.00322	-0.00313	-0.00313	-0.00313	-0.00313
	(-0.384)	(-0.396)	(-0.397)	(-0.393)	(-0.380)	(-0.380)	(-0.381)	(-0.381)
$Returns_{t-1}$	-0.0251***	-0.0250***	-0.0252***	-0.0251***	-0.0250***	-0.0250***	-0.0250***	-0.0250***
	(-11.913)	(-11.893)	(-11.963)	(-11.932)	(-11.881)	(-11.889)	(-11.891)	(-11.886)
MKT_β_{t-12}	-0.00310***	-0.00311***	-0.00308***	-0.00309***	-0.00310***	-0.00310***	-0.00309***	-0.00310***
	(-11.135)	(-11.153)	(-11.104)	(-11.108)	(-11.139)	(-11.133)	(-11.127)	(-11.136)
SMB_β_{t-12}	-0.00255***	-0.00256***	-0.00254***	-0.00255***	-0.00255***	-0.00255***	-0.00255***	-0.00255***
	(-10.450)	(-10.465)	(-10.426)	(-10.479)	(-10.455)	(-10.446)	(-10.449)	(-10.447)
HML_β_{t-12}	0.00155***	0.00155***	0.00155***	0.00155***	0.00155***	0.00155***	0.00155***	0.00155***
	(7.859)	(7.873)	(7.872)	(7.915)	(7.859)	(7.858)	(7.864)	(7.860)
RMW_β_{t-12}	0.000777***	0.000782***	0.000767***	0.000772***	0.000781***	0.000778***	0.000776***	0.000778***
	(4.516)	(4.544)	(4.489)	(4.505)	(4.534)	(4.517)	(4.509)	(4.519)
CMA_β_{t-12}	0.000428***	0.000433***	0.000426***	0.000433***	0.000429***	0.000428***	0.000429***	0.000429***
	(2.777)	(2.813)	(2.779)	(2.825)	(2.788)	(2.776)	(2.783)	(2.783)
MOM_β_{t-12}	-0.000875***	-0.000865***	-0.000853***	-0.000869***	-0.000872***	-0.000879***	-0.000876***	-0.000879***
	(-3.100)	(-3.064)	(-3.044)	(-3.088)	(-3.094)	(-3.114)	(-3.108)	(-3.113)
Constant	0.352***	0.351***	0.353***	0.353***	0.352***	0.352***	0.352***	0.352***
	(48.359)	(48.323)	(48.664)	(48.504)	(48.426)	(48.390)	(48.444)	(48.381)
Firm, Mo. FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854

Table 9:
Information Collection post Corporate Events on Firms with Strong vs Weak Entrenchment/Corporate Governance

This table shows the results of a pooled regression of corporate events variables on the measure of price informativeness while controlling for several firm characteristics within several sub-samples created using Entrenchment/Corporate Governance Indexes. The corporate events variables "Ln_ACQ" and "Ln_SEO" are simply the natural logarithms of a cumulative count of the number of M&A transactions in which a firm is an acquirer, and the number of times the firm performed secondary equity offerings in the last twelve months, respectively. Based on the findings of numerous research papers, corporate events "Ln_ACQ" and "Ln_SEO" are considered to be events that signal stock over-valuation. Using a firm's G-Index data of Gompers et al. (2003) and E-Index data of Bebchuk et al. (2008) from the previous year, I split the sample of firms into groups - high index (poor governance) and low (strong governance) - and run a pool regression on each sub-sample. The sample period is from January 1993 through December 2007 due to the availability of G- and E-Index data. All variables are defined in Appendix A. *, **, and *** indicate the statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

	Over-Value Events							
	Strong-E (1)	Poor-E (2)	Strong-G (3)	Poor-G (4)	Strong-E (5)	Poor-E (6)	Strong-G (7)	Poor-G (8)
Ln_ACQ_{t-3}	-0.00186**	-0.00152*	-0.00194**	-0.00149*				
	(-2.144)	(-1.789)	(-2.206)	(-1.895)				
Ln_SEO_{t-3}					-0.00229*	0.00269*	-0.000906	0.000762
					(-1.906)	(1.867)	(-0.703)	(0.523)
MB_{t-12}	-0.00214***	-0.00312***	-0.00252***	-0.00232**	-0.00222***	-0.00314***	-0.00258***	-0.00233**
	(-3.612)	(-3.344)	(-4.073)	(-2.406)	(-3.713)	(-3.382)	(-4.142)	(-2.417)
$LVolatility_{t-1}$	0.580**	0.309*	0.778***	0.137	0.584**	0.315*	0.785***	0.142
	(2.045)	(1.736)	(2.969)	(1.484)	(2.056)	(1.744)	(2.982)	(1.507)
Ln_Assets_{t-12}	-0.0207***	-0.0210***	-0.0228***	-0.0177***	-0.0210***	-0.0214***	-0.0230***	-0.0180***
	(-10.054)	(-8.892)	(-9.719)	(-8.385)	(-10.214)	(-9.108)	(-9.896)	(-8.522)
$Leverage_{t-12}$	0.0343***	0.0396***	0.0453***	0.0333***	0.0355***	0.0396***	0.0460***	0.0337***
	(6.093)	(5.503)	(5.157)	(5.340)	(6.253)	(5.543)	(5.239)	(5.381)
$Profit_{t-12}$	-4.335***	-4.508***	-3.870***	-5.256***	-4.411***	-4.637***	-3.955***	-5.384***
	(-5.503)	(-4.753)	(-5.046)	(-4.952)	(-5.554)	(-4.849)	(-5.138)	(-5.018)
Tobin's Q_{t-12}	-0.00352***	-0.00449***	-0.00353***	-0.00452***	-0.00346***	-0.00452***	-0.00350***	-0.00451***
	(-5.866)	(-4.783)	(-5.756)	(-4.390)	(-5.766)	(-4.792)	(-5.708)	(-4.376)
$Inst\_Hold_{t-3}$	-0.0289***	-0.0199***	-0.0276***	-0.0232***	-0.0284***	-0.0202***	-0.0274***	-0.0233***
	(-6.496)	(-3.317)	(-5.576)	(-4.210)	(-6.391)	(-3.375)	(-5.523)	(-4.226)
Ln_Anlst_{t-12}	-0.00168***	-0.00104*	-0.00159***	-0.00104**	-0.00168***	-0.00104*	-0.00159***	-0.00104**
	(-3.162)	(-1.918)	(-2.945)	(-2.089)	(-3.167)	(-1.930)	(-2.941)	(-2.080)
Ln_Age_{t-1}	0.0295***	0.0103	0.0307***	0.00659	0.0293***	0.0105	0.0308***	0.00653
	(5.030)	(1.591)	(4.859)	(1.143)	(5.010)	(1.625)	(4.866)	(1.130)
$Turnover_{t-1}$	-0.0517***	-0.0507***	-0.0541***	-0.0449***	-0.0514***	-0.0511***	-0.0540***	-0.0450***
	(-12.187)	(-10.048)	(-12.912)	(-8.765)	(-12.131)	(-10.087)	(-12.900)	(-8.739)
$Ind\_Returns_{t-1}$	-0.00191	-0.00105	-0.00169	-0.000864	-0.00195	-0.000913	-0.00161	-0.000893
	(-0.419)	(-0.230)	(-0.364)	(-0.160)	(-0.432)	(-0.200)	(-0.351)	(-0.165)
$Returns_{t-1}$	-0.0140***	-0.00849***	-0.0136***	-0.00845***	-0.0140***	-0.00837***	-0.0136***	-0.00836***
	(-7.105)	(-4.148)	(-7.158)	(-3.983)	(-7.075)	(-4.074)	(-7.101)	(-3.936)
MKT_β_{t-12}	-0.00244***	-0.00258***	-0.00283***	-0.00235**	-0.00241***	-0.00256***	-0.00281***	-0.00233**
	(-3.280)	(-2.629)	(-3.633)	(-2.535)	(-3.233)	(-2.611)	(-3.600)	(-2.521)
SMB_β_{t-12}	0.00128**	0.000620	0.00180***	-0.000118	0.00130**	0.000621	0.00180***	-0.000113
	(2.318)	(1.024)	(3.519)	(-0.196)	(2.348)	(1.028)	(3.517)	(-0.188)
HML_β_{t-12}	0.000668*	0.00190***	0.000879**	0.00118**	0.000682*	0.00188***	0.000882**	0.00117**
	(1.688)	(3.656)	(2.192)	(2.335)	(1.725)	(3.611)	(2.205)	(2.326)
RMW_β_{t-12}	-0.000155	-0.000947*	-0.000603*	0.000139	-0.000150	-0.000935*	-0.000592*	0.000141
	(-0.449)	(-1.971)	(-1.730)	(0.280)	(-0.432)	(-1.944)	(-1.699)	(0.284)
CMA_β_{t-12}	0.00101***	0.00115***	0.000925***	0.00110***	0.00101***	0.00114***	0.000921***	0.00109***
	(3.097)	(3.050)	(2.722)	(3.075)	(3.105)	(3.031)	(2.715)	(3.051)
MOM_β_{t-12}	-0.000543	0.00000401	-0.000600	0.000503	-0.000537	-0.0000562	-0.000596	0.000471
	(-0.945)	(0.006)	(-1.011)	(0.785)	(-0.932)	(-0.084)	(-1.001)	(0.735)
Constant	0.252***	0.313***	0.267***	0.298***	0.253***	0.315***	0.268***	0.299***
	(10.984)	(12.348)	(10.673)	(13.659)	(11.079)	(12.410)	(10.730)	(13.757)
Firm, Mo. FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	111,922	91,396	111,399	91,917	111,922	91,396	111,399	91,917

Table 10:
Over- and Under-Value Corporate Events and Announcement Returns

This table shows the results of a pooled regression of corporate events variables on the measure of price informativeness while controlling for several firm characteristics in a sub-sample of events divided using 20-day announcement BHAR. The corporate events variables "Ln_ACQ", "Ln_SEO", "Ln_TGT", and "Ln_SREP" are simply the natural logarithms of a cumulative count of the number of M&A transactions in which a firm is an acquirer, the number of times the firm performed secondary equity offerings, the number of M&A transactions in which a firm is a target, and the number of times the firm performed share repurchases in the last twelve months, respectively. In high BHAR and low BHAR columns, event counts exclude an event if the event's 20-day announcement BHAR is less than the median and more than the median, respectively (please see section VI.B for more detail). Based on the findings of numerous research papers, corporate events "Ln_ACQ" and "Ln_SEO" are considered to be events that signal firm over-valuation. The corporate events "Ln_TGT" and "Ln_SREP" are considered to be events that signal firm under-valuation. All variables are defined in Appendix A. *, **, and *** indicate the statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

	Over-Value Events				Under-Value Events			
	High BHAR (1)	Low BHAR (2)	High BHAR (3)	Low BHAR (4)	High BHAR (5)	Low BHAR (6)	High BHAR (7)	Low BHAR (8)
Ln_ACQ_{t-3}	-0.00823***	-0.00348***						
	(-11.666)	(-4.991)						
Ln_SEO_{t-3}			-0.0149***	-0.00955***				
			(-12.583)	(-7.552)				
Ln_TGT_{t-3}					-0.000459	0.00405***		
					(-0.503)	(4.679)		
Ln_SREP_{t-3}							0.00172	0.00739***
							(1.173)	(5.045)
MB_{t-12}	-0.0000297	-0.0000288	-0.0000316	-0.0000303	-0.0000301	-0.0000306	-0.0000302	-0.0000308
	(-0.992)	(-0.939)	(-1.078)	(-1.003)	(-0.989)	(-1.010)	(-0.992)	(-1.022)
$Volatility_{t-1}$	0.00288	0.00338	0.00304	0.00350	0.00345	0.00330	0.00351	0.00361
	(0.233)	(0.274)	(0.248)	(0.285)	(0.280)	(0.268)	(0.284)	(0.293)
Ln_Assets_{t-12}	-0.0265***	-0.0266***	-0.0268***	-0.0268***	-0.0269***	-0.0271***	-0.0269***	-0.0270***
	(-26.233)	(-26.390)	(-26.634)	(-26.645)	(-26.649)	(-26.790)	(-26.688)	(-26.745)
$Leverage_{t-12}$	0.0318***	0.0325***	0.0329***	0.0330***	0.0327***	0.0329***	0.0328***	0.0330***
	(9.605)	(9.796)	(9.910)	(9.950)	(9.882)	(9.937)	(9.906)	(9.960)
$Profit_{t-12}$	-0.000312	-0.000311	-0.000313	-0.000310	-0.000309	-0.000308	-0.000309	-0.000309
	(-1.095)	(-1.106)	(-1.108)	(-1.114)	(-1.111)	(-1.116)	(-1.112)	(-1.116)
Tobin's Q_{t-12}	-0.0000264	-0.0000275	-0.0000252	-0.0000265	-0.0000267	-0.0000266	-0.0000267	-0.0000262
	(-0.569)	(-0.582)	(-0.550)	(-0.566)	(-0.569)	(-0.570)	(-0.568)	(-0.561)
$Inst\_Hold_{t-3}$	-0.00226*	-0.00227*	-0.00225*	-0.00226*	-0.00227*	-0.00227*	-0.00227*	-0.00227*
	(-1.678)	(-1.676)	(-1.688)	(-1.680)	(-1.676)	(-1.678)	(-1.676)	(-1.677)
Ln_Anlst_{t-12}	-0.00515***	-0.00517***	-0.00514***	-0.00520***	-0.00520***	-0.00522***	-0.00521***	-0.00523***
	(-10.195)	(-10.228)	(-10.188)	(-10.287)	(-10.270)	(-10.290)	(-10.278)	(-10.330)
Ln_Age_{t-1}	0.0112***	0.0105***	0.0106***	0.0105***	0.0102***	0.00983***	0.0101***	0.00996***
	(5.074)	(4.774)	(4.822)	(4.761)	(4.631)	(4.469)	(4.593)	(4.534)
$Turnover_{t-1}$	-0.00753	-0.00753	-0.00747	-0.00749	-0.00753	-0.00752	-0.00753	-0.00752
	(-1.472)	(-1.469)	(-1.471)	(-1.470)	(-1.469)	(-1.468)	(-1.469)	(-1.469)
$Ind\_Returns_{t-1}$	-0.00336	-0.00315	-0.00331	-0.00324	-0.00312	-0.00315	-0.00313	-0.00316
	(-0.409)	(-0.383)	(-0.405)	(-0.395)	(-0.380)	(-0.383)	(-0.381)	(-0.385)
$Returns_{t-1}$	-0.0251***	-0.0250***	-0.0252***	-0.0251***	-0.0250***	-0.0250***	-0.0250***	-0.0250***
	(-11.942)	(-11.898)	(-11.998)	(-11.924)	(-11.885)	(-11.904)	(-11.888)	(-11.899)
MKT_β_{t-12}	-0.00311***	-0.00310***	-0.00308***	-0.00308***	-0.00310***	-0.00310***	-0.00310***	-0.00309***
	(-11.170)	(-11.142)	(-11.122)	(-11.111)	(-11.136)	(-11.137)	(-11.132)	(-11.126)
SMB_β_{t-12}	-0.00255***	-0.00255***	-0.00253***	-0.00254***	-0.00255***	-0.00255***	-0.00255***	-0.00254***
	(-10.480)	(-10.453)	(-10.453)	(-10.435)	(-10.450)	(-10.453)	(-10.447)	(-10.443)
HML_β_{t-12}	0.00155***	0.00155***	0.00155***	0.00155***	0.00155***	0.00155***	0.00155***	0.00155***
	(7.837)	(7.850)	(7.884)	(7.865)	(7.860)	(7.865)	(7.859)	(7.864)
RMW_β_{t-12}	0.000783***	0.000780***	0.000765***	0.000769***	0.000779***	0.000778***	0.000778***	0.000775***
	(4.555)	(4.526)	(4.479)	(4.482)	(4.522)	(4.520)	(4.517)	(4.508)
CMA_β_{t-12}	0.000430***	0.000430***	0.000432***	0.000426***	0.000430***	0.000427***	0.000429***	0.000429***
	(2.803)	(2.786)	(2.813)	(2.771)	(2.785)	(2.773)	(2.782)	(2.781)
MOM_β_{t-12}	-0.000848***	-0.000876***	-0.000849***	-0.000874***	-0.000879***	-0.000873***	-0.000879***	-0.000878***
	(-3.013)	(-3.100)	(-3.034)	(-3.107)	(-3.114)	(-3.101)	(-3.113)	(-3.114)
Constant	0.349***	0.350***	0.351***	0.351***	0.352***	0.353***	0.352***	0.352***
	(47.845)	(47.938)	(48.219)	(48.256)	(48.351)	(48.474)	(48.414)	(48.431)
Firm, Mo. FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854	1,027,854

Table 11:
Pre-Post Corporate Events Analysis with Corporate Events Dummies

This table shows the results of a pooled regression of corporate event dummy variables on the measure of price informativeness while controlling for several firm characteristics. The corporate events variables "ACQ_D", "SEO_D", "TGT_D", and "SREP_D" are simply the binary variables that are equal to 1 if a firm performed M&A transactions in which a firm is an acquirer, secondary equity offerings, M&A transactions in which a firm is a target, and share repurchases in the last twelve months, respectively, and 0 otherwise. Based on the findings of numerous research papers, corporate events "ACQ_D" and "SEO_D" are considered to be events that signal firm over-valuation. The corporate events "TGT_D" and "SREP_D" are considered to be events that signal firm under-valuation. The sample period is from January 1993 through December 2017. All variables are defined in Appendix A. *, **, and *** indicate the statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

Dependent Variable PIN (Venter & De Jongh 2006)				
	Over-Value Events		Under-Value Events	
	(1)	(2)	(3)	(4)
ACQ_D $_{t-3}$	-0.00455***			
	(-7.180)			
SEO_D$_{t-3}$		-0.0120***		
		(-13.687)		
TGT_D$_{t-3}$			0.00277***	
			(4.380)	
SREP_D$_{t-3}$				0.00364***
				(4.211)
MB$_{t-12}$	-0.0000288	-0.0000318	-0.0000303	-0.0000308
	(-0.942)	(-1.090)	(-0.997)	(-1.022)
Volatility$_{t-1}$	0.00281	0.00287	0.00340	0.00373
	(0.227)	(0.234)	(0.276)	(0.303)
Ln_Assets$_{t-12}$	-0.0266***	-0.0268***	-0.0270***	-0.0270***
	(-26.367)	(-26.706)	(-26.773)	(-26.759)
Leverage$_{t-12}$	0.0322***	0.0334***	0.0329***	0.0331***
	(9.723)	(10.065)	(9.926)	(9.989)
Profit$_{t-12}$	-0.000314	-0.000278	-0.000304	-0.000308
	(-1.177)	(-0.909)	(-1.113)	(-1.117)
Tobin's Q$_{t-12}$	-0.0000273	-0.0000249	-0.0000268	-0.0000262
	(-0.580)	(-0.546)	(-0.573)	(-0.561)
Inst_Hold$_{t-3}$	-0.00226*	-0.00225*	-0.00227*	-0.00227*
	(-1.679)	(-1.693)	(-1.678)	(-1.677)
Ln_Anlst$_{t-12}$	-0.00516***	-0.00532***	-0.00521***	-0.00524***
	(-10.193)	(-10.546)	(-10.292)	(-10.343)
Ln_Age$_{t-1}$	0.0100***	0.00876***	0.0100***	0.0101***
	(4.567)	(3.988)	(4.564)	(4.580)
Turnover$_{t-1}$	-0.00753	-0.00744	-0.00752	-0.00752
	(-1.471)	(-1.471)	(-1.468)	(-1.469)
Ind_Returns$_{t-1}$	-0.00319	-0.00344	-0.00317	-0.00316
	(-0.387)	(-0.423)	(-0.387)	(-0.386)
Returns$_{t-1}$	-0.0251***	-0.0253***	-0.0250***	-0.0250***
	(-11.929)	(-12.076)	(-11.898)	(-11.903)
MKT_β_{t-12}	-0.00310***	-0.00306***	-0.00309***	-0.00309***
	(-11.152)	(-11.039)	(-11.132)	(-11.123)
SMB_β_{t-12}	-0.00255***	-0.00252***	-0.00254***	-0.00254***
	(-10.465)	(-10.428)	(-10.448)	(-10.441)
HML_β_{t-12}	0.00155***	0.00155***	0.00155***	0.00155***
	(7.866)	(7.897)	(7.860)	(7.866)
RMW_β_{t-12}	0.000782***	0.000754***	0.000778***	0.000774***
	(4.541)	(4.448)	(4.520)	(4.502)
CMA_β_{t-12}	0.000432***	0.000430***	0.000426***	0.000428***
	(2.805)	(2.820)	(2.769)	(2.779)
MOM_β_{t-12}	-0.000861***	-0.000829***	-0.000874***	-0.000877***
	(-3.054)	(-2.982)	(-3.105)	(-3.113)
Constant	0.352***	0.356***	0.352***	0.352***
	(48.446)	(48.990)	(48.419)	(48.433)
Firm, Mo. FE	YES	YES	YES	YES
Observations	1,027,854	1,027,854	1,027,854	1,027,854

Table 12:
Corporate Events and Weak and Semi-Strong Form Market Efficiency

This table shows the results of a pooled regression of corporate events variables on the measure of weak and semi-strong from market efficiency while controlling for several firm characteristics. I use the variance ratio of Lo and MacKinlay (1988) to measure weak form market efficiency and the Information Delay measure of Hou and Moskowitz (2005) to measure semi-strong form market efficiency. For both measures, lower numbers signify higher market efficiency. The corporate events variables "Ln_ACQ", "Ln_SEO", "Ln_TGT", and "Ln_SREP" are simply the natural logarithms of a cumulative count of the number of M&A transactions in which a firm is an acquirer, the number of times the firm performed secondary equity offerings, the number of M&A transactions in which a firm is a target, and the number of times the firm performed share repurchases in the last twelve months, respectively. Based on the findings of numerous research papers, corporate events "Ln_ACQ" and "Ln_SEO" are considered to be events that signal stock over-valuation. And, the corporate events "Ln_TGT" and "Ln_SREP" are considered to be events that signal stock under-valuation. To be consistent with previous tables, the sample period is from January 1993 through December 2017. Controls are used following Busch and Obernberger (2016). All variables are defined in Appendix A. *, **, and *** indicate the statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

	Semi-Strong Form Market Efficiency				Weak Form Market Efficiency			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln_ACQ_{t-1}	-0.0103***				-0.00681***			
	(-6.159)				(-7.503)			
Ln_SEO_{t-1}		-0.0121***				-0.0121***		
		(-4.653)				(-9.914)		
Ln_TGT_{t-1}			0.00215				-0.00649***	
			(1.100)				(-6.336)	
Ln_SREP_{t-1}				-0.00903***				-0.00637***
				(-3.054)				(-4.294)
Inst_Hold_{t-3}	-0.0493***	-0.0492***	-0.0496***	-0.0494***	-0.00730**	-0.00716**	-0.00746**	-0.00740**
	(-2.621)	(-2.622)	(-2.621)	(-2.620)	(-2.287)	(-2.283)	(-2.290)	(-2.288)
Ln_Anlst_{t-12}	-0.00693***	-0.00714***	-0.00693***	-0.00687***	-0.000421	-0.000630	-0.000407	-0.000380
	(-6.159)	(-6.342)	(-6.154)	(-6.105)	(-0.819)	(-1.226)	(-0.790)	(-0.737)
Ln_Assets_{t-12}	-0.0608***	-0.0613***	-0.0614***	-0.0612***	-0.0272***	-0.0274***	-0.0273***	-0.0274***
	(-24.988)	(-25.175)	(-25.099)	(-25.092)	(-23.481)	(-23.889)	(-23.652)	(-23.700)
$\text{Trading Vol.}_{t-1}$	0.0677**	0.0743**	0.0662**	0.0665**	-0.112	-0.105	-0.113	-0.113
	(2.169)	(2.512)	(2.088)	(2.104)	(-1.363)	(-1.376)	(-1.367)	(-1.362)
Volatility_{t-1}	0.0415	0.0419	0.0425	0.0421	0.140	0.140	0.140	0.140
	(1.162)	(1.162)	(1.167)	(1.165)	(1.379)	(1.378)	(1.378)	(1.379)
Pos. Ret._{t-1}	0.0236***	0.0239***	0.0239***	0.0237***	-0.0274***	-0.0272***	-0.0272***	-0.0274***
	(2.953)	(2.989)	(2.987)	(2.963)	(-10.251)	(-10.199)	(-10.137)	(-10.205)
Neg. Ret._{t-1}	-0.00150	-0.00298	-0.00203	-0.00136	0.0485***	0.0471***	0.0485***	0.0486***
	(-0.089)	(-0.177)	(-0.120)	(-0.081)	(11.570)	(11.317)	(11.519)	(11.562)
BM_{t-3}	0.0407***	0.0404***	0.0409***	0.0411***	0.0271***	0.0267***	0.0274***	0.0274***
	(23.478)	(23.495)	(23.603)	(23.697)	(24.740)	(24.648)	(24.977)	(24.925)
Short Int. δ_{t-1}	0.000865	0.00106	0.000778	0.000756	-0.00145	-0.00122	-0.00152	-0.00153
	(0.264)	(0.314)	(0.240)	(0.234)	(-0.822)	(-0.729)	(-0.843)	(-0.851)
Dev_30_{t-1}	0.00767***	0.00770***	0.00780***	0.00778***	0.00518***	0.00517***	0.00529***	0.00526***
	(7.699)	(7.728)	(7.806)	(7.793)	(8.710)	(8.696)	(8.845)	(8.787)
Constant	0.875***	0.876***	0.875***	0.875***	0.373***	0.374***	0.373***	0.373***
	(70.693)	(71.001)	(70.695)	(70.678)	(51.721)	(51.985)	(51.731)	(51.671)
Observations	1,326,656	1,326,656	1,326,656	1,326,656	1,330,220	1,330,220	1,330,220	1,330,220

Appendix A. Variable Definitions

ACQ: Cumulative count of the number of M&A transactions in which a firm is an acquirer in the last 12 months.

BM: Book to market ratio calculated following Davis et al. (2000).

Ln_ACQ: Natural logarithm of ACQ.

CMA_β: Slope coefficient of CMA of the regression - $Ret_{i,w} = \alpha + \beta_1 MKT\_RF_w + \beta_2 SMB_w + \beta_3 HML_w + \beta_4 CMA_w + \beta_5 RMW_w + \beta_6 MOM_w + \epsilon_i$, *where all returns and factors are weekly* - run for each calendar year.

D1: Information delay measure of Hou and Moskowitz (2005). Hou and Moskowitz (2005) estimate the following models, using a 12-month rolling window, for each firm for each month: $Base: \; r_{i,w} = \alpha_i + \gamma_i^0 \, r_{m,w} + \epsilon_{i,t}$ and $Extended: \; r_{i,t} = \alpha_i + \beta_i^0 \, r_{m,w} + \sum_{n=1}^{4} \beta_i^n \, r_{m,w-n} + \epsilon_{i,t}$, where, $r_{i,w}$ is the weekly return of stock i in week w and $r_{m,w}$ is the weekly CRSP value-weighted market returns in week w. Then, their D1 information delay measure is calculated as

$$D1 = 1 - \frac{R^2_{Base}}{R^2_{Extended}} \tag{A1}$$

Dev_$30: Absolute difference between the stock price and $30 (ln)

EAR_SURP_RDQ: Three-day cumulative abnormal returns from day -1 to +1 around earnings announcements. Abnormal returns are raw returns adjusted for returns of the benchmark portfolio of firms matched on size and book-to-market ratio. The benchmark portfolios are constructed following (Fama and French, 1992). Earning announcement dates are obtained from the COMPUSTAT (variable *rdq*) database.

EAR_SURP_IBES: Three-day cumulative abnormal returns from day -1 to +1 around earnings announcements. Abnormal returns are raw returns adjusted for returns of the benchmark portfolio of firms matched on size and book-to-market ratio. The benchmark portfolios are constructed following (Fama and French, 1992). Earning announcement dates are obtained from IBES (*anndats_act*) database.

HML_β: Slope coefficient of HML of the regression - $Ret_{i,w} = \alpha + \beta_1 MKT\_RF_w + \beta_2 SMB_w + \beta_3 HML_w + \beta_4 CMA_w + \beta_5 RMW_w + \beta_6 MOM_w + \epsilon_i$, *where all returns and factors are weekly* - run for each calendar year.

Ind_Ret: Value-weighted industry return calculated using SIC two digit

Inst_Hold: The fraction of a company's share held by all institutional investors

Leverage: Total debt (debt in current liabilities plus total long-term debt) divided by total assets

Ln_Age: Natural logarithm of the number of months since the firm first introduced in the CRSP monthly returns file.

Ln_Anlst: Natural logarithms of the number of analysts covering the firm

Ln_Assets: Natural logarithm of firm's total assets

MB: Market-to-book calculated following Dasgupta et al. (2010). It is market capital plus total debt (debt in current liabilities plus total long-term debt) divided by total assets.

MKT_β: Slope coefficient of MKT_RF of the regression - $Ret_{i,w} = \alpha + \beta_1 MKT\_RF_w + \beta_2 SMB_w + \beta_3 HML_w + \beta_4 CMA_w + \beta_5 RMW_w + \beta_6 MOM_w + \epsilon_i$, *where all returns and factors are weekly* - run for each calendar year.

MOM_β: Slope coefficient of MOM of the regression - $Ret_{i,w} = \alpha + \beta_1 MKT\_RF_w + \beta_2 SMB_w + \beta_3 HML_w + \beta_4 CMA_w + \beta_5 RMW_w + \beta_6 MOM_w + \epsilon_i$, *where all returns and factors are weekly* - run for each calendar year.

Neg. Ret. : Monthly stock return if negative and zero otherwise.

Pos. Ret. : Monthly stock return if positive and zero otherwise.

Profit: Operating income before depreciation divided by total assets from the previous year.

P/V: P/V is calculated following D'mello and Shroff (2000) and Dong et al. (2006). Equity value (EV) at time t and terminal value (TV) are calculated as

$$EV_t = B_t + \sum_{i=1}^{T} (1+r)^{-i} E_t[X_{t+i} - r * B_{t+i-1}] + \frac{(1+r)^{-T}}{r} TV \tag{A2}$$

$$TV = E_t[(X_{t+T-1} - r * B_{t+T-2}) + (X_{t+T} - r * B_{t+T-1})]/2 \tag{A3}$$

where X is the expectations of future earnings, B is book value, and r is the cost of capital. Again following Dong et al. (2006), I set T equal to 3, meaning I use a three-period forecast horizon. Following D'mello and Shroff (2000), a firm's specific cost of capital is calculated using CAPM. First, I run a 60-month rolling regression of an individual stock's monthly returns on the monthly market returns to obtain $\hat{\beta}$. The cost of capital implied by CAPM is then calculated as

$$E(r) = r_f + \hat{\beta}[E(r_m) - r_f] \tag{A4}$$

Returns: Monthly returns obtained from CRSP.

RMW_β: Slope coefficient of RMW of the regression - $Ret_{i,w} = \alpha + \beta_1 MKT\_RF_w + \beta_2 SMB_w +$

$\beta_3 HML_w + \beta_4 CMA_w + \beta_5 RMW_w + \beta_6 MOM_w + \epsilon_i$, *where all returns and factors are weekly* - run for each calendar year.

SEO: Cumulative count of the number of times the firm performed secondary equity offerings in the last 12 months.

Short Int. Δ: Change in short interest at month end scaled by shares outstanding

Ln_SEO: Natural logarithm of SEO.

SREP: Cumulative count of the number of times the firm performed share repurchases in the last 12 months.

Ln_SREP: Natural logarithm of SREP.

SMB_β: Slope coefficient of SMB of the regression - $Ret_{i,w} = \alpha + \beta_1 MKT\_RF_w + \beta_2 SMB_w + \beta_3 HML_w + \beta_4 CMA_w + \beta_5 RMW_w + \beta_6 MOM_w + \epsilon_i$, *where all returns and factors are weekly* - run for each calendar year.

TGT: Cumulative count of the number of M&A transactions in which a firm is an acquirer in the last 12 months.

Ln_TGT: Natural logarithm of TGT.

Trading Vol.: Monthly total trading volume scaled by shares outstanding.

Tobin's Q: Market value of equity plus total assets minus book equity divided by total assets, where book equity is calculated following Davis et al. (2000)

Turnover: Monthly turnover calculated as the monthly volume divided by share outstanding

Variance Ratio: Four-week based variance ratio is calculated following Lo and MacKinlay (1988)

Volatility: Standard deviation of daily returns calculated within each calendar month

Appendix B. Additional Tables

Table BI:
Over- and Under-Valuations Signals from a Firm's Corporate Events and Information Collection after Controlling for Insider Information

This table is a replication of Table 2 Panel A, but after controlling for Insider Information following Chen et al. (2007). This table shows the results of a pooled regression of corporate events variables on the measure of price informativeness while controlling for several firm characteristics. The corporate events variables "Ln_ACQ", "Ln_SEO", "Ln_TGT", and "Ln_SREP" are simply the natural logarithms of a cumulative count of the number of M&A transactions in which a firm is an acquirer, the number of times the firm performed secondary equity offerings, the number of M&A transactions in which a firm is a target, and the number of times the firm performed share repurchases in the last twelve months, respectively. Based on the findings of numerous research papers, corporate events "Ln_ACQ" and "Ln_SEO" are considered to be events that signal stock over-valuation. And, the corporate events "Ln_TGT" and "Ln_SREP" are considered to be events that signal stock under-valuation. EAR_SURP_RDQ and EAR_SURP_IBES are earning surprise calculated following Chen et al. (2007) where actual earning announcement dates are obtained from COMPUSTAT (*rdq*) and IBES (*anndats_act*), respectively. Controls are all other variables used in Table 2 Panel A - MB_{t-12}, $Volatility_{t-3}$, Ln_Assets_{t-12}, $Leverage_{t-12}$, $Profit_{t-12}$, Tobin's Q_{t-12}, $Inst\_Hold_{t-3}$, Ln_Anlst_{t-12}, Ln_Age_{t-1}, $Turnover_{t-1}$, Ind_Ret_{t-1}, $Returns_{t-1}$, MKT_β_{t-12}, SMB_β_{t-12}, HML_β_{t-12}, RMW_β_{t-12}, CMA_β_{t-12}, MOM_β_{t-12}. The sample period is from January 1993 through December 2017. All variables are defined in Appendix A. *, **, and *** indicate the statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ln_ACQ_{t-3}	-0.00425***	-0.00357***	-0.00335***									
	(-6.634)	(-6.057)	(-5.652)									
Ln_SEO_{t-3}				-0.0120***	-0.0109***	-0.0108***						
				(-13.637)	(-13.190)	(-12.964)						
Ln_TGT_{t-3}							0.00327***	0.00333***	0.00358***			
							(5.169)	(5.588)	(6.051)			
Ln_SREP_{t-3}										0.00380***	0.00366***	0.00384***
										(4.432)	(4.507)	(4.749)
EAR_SURP_RDQ	-0.117***		-0.117***	-0.115***		-0.115***	-0.116***		-0.116***	-0.116***		-0.116***
	(-11.612)		(-6.161)	(-11.470)		(-6.063)	(-11.524)		(-6.125)	(-11.475)		(-6.092)
EAR_SURP_IBES		-0.108***	-0.0155		-0.106***	-0.0151		-0.107***	-0.0151		-0.107***	-0.0152
		(-10.654)	(-0.831)		(-10.499)	(-0.811)		(-10.564)	(-0.806)		(-10.539)	(-0.812)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm, Mo. FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	0.370***	0.333***	0.337***	0.373***	0.337***	0.341***	0.370***	0.333***	0.338***	0.370***	0.333***	0.338***
	(48.663)	(40.604)	(41.418)	(49.088)	(41.006)	(41.801)	(48.650)	(40.629)	(41.457)	(48.666)	(40.632)	(41.456)
Observations	952,700	781,520	756,706	952,700	781,520	756,706	952,700	781,520	756,706	952,700	781,520	756,706

Table BII:
Corporate Events and Information Collection in Growth vs Value Firms

This table shows the results of a pooled regression of corporate events variables on the measure of price informativeness while controlling for several firm characteristics within several sub-samples created using the book-to-market ratio (a proxy for the profitability of investment opportunities). The corporate events variables "Ln_ACQ", "Ln_SEO", "Ln_TGT", and "Ln_SREP" are simply the natural logarithms of a cumulative count of the number of M&A transactions in which a firm is an acquirer, the number of times the firm performed secondary equity offerings, the number of M&A transactions in which a firm is a target, and the number of times the firm performed share repurchases in the last twelve months, respectively. Based on the findings of numerous research papers, corporate events "Ln_ACQ" and "Ln_SEO" are considered to be events that signal firm over-valuation. The corporate events "Ln_TGT" and "Ln_SREP" are considered to be events that signal firm under-valuation. Using a firm's book-to-market ratio from the previous quarter, I split the sample of firms into groups - growth firms and value firms - and run a pool regression on each sub-sample. The sample period is from January 1993 through December 2017. All variables are defined in Appendix A. *, **, and *** indicate the statistical significance at 10%, 5%, and 1% levels, respectively. Standard errors are clustered at both firm and month levels.

	Over-Value Events				Under-Value Events			
	Growth (1)	Value (2)	Growth (3)	Value (4)	Growth (5)	Value (6)	Growth (7)	Value (8)
Ln_ACQ_{t-3}	-0.00287***	-0.00578***						
	(-4.049)	(-6.700)						
Ln_SEO_{t-3}			-0.00725***	-0.00886***				
			(-6.978)	(-6.656)				
Ln_TGT_{t-3}					0.00299***	0.000808		
					(3.594)	(0.851)		
Ln_SREP_{t-3}							0.00303**	0.00299*
							(2.483)	(1.836)
MB_{t-12}	-0.0000343*	-0.00959***	-0.0000363*	-0.00964***	-0.0000353*	-0.00979***	-0.0000353*	-0.00981***
	(-1.702)	(-7.301)	(-1.853)	(-7.333)	(-1.742)	(-7.375)	(-1.755)	(-7.369)
$L.Volatility_{t-1}$	0.103**	-0.0187	0.101**	-0.0167	0.103**	-0.0168	0.104**	-0.0163
	(2.129)	(-0.545)	(2.113)	(-0.491)	(2.133)	(-0.492)	(2.141)	(-0.476)
Ln_Assets_{t-12}	-0.0236***	-0.0382***	-0.0239***	-0.0385***	-0.0241***	-0.0387***	-0.0240***	-0.0387***
	(-18.753)	(-24.424)	(-18.999)	(-24.715)	(-19.080)	(-24.702)	(-19.040)	(-24.725)
$Leverage_{t-12}$	0.0319***	0.0514***	0.0326***	0.0532***	0.0325***	0.0525***	0.0326***	0.0528***
	(8.942)	(7.800)	(9.128)	(8.066)	(9.112)	(7.954)	(9.136)	(7.986)
$Profit_{t-12}$	-0.000299	-0.000347	-0.000368	-0.000309	-0.000286	-0.000335	-0.000305	-0.000335
	(-0.360)	(-1.233)	(-0.451)	(-1.070)	(-0.335)	(-1.184)	(-0.360)	(-1.185)
Tobin's Q_{t-12}	-0.00000523	-0.00739***	-0.00000381	-0.00735***	-0.00000505	-0.00749***	-0.00000479	-0.00749***
	(-0.209)	(-3.556)	(-0.157)	(-3.539)	(-0.202)	(-3.563)	(-0.192)	(-3.559)
$Inst\_Hold_{t-3}$	-0.00163	-0.0241***	-0.00162	-0.0238***	-0.00163	-0.0243***	-0.00164	-0.0243***
	(-1.431)	(-2.881)	(-1.438)	(-2.885)	(-1.433)	(-2.890)	(-1.432)	(-2.890)
Ln_Anlst_{t-12}	-0.00384***	-0.00312***	-0.00397***	-0.00319***	-0.00386***	-0.00314***	-0.00389***	-0.00315***
	(-7.904)	(-4.668)	(-8.190)	(-4.772)	(-7.953)	(-4.677)	(-7.998)	(-4.702)
Ln_Age_{t-1}	-0.00209	0.0119***	-0.00288	0.0116***	-0.00227	0.0123***	-0.00216	0.0123***
	(-0.806)	(3.947)	(-1.109)	(3.835)	(-0.880)	(4.046)	(-0.834)	(4.058)
$Turnover_{t-1}$	-0.0362***	-0.00736	-0.0359***	-0.00726	-0.0362***	-0.00735	-0.0362***	-0.00734
	(-6.532)	(-1.321)	(-6.529)	(-1.320)	(-6.534)	(-1.320)	(-6.534)	(-1.320)
$Ind\_Returns_{t-1}$	-0.00117	-0.00950	-0.00135	-0.00953	-0.00118	-0.00943	-0.00117	-0.00943
	(-0.198)	(-1.318)	(-0.230)	(-1.328)	(-0.200)	(-1.312)	(-0.199)	(-1.313)
$Returns_{t-1}$	-0.0144***	-0.0336***	-0.0146***	-0.0336***	-0.0143***	-0.0335***	-0.0144***	-0.0335***
	(-8.465)	(-13.574)	(-8.589)	(-13.600)	(-8.443)	(-13.529)	(-8.440)	(-13.534)
MKT_β_{t-12}	-0.00192***	-0.00316***	-0.00190***	-0.00312***	-0.00191***	-0.00314***	-0.00191***	-0.00314***
	(-8.016)	(-7.171)	(-7.960)	(-7.066)	(-7.980)	(-7.119)	(-7.987)	(-7.106)
SMB_β_{t-12}	-0.00155***	-0.00261***	-0.00154***	-0.00259***	-0.00154***	-0.00261***	-0.00154***	-0.00260***
	(-8.142)	(-7.054)	(-8.149)	(-7.001)	(-8.096)	(-7.043)	(-8.102)	(-7.033)
HML_β_{t-12}	0.00117***	0.000906***	0.00117***	0.000923***	0.00117***	0.000909***	0.00117***	0.000910***
	(7.208)	(3.060)	(7.214)	(3.095)	(7.161)	(3.029)	(7.167)	(3.026)
RMW_β_{t-12}	0.000401**	0.000715***	0.000392**	0.000691***	0.000399**	0.000708***	0.000398**	0.000704***
	(2.445)	(3.083)	(2.403)	(2.977)	(2.436)	(3.048)	(2.427)	(3.032)
CMA_β_{t-12}	0.000182	0.000445**	0.000183	0.000445**	0.000178	0.000443**	0.000180	0.000445**
	(1.462)	(2.058)	(1.479)	(2.048)	(1.433)	(2.032)	(1.444)	(2.036)
MOM_β_{t-12}	-0.000349	-0.000529	-0.000336	-0.000548	-0.000350	-0.000572	-0.000355	-0.000575
	(-1.573)	(-1.237)	(-1.524)	(-1.283)	(-1.583)	(-1.334)	(-1.601)	(-1.341)
Constant	0.326***	0.473***	0.329***	0.474***	0.327***	0.473***	0.326***	0.473***
	(39.119)	(39.852)	(39.498)	(39.868)	(39.240)	(39.695)	(39.207)	(39.685)
Firm, Mo. FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	503,220	480,923	503,220	480,923	503,220	480,923	503,220	480,923

Appendix C. Theoretical Argument & Testable Predictions

Here, I am motivating my empirical analysis through a very simple theoretical argument of an informed investor's profitability on the investor's information collection efforts. Let's assume an informed investor's information collection costs are not too prohibitive (as in Dow and Gorton (1997)) so that in equilibrium collecting information and trading based on her private information gives her positive profits. She optimizes her information collection efforts based on the expected profitability of her trades, so as new information that changes the expected profitability of her trades comes to market, she reallocates her information collection efforts from low expected profitability opportunities to high expected profitability opportunities. Post information collection, she trades based on her findings, and consequently, the prices reflect her private information.

Appendix A. Baseline: No Feedback Effect

Let's assume three dates, $t \in \{0, 1, 2\}$ (Figure AC.I), and a firm whose average NPV of projects is positive. Further, assume that the informed investor's expected profitability ($E[Profit]$) of her informed trades is an increasing convex function of the effort level (e) (Edmans et al. (2015)).

$$E[Profit] = P(e),\ where\ P(e)' > 0,\ and\ P(e)'' < 0 \tag{C1}$$

Then, her objective function is,

$$\max_{e}\ E[Profit] \tag{C2}$$

At $t = 0$, her optimization of the objective function leads her to allocate e_{ExAnte} efforts to collect information about that firm.

The firm's current stock price is P_C, which might or might not be equal to its fundamental price. The true fundamental price of the security is P_F. α is a measure of misvaluation such that $P_F = P_C\ log\ \alpha$. It is distributed $\alpha \sim Lognormal(\mu, \sigma_\alpha)$ with $\alpha \in [1, \infty)$ and $E[\alpha] = exp(1)$. At $E[\alpha] = exp(1)$, the current price is equal to a true fundamental price, and there is no misvaluation. Security is overvalued if $\alpha < exp(1)$ and undervalued if $\alpha > exp(1)$. Distribution of α is such that, before considering any frictions that asymmetrically impact sell vs buy profits (e.g., feedback effect, short-selling costs, voting rights), we have,

$$E[\text{Sell Profit}] = E[\text{Buy Profit}],\ \ Or \tag{C3}$$

$$\underbrace{\int_{1}^{\exp(1)} \frac{1}{\alpha\sigma_\alpha\sqrt{2\pi}} \exp^{\left(-\frac{(log\alpha-\mu)}{2\sigma_\alpha^2}\right)} [P_C - P_C log\alpha] d\alpha}_{\text{Expected Sell Profit}} = \underbrace{\int_{\exp(1)}^{\infty} \frac{1}{\alpha\sigma_\alpha\sqrt{2\pi}} \exp^{\left(-\frac{(log\alpha-\mu)}{2\sigma_\alpha^2}\right)} [P_C log\alpha - P_C] d\alpha}_{\text{Expected Buy Profit}} \tag{C4}$$

In another word, if we exclude the factors that asymmetrically affect the profitability of sell trades vs that of the buy trades, there is no reason to believe that expected profits are higher for buy or sell trades versus the other (Figure AC.II). Any security is equally likely to be under-valued or over-valued and the investor is equally likely to Buy or Sell post information collection. She does not prefer one firm to another when collecting information.

Appendix B. Adding Feedback Effect

Research shows that managers incorporate at least some of the information revealed by prices into their decisions(Edmans et al. (2015), Dow and Gorton (1997), Luo (2005)). Hence, if present, the feedback effect always has a positive effect on firm value regardless of whether the firm is over- or under-valued compared to the firm value without the presence of the feedback effect (Edmans et al. (2015)). Let's assume the feedback effect adds $\lambda(\xi)$ (more on this aspect later) to the firm's true fundamental price (P_F) at $t = 2$. The fundamental price that includes the value added of the feedback effect is P_{FE}. At $t = 2$, P_{FE} will converge to

$$P_{FE} = P_F + \lambda(\xi) = P_C \, log \, \alpha + \lambda(\xi) \tag{C5}$$

where $\lambda(\xi)$ is the price impact of the managers' actions that are motivated by the learning from prices. Based on the model of DGG (Proposition 3 - better a firm's investment opportunities the higher the information collection), λ is a function of the profitability of a firm's investment opportunities (ξ). Again, based on the model of DGG, we have $\frac{\partial\lambda}{\xi} > 0$ (the higher the profitability of investment opportunities of a firm, the higher the impact of feedback effect on the fundamental stock prices). The reasoning is that the higher the profitability of investment opportunities, the higher the information collected by investors, and hence, assuming that managers incorporate at least some of the information learned from prices, the bigger will be the positive impact of the feedback effect on the firm's value.

As pointed out by Edmans et al. (2015), as the feedback effect increases the firm value above and beyond the firm's true fundamental value without the presence of any feedback effect, the feedback effect always increases (decreases) the expected profitability of an informed investor's buy (sell) trades (Figure AC.III). Hence, we get.

$$E[\text{Sell Profit}]_{FE} < E[\text{Buy Profit}]_{FE} \tag{C6}$$

$$\begin{aligned} Or,\ & \underbrace{\int_{1}^{\exp(1)} \frac{1}{\alpha\sigma_\alpha\sqrt{2\pi}} \exp^{\left(-\frac{(log\ \alpha-\mu)}{2\sigma_\alpha^2}\right)} \Big[P_C - \Big\{P_C\ log\ \alpha + \lambda(\xi)\Big\}\Big] d\alpha}_{\text{Expected Sell Profit}} \\ & < \underbrace{\int_{\exp(1)}^{\infty} \frac{1}{\alpha\sigma_\alpha\sqrt{2\pi}} \exp^{\left(-\frac{(log\ \alpha-\mu)}{2\sigma_\alpha^2}\right)} \Big[\Big\{P_C\ log\ \alpha + \lambda(\xi)\Big\} - P_C\Big] d\alpha}_{\text{Expected Buy Profit}} \end{aligned} \tag{C7}$$

$$And,\ \ E[Profit_{FE\_ExPost}] = E[\text{Sell Profit}]_{FE} + E[\text{Buy Profit}]_{FE} \tag{C8}$$

Besides the feedback effect, other factors can affect the profitability of selling and buying asymmetrically, such as short-selling costs (Engelberg et al. (2018)) and voting rights (Kalay, Karakaş, and Pant (2014)). The stock owners also have the option to earn some additional returns by lending their stocks to short-sellers.

If we assume short-selling cost is $C_{ss} > 0$ and the benefits of owning the stock such as voting rights is $VR > 0$, then, the feedback effect, in the presence of these two factors, generates even bigger asymmetry between sell and buy profits.

$$E[\text{Sell Profit}]_{FE} - C_{SS} << E[\text{Buy Profit}]_{FE} + VR \tag{C9}$$

Unlike in the baseline case where an investor was indifferent between being a buyer or a seller, due to feedback effects, in this case, the informed investor prefers to be a buyer versus to be a seller post information collection. However, as she does not know in which firms she will more likely be a seller or a buyer, her allocations of information collection resources to a firm still do not change from the baseline case. So, before $t = 1$, it is still equally likely that the information collector will buy or sell the stocks after information collection and it is still equally likely that a firm can be over- or under-valued. The allocated effort to collect the information about the firm is e_{FE_ExAnte}, which is equal to e_{ExAnte}.

Appendix C. Adding misvaluation Signals from Corporate Events

At $t = 1$, the firm does a corporate event, which is purely a result of managers optimizing the firm value based on only their insider information. In another word, at this stage of information flow, the assumption

is that the feedback effect is exogenous to their decision on performing the corporate event. For example, if they know, based on only their insider information, that their firm is undervalued, they do share repurchase and if they know that their firm is overvalued, then they undertake secondary equity offerings.

For further analysis purposes, let's focus on a case in which the firm at hand performs share repurchases (Under-Value event) at time $t = 1$ and feedback effect is present. Findings of share repurchase event studies and future abnormal return predictability of share repurchases strongly imply that the share repurchases signal the informed investor that the firm is likely undervalued. In another word, the mean of the distribution of α is above $exp(1)$, and hence the current price, P_C, is more likely to be below the true fundamental price, P_F. If we assume that the informed investor learns from a share repurchase event that the distribution of α shifts upward from $exp(1)$ by $\kappa > 0$, then the expected trading profit post share repurchase event, $(E[Profit_{FE\_ExPost}])$, is given by,

$$E[Profit_{FE\_ExPost}] = \underbrace{\int_{1}^{\exp(1)} \frac{1}{\alpha\sigma_\alpha\sqrt{2\pi}} \exp^{\left(-\frac{(log\ \alpha-\mu-\kappa)}{2\sigma_\alpha^2}\right)} \Big[P_C - \Big\{P_C\ log\ \alpha + \lambda(\xi)\Big\}\Big] dt}_{\text{Expected Sell Profit}}$$

$$+ \underbrace{\int_{\exp(1)}^{\infty} \frac{1}{\alpha\sigma_\alpha\sqrt{2\pi}} \exp^{\left(-\frac{(log\ \alpha-\mu-\kappa)}{2\sigma_\alpha^2}\right)} \Big[\Big\{P_C\ log\ \alpha + \lambda(\xi)\Big\} - P_C\Big] dt}_{\text{Expected Buy Profit}} \tag{C10}$$

Since $E[Profit_{FE\_ExPost}] > E[Profit_{FE\_ExAnte}]$ (see Implication 1 below), at $1 < t < 2$ the investor collects information using e_{FE_ExPost} (where $e_{FE\_ExPost} > e_{FE\_ExAnte}$) level of efforts, trades and incorporate her private into prices. At $t = 2$, managers take such actions as making investment decisions based on what they know and what incremental information they learned from prices (feedback effect) and stock prices converge to P_{FE}, which is the true fundamental price (P_F) plus the positive impact from the feedback effect, $\lambda(\xi)$.

In short, because the expected profitability of buys is higher than that of sells due to the feedback effect, market misvaluation information coming to market impacts the expected profitability of her trades and hence the information collection behavior of an informed investor.

The following implications can thus be offered:

Implication 1: Post Under-Value event, since (i) $\kappa > 0$, (ii) E[Sell Profit] $< E$[Buy Profit] (equa-

tion (6) or (9)), (iii) $\alpha \sim Lognormal(\mu + \kappa, \sigma_\alpha)$ have more probability mass for buy trades than $\alpha \sim Lognormal(\mu, \sigma_\alpha)$, and $\lambda(\xi) > 0$ (feedback effect exists), we get:

$$E[Profit_{FE\_ExAnte}] < E[Profit_{FE\_ExPost}] \rightarrow e_{FE\_ExAnte} < e_{FE\_ExPost}. \tag{C11}$$

It means the informed investor increases her allocated information collection efforts from what she was allocating before the corporate event. Similar reasoning tells us that in the Over-Value event case ($\kappa < 0$), we will have the following:

$$E[Profit_{FE\_ExAnte}] > E[Profit_{FE\_ExPost}] \rightarrow e_{FE\_ExAnte} > e_{FE\_ExPost}. \tag{C12}$$

Equation (12) says that after the Over-Value event, an informed investor reduces her allocation of information collection efforts for the firm from what she was allocating before the corporate events. Figure AC.IV and Figure AC.V show intuition behind equations 11 and 12, respectively.

Implication 2: Again, since, $\lambda(\xi) > 0$ reduces the profits of an informed investor's sell trades while increasing the profits for his buy trades if a corporate event signals her that there is a higher probability that she will be a buyer (seller) post information collection, her increasing (decreasing) of the allocation of information collection efforts for the firm from e_{FE_ExAnte} to e_{FE_ExPost} increases (decreases) in λ as:

$$\text{If } H(.) = \underbrace{\int_1^{\exp(1)} \frac{1}{\alpha\sigma_\alpha\sqrt{2\pi}} \exp^{\left(-\frac{(log\ \alpha-\mu)}{2\sigma_\alpha^2}\right)} \Big[P_C - \Big\{P_C\ log\ \alpha + \lambda(\xi)\Big\}\Big] dt}_{\text{Expected Sell Profit}};$$
$$\text{Then, } \frac{\partial H(.)}{\partial \lambda(\xi)} < 0 \ \rightarrow \ \frac{\partial H(.)}{\xi} < 0 \tag{C13}$$

$$\text{If } G(.) = \underbrace{\int_{\exp(1)}^{\infty} \frac{1}{\alpha\sigma_\alpha\sqrt{2\pi}} \exp^{\left(-\frac{(log\ \alpha-\mu)}{2\sigma_\alpha^2}\right)} \Big[\Big\{P_C\ log\ \alpha + \lambda(\xi)\Big\} - P_C\Big] dt}_{\text{Expected Buy Profit}};$$
$$\text{Then, } \frac{\partial G(.)}{\partial \lambda(\xi)} > 0 \ \rightarrow \ \frac{\partial G(.)}{\xi} > 0 \tag{C14}$$

The higher the $\lambda(\xi) > 0$, the higher the asymmetry in profitability between sell trades and buy trades, and the higher the asymmetry between sell and buy trades, the higher the resource allocation switching after receiving the signal. Since $\lambda'(\xi) > 0$ if a corporate event signals her that there is a higher probability that

she will be a buyer (seller) post information collection, for similar levels of $\kappa > 0$ ($\kappa < 0$), her increasing (decreasing) of effort from e_{FE_ExAnte} to e_{FE_ExPost} increases in the profitability of the firm's investment opportunities (ξ).

In short, ξ changes the expected profitability by changing the difference between two prices - P_F and P_{FE} - while κ changes the expected profitability by changing the distribution of α from $\alpha \sim Lognormal(\mu, \sigma_\alpha)$ to $\alpha \sim Lognormal(\mu + \kappa, \sigma_\alpha)$. ξ changes the expected profitability by increasing the impact of the feedback effect on prices. κ changes the expected profitability by shifting the probability mass from sell trades to buy trades and vice versa, or by changing the beliefs about how deeply misvalued the stock is.

Furthermore, abnormal return patterns or future price directions found by the papers noted in the literature review above after SEOs, M&As, and share repurchases are very clear in that these events send misvaluation signals to the market. Implication 1, when combined with these findings, signifies that κ is positive (negative) for those firms that perform share repurchases (secondary equity offerings) or for those firms that are targets (acquires) in an M&A transaction. Also, I assume that the total information collected by the informed investor is proportionate to the allocation of information collection efforts.

The above two implications offer the following testable predictions:

Prediction 1: *Market Learning from a Firm's Corporate Events:* An informed investor's information collection in firms that perform Under-Value (Over-Value) events goes (down) after the events.

Prediction 2: *Market Learning from Industry-Wide Corporate Events:* Finance, as well as management research, have found a very strong link between firm-specific characteristics such as profitability, the type of corporate events that firms perform, and the characteristics of the industry in which they operate [17].

The finance literature also strongly suggests that investors learn from the information released not only by a firm but also by its peers. Hence, the next prediction is that an informed investor's information collection in firms whose peers perform Under-Value(Over-Value) events goes up (down) after the events.

Prediction 3: *Information Collection and Ex-ante Investment Profitability:* One of the insights from DGG is that information collection goes up with better investment opportunities. Combining the insight with Prediction 1, Prediction 3 says that an increase (decrease) in an informed investor's information collection for the firms that perform Under-Value (Over-Value) events is higher for those firms with higher (lower) ex-ante investment profitability (measured using ROA). If a high ROA firm performs Under-Value

[17] Please refer to the Literature Review Section

(Over-Value) events, then the results depend on whether the effect of misvaluation signal or the effect of profitability of investment opportunities dominates.

Prediction 4: *Implications of Information from Other misvaluation Proxies:* Besides the misvaluation signal coming out from the corporate events, investors can also use other matrices to gauge a firm's misvaluation. Finance research has used both Tobin's Q (e.g., Baker et al. (2003a)) and price-to-value (P/V) (e.g.,Dong et al. (2006),Dong et al. (2012)) to identify under- and over-valuation.

Prediction 4 says that the change in information collection by an informed investor after the misvaluation signal is higher (lower) when the direction of misvaluation implied by other misvaluation proxies matches (mismatches) with the misvaluation signaled by the corporate events.

Prediction 5: *Implications of Short-Sale Constraints on Information Collection:* Because short-sell constraints, costs, and risks further reduce an informed trader's profits of her sell trades, everything else being equal, given that there is a higher likelihood that she will be a seller post information collection, she prefers to collect information on firms with lower short-sell constraints vs firms with higher short sell constraints.

Prediction 5 says that the decrease in an informed investor's information collection for the firms that perform Over-Value events is higher for those firms with higher(lower) short-sale constraints or costs. Among the firms that performed over-value events, the feedback effect's impact on the information collection behavior of investors should be stronger (weaker) among firms with higher (lower) short-sell constraints.

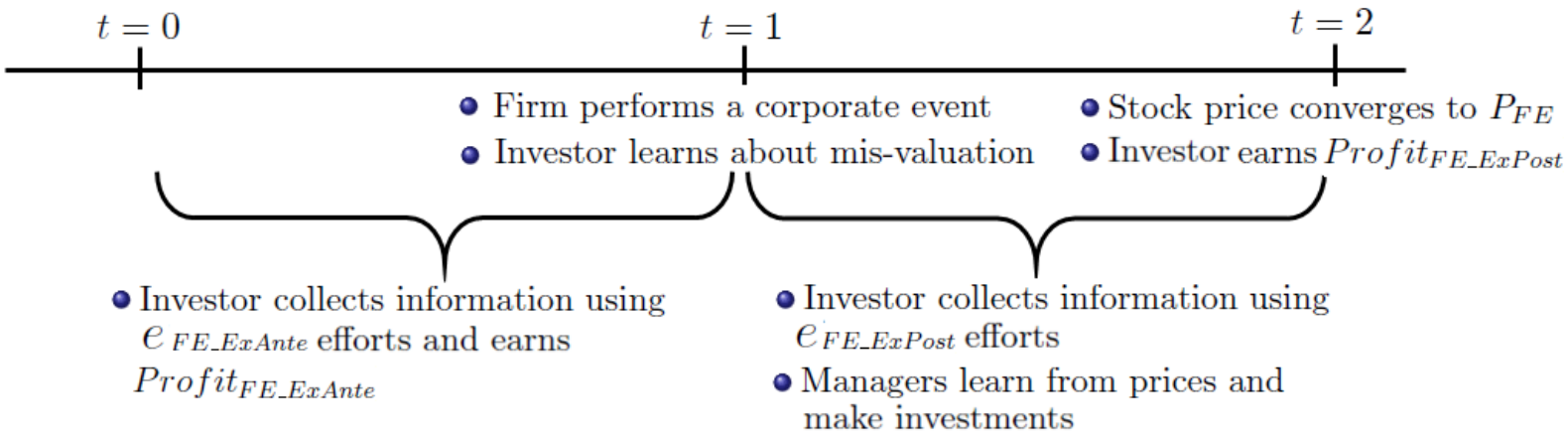

Figure AC.I: Theoretical Argument Timeline. This figure shows the assumed timeline of events within the theoretical argument.

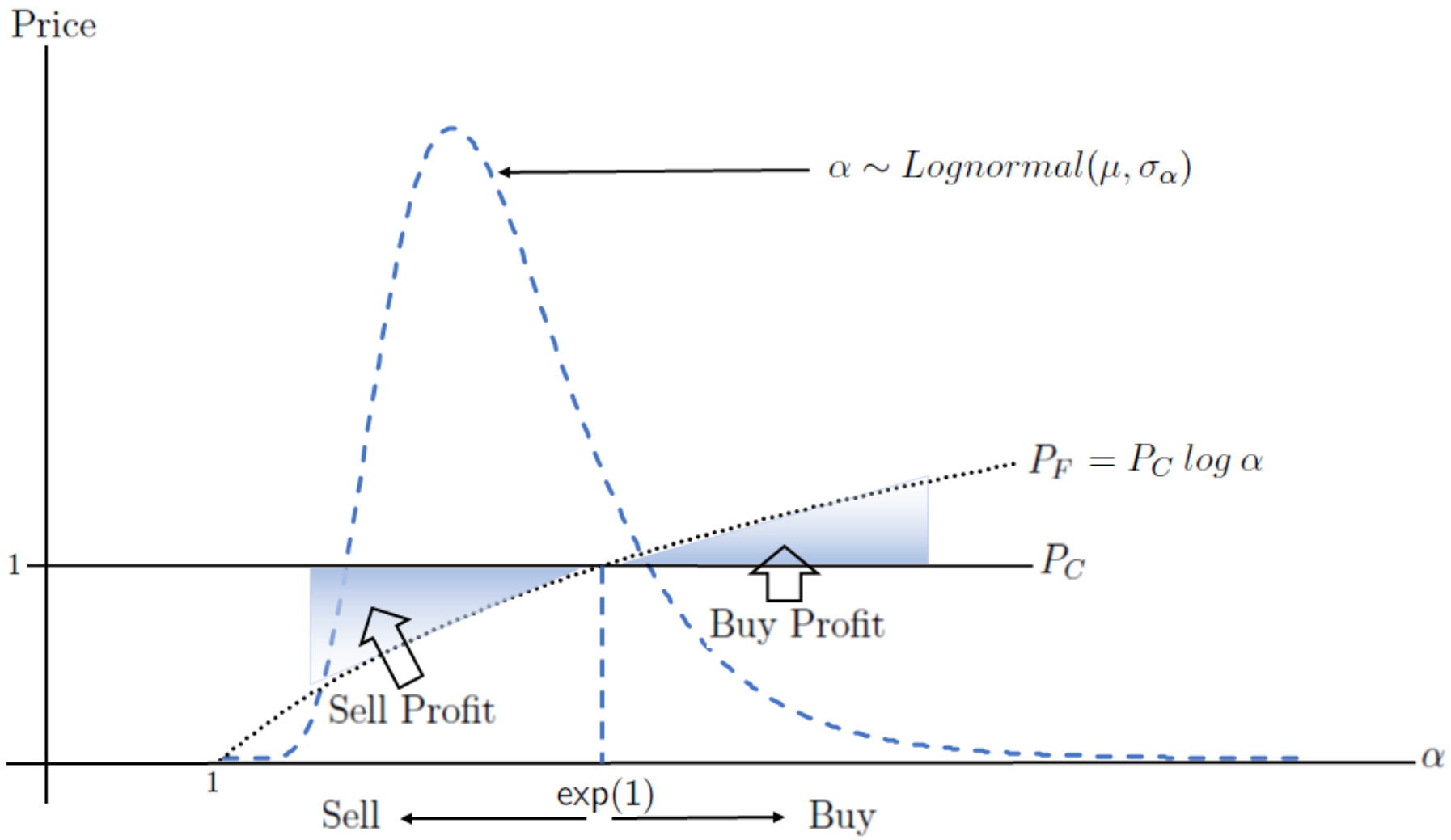

Figure AC.II: Expected Profitability of an Informed Investor. This figure shows the expected profitability of an informed trader on her buy and sell trades before considering things that asymmetrically affect the profitability of sell versus buy trades such as the feedback effect, short-selling costs, or voting rights. P_C (Current Price) is the current price at which the informed investor buys or sells and P_F is the true fundamental price of the security.

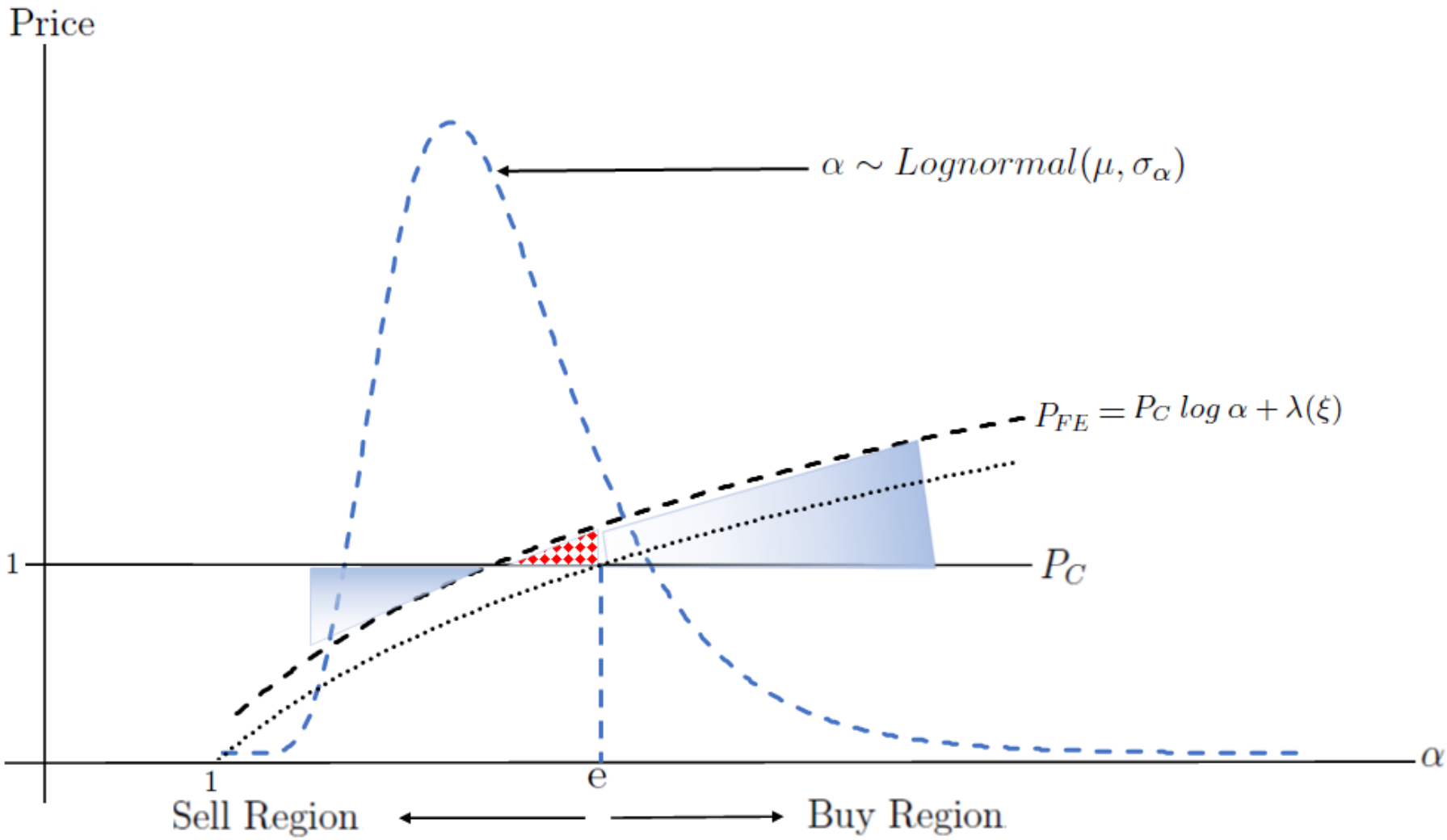

Figure AC.III: Expected Profitability of an Informed Investor (Asymmetric Effect of Feedback Effects). This figure shows the profitability of an informed trader on her buy and sell trades after considering the impact of feedback effect on her trade profitability. P_C is the current price at which the informed investor buys or sells; P_F is the true fundamental price of the security; And P_{FE} is the fundamental price plus the feedback effect or the fundamental price after the manager incorporates the information learned from prices into his decisions

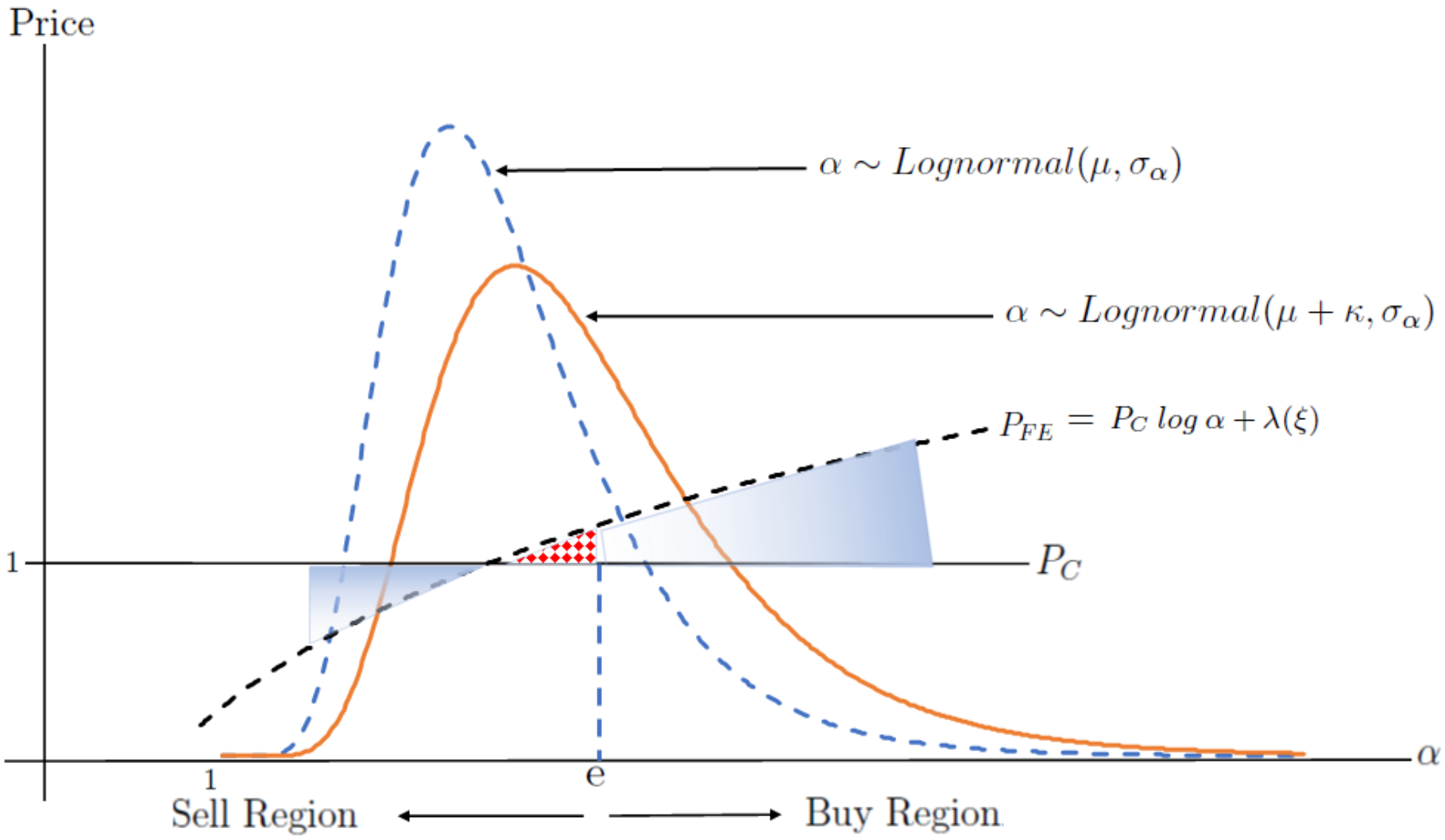

Figure AC.IV: Expected Profitability of Informed Investor (Under-Value Event). This figure shows the change in expected profitability of an informed investor on her buy and sell trades after considering the impact of feedback effect on the profitability of her trades after an Under-Value event compared to the expected profitability just before the event. P_C is the current price at which the informed investor buys or sells; P_F is the true fundamental price of the security; And P_{FE} is fundamental price plus the feedback effect or the fundamental price after the manager incorporates the information learned from prices into his decisions.

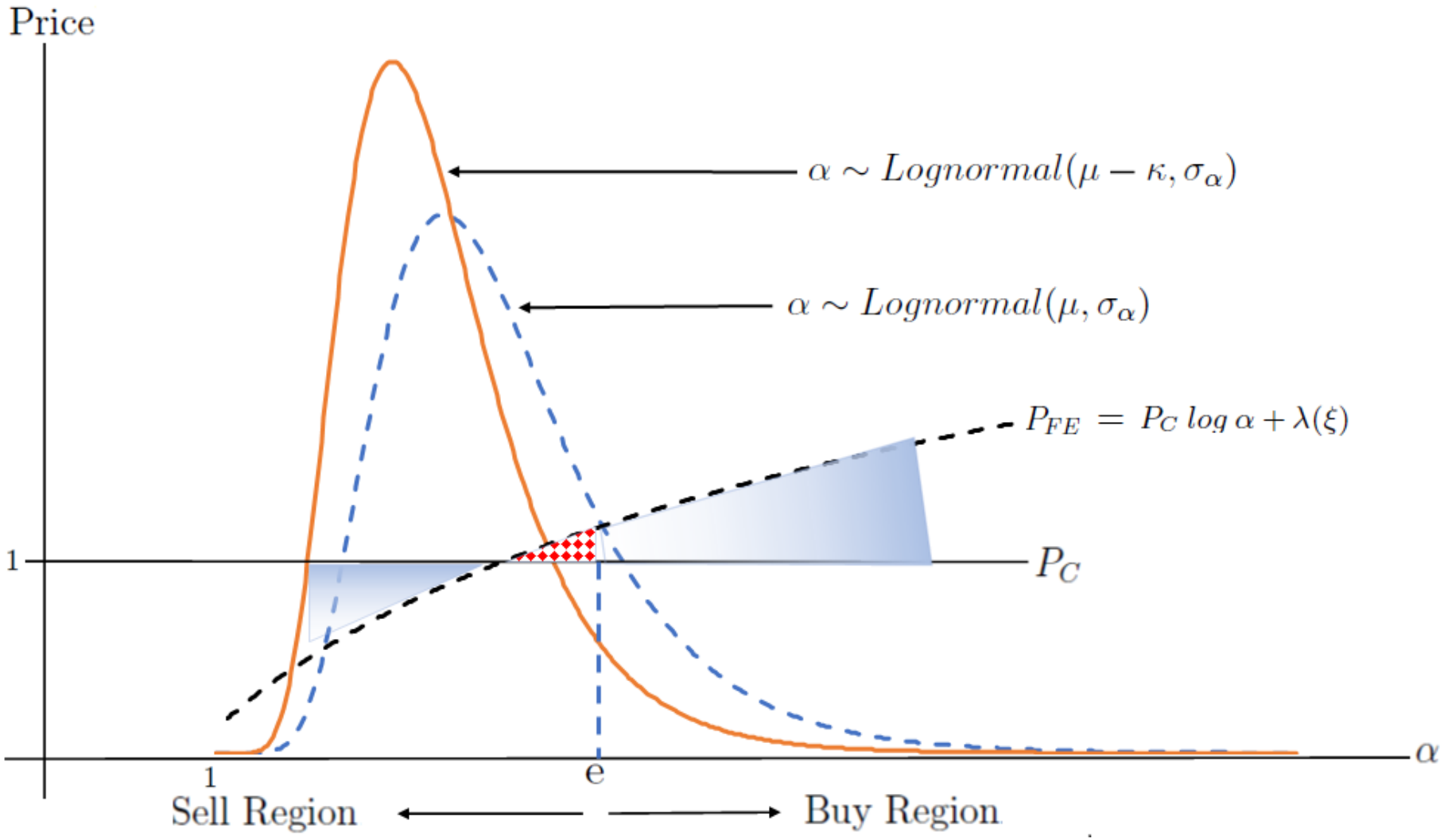

Figure AC.V: Expected Profitability of an Informed Investor (Over-Value Event). This figure shows the change in expected profitability of an informed investor on her buy and sell trades after considering the impact of feedback effect on the profitability of her trades after an Over-Value event compared to the expected profitability just before the event. P_C is the current price at which the informed investor buys or sells; P_F is the true fundamental price of the security; And P_{FE} is fundamental price plus the feedback effect or the fundamental price after the manager incorporates the information learned from prices into his decisions.