Follow the Money: Investor Trading Around Investor-Paid Credit Rating Changes

Utpal Bhattacharya, Kelsey D. Wei, and Han Xia*

Abstract

We examine the influence of investor-paid credit ratings on institutional investors – the ultimate consumers of credit ratings. Using institutional equity trading data, we identify institutional investors who consistently trade on ratings issued by EJR – an investor-paid rating agency. Although EJR's advice is largely credit-related, we find that these EJR followers often respond more strongly to EJR ratings than to influential equity trading signals like earnings announcements, analyst earnings forecast revisions, and recommendation changes. Ultimately, followers, by putting their money where EJR's mouth is, benefit from EJR's advice: they outperform non-followers, and show improved trading performance after becoming followers.

Keywords: Investor-Paid Credit Rating Agencies, Credit Ratings, Capital Market Regulation

JEL number: G11, G14, G24, G28

---

* Bhattacharya is with the Department of Finance at Hong Kong University of Science and Technology ubhattac@ust.hk), and Wei and Xia are with the Naveen Jindal School of Management at the University of Texas at Dallas (kelsey.wei@utdallas.edu; han.xia@utdallas.edu). We are grateful for comments and suggestions from Jonathan Berk, Zhihua Chen, Jess Cornaggia, Kimberley Cornaggia, Paolo Fulghieri, Paul Irvine, Travis Johnson, Dennis Kahlert, Di Li, Andrea Lu, Abraham Ravid, Kumar Venkataraman, as well as seminar and conference participants at the Georgia State University, Monash University, Indiana University, University of Hong Kong, University of Nebraska at Lincoln, the 2014 NBER Workshop on the Economics of Credit Rating Agencies, the 2014 European Finance Association Annual Meeting, the 2014 Lone Star Conference, and the 4th International Credit Risk Conference, 2015 China International Conference in Finance, 2016 FIRS Conference, 2016 Finance Down Under Conference. Part of this study was conducted during Xia's visit to the Chinese University of Hong Kong. Xia thanks the faculty at the University for their hospitality.

Credit ratings play an important role in affecting the cost of capital, security liquidity, and corporate policies.[1] The credit rating industry has long been dominated by issuer-paid rating agencies that generate revenues from the issuers they rate. In recent years, a new type of rating company whose ratings are paid by investors, such as the Egan-Jones Rating Company or Rapid Ratings, have emerged as a notable player. A few studies document that investor-paid ratings are timelier and better predict default than large issuer-paid rating agencies (e.g., Cornaggia and Cornaggia, 2013). Investor-paid ratings have also become part of the regulatory discussions on whether this new rating model can improve the overall quality of the rating industry (e.g., Ramsay, 2011). Despite the growing attention, it remains unclear how institutional investors – the ultimate consumers of credit ratings – use investor-paid credit ratings in trading decisions, and whether the *relative* advantage of investor-paid ratings over issuer-paid ratings can translate into *real* investment value. In this paper, we fill this void in the literature. We study which investors follow investor-paid rating advice, how this advice influences investor trading, and whether investors benefit from following this advice. These are important questions because they help us assess whether the new type of ratings has real influences on the ultimate users of ratings and hence, the potential to help improve the overall quality of the rating industry.

Ex ante, institutional investors may follow investor-paid rating advice for various reasons. While timely and accurate investor-paid ratings can afford investors an informational advantage, certain institutions may simply acquire investor-paid ratings to satisfy the prudent man rule, and use them as an external certification of prudence.[2] Institutions may also rely on ratings of investor-paid agencies, particularly the ones designated as the NRSRO (Nationally Recognized Statistical Rating Organization), to ensure their security holdings comply with regulatory requirements.

[1] See, e.g., Kliger and Sarig (2000), Kisgen (2006), Tang (2009), Kisgen and Strahan (2010), Ellul, Jotikasthira, and Lundblad (2011), Begley (2014), Harford and Uysal (2014), Adelino and Ferreira (2016), Almeida, Cunhua, Ferreira, and Felipe (2016).

[2] See, e.g., Brown, Wei, and Wermers (2014) for more detailed discussions.

Hence, it is an empirical question how investor-paid ratings influence investor trading and whether they generate real investment value.

We shed light on this question by examining investor trading around investor-paid credit rating changes. We find that institutional investors who consistently trade on investor-paid ratings put considerable weight on this advice, such that it often substitutes for the value of other important trading signals (like earnings announcements, analyst earnings forecasts and analyst recommendations) in their trading decisions. By doing so, they capitalize on the investment value of this advice and ultimately outperform others.

We examine institutional trading of firms rated by the Egan-Jones Ratings Company (EJR), a representative of investor-paid credit rating agencies (CRAs). EJR is an independent rating agency founded in 1995. It covers a large number of companies across all industries rated by major issuer-paid agencies and collects fees from institutional investors who subscribe to its rating advice. EJR disseminates ratings in a semi-private manner. Not only does EJR provide its subscribers with direct access to historical ratings for a moderate fee, it also often announces real-time rating actions on its website or releases them to the media.[3] Therefore, like sell-side analyst research, EJR ratings can potentially influence the investment behavior of a wide range of investors, subscribers or non-subscribers.

We collect institutional trading information using proprietary data provided by Ancerno. This dataset covers equity trades of a representative set of institutional investors. For most of our analyses, we focus on institutional equity trading, rather than illiquid corporate bond trading, to take advantage of the daily equity trading data, which allow us to better identify an institution's specific trading response to rating information in event-study type of analyses. This approach is in line with prior evidence that equity and bond prices typically react to credit ratings in the same

[3] See, e.g., press mentions of EJR's downgrade of Goldman Sachs (http://www.streetinsider.com/Credit+Ratings/Egan-Jones+downgrades+Goldman+Sachs+%28GS%29+from+A-+to+BBB%2B/7650505.html) and Knight Capital (http://marketshadows.com/2012/08/02/the-math-behind-eganjones-downgrade-of-knight-to-triple-hooks-2/).

direction (see, e.g., Hand, Holthausen, and Leftwich, 1992; Chava, Ganduri, and Ornthanalai, 2015). In the later part of the paper, we perform supplementary analyses to confirm the investment value of investor-paid rating advice for bond trading.

We first examine which institutional investors follow investor-paid ratings. During our sample period of 1999 to 2010, we identify a group of institutions that consistently exhibit abnormal trading around EJR's rating changes in a way suggesting that they trade on EJR's advice. Compared to non-followers, these EJR followers are smaller institutions. They trade more stocks of firms rated by EJR, and of firms whose S&P ratings are more favorable than EJR's. Hence, EJR followers appear to be institutions with limited in-house research; they rely on EJR's ratings for firms' credit information, especially when these firms are likely overrated by issuer-paid raters. Conditional on being a follower, an institution relies more on EJR's advice when a firm is in deeper financial distress, more difficult to evaluate, or has a more opaque information environment; these are the situations when EJR's information is likely more valuable.

We next examine how investor-paid ratings influence followers' trading. Surprisingly, we find that EJR's rating advice, despite being credit information, significantly influences followers' reliance on other important equity trading signals. First, when an EJR rating change precedes a concurrent earnings announcement of the same firm, EJR followers only respond to the EJR rating change, but not to the subsequent earnings announcement. Second, when an EJR rating change is in conflict with the concurrent earnings forecast revision, EJR followers trade in accordance with EJR's advice, rather than the earnings forecast revision. Third, when sell-side analysts have diverse recommendations on a firm, EJR followers rely more on EJR's information than the analyst recommendations. Therefore, followers appear to perceive EJR ratings as containing information that can often substitute for the value of these important trading signals. On the other hand, none of these signals significantly affects how followers trade on EJR's rating information, regardless of their relative timing, direction, and informativeness.

Followers' reliance on investor-paid rating advice pays off. In the cross-section, EJR followers earn greater abnormal returns in equity trading than non-followers, and in the time-series, an institution's trading performance improves substantially after it becomes an EJR follower. This outperformance is economically sizable. Over a 12-month horizon, it amounts up to over 6% to 8% in terms of Daniel, Grinblatt, Titman, and Wermers (1997) characteristics-adjusted abnormal returns. More importantly, this outperformance mainly concentrates on EJR revised stocks, suggesting that the outperformance stems from the investment value of EJR's advice rather than followers' general investment skill. We also find evidence that EJR ratings contribute to followers' bond trading performance.

Our findings uncover significant investment value of an alternative type of rating, the investor-paid rating. These results, however, do not necessarily suggest that EJR produces credit information that is superior to that from major issuer-paid rating agencies. In fact, with a sizable team of credit rating analysts, it is likely that major issuer-paid rating agencies are capable of producing research that is as valuable to investors. This capability, however, is often affected by conflicts of interest associated with the issuer-paid model, which motivates them to cater to issuers' demands for favorable ratings, instead of investors' demands for timely and informative ratings (e.g., Skreta and Veldkamp, 2009; Bolton, Freixas, and Shapiro, 2012; He, Qian and Strahan, 2012; Jiang, Stanford, and Xie, 2012; Griffin and Tang, 2012; Baghai and Becker, 2018). It is therefore the different incentives that plausibly give rise to EJR's edge over major rating agencies, and ultimately the real investment value of EJR ratings for investors.

We recognize that followers' trading surrounding EJR rating changes may be confounded by factors that affect both EJR rating changes and institutional trading, such as concurrent releases of credit information by rated firms or credit ratings from other agencies (like S&P, Moody's or Fitch). In this case, followers' trading activities and outperformance might not be entirely attributable to EJR's informational value. We take several steps to address this concern.

First, we implement a difference-in-differences test. We use non-followers' trading patterns as a benchmark, and contrast followers' differential trading activities surrounding EJR rating changes versus other trading signals (the first difference) with those of non-followers (the second difference). To the extent that followers and non-followers exhibit similar trading patterns in response to confounding factors, the difference-in-differences setting helps us isolate the specific impact of EJR's rating information on followers' trading.

Second, it is still possible that followers, who are identified as showing abnormal trading surrounding rating changes like EJR's, may intrinsically respond more strongly to any confounding credit information than non-followers. In this case, non-followers' trading patterns cannot serve as a valid control, and our difference-in-differences results would simply reflect different trading patterns of the two groups of investors. To address this concern, we repeat our analyses in the context of S&P followers. We identify S&P followers using the same algorithm as for EJR followers. If followers of credit ratings are simply the ones who react more strongly to any confounding information than non-followers, then the trading patterns we observe for EJR followers should also show up for S&P followers. However, this is not what we find. The trading behavior of S&P followers is in stark contrast to that of EJR followers: S&P followers do not rely more on S&P's advice than any of the other trading signals relative to non-S&P followers, regardless of their relative timing, direction, and informativeness. Hence, it is the investor-paid, rather than the issuer-paid ratings, that have the greatest influence on investor trading.

Third, we focus on a subset of EJR rating changes that cross the investment-speculative grade threshold. EJR's cross-threshold rating changes indicate significant changes in the underlying firms' credit condition, which are often confirmed by subsequent cross-threshold rating changes from the Big 3 CRAs (Moody's, S&P, and Fitch).[4] If EJR followers trade specifically on EJR's rating information, instead of concurrent confounding information (which may not be

[4] Prior studies have shown that EJR's rating changes can predict same-direction rating actions from the Big 3 CRAs (see, e.g., Beaver, Shakespeare, and Soliman 2006; Bruno, Cornaggia, and Cornaggia 2015).

clearly mapped to cross-threshold rating changes), they should react particularly strongly to cross-threshold EJR rating changes. This is indeed what we find. In contrast, we show that non-followers do not exhibit heightened trading activities to cross-threshold rating changes.

Taken together, EJR information has a significant impact on investors' trading, which seems to go beyond that of conventional trading signals; this information ultimately leads to real investment value for its followers and allow them to outperform others. These findings have important implications on the viability of investor-paid rating services. While EJR appears to mainly attract small institutions and operate on a relatively small scale at present, the significant influence they have on investor trading, as well as the superior investment performance resulting from such influence suggest that EJR ratings are likely to build up the reputation, and garner greater investor demand and recognition in the long run. The sizable information value produced by these ratings may help increase the accuracy of issuer-paid ratings (Xia, 2014; Bongaerts, 2016). Eventually, the overall quality of the rating industry may improve as a result.

Our paper is also related to the burgeoning literature that examines how the interplay among various participants in the rating industry influences ratings' information content. In particular, this literature mainly focuses on how ratings' informational value varies with issuer characteristics and rating agency attributes (e.g., Becker and Milbourn, 2011; Kedia, Rajgopal, and Zhou, 2013; Chava, Ganduri, and Ornthanalai, 2015). Different from these studies, we focus on the equally important participants – institutional investors, who are the ultimate consumers of credit ratings, and show that investor-paid ratings have real investment value. This finding therefore provides an interesting contrast to the existing literature that finds mixed evidence on the investment value of equity or credit research by sell-side analysts, which is similarly paid by investors but subject to conflicts of interest due to investment banking and brokerage business with the covered firms.[5]

[5] For example, several studies show that sell-side analyst recommendations can influence investor trading and equity price (see, e.g., Stickel 1995, Womack 1996, Jegadeesh et al. 2004, Johnston et al., 2009, Gurun et al., 2016; and

The rest of the paper proceeds as follows. Section 1 describes the institutional background of investor-paid ratings, data sources and sample construction. Section 2 analyzes institutional trading around EJR rating changes to examine which and how investors are influenced by these ratings. Section 3 conducts robustness analyses. Section 4 examines whether followers of investor-paid ratings benefit from relying on this information. Section 5 concludes.

1. Institutional background, data and sample construction

Traditionally, credit rating agencies generate a large part of their revenues from the issuers they rate. In recent years, a few new rating agencies, such as the Egan-Jones Rating Company (EJR), have emerged to adopt the investor-paid model, under which they receive subscription fees from investors. [6] EJR started providing firm-level credit ratings in 1995.[7] Since its inception, it has covered a large number of companies in the industrial, financial, and service sectors. As of 2011, EJR had rated approximately 60% of all U.S. public firms rated by S&P (80% in terms of -total assets), spanning almost 60 industries (see, e.g., Xia, 2014).

Under the investor-paid model, EJR claims that it "delivers highly accurate ratings with predictive value for equity, debt, and money market portfolios and has no conflicts of interest." Adding credibility to this claim, EJR has successfully predicted the demise of Enron, WorldCom, and more recently, Lehman Brothers, ahead of major issue-paid rating agencies. As a result, EJR's rating services have attracted significant attention from both the media and practitioners (Greenberg, 2002; Lindorff, 2011; Morgenson, 2002).[8] In 2007, the SEC granted EJR the NRSRO

Gillete, 2017), while others find that their recommendations often piggyback on common news or return predictors, and thus do not materially impact investment outcomes (see, e.g., Altınkılıç and Hansen, 2009; Loh and Stulz 2011).

[6] EJR subscribers pay a moderate annual fee ranging from $12,750 to $150,000 depending on their size.

[7] EJR does not provide ratings for individual bonds of firms.

[8] EJR employs only a handful of credit rating analysts, in contrast to the Big 3 CRAs that typically employ a large number of rating analysts. However, we note that more rating analysts are not necessarily associated with more informative ratings. For example, as shown in Cornaggia and Cornaggia (2013), Rapid Rating, another investor-paid rating company, does not employ any rating analysts at all, but provides more timely and accurate ratings than Moody's.

(Nationally Recognized Statistical Ratings Organizations) title, certifying it as a "nationally recognized" rating agency that provides "credible and reliable" ratings.[9]

We obtain EJR's historical rating information for the period of July, 1999 (the starting point of EJR's rating database) to December, 2010.[10] Our data includes EJR's new rating assignments, upgrades, and downgrades for all EJR covered firms as well as the date of each rating action of EJR.[11] Since we are interested in corporate ratings, we exclude EJR's sovereign and asset-backed securities (ABS) ratings. We next collect S&P's corporate credit ratings from S&P's RatingXpress data services. This database contains detailed information on S&P's rating actions for all S&P covered firms dating back to the 1920s. We only keep S&P ratings that are requested and paid for by issuers (i.e., solicited ratings).[12] To compare investors' trading responses to EJR versus S&P rating changes for the same set of firms, we merge EJR and S&P ratings using both tickers and company names. We then match these firms to Compustat and CRSP for accounting and stock information. Our final rating sample consists of 1,135 firms.

Table 1 column (1) presents descriptive statistics of this sample. For comparison, we report summary statistics for all U.S. public firms rated by S&P but not by EJR during the same period in column (2). A comparison between column (1) and column (2) indicates that our sample firms rated by EJR are, on average, larger than firms rated by S&P only, as measured by total book assets, market capitalization, and sales. This is consistent with EJR's policy to cover relatively large firms. These firms also have lower leverage and higher profitability. Hence, EJR rated firms appear to be less risky and more established firms.

[9] It is worth mentioning that EJR was under regulatory scrutiny in 2012, leading to a settlement with the SEC under which the SEC would stop certifying EJR's ratings on governments and asset-backed securities for 18 months (http://dealbook.nytimes.com/2013/01/22/egan-jones-barred-for-18-months-on-some-ratings/). This event, however, was related to EJR's mis-registration of its ratings on asset-backed securities and government bonds, rather than criticisms on its rating quality. In addition, as explicitly indicated by the SEC, EJR's corporate ratings, which are the focus of our paper, are not affected by the settlement and will continue to entitle the NRSRO designation.

[10] We thank the Egan-Jones Rating Company for sharing its historical rating data. We particularly thank Peter Arnold and Chris Bauman at Egan-Jones Rating Company for their help with data collection.

[11] We exclude firms with only an initial EJR rating that has not been revised ever since.

[12] See Fulghieri, Strobl, and Xia (2014), and Sangiorgi and Spatt (2016) for more details on solicited and unsolicited ratings.

We obtain information on institutional equity trading from Ancerno Ltd. (formerly the Abel/Noser Corporation), a consulting firm that specializes in analyzing the trading costs for institutional investors. This database records detailed institutional equity trading information, including the underlying stock traded, the direction (buy or sell), size, date, and execution price of each transaction. It covers trades of a representative set of institutional investors, including some of the sizable ones like Fidelity Investments and Putman Investments. According to the existing studies, Ancerno institutions account for a significant proportion of the total CRSP trading volume and the stocks traded by Ancerno institutions have characteristics that are similar to those traded by 13-F filing institutions (Puckett and Yan, 2011; Anand, Irvine, Puckett, and Venkataraman, 2012, 2013). Because of its sizable and representative coverage, this dataset has been used by many studies to analyze institutional trading.[13]

Ancerno provides a combination of identification codes for each transaction submitted by its clients.[14] Among them, the manager code corresponds to the specific money management company conducting the trades for one or multiple funds under its management. Because Ancerno does not provide a consistent identifier for individual funds over time and because we are interested in learning how institutional trading is affected by investment research, which is usually conducted and distributed at the fund family level, we aggregate all trades of a particular stock in a given period by each money management company using the Ancerno manager code. After merging our rating sample with the Ancerno database, we obtain a sample of equity trades for 1,053 EJR rated firms by 565 unique Ancerno managers. These trades constitute the sample we use to examine the influence of rating changes on institutional trading.

Table 2 reports summary statistics for rating changes in our sample. Panel A describes EJR's and S&P's rating scales. EJR employs the same 21-notch rating scale as S&P, namely from *AAA* to *D*. An *AAA* rating indicates the lowest credit risk, and a D rating indicates default.

[13] See, for example, Chemmanur et al. (2009), Goldstein et al. (2009), Hu (2009), Chemmanur et al. (2010), Hu et al. (2014), and Brown, Wei and Wermers (2014).
[14] A reporting client could be a fund manager managing a single fund or multiple funds, or a plan sponsor.

Therefore, a rating migration from the *AAA* end of the rating spectrum to the *D* end indicates a rating downgrade, and a rating migration in the opposite direction indicates a rating upgrade. The magnitude of a rating downgrade or upgrade is captured by the number of notches a rating has changed.

Panel B of Table 2 reports distributional statistics of EJR and S&P rating changes. Our sample consists of 6,148 firm-quarters with EJR rating changes, of which 2,627 are upgrades and 3,521 are downgrades. The magnitude of EJR revisions is mostly around one notch, consistent with existing studies (see, e.g., Beaver, Shakespeare, and Soliman, 2006; Bruno, Cornaggia, and Cornaggia, 2016). Similar statistics are observed among S&P's rating revisions.

2. Institutional trading around EJR rating changes

2.1. Which institutional investors are influenced by EJR ratings?

We first identify which type of institutional investors is most influenced by EJR ratings, i.e., the EJR followers. Our identification procedure is based on a straightforward intuition: followers should consistently have abnormal trades around EJR's rating changes.

Specifically, for each EJR rating change of a firm, we calculate an institution's net trading imbalance (in dollars) of the firm's stock during the event window of [0, 5], scaled by the stock's one-month-lagged market capitalization. Here day 0 is the date of EJR's rating revision. We include investors' trading responses up to day 5 so that we can adequately account for the gradual dissemination of EJR information through channels such as media releases and word-of-mouth (due to EJR's semi-private nature), while avoiding capturing confounding information that might arrive in longer windows.[15]

[15] In about 8% of our sample firm-quarters, a firm has more than one rating revision from EJR during a quarter. In these cases we aggregate each institution's event-window, market-cap scaled net trading imbalance corresponding to all of EJR's rating changes in the quarter. We do so to capture each institution's overall trading activity in response to a cluster of rating changes by EJR during the same quarter, which could simply reflect the same information that triggers a sequence of rating actions.

We then similarly calculate an institution's net trading imbalance associated with each S&P rating change for the same firm in the same quarter, and use it as the benchmark to control for institutions' common trading responses to concurrent public credit information for the same firm in the same quarter.[16] Because EJR and S&P's rating revisions do not tend to cluster within days (e.g., Bruno, Cornaggia, and Cornaggia, 2016), institutional trading around S&P rating changes provides a relatively clean benchmark that would not confound our measure of institutions' trading surrounding EJR rating changes.[17] We therefore define an institution's abnormal trades around EJR rating changes as the difference between its net trading imbalance around EJR rating changes and S&P rating changes. If an investor has abnormal buys for EJR upgrades or abnormal sells for EJR downgrades for the majority (i.e., over 50%) of firms in each quarter, persistently for at least four consecutive event quarters, we classify this investor as an *EJR follower* during the entire period spanning the four event quarters.[18]

Among all the fund management companies in our sample identified by the Ancerno manager code, 94 of them are classified as an EJR follower for at least one quarter during our sample period. It is worth noting that Ancerno does not provide a consistent identifier for individual funds, and a manager reporting to Ancerno could be a fund manager managing a single fund (e.g., a standalone hedge fund) or a large money management company managing multiple funds (e.g., Putnam). Therefore, we cannot draw inferences on EJR's market share based on the proportion of followers that we identify.

In Figure 1, we plot EJR followers' trading activities surrounding EJR rating changes. Panel A plots EJR followers' average trading imbalance from five days before an EJR rating

[16] We employ S&P ratings as a representative of issuer-paid ratings. Prior studies show that there exists no systematic difference in the quality and timeliness of ratings from S&P, Moody's and Fitch. Therefore, we do not expect the choice of S&P ratings as the benchmark to bias our results in any particular direction.

[17] Indeed, we find that only about 8% of S&P rating changes in our sample occur within the [0, 5] window of EJR's rating revisions. We drop such cases when identifying EJR followers.

[18] This four-quarter requirement is consistent with our observation (unreported) that an institution typically exhibits abnormal trading around EJR rating changes for at least four consecutive event quarters. In addition, if an institution has abnormal trading around an EJR rating change for a particular stock in a quarter, it typically shows abnormal trading for more than 70% of all stocks revised by EJR in that quarter.

change through five days after. The x-axis depicts days relative to day 0. For ease of presentation, we sign each institution's trading imbalance during a period as positive if it is a net buy associated with an upgrade or a net sell associated with a downgrade, and as negative if it is in the opposite direction to the rating change. The y-axis denotes EJR followers' signed, market-cap scaled dollar trading imbalance (in basis points). To reduce noise in daily trading activities, we plot the three-day moving average of daily trading imbalance.

Panel A of Figure 1 indicates that followers' trades stay generally flat throughout the five days prior to an EJR rating change. But they elevate significantly starting from the day of the rating change. It suggests that our identification of EJR followers effectively captures investors who actively trade on EJR rating changes, instead of those who trade in the opposite direction of S&P rating changes – the benchmark we use. Moreover, Panel B of Figure 1 checks the robustness of the follower identification by using the alternative event window of [-2, 5] (instead of [0, 5]) to measure institutions' abnormal trading responses. This window therefore accounts for potential information leakage before rating agencies' actual rating releases. Comparing Panel A and Panel B, it is clear that followers identified using either window exhibit similar trading patterns. In fact, the EJR followers identified using these two alternative ways overlap approximately 92% with each other. Because our EJR follower identification and main results are not sensitive to the alternative window, we only report results using EJR followers identified using [0, 5] for the rest of the paper.

Table 3 Panel A summarizes characteristics of EJR followers and the stocks they trade, as compared to non-EJR followers. We characterize an institution's size using its total dollar trading volume (in millions of U.S. dollars, $M) standardized by the total number of trades during the past four quarters.[19] We proxy the net money inflows to an institution with its net buying activities (in $M) during the past four quarters. To gauge the diversity of an institution's trading portfolio, we compute the quarterly average number of stocks traded by each institution during the past four

[19] We use trading volume to proxy for fund size because we do not have information on institutions' holdings.

quarters. We also calculate the average proportion of traded stocks that are covered by EJR, and the average proportion of trades involving stocks with EJR ratings that are different from, lower than, and higher than S&P ratings in the past four quarters (denoted as *Split rating*, *S&P more favorable*, and *S&P less favorable,* respectively). Lastly, we calculate the average difference between EJR and S&P ratings for stocks traded by an institution during the past four quarters (denoted as *Rating difference*).

Several observations in Panel A of Table 3 are worth noting. First, EJR followers are evidently smaller than non-followers, as reflected by their smaller average size of trades and number of trades. They also tend to have smaller fund inflows and hold a smaller number of stocks, although these differences are less significant. It suggests that followers seem to be smaller institutions with limited in-house research. Indeed, followers tend to rely more on external research providers such as EJR and S&P, as indicated by the higher value *EJR covered* and *S&P covered*. Second, EJR followers trade more stocks that have split S&P and EJR ratings (i.e., larger *Split rating*). Comparing the two variables *S&P more favorable* and *S&P less favorable*, it is evident that followers' larger proportion of traded stocks with split ratings mostly arises from S&P ratings being more favorable than EJR's. Consistent with this observation, *Rating difference* of followers is almost three times larger than that of non-followers. It indicates that the stocks traded by followers have more favorable ratings from S&P (relative to EJR) than those traded by non-followers. Taken together, followers tend to rely on EJR ratings for valuable credit information, particularly when they perceive firms are likely overrated by issuer-paid raters.

Conditional on an institution being a follower, Table 3 Panel B examines under what circumstances the follower relies more on EJR's information. We consider three cases. First, we consider firms' financial conditions. Credit information is more relevant to equity valuation when firms are financially distressed. In this case, we expect followers to rely more on EJR's advice. We measure the degree of financial distress using profitability (measured by return on assets), interest coverage ratio (measured as EBITA divided by total interest expenses), and Altman's Z-

score. In the first three rows of Table 3 Panel B, we report followers' signed, market-cap scaled dollar trading imbalance during the [0, 5] event window (in basis points), separately for two groups of firms, depending on whether their financial distress measures are above or below the median (calculated for each quarter). They show that followers trade more strongly in response to EJR ratings for firms with lower profitability, lower interest coverage ratios, and lower Altman's Z-scores.

Second, we consider firms' performance uncertainty. Firms with greater performance uncertainty are more difficult to value. In this case EJR's information again becomes more valuable. We capture firms' performance uncertainty using volatility of profit growth (measured as the volatility of the firm's quarterly growth in return on assets during the 12 quarters ending as of the current quarter) and idiosyncratic volatility (measured as standard deviation of the residual returns from regressing daily stock returns onto contemporaneous and three lags of daily returns to CRSP value-weighted index using daily returns of the current quarter).[20] In rows (4) and (5) of Table 3 Panel B, we see that followers respond more strongly to EJR information when firms have higher performance uncertainty.

Third and more generally, we expect that EJR advice adds more value if a firm has opaque information environment. We capture firms' information environment using firm size (i.e., the current-quarter total market capitalization) and analyst coverage (i.e., the average number of stock analysts covering a firm). Rows (6) and (7) indicate that institutions exhibit significantly larger trading imbalance around EJR rating changes for firms with opaque information environment, that is, for smaller firms and firms with low analyst coverage.

2.2. How are EJR followers influenced by EJR's ratings?

We next examine the nuances of followers' reliance on EJR information. Specifically, we analyze how EJR ratings influence followers' trading in the presence of three well-documented

[20] We measure the volatility of profit growth, instead of the volatility of profitability, because our sample of EJR covered firms mostly consists of profitable firms, where the within-firm variation in profitability is limited.

equity trading signals: (a) earnings announcements, (b) sell-side analyst earning forecast revisions and (c) analyst recommendations. We do so to evaluate the significance of EJR's influence on follower trading, relative to these other influential signals.

2.2.1. Earnings announcements and followers' reliance on EJR rating changes

We first examine how followers trade on EJR ratings in the presence of earnings announcements – an influential equity trading signal that triggers significant market reactions (e.g., Ball and Brown, 1968; Bernard and Thomas, 1989; Chan, Jegadeesh and Lakonishok, 1996; and Fama, 1998). We compare followers' trading reactions to EJR rating changes versus earnings announcements depending on their relative timing – whether an EJR rating change precedes or follows the firm's earnings announcement. This analysis helps us understand how followers' reliance on EJR's advice interacts with their use of earnings information.

We obtain firms' earnings announcements from Compustat. To ensure that institutions' trading responses to earnings announcements are comparable with their responses to EJR rating changes, we first pair each earnings announcement with the most adjacent EJR rating change that either precedes or follows the earnings announcement of the same firm during the 90-day period surrounding the earnings announcement date (i.e., 45 days before or 45 days after the earnings announcement).[21] We next limit our sample to firm-quarters with large earnings surprises (i.e., above the sample median) so that both earnings announcements and rating changes are more likely to be related to material earnings information.[22] We consider earnings announcements associated with positive market adjusted abnormal returns during the window of [-2, 2] as good news events, and those associated with negative market reactions as bad news events. We sign net buying

[21] We exclude earnings announcements that are surrounded by EJR rating changes within 5 days (i.e., five days before till five days after) because in these cases we cannot clearly attribute the institutions' specific trading reaction to either event. These cases account for approximately 5% of our sample.

[22] We define earnings surprises as the change in split-adjusted earnings per share (EPS) from quarter *t-3* to *t* divided by the standard deviation of the 4-quarter EPS change. The standard deviation of the 4-quarter EPS change is measured using the 4-quarter EPS changes during past 8 quarters, with a minimum of 4 quarters of observations required.

(selling) activities following good (bad) news earnings announcements as positive, and those in the opposite direction as negative.

The top section of Table 4 reports EJR followers' dollar trading (scaled by market capitalization, in basis points) surrounding EJR rating changes versus earnings announcements in two separate cases: when an EJR rating change precedes the firm's earnings announcement, and when an EJR rating change follows the firm's earnings announcement. As shown in column (1) of this section, when an EJR rating change precedes the firm's earnings announcement, followers only significantly react to EJR rating changes, but not to (or even in the opposite direction to) the subsequent earnings announcement (i.e., a significant 0.305 versus an insignificant -0.206). On the other hand, when an EJR rating change is issued following the corresponding earnings announcement (column (2)), followers' reactions to the EJR rating change are still significant and are comparable in magnitude to their reactions to the earnings announcement (i.e., a significant 0.303 versus a significant 0.365).

This asymmetric pattern has two implications. First, followers seem to perceive EJR ratings as containing valuable information on firms' earnings prospect such that it may even substitute for the value of the actual earnings announcements. This information leads EJR followers to trade ahead of earnings announcements. Second, although EJR information may substitute for that of earnings announcements, the reverse is not true: EJR followers do not perceive earlier released earnings announcements as completely subsuming the informational value of subsequent EJR rating changes. We obtain similar interpretations when examining followers' trading during the [-2, 5] window as shown in the top right section of Table 4.

Next, we formalize the above univariate analysis in the regression setting, where we conduct a *pairwise* comparison between followers' reactions to EJR rating changes and earnings announcements of the same firm. We estimate the following model:

$$Trades_{i,n,t} = \alpha + \beta_1 EJR\ changes_{i,n,t} + \beta_2 X_{i,n,t} + \Upsilon_1 Announcement - rating\ change\ pair\ fixed\ effects + \Upsilon_2 Insitution\ fixed\ effects + \epsilon_{i,n,t}, \quad (1)$$

where *i* indexes firms, *n* indexes institutions, and *t* indexes event quarters. The dependent variable is followers' signed trades around adjacent earnings announcements and EJR rating changes. The main explanatory variable of interest is *EJR Changes* that equals 1 if the trade corresponds to an EJR rating change, and 0 if it corresponds to an earnings announcement. It captures whether institutions trade differently in response to the two signals. *X* denotes a vector of fund characteristics that may affect institutional trading. *Announcement-rating change pair fixed effects* denote fixed effects for each pair of earnings announcement and EJR rating change. Because all the paired earnings announcements and EJR rating changes in our sample occur in the same firm-quarter, these *pair fixed effects* subsume *firm-quarter fixed effects*. They hence control for firm-specific factors that are associated with institutional trading of a firm in a given quarter, such as the firm's earnings surprises and stock performance. Lastly, *Institution fixed effects* are indicators for Ancerno institutions.

The regression results are reported in the lower section of Table 4. The positive and significant coefficient of *EJR changes* in column (1) indicates that when an EJR rating change occurs before the corresponding earnings announcement, EJR followers react significantly more strongly to the former than to the latter. The magnitude of this difference, 0.512, is consistent with the contrast we observe in the univariate tests. It is economically sizable given that followers' unconditional trading reactions to EJR rating changes and earning announcements in the [0, 5] event window are 0.191 and 0.181 respectively, yielding a difference of only 0.01. In contrast, when an EJR rating change is released after the earnings announcement, followers react similarly to these two information events, as indicated by the insignificant coefficient of *EJR changes*, -0.062, in column (2).

In columns (3) and (4), we control for various institution characteristics. We control for institution size (as measured by the average dollar trade size, *Trading size*) and fund flows (as measured by an indicator variable for whether an institution has made net purchases during the same period, *Inflows*). In addition, we include an institution's net trades from 10 days before to 6

days before each event (*Trade [-10, -6]*). This variable would capture certain time-varying fund characteristics, such as managerial skills and investment styles, which may not be picked up by *Announcement-rating change pair fixed effects* or *Institution fixed effects*. The coefficient of *EJR changes* in column (3) is 0.650 and remains statistically and economically significant, whereas the coefficient of *EJR changes* in column (4) is a statistically insignificant -0.103. In columns (5) to (8) of Table 4, we repeat the analyses using followers' trading during the [-2, 5] window. Our results remain.

In unreported analyses, we find that followers have stronger trading reactions to an EJR rating change than to the subsequent earnings announcement no matter whether the rating change is an upgrade or downgrade. This finding is consistent with Bruno, Cornaggia, and Cornaggia (2016), who show that EJR releases positive and negative credit information in a symmetric manner and both types of rating actions contain valuable information.

2.2.2. Analyst earnings forecasts and followers' reliance on EJR rating changes

Given EJR's significant influences on followers' trading reactions to earnings announcements, we next examine how this investor-paid rating advice affects their use of an important trading signal on firms' earnings outlook – sell-side analyst earnings forecasts (e.g., Stickel, 1995; Mikhail, Walther, and Willis, 2007). We examine how followers trade when EJR rating changes and earnings forecast revisions are consistent versus conflicting with each other regarding firms' earnings prospect.

Specifically, we estimate a model similar to Equation (1) and perform a pairwise comparison between followers' reactions to EJR rating changes and earnings forecast revisions. Quarterly earnings forecast revision is measured as the last earnings forecast revisions of each analyst as of the end a fiscal quarter, standardized by prior month stock price and averaged across all analysts. Similar to previous analyses, we first select EJR rating changes that are adjacent to future earnings announcements (i.e., within the 45-day window before the earnings announcement of the same firm) and pair them with earnings forecast revisions in the quarters corresponding to

the same earnings announcements. This helps us ensure that rating changes and forecast revisions pertain to the same recent earnings event. Second, we focus on firm-quarters with significant earnings forecast revisions (i.e., above the sample median). This helps us ensure that both EJR rating changes and earnings forecast revisions relate to material earnings information.

The main explanatory variable of interest is again *EJR Changes*, which equals 1 if the trade corresponds to an EJR rating change, and 0 if it corresponds to an earnings forecast revision. It thus captures followers' differential reactions to the two signals. Like before, we separately estimate this equation under two scenarios to capture the interaction of followers' reliance on the two signals: when an EJR rating change agrees with an earnings forecast revision, i.e., when an EJR upgrade (downgrade) coincides with an upward (downward) forecast revision, and when an EJR rating change disagrees with an earnings forecast revision, i.e., when an EJR upgrade (downgrade) coincides with a downward (upward) forecast revision,

Table 5 presents this pairwise analyses. We present various specifications with and without fund characteristics controls, in event windows of [0, 5] and [-2, 5], respectively. In columns (1), (3), (5), and (7), the positive and significant coefficients of *EJR changes* consistently suggest that when EJR rating changes disagree with analyst forecast revisions, EJR followers rely more on the rating changes than earnings forecast revisions. It indicates that EJR ratings seem to embed valuable information such that followers trade in accordance with EJR's advice when it provides conflicting signals with earnings forecast revisions. On the other hand, when the two trading signals agree with each other, followers react similarly to them, as suggested by the insignificant coefficients of *EJR changes* in columns (2), (4), (6), and (8).

These observations, combined with the results in Section 2.2.1, suggest that EJR's rating advice significantly influences followers' use of earnings announcements and earnings forecast revisions. This finding may appear surprising at first sight since EJR ratings are directly related to firms' credit information. However, it echoes an important rating principal from EJR's rating guidelines, which states that expected operating performance and cash flows constitute important

determinants of firms' credit worthiness (see, e.g., Egan-Jones Rating Company, 2015). Our findings suggest that investor-paid rating advice incorporates important earnings information beyond other influential earnings related trading signals. As such, it may afford followers an informational advantage to outperform. We examine this prediction in Section 4.

2.2.3. Analyst recommendation changes and followers' reliance on EJR rating changes

Lastly, we analyze how EJR ratings affect followers' use of another set of investment advice that has been shown to significantly influence institutional trading – sell-side analysts' recommendations (e.g., Mikhail, Walther, and Willis, 2007; Brown, Wei and Wermers, 2014). We compare followers' trading reactions to EJR rating changes and analyst recommendation changes, when analyst opinions are ambiguous versus informative.

We obtain sell-side analyst recommendations from the IBES detailed recommendation history database, and classify recommendation changes into three groups: upgrade, downgrade, and no change. We focus on analyst recommendations occurring in the same quarter as EJR rating changes.[23] When there are multiple analyst recommendation changes in a firm-quarter, we aggregate an institution's trading surrounding these analyst recommendations to the firm-quarter level. Like before, we limit our attention to a subset of analyst recommendations issued in firm-quarters with large earnings surprises, so that both analyst recommendations and the corresponding rating changes relate to material earnings information.

We estimate a model similar to Equation (1), with the dependent variable capturing followers' signed trades surrounding EJR rating changes and analyst recommendation changes. We again separately estimate this equation under two scenarios: when analyst recommendation changes in a quarter are unanimous (i.e., unanimous buy or sell recommendations) versus diverse (i.e., a mix of buy and sell recommendations). The main explanatory variable of interest is *EJR Changes* that equals 1 for trades corresponding to EJR rating changes, and 0 for those

[23] When computing an analyst's recommendation change on a particular stock, the analyst's prior recommendation is considered as valid if it is dated within the past 360 days.

corresponding to recommendation changes. This variable captures whether followers respond differently to the two signals. We control for the same set of institution characteristics used in Equation (1) along with institution and firm-quarter fixed effects.

Table 6 presents the analyses. Columns (2), (4), (6) and (8) show that when analysts all speak with one voice, followers' trades are slightly more influenced by analyst recommendations than by EJR ratings. However, when analysts' opinions are diverse, followers react significantly more to EJR rating changes than to analyst recommendation changes (see the significant positive coefficients of *EJR changes* in columns (1), (3), (5), and (7)). In untabulated analyses, we verify that in this case, the difference is driven by followers' significant trading reactions to EJR rating information in conjunction with their muted reactions to analyst recommendations. Hence, not only do EJR ratings substitute for earnings information as shown earlier, they also appear to substitute for the investment advice from influential information providers like sell-side analysts, particularly when their opinions are diverse.

3. Addressing potential concerns regarding confounding factors

EJR followers' trading surrounding EJR rating changes may be confounded by other factors. For example, concurrent firm disclosures or credit ratings by other rating agencies (like S&P, Moody's or Fitch) may affect both EJR rating changes and institutional trading. In this case, followers' trading activities surrounding EJR rating changes may not be entirely attributed to EJR's information value. We take several steps to address this concern.

3.1. Difference-in-differences tests

We start by performing a difference-in-differences test. We use non-followers' trading patterns as benchmark, and compare followers' differential trading activities surrounding EJR rating changes versus three other trading signals – earnings announcements, earnings forecast revisions, and analyst recommendation changes (the first difference) to those of non-followers (the second difference). To the extent that follower and non-followers have similar trading reactions to

confounding factors, such as concurrent credit information, the difference-in-differences analyses will help us identify the marginal impact of EJR information on investor trading.

Table 7 presents the difference-in-differences analyses, separately for earnings announcements, earnings forecast revisions, and analyst recommendations. We apply the same set of filters as in Sections 2.2.1 to 2.2.3 to construct the sample for this analysis. To conserve space, we only report analyses using the event window [0, 5], and confirm all results using the alternative window of [-2, 5]. Columns (1) and (2) show results pertaining to earnings announcements. Specifically, we estimate an augmented model of Equation (1) by including an interaction term between *EJR changes* and *EJR followers* as follows:

$$Trades_{i,n,t} = \alpha + \beta_1 EJR\ changes_{i,n,t} * EJR\ follower_{i,n,t} + \beta_2 EJR\ changes_{i,n,t} + \beta_3 EJR\ follower_{i,n,t} + \beta_4 X_{i,n,t} + \Upsilon_1 Announcement - rating\ change\ pair\ fixed\ effects + \Upsilon_2 Insitution\ fixed\ effects + \epsilon_{i,n,t}. \quad (2)$$

Similar to Equation (1), the dependent variable is signed trades around adjacent earnings announcements and EJR rating changes. Different from Equation (1), this model is now estimated using the trades of both EJR followers and non-followers. *EJR follower* is a dummy variable indicating whether an institution is an EJR follower. The main explanatory variable of interest is the interaction term, *EJR changes * EJR follower*. It captures whether investors' differential trading reactions to EJR rating changes versus earnings announcements (the first difference) are different between followers and non-followers (the second difference). If followers respond more strongly to EJR's specific rating information than to earnings announcements beyond institutions' common reactions to confounding factors, we expect β_1 to be significantly positive.

This is indeed what we find. In column (1), when EJR rating revisions precede earnings announcements, the coefficient of *EJR changes * EJR follower* is 0.671 and is statistically significant at the 5% level. In contrast, in column (2), when EJR rating revisions follow earnings announcements, the coefficient of *EJR changes * EJR follower* becomes insignificant (-0.025). Hence, followers seem to regard EJR's information as being able to substitute for that of earnings announcements.

In columns (3) and (4), we present the difference-in-differences analyses related to analyst earnings forecast revisions. We estimate a model similar to Equation (2), replacing the dependent variable with signed trades around adjacent earnings forecast revisions and EJR rating changes. The main explanatory variable is again the interaction term, *EJR changes * EJR follower*, which captures whether investors' differential trading reactions to EJR rating changes versus earnings forecast revisions vary across followers and non-followers.

The positive and significant coefficient of *EJR changes * EJR follower* in column (3), 1.402, indicates that relative to non-followers, EJR followers exhibit stronger trading responses to EJR rating changes than to earnings forecast revisions when the signals disagree with each other. In contrast, we observe no differential trading responses between follower and non-followers when the two signals agree (see the insignificant coefficient 0.123 of *EJR changes* EJR followers* in columns (4)). Hence, when they provide conflicting information about firm fundamentals, followers appear to put more weight on EJR's advice than earnings forecast revisions.

Lastly, in columns (5) and (6), we present the difference-in-differences analyses regarding analyst recommendation changes. The results corroborate our earlier interpretation. Relative to non-followers, followers rely more on EJR's information than analyst recommendation changes when analyst opinions are diverse (see the significantly positive coefficient of *EJR changes* EJR followers* in column (5), 0.512). This pattern, however, is not observed when analyst opinions are unanimous (see the insignificant coefficient -0.132 of *EJR changes* EJR followers* in column (6)).

3.2. The influence of S&P ratings on S&P followers

The validity of the difference-in-differences analyses hinges on the assumption that followers and non-followers have similar trading reactions to confounding factors. However, one may argue that followers, who are identified to exhibit abnormal trading surrounding rating changes like EJR's, may intrinsically respond more strongly than non-followers to any confounding credit information. If this is the case, non-followers' trading activities would not serve as a valid control, and our difference-in-differences results would simply reflect the differential

reactions of follower and non-followers to the confounds.

To address this concern, we repeat our difference-in-differences analyses in the context of S&P followers. That is, we test whether S&P followers, identified using the same algorithm as for EJR followers, significantly rely on S&P's advice in a similar way as EJR followers. If followers of credit ratings are simply the ones who react more strongly to any confounding information by definition, then the trading patterns we observe for the EJR followers should also show up for S&P followers.

To identify S&P followers, we look for investors who consistently exhibit abnormal trades surrounding S&P rating changes, using institutions' trades surrounding EJR rating changes as the benchmark. We follow the same algorithm as in Section 2.1, except that we now use institutions' trading responses during the window of [-5, 5], instead of [0, 5] window, to measure abnormal trades around S&P rating changes. We do so to account for the potential influence of S&P rating changes on institutional trading before they are formally announced. This is relevant as S&P rating announcements are typically delayed and are preceded by considerable information leakage (see, e.g., Bruno, Cornaggia, and Cornaggia, 2016). Among our sample institutions, about 2% are identified as both S&P followers and EJR followers. We drop these institutions when analyzing S&P followers' trading. [24]

In Table 8, we report analyses parallel to those in Table 7. That is, we compare S&P followers' trading responses to S&P rating changes versus earnings announcements, earnings forecast revisions, and sell-side analyst recommendations, respectively. As before, we only report results based on the [0, 5] event window for brevity.

Columns (1) and (2) examine how S&P followers react to adjacent S&P rating changes and earnings announcements. The variable of interest, *S&P changes * S&P follower*, captures whether S&P followers exhibit differential reactions to S&P rating changes versus earnings

[24] In unreported analyses, we find that followers of S&P ratings also tend to be smaller ones. They hold less diverse portfolios according to the number of stocks traded.

announcements beyond those of non-followers. The result is in stark contrast to those in Table 7. Regardless of whether an S&P rating change is before or after an earnings announcement, the coefficient of *S&P changes * S&P follower* is always statistically insignificant. This finding suggests that S&P followers do not perceive S&P ratings as having significant value in predicting firms' earnings prospects. In columns (3) to (6), we run a similar difference-in-differences analyses related to analyst earnings forecast revisions and analyst recommendation changes. Not surprisingly, we observe insignificant coefficients of *S&P changes * S&P follower* for all specifications.[25]

Taken together, the results shown in Table 8 have several implications. First, it indicates that our difference-in-differences results in Table 7 do not merely reflect different trading patterns between EJR followers and non-followers surrounding confounding credit information. Second, the contrast in EJR and S&P followers' trading behavior also helps alleviate a concern originating from our follower definition. That is, since we identify EJR followers as those consistently trading on EJR's information, they may, by design, respond more to EJR's rating changes than any other signals like earnings announcements, earning forecast revisions, or analyst recommendations. If this is the case, we would see that compared to non-S&P followers, S&P followers should also respond more strongly to S&P rating changes than to other signals. This, however, is not what we find.[26] Hence, it is investor-paid, rather than issuer-paid, rating information that influences followers' trading, which is likely due to its perceived informational advantage over other trading signals.

3.3. EJR rating changes across the investment-speculative grade threshold

[25] In unreported analyses, we perform an estimation using only S&P followers' trading reactions as the dependent variable and *S&P Changes* as the independent variable of interest, without the difference-in-differences specification. We find a consistent interpretation: S&P followers do not seem to trade on S&P information over earnings announcements, earnings forecast revisions, or recommendation changes.

[26] In addition, our previous finding that EJR's influence on institutional trading vary with the relative timing, direction and informativeness of EJR rating changes also suggests that our findings are unlikely to be mechanically driven by our classification of followers.

In the previous section, our results from the difference-in-differences analyses suggest that EJR followers' trading reactions to EJR rating changes are unlikely to be driven by confounding factors, which should affect both EJR followers and non-followers in similar ways. To further ensure that our findings reflect followers' responses to EJR's specific information, in this section we examine EJR followers' trading activities around rating changes that move ratings across the investment-speculative grade threshold.

Cross-threshold rating changes are typically viewed as particularly important credit events for institutional investors because these changes indicate a significant regime shift in a firm's credit worthiness (Standard and Poor's, 2010; Moody's Investor Service, 2010). Therefore, EJR's cross-threshold rating changes should draw particularly large reactions from investors, particularly given that these rating changes are often confirmed by big rating agencies in the subsequent period (Beaver, Shakespeare, and Soliman, 2006; Bruno, Cornaggia, and Cornaggia, 2015). If EJR followers react directly to EJR's specific rating information , then we should expect them to respond particularly strongly around EJR's cross-threshold rating changes. If their trading activities are simply driven by confounding factors, e.g., concurrent information regarding changes in firms' credit condition, we should not see any elevated reactions because changes in concurrent credit information may not necessarily be clearly mapped to a cross-threshold rating change.

To test this idea, we estimate the following regression for EJR rating changes:

$$Trades_{\,i,n,t} = \alpha + \beta_1 Cross_{i,n,t} + \beta_2 X_{i,n,t} + \Upsilon_1 Quarter\ fixed\ effects + \Upsilon_2 Insitution\ fixed\ effects + \epsilon_{i,n,t}\ . \quad (3)$$

We estimate Equation (3) separately for EJR followers and non-followers. The dependent variable is the net trades of institution *n* during the [0, 5] window around an EJR rating change for firm *i* during quarter *t*. The main variable of interest is *Cross*, which equals 1 if an EJR rating change crosses the investment-speculative threshold, and 0 otherwise. *X* is a vector of firm and fund manager characteristics that may affect investors' trading activities. The firm characteristics we

control for include: *Ln* (*Sales)* is the natural logarithm of the firm's total sales; *Leverage* is the ratio of total debt from the balance sheet to total assets; *M-B ratio* is the ratio of the market value of assets to total book value of assets, where the numerator is defined as the sum of market equity and total debt; and *ROA* is the ratio of operating income before depreciation to total assets. All firm characteristics are measured as of the prior quarter end. The fund manager characteristics we control for are average size of trades (*Trading size*), fund flows (*Inflows*), and fund trading prior to the rating event, all as defined in Tables 4 and 6. Lastly, since cross-threshold rating changes account for around 7% of all EJR rating change, and none of our sample firms has more than one cross-threshold rating change during the entire sample period, we only control for quarter but not firm fixed effects. As before, *Institution fixed effects* are indicators for Ancerno institutions.

Table 9 presents results of this analysis. Columns (1) and (2) show that EJR followers react particularly strongly to EJR's cross-threshold rating changes (see the significant coefficient 0.451 and 0.420 of *Cross* in columns (1) and (2)). Based on column (2), an average EJR follower's trading imbalance is 0.42 basis points (of the firm's market capitalization) higher for firms experiencing cross-threshold rating changes, as compared to that associated with non-cross-threshold rating changes. This effect is economically significant given that the average trading imbalance of EJR followers across all EJR rating changes only amounts to 0.165 basis points of a firm's market capitalization. On the other hand, the coefficients of *Cross* in columns (3) and (4) of Table 7 are insignificant, as non-followers should not significantly respond to EJR's rating changes, whether they are cross-threshold rating changes or not. These observations further indicate that followers are likely to respond to EJR's specific information, instead of confounding common factors.

4. Do EJR followers benefit from following EJR?

In this section, we examine whether EJR followers' reliance on EJR ratings pays off. That is, do EJR ratings generate real investment value? We answer this question by examining the performance of EJR followers relative to that of non-followers.

4.1. Main analyses

We start by analyzing whether EJR followers outperform non-followers in their equity trading. Since we do not observe the reported equity portfolio returns or holdings of our sample institutions, we analyze the performance of trades conducted by these institutions. In each month and for each stock whose rating is revised by EJR, we compute an institution's net trading imbalance of the stock. We then calculate the value-weighted future returns of this institution's trades of all EJR revised stocks in the month over various investment horizons, ranging from one month to twelve months, with the weight being the net dollar trade of the EJR-revised stock normalized by the stock's market capitalization as of the prior month end. We compute the abnormal returns of trades as the Daniel et al. (1997) characteristics-adjusted abnormal returns.

Table 10 reports the abnormal trading performance for EJR followers and non-followers over various horizons. Two observations are notable. First, EJR followers earn significantly positive abnormal returns starting from six months following their trading of EJR revised stocks; these abnormal returns persist and increase as the investment horizon becomes longer. This pattern suggests that EJR's information, which reflects a firm's credit worthiness, seems to impact followers' equity trading performance in the relatively longer term. In contrast, as we document in Section 4.2 below, EJR ratings tend to have a more immediate effect on investors' bond trading performance. Second and more importantly, EJR followers outperform non-followers for all investment horizons. For example, over the 12-month horizon, EJR followers earn a positive abnormal return of up to 4.914%, while non-followers earn a negative abnormal return of -1.409%. As a result, EJR followers outperform non-followers by 6.324% a year, significant at the 1% level.

This superior performance, however, may simply reflect fundamental differences in the two groups of institutions' investment skills, rather than the investment value of EJR ratings. To

investigate this possibility, we perform two additional analyses. First, we compare EJR followers' trading performance before and after they become followers (i.e., EJR followers-to-be versus EJR followers). If EJR's rating information adds value, we should see an improvement in an institution's performance after it becomes an EJR follower. To the extent that institutions' investment skill does not change after it becomes an EJR follower, this time-series test would capture the marginal benefit of becoming EJR followers, and hence EJR ratings' investment value.

Panel A of Table 11 presents the results of this analysis. It reports the performance of EJR followers versus EJR followers-to-be, as well as the change in an institution's performance after it becomes an EJR follower (at the bottom of the panel). An institution's trading performance on EJR revised stocks significantly improves after it becomes an EJR follower. This improvement ranges from 2.146% (for the 1-month horizon) to 8.4% (for the 12-month horizon), and is both economically and statistically significant.

Second, we further consider the possibility that an institution's investment skill might improve coincidentally after it has become a follower. We examine whether the performance improvement of EJR followers-to-be is concentrated on their trading of EJR revised stocks. An overall improvement in an institution's trading skill would lead to better performance across all stocks, whereas EJR's investment value would lead to performance improvement only for EJR-revised stocks.

Panel B of Table 11 shows that the performance improvement of EJR followers-to-be concentrates on EJR-revised stocks. For example, in the 1-month horizon, the performance improvement of non-revised stocks is only 0.306%, and is markedly smaller than that of EJR-revised stocks (2.146%). Moreover, the performance improvement of non-EJR revised stocks does not seem to persist over longer horizons. The difference-in-differences estimates (shown in the bottom row of Table 11) are all statistically significant at the 5% level or better.

For comparison, we also examine the trading performance of S&P followers. We perform both the cross-sectional analysis where we compare the performance of S&P followers with non-

S&P followers, and the time-series analysis where we examine the change in an institution's trading performance before and after it becomes an S&P follower. The results in Table 12 suggest that followers of S&P rating changes do not outperform. There is no material difference between S&P followers and non-followers' trading performance of S&P revised stocks (Panel A). An institution's trading performance also does not improve significantly after it becomes an S&P follower. This result is true for both S&P revised stocks and for non-S&P revised stocks (Panel B). These results corroborate our earlier finding that S&P ratings do not have as much investment value as EJR ratings.

4.2. The value of EJR ratings for bond investment

In our analyses so far, we focus on institutional equity trading, rather than illiquid corporate bond trading. We do so to take advantage of daily equity trading data that allow us to better identify an institution's specific trading response to rating information. This approach relies on the assumption that investors have correlated equity and bond trading reactions to credit information, which has been used in various studies (e.g., Holthausen and Leftwich, 1986; Jorion, Liu, and Shi, 2005; Beaver, Shakespeare, and Soliman, 2006). In this section we perform supplementary analyses to explicitly assess the value of EJR ratings for bond investments.

Because bond trading is sparse by nature and real-time bond returns can only be observed at relatively low frequencies, we estimate EJR ratings' value for bond investment for an average institutional investor, independent of its actual trading.[27] That is, we examine whether a hypothetical investor who purchases bonds of EJR upgraded firms and sells bonds of EJR downgraded firms would earn abnormal returns. This analysis therefore does not rely on the availability of high-frequency bond trading data.

Specifically, we form event-time based bond portfolios, and examine their abnormal holding-period returns during the 1-month, 3-month, 6-month, 9-month, and 12-month windows

[27] For example, Chava, Ganduri and Ornthanalai (2015) show that during the period of 2006 and 2007, an average bond in their sample is traded only 30 days per year.

following individual EJR rating downgrades or upgrades. Similar to Bruno, Cornaggia, and Cornaggia (2016) and Chava, Ganduri and Ornthanalai (2015), we obtain bond price and return information from Trade Reporting and Compliance Engine (TRACE), and calculate abnormal bond returns as the difference between a bond's holding period returns in each event window and those of the Barclay bond index with a similar maturity and credit rating category in the same window.

Panel A of Table 13 reports the average cumulative abnormal returns for bond portfolios formed on EJR rating changes. Prior studies (e.g., Bruno, Cornaggia, and Cornaggia, 2016) show that EJR's positive and negative rating actions are equally informative for equity valuation. To see whether this is also the case for bond valuation, we separately form EJR upgrade and downgrade portfolios. We find that bonds of EJR downgraded firms realize significantly negative abnormal returns, and bonds of EJR upgraded firms realize significantly positive abnormal returns. Unlike the case of equity trading (as shown in Section 4.1 and Table 9), EJR ratings have investment value for bond investments from as early as the one-month horizon, which persists through the 12-month horizon.

In Panel B of Table 13, we perform the same analysis for bond portfolios formed on S&P rating changes. We find that while bonds of S&P downgraded firms realize negative abnormal returns in the 1-month horizon, these returns reverse over the next few months. This pattern is consistent with the regulatory implications of S&P downgrades, which typically put downward pressure on bond prices in the short run.[28] Similarly, bonds of S&P updated firms experience significantly positive 1-month abnormal returns, which do not persist in the long term either.

Lastly, we similarly investigate whether an average institutional investor can profit from EJR's rating changes in equity trading, independent of the actual trades of our sample institutions. That is, we examine whether an investor who purchases stocks of EJR upgraded firms and sells

[28] See, e.g., Kisgen and Strahan (2010), Ellul, Jotikasthira, and Lundblad (2011), and Opp, Opp, and Harris (2013) for more details about regulatory implications of credit ratings.

stocks of EJR downgraded firms would earn significant abnormal returns. Using the approach in Barber, Lehavy, and Trueman (2007), we find (in unreported tests) that this portfolio earns a significant abnormal return of up to 0.86 basis points per month, based on the Carhart (1997) four-factor model.

This result has two implications. First, because EJR's advice can benefit average investors, it addresses the concern that EJR followers' superior performance documented in Section 4.1 might be driven by revealed preference. That is, followers follow EJR's advice because they are precisely the subgroup of investors who profit the most from this advice. Second, given EJR's advice can benefit average investors, the allegation that investor-paid ratings may be biased to cater to the interest of their paid customers does not seem credible.

5. Conclusion

Investor-paid rating agencies have recently emerged as a notable player in the credit rating industry, garnering attention from both the academia and regulators. While several studies have examined the timeliness of investor-paid credit ratings and their ability to predict default, they have not directly addressed the fundamental question of how investor-paid ratings influence investor trading, and whether the *relative* advantage of investor-paid ratings over issuer-paid ratings can translate into real investment value for institutional investors – the ultimate consumers of credit ratings. In this paper, we fill this void in the literature. We study which investors follow investor-paid rating advice, how this advice influences investor trading, and whether investors benefit from following this advice.

Using institutional trading of firms rated by the Egan-Jones Ratings Company (EJR), a representative of investor-paid rating agencies, we show that followers of this investor-paid rating advice tend to be smaller institutions. They rely more on EJR's ratings when their traded stocks are likely overrated by issuer-paid raters; they rely more EJR's ratings when firms are in deeper

financial distress, are harder to value, and face greater information asymmetry; they also respond more strongly to EJR when EJR rating changes cross the investment-speculative grade threshold.

Surprisingly, EJR followers often put more weight on EJR ratings than other important equity trading signals (such as earnings announcements, sell-side analyst earnings forecasts and analyst recommendations) in their trading decisions, depending on their relative timing, direction, and informativeness. This reliance affords followers an informational advantage to outperform non-followers in the cross-section. In the time-series, the performance of an institution also improves substantially after it becomes an EJR follower, and such improvement concentrates on EJR revised stocks. In contrast, S&P's rating information does not have a similarly strong influence on S&P followers' trading, nor does it lead to outperformance of the followers.

Overall, our results suggest that investor-paid rating services have a significant impact on investor trading and are associated with real investment value. Therefore, they have the potential to attract greater investor demand and may help improve the overall quality of the rating industry.

References

Adelino, M., Ferreiara, M., 2016. Bank ratings and lending supply: Evidence from sovereign downgrades. Review of Financial Studies 29, 1709-1746.

Almeida, H., Cunha, I., Ferreira, M., Restrepo, F., 2017, The real effects of credit ratings: The sovereign ceiling channel, Journal of Finance 72, 249–290.

Anand, A., Irvine, P., Puckett, A., Venkataraman, K., 2012, Performance of institutional trading desks: An analysis of persistence in trading cost. Review of Financial Studies 25, 557-598.

Anand, A., Irvine, P., Puckett, A., Venkataraman, K., 2013, Institutional trading and stock resiliency: Evidence from the 2007-2009 financial crisis. Journal of Financial Economics 108, 773-797.

Altınkılıç O., Hansen, R., 2009, On the informativeness of analyst recommendations. Journal of Accounting and Economics 38, 17–39.

Baghai, R., Becker, B., 2018, Non-rating revenue and conflicts of interest. Journal of Financial Economics 127, 94–112.

Ball, R., Brown, P., 1968, An empirical evaluation of accounting income numbers. Journal of Accounting Research 6, 159–178.

Barber, B., Lehavy, R., Trueman, B., 2007, Comparing the stock recommendation performance of investment banks and independent research firms, Journal of Financial Economics 85, 490-517.

Begley, T., 2015. The real costs of corporate credit ratings. Unpublished working paper.

Ben-Rephael, A., Israelsen, R., 2014, Are some clients more equal than others? Evidence of price allocation by delegated portfolio managers. Unpublished working paper, Indianan University.

Bernard, V., Thomas, J., 1989, Post-earnings-announcement drift: Delayed price response or risk premium? Journal of Accounting Research 27, 1–36.

Beaver, W., Shakespeare, C., Soliman, M., 2006, Differential properties in the ratings of certified versus non-certified bond-rating agencies. Journal of Accounting and Economics 42, 303–334.

Becker, B., Milbourn, T., 2011, How did increased competition affect credit ratings? Journal of Financial Economics 101, 493–514.

Bolton, P., Freixas, X., Shapiro, J., 2012, The credit ratings game. Journal of Finance 67, 85–112.

Bongaerts, D., 2016, The economics of investor-paid credit rating agencies. Unpublished working paper, Erasmas University.

Brown, N., Wei, K., Wermers, R., 2014, Analyst recommendations, mutual fund herding, and overreaction in stock prices. Management Science 60, 1-20.

Bruno, V., Cornaggia, J., Cornaggia, K., 2016, Does regulatory certification affect the information content of credit ratings? Management Science 62, 1578-1597.

Carhart, M., 1997, On the persistence in mutual fund performance. Journal of Finance 52, 57-82.

Chan, L.K.C., Jegadeesh, N., Lakonishok, J., 1996, Momentum strategies. Journal of Finance 51, 1681–1713.

Chava, S., Ganduri, R., Ornthanalai, C., 2015, Are credit ratings still relevant? Unpublished working paper, Georgia Tech University.

Chemmanur T, He, S., Hu, G., 2009, The role of institutional investors in seasoned equity offerings. Journal of Financial Economics 94, 384–411.

Chemmanur T, Hu, G., Huang, J., 2010, The role of institutional investors in initial public offerings. Review of Financial Studies 23, 4496-4540.

Cornaggia, J., Cornaggia, K., 2013, Estimating the costs of issuer-paid credit ratings. Review of Financial Studies 26, 2229-2269.

Daniel, K., Grinblatt, M., Titman, S., Wermers, R., 1997, Measuring mutual fund performance with characteristic-based benchmarks. Journal of Finance 52, 1035-1058.

Doherty, N., Kartasheva, A., Phillips, R., 2012, Information effect of entry into credit rating market: the case of insurers' ratings. Journal of Financial Economics 106, 308–330.

Egan-Jones Rating Company, 2015, Description of the procedures and methodologies to determine credit ratings.

Ellul, A., Jotikasthira, C., Lundblad, C., 2011, Regulatory pressure and fire sales in the corporate bond market. Journal of Financial Economics 101, 596–620.

Fama, E., 1998, Market efficiency, long-term returns, and behavioral finance. Journal of Financial Economics 49, 283–306.

Fulghieri, P., Strobl, G., Xia, H., 2014, The economics of solicited and unsolicited credit ratings. Review of Financial Studies 27, 485-518.

Gillete, J., 2017, Do sell-side debt analysts provide new information? Working Paper, Massachusetts Institute of Technology.

Goldstein, M., Irvine, P., Kandel, E., Wiener, Z. 2009, Brokerage commissions and institutional trading patterns. Review of Financial Studies 22, 5175-5212.

Greenberg, H., Caught off balance bond sleuths were ahead on Enron. Now they gave their sights on three others, Fortune, January 21, 2002.

Griffin, J., Tang, D., 2012, Did subjectivity play a role in CDO credit ratings? Journal of Finance 67, 1293–1328.

Gurun, U., Johnston, R.; Markov, S., 2016, Sell-side debt analysts and debt market efficiency, Management Science 62, 682-703.

Hand, J., Holthausen, R., Leftwich, R., 1992, The effect of bond rating agency announcements on bond and stock prices. Journal of Finance 47, 733–752.

Harford, J., Uysal, V., 2014, Bond market access and investment. Journal of Financial Economics 112, 147–163.

He, J., Qian, J., Strahan, P., 2012, Are all ratings created equal? The impact of issuer size on the pricing of mortgage-backed securities. Journal of Finance 67, 2097–2137.

Holthausen, R., Leftwich, R., 1986, The effect of bond rating changes on common stock prices. Journal of Financial Economics 17, 57–89.

Hu, G., 2009, Measures of implicit trading costs and buy-sell asymmetry, Journal of Financial Markets 12, 418-437.

Hu, G., McLean, D., Pontiff, J., Wang, Q. 2014, The year-end trading activities of institutional investors: Evidence from daily trades. Review of Financial Studies 27, 1593-1614.

Jegadeesh N, Kim J, Krische S, Lee, C., 2004, Analyzing the analysts: When do recommendations add value? Journal of Finance 59 (3): 1083–1124.

Jiang, J., Stanford, M., Xie, Y., 2012, Does it matter who pays for bond ratings? Historical evidence. Journal of Financial Economics 105, 607-621.

Jorion, P., Liu, Z., Shi, C., 2005, Information effects of regulation FD: evidence from rating agencies. Journal of Financial Economics 76, 309–330.

Johnston, R., Markov S., Ramnath, S., 2009, Sell-side debt analysts. Journal of Accounting and Economics 47, 91-107.

Kedia, S., Rajgopal, S., Zhou, X., 2014, Did going public impair Moody's credit ratings? Journal of Financial Economics 114, 293-315.

Kisgen, D., 2006, Credit ratings and capital structure. Journal of Finance 61, 1035-1072.

Kisgen, D., P, Strahan. 2010, Do regulations based on credit ratings affect a firm's cost of capital? Review of Financial Studies 23, 4324–4347.

Kliger, D., Sarig, O., 2000, The information value of bond ratings. Journal of Finance 55, 2879-2902.

Lindorff, D., 2001, Judging the Judges: Are the Top Rating Agencies too Slow to Downgrade?, Investment Dealers' Digest, August, 2001.

Loh, R., Stulz, R. , 2011, When are analyst recommendation changes influential? Review of Financial Studies 24, 593–627.

Mikhail, M. B., Walther, B. R., and Willis, R. H., 2007, When security analysts talk who listens? The Accounting Review 80, 1227–1253

Moody's Investor Service, 2010, Corporate default and recovery rates, 1920-2010.

Morgenson, G., 2002, Market Watch; Is the bad news over? Not yet, says debt watcher. New York Times, July, 2002.

Opp, C., Opp, M., Harris, M., 2013, Rating agencies in the face of regulation. Journal of Financial Economics 1, 46–61.

Puckett A, Yan X., 2011, The interim trading skills of institutional investors. Journal of Finance 66, 601–633.

Ramsay, J., 2011, Testimony concerning oversight of the credit rating agencies post Dodd-Frank, http://www.sec.gov/news/testimony/2011/ts072711jr.htm.

Sangiorgi, F., Spatt, C., 2016, Opacity, credit rating shopping, and bias. Management Science, forthcoming.

Skreta, V., Veldkamp, L., 2009, Ratings shopping and asset complexity: a theory of ratings inflation. Journal of Monetary Economics 56, 678–695.

Standard and Poor's, 2010, Annual U.S. corporate default study and rating transitions.

Stickel, S, 1995, The anatomy of the performance of buy and sell recommendations. Financial Analysts Journal 51: 25-39.

Tang, T., 2009. Information asymmetry and firms' credit market access: evidence from Moody's credit rating format refinement. Journal of Financial Economics 93, 325-351.

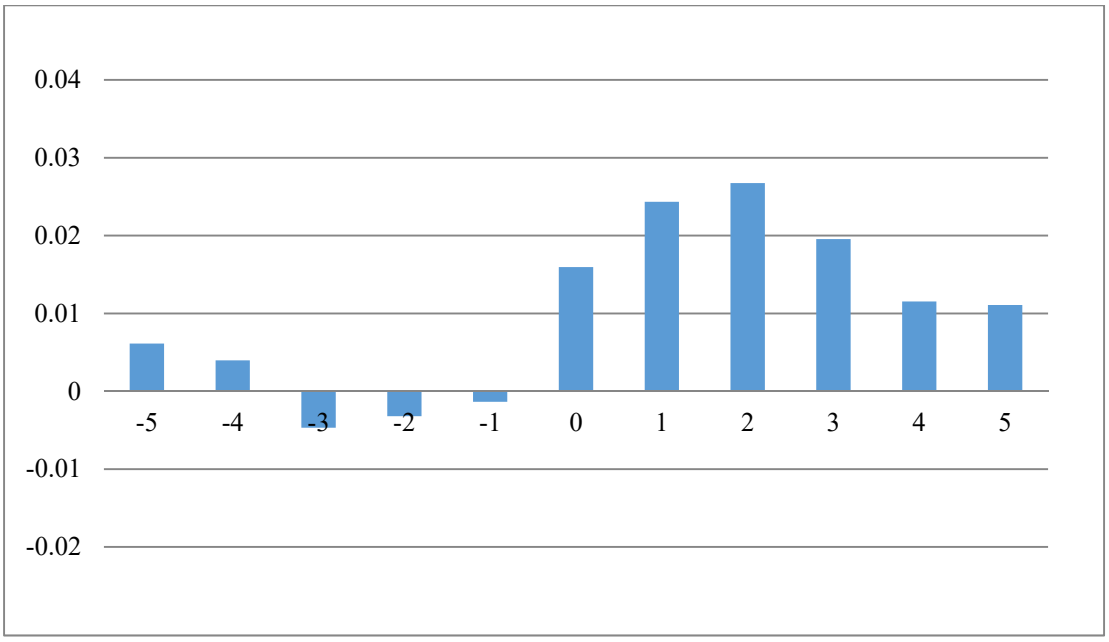
Xia, H., 2014, Can investor-paid credit rating agencies improve the information quality of issuer-paid rating agencies? Journal of Financial Economics 111, 450-68.

Womack, K., 1996, Do brokerage analysts' recommendations have investment value? Journal of Finance 51: 137–167.

Figure 1. EJR followers' trading surrounding EJR rating changes

This figure plots the three-day moving average of EJR followers' net trading imbalance of stocks of firms whose credit ratings are revised by EJR during the period of five days prior to an EJR rating revision to five days after. Net trading imbalance is in dollars, and is scaled by the stock's one-month-lagged market capitalization. The x-axis denotes event days where 0 is the day when EJR changes a rating. The y-axis denotes the signed net trading imbalance (in basis points). An EJR follower's net trading imbalance is signed as positive if it is a net purchase (sale) of an upgraded (downgraded) firm's stock, and negative if it is a net sale (purchase) of an upgraded (downgraded) firm's stock. In Panel A, an institution is classified as an EJR follower during the period spanning four consecutive event quarters if it has abnormal buys for EJR upgrades or abnormal sells for EJR downgrades for the majority (i.e., over 50%) of firms in each quarter, persistently during all of the four quarters. An institution's abnormal trade around an EJR change is defined as its net trading imbalance of the firm's stock during the event window of [0, 5] around an EJR rating change, minus its net trading imbalance of the same firm's stock during the event window of [0, 5] around an S&P rating change issued in the same quarter. Panel B similarly plots EJR followers' average trading during the 11-day window surrounding an EJR rating change, but for followers defined based on abnormal trades around EJR changes using trading responses to EJR and S&P rating changes during the [-2, 5] event window.

Panel A: Net Trading Imbalance of EJR followers (EJR followers defined using trades during the [0, 5] window)



Panel B: Net Trading Imbalance of EJR followers (EJR followers defined using trades during the [-2, 5] window)

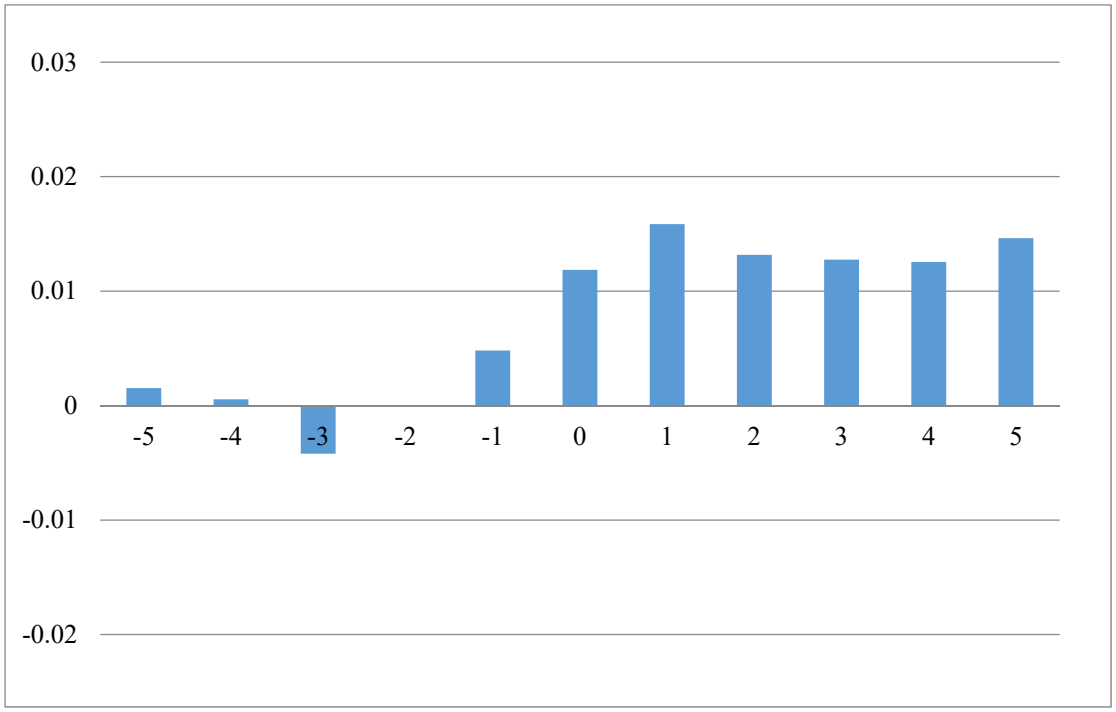


Table 1. Sample summary statistics

This table presents descriptive statistics of our sample firms during the period from the third quarter of 1999 to the fourth quarter of 2010. Column (1) presents statistics for all the sample firms, which are rated by both EJR and S&P. Column (2) presents statistics for firms rated by S&P but not by EJR. *Total Assets* are the total book value of assets, *Capitalization* is the market value of firms' total equity, and *Total Sales* are the total book value of sales, all in million U.S. dollars. *Leverage* is the ratio of total book value of debt to *Total Assets*; *Market-to-Book* is the ratio of the market value of total assets to the book value of total assets, where the numerator is computed as the sum of market equity and total debt; *Profitability* is the ratio of operating income before depreciation to *Total Assets*; *Tangibility* is the ratio of net property, plant, and equipment to *Total Assets*. ***, ** and * indicate statistical significance at the 1%, 5%, and 10 % level, respectively.

	Sample Firms (1)			Firms Rated by S&P Only (2)			Mean	Median
	N	Mean	Median	N	Mean	Median	(1)-(2)	(1)-(2)
Total Assets ($M)	31,422	13,535	4,090	40,406	3,957	1,214	+***	+***
Capitalization ($M)	30,292	10,896	2,908	26,036	4,024	813	+***	+***
Sales ($M)	31,493	2,317	831	40,784	635	195	+***	+***
Leverage	31,385	0.354	0.325	40,355	0.466	0.395	-***	-***
Market-to-Book	30,276	1.294	1.046	26,021	1.443	1.061	-*	-**
Profitability	29,341	0.032	0.031	36,884	0.029	0.029	+***	+***
Tangibility	30,733	0.352	0.301	38,230	0.382	0.334	-***	-***

Table 2. Summary statistics of credit ratings

This table presents summary statistics of credit ratings issued by EJR and S&P. Panel A presents numeric conversions of EJR and S&P credit ratings. Panel B presents summary statistics for EJR and S&P credit rating changes at the firm-quarter level, where the magnitude of rating change is calculated as the total number of notches by which a rating agency changes a firm's credit rating in a given quarter.

Panel A: Numeric conversions of credit ratings

Investment grade		Speculative grade	
EJR and S&P scale	Numeric equivalent	EJR and S&P scale	Numeric equivalent
AAA	1	BB+	11
AA+	2	BB	12
AA	3	BB-	13
AA-	4	B+	14
A+	5	B	15
A	6	B-	16
A-	7	CCC+	17
BBB+	8	CCC	18
BBB	9	CCC-	19
BBB-	10	CC	20
		C	21
		D	22

Panel B: The distribution of rating changes

	N	Mean notches	Std. Dev.	25th Pct.	Median	75th Pct.
EJR upgrades	2,627	1.410	1.092	1	1	1
EJR downgrades	3,521	1.644	1.296	1	1	1
S&P upgrades	1,972	1.483	1.189	1	1	2
S&P downgrades	3,258	1.734	1.439	1	1	2

Table 3. Characteristics and trades of EJR followers and non-EJR followers

This table compares characteristics of EJR followers and non-followers (Panel A) and examines how followers' trading responses to EJR rating changes vary with firm characteristics (Panel B). An institution is classified as an EJR follower during the period spanning four consecutive event quarters if it has abnormal buys for EJR upgrades or abnormal sells for EJR downgrades for the majority (i.e., over 50%) of firms in each quarter, persistently during all of the four quarters. An institution's abnormal trades around an EJR change are defined as its net trading imbalance (in dollars, scaled by the stock's one-month-lagged market capitalization) of the firm's stock during the event window of [0, 5] around an EJR rating change, minus its net trading imbalance (in dollars, scaled by the stock's one-month-lagged market capitalization) of the same firm's stock during the event window of [0, 5] around an S&P rating change issued in the same quarter. In Panel A, *Trading size* is the total dollar trading volume (in $M) of an institution standardized by the total number of trades during the past four-quarter period ending as of the end of the prior quarter. *Fund flows* is an institution's net dollar purchases (in $M) during the past four-quarter period ending as of the end of the prior quarter. *No. of stocks* traded is the average number of stocks traded by an institution each quarter during the past four-quarter period ending as of the end of the prior quarter. *No. of trades* is the total number of trades conducted by each institution during the past four-quarter period ending as of the end of the prior quarter. *EJR Covered* is the average proportion of trades an institution places on stocks rated by EJR each month during the past four-quarter period ending as of the end of the prior quarter. *Split rating*, *S&P more favorable*, and *S&P less favorable* are the average proportion of trades placed by an institution on stocks with EJR ratings that are different from, lower than, and higher than S&P's each month during the past four-quarter period ending as of the end of the prior quarter, respectively. *Rating difference* is the average difference between EJR and S&P ratings for the stocks traded by an institution each month during the past four-quarter period ending as of the end of the prior quarter. Column (3) reports the differences between columns (1) and (2). Standard errors are in parentheses. Panel B reports EJR followers' signed dollar trading imbalance, scaled by the stock's one-month-lagged market capitalization (in basis points), in the event window [0, 5] of EJR rating changes. An institution's trade in response to an EJR (S&P) rating change is signed as positive if it is a net purchase (sale) of an upgraded (downgraded) firm's stock, and negative if it is a net sale (purchase) of an upgraded (downgraded) firm's stock. Columns (1) and (2) report the signed trading imbalance for firms with above or below the calendar-quarter median of the respective firm characteristics, including current-quarter *Profitability* (measured by ROA), *Interest coverage* (measured as EBITA divided by total interest expenses), *Altman's Z-score*, *Profit growth volatility* (measured as one-year growth rate of ROA) over the 12 quarters ending as of the current quarter, *Stock idiosyncratic volatility* (measured as standard deviation of residual returns from regressing daily stock returns onto contemporaneous and three lags of daily returns to CRSP value-weighted index using daily returns of the current quarter), *Firm size* (measured as total market capitalization), *Analyst coverage* (measured as the average number of analysts covering a firm during the quarter). Column (3) reports the differences between columns (1) and (2). Standard errors are in parentheses.

Panel A: Difference between EJR followers and non-EJR followers			
	(1) EJR follower	(2) non-EJR follower	(3) Difference
Fund characteristics			
Trading size	0.359	0.465	-0.106***
			(0.023)
Fund flow	-38.537	63.841	-102.378
			(71.096)
No. of stocks traded	422	452	-30
			(30)
No. of trades	14,089	18,415	-4,326**
			(1,670)
Stock characteristics			
EJR covered	0.414	0.392	0.022***
			(0.006)
S&P covered	0.413	0.400	0.013***
			(0.005)
Split rating	0.695	0.688	0.007*
			(0.004)
S&P more favorable	0.355	0.336	0.019***
			(0.005)
S&P less favorable	0.340	0.352	-0.012*
			(0.006)
Rating difference	0.080	0.027	0.052***
			(0.020)
Panel B: Trading Imbalance of EJR followers around EJR ratings changes			
	(1) High/Large	(2) Low/Small	(3) Difference
Profitability	0.054	0.166***	-0.112*
	(0.038)	(0.051)	(0.062)
Interest coverage	-0.007	0.232***	-0.239***
	(0.039)	(0.054)	(0.066)
Z-score	0.019	0.188***	-0.169**
	(0.043)	(0.058)	(0.071)
Profit growth volatility	0.196***	0.041	0.155**
	(0.049)	(0.036)	(0.061)
Stock idiosyncratic volatility	0.266***	-0.021	0.287***
	(0.051)	(0.033)	(0.060)
Firm size	0.011	0.223***	-0.213***
	(0.029)	(0.055)	(0.060)
Analyst coverage	0.031	0.219***	-0.188***
	(0.036)	(0.051)	(0.061)

Table 4. Regression analyses of institutional trading around EJR rating changes versus earnings announcements

This table presents the results of OLS regressions of EJR followers' trades surrounding EJR rating changes versus earnings announcements in event windows [0, 5] and [-2, 5], respectively. EJR followers are defined as in Table 3. The sample consists of EJR rating changes and earnings announcements that are adjacent to each other, where an earnings announcement is either preceded or followed by an EJR change of the same firm during the 90 days around (i.e., 45 days before or 45 days after) the earnings announcement date. The upper section presents the results of univariate analyses and the lower section presents those of multivariate analyses. Columns labeled as "EJR preceding" consists of cases where EJR rating changes precede the earnings announcements of the same firms. Columns labeled as "EJR following" consists of cases where EJR rating changes occur after the earnings announcements of the same firms. In the multivariate regressions, the dependent variable is an institution's signed trading imbalance, scaled by the stock's one-month-lagged market capitalization (in basis points), around EJR rating changes and earnings announcements. *EJR changes* is a dummy variable that equals 1 for trades corresponding to EJR rating changes, and 0 for trades corresponding to earnings announcements. *Trading size* is an institution's dollar trades scaled by the total number of trades during the past four quarters. *Inflows* is an indicator variable that equals 1 if an institution has net buying during the past four quarters, and otherwise. *Trade [-10, -6]* is the net trades of an institution during the period of 10 days before to 6 days before the event. *Announcement-rating change pair fixed effects* are indicators for pairs of EJR rating changes and earnings announcements of the same underlying firm. *Institution fixed effects* are indicators for Ancerno institutional investors. Robust standard errors clustered at the firm and year levels are in parentheses. Within-group R-squared are reported. ***, **, and * indicate statistical significance at the 1%, 5%, and 10 % levels, respectively.

Univariate tests

	[0, 5]		[-2, 5]	
	(1) EJR preceding	(2) EJR following	(3) EJR preceding	(4) EJR following
EJR changes	0.305***	0.303***	0.315**	0.356***
	(0.101)	(0.080)	(0.126)	(0.128)
Earnings ann.	-0.206	0.365**	-0.160	0.444**
	(0.216)	(0.168)	(0.218)	(0.178)

Regressions

	[0, 5]				[-2, 5]			
	(1) EJR preceding	(2) EJR following	(3) EJR preceding	(4) EJR following	(5) EJR preceding	(6) EJR following	(7) EJR preceding	(8) EJR following
EJR changes	0.512**	-0.062	0.650***	-0.103	0.475**	-0.088	0.631***	-0.144
	(0.230)	(0.182)	(0.249)	(0.199)	(0.235)	(0.199)	(0.243)	(0.214)
Trading size			1.500	0.450			1.870	1.219
			(1.677)	(1.017)			(1.571)	(1.586)
Inflows			-0.029	-0.494			-0.011	-0.373
			(0.318)	(0.303)			(0.295)	(0.362)
Trade [-10, -6]			0.383***	0.313***			0.434***	0.413***
			(0.068)	(0.062)			(0.077)	(0.106)
Announcement-rating change pair fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Institution fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Observations	3,622	3,722	3,622	3,722	3,622	3,722	3,622	3,722
R-squared	0.001	0.000	0.119	0.070	0.001	0.000	0.128	0.076

Table 5. Regression analyses of institutional trading around EJR rating changes versus earnings forecast revisions

This table presents the results of OLS regressions of EJR followers' trades surrounding EJR rating changes versus earnings forecast revisions in event windows [0, 5] and [-2, 5], respectively. EJR followers are defined as in Table 3. The sample consists of EJR rating changes proceeding an earnings announcement (i.e., 45 days before the earnings announcement date) and earnings forecast revisions regarding the earnings announcement. Columns labeled as "Agree" pertain to cases where an EJR rating upgrade (downgrade) coincides with an upward (downward) forecast revision. Columns labeled as "Disagree" pertain to cases where an EJR rating upgrade (downgrade) coincides with a downward (upward) forecast revision. EJR rating changes and earnings forecast revisions are in the opposite direction. The dependent variable is an institution's signed trading imbalance, scaled by the stock's one-month-lagged market capitalization (in basis points), around EJR rating changes and earnings announcements. *EJR changes* is a dummy variable that equals 1 for trades corresponding to EJR rating changes, and 0 for trades corresponding to earnings forecast revisions. *Trading size* is an institution's dollar trades scaled by the total number of trades during the past four quarters. *Inflows* is an indicator variable that equals 1 if an institution has net buying during the past four quarters, and otherwise. *Trade [-10, -6]* is the net trades of an institution during the period of 10 days before to 6 days before the event. *Forecast revision-rating change pair fixed effects* are indicators for pairs of EJR rating changes and earnings forecast revisions corresponding to the same earnings announcement. *Institution fixed effects* are indicators for Ancerno institutional investors. Robust standard errors clustered at the firm and year levels are in parentheses. Within-group R-squared are reported. ***, **, and * indicate statistical significance at the 1%, 5%, and 10 % levels, respectively.

	[0, 5]				[-2, 5]			
	(1) Disagree	(2) Agree	(3) Disagree	(4) Agree	(5) Disagree	(6) Agree	(7) Disagree	(8) Agree
EJR changes	1.496*	0.136	1.224**	0.179	1.586*	0.100	1.259**	0.159
	(0.832)	(0.380)	(0.614)	(0.355)	(0.886)	(0.462)	(0.619)	(0.381)
Trading size			5.272**	1.232			5.648**	0.054
			(2.621)	(0.804)			(2.628)	(0.810)
Inflows			-0.567	0.134			-0.381	0.019
			(0.567)	(0.299)			(0.726)	(0.250)
Trade [-10, -6]			0.890***	0.630***			1.069***	0.870***
			(0.285)	(0.026)			(0.338)	(0.061)
Forecast revision-rating change pair fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Institution fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Observations	1,146	3,620	1,146	3,620	1,146	3,620	1,146	3,620
R-squared	0.004	0.000	0.314	0.249	0.003	0.000	0.368	0.347

Table 6. Regression analyses of institutional trading around EJR rating changes versus analyst recommendation changes

This table presents OLS regressions of EJR followers' trades surrounding rating changes versus sell-side analyst recommendation changes in event windows [0, 5] and [-2, 5], respectively. EJR followers are defined as in Table 3. The sample consists of EJR rating changes and analyst recommendations that are in the same firm-quarters. Columns labeled as "Diverse" pertain to firm-quarters when analysts report a mix of buy or sell recommendations. Columns labeled as "Unanimous" pertain to firm-quarters when analysts report unanimous buy or sell recommendations. The dependent variable is an institution's signed trading imbalance, scaled by the stock's one-month-lagged market capitalization (in basis points), around EJR rating changes and analyst recommendation changes. *EJR changes* is a dummy variable that equals 1 for trades corresponding to EJR rating changes, and 0 for trades corresponding to analyst recommendation changes. *Trading size* is an institution's dollar trades scaled by the total number of trades during the past four quarters. *Inflows* is an indicator variable that equals 1 if an institution has net buying during the past four quarters, and 0 otherwise. *Trade [-10, -6]* is the net trades of an institution during the period of 10 days before to 6 days before the event. *Firm-quarter fixed effects* are indicators for firm-quarters. Institution fixed effects are indicators for Ancerno institutional investors. Robust standard errors clustered at the firm and year levels are in parentheses. Within-group R-squared are reported. ***, **, and * indicate statistical significance at the 1%, 5%, and 10 % levels, respectively.

	[0, 5]				[-2, 5]			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Diverse	Unanimous	Diverse	Unanimous	Diverse	Unanimous	Diverse	Unanimous
EJR changes	0.442**	-0.295	0.423**	-0.265	0.454*	-0.436	0.429*	-0.384
	(0.218)	(0.267)	(0.202)	(0.237)	(0.267)	(0.318)	(0.248)	(0.269)
Trading size			0.135	1.043			-0.552	0.716
			(0.983)	(1.046)			(0.996)	(1.159)
Inflows			-0.096	0.003			0.020	-0.147
			(0.252)	(0.164)			(0.253)	(0.130)
Trade [-10, -6]			0.112***	0.158***			0.143***	0.275***
			(0.021)	(0.040)			(0.030)	(0.058)
Firm-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Institution fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Observations	4,926	5,498	4,926	5,498	4,926	5,498	4,926	5,498
R-squared	0.000	0.000	0.018	0.027	0.000	0.001	0.021	0.044

Table 7. Difference-in-differences analyses of institutional trading

This table presents the results of OLS regressions of institutions' trades surrounding EJR rating changes versus three signals: earnings announcements (columns (1) and (2)), earnings forecast revisions (columns (3) and (4)), and analyst recommendation changes (columns (5) and (6)), in the event window [0, 5]. EJR followers and non-followers are defined as in Table 3. The sample and specifications are constructed in the same way as those in Table 4, Table 5, and Table 6, respectively. The dependent variable is an institution's signed trading imbalance, scaled by the stock's one-month-lagged market capitalization (in basis points), around EJR rating changes and each of these three signals. *EJR changes* is a dummy variable that equals 1 for trades corresponding to EJR rating changes, and 0 for trades corresponding to each of these three signals. *EJR follower* is a dummy variable that equals 1 if the institution is classified as an EJR follower, and 0 otherwise. All other control variables are defined the same as in Table 4, Tale 5, and Table 6, respectively. Within-group R-squared are reported. ***, **, and * indicate statistical significance at the 1%, 5%, and 10 % levels, respectively.

	Earnings announcements		Earnings forecast revisions		Analyst recommendation changes	
	(1) EJR preceding	(2) EJR following	(3) Disagree	(4) Agree	(5) Diverse	(6) Unanimous
EJR changes * EJR follower	0.671**	-0.025	1.402**	0.123	0.528**	-0.121
	(0.321)	(0.231)	(0.582)	(0.351)	(0.222)	(0.226)
EJR changes	-0.060	-0.073	-0.046	0.055	-0.122	-0.114
	(0.177)	(0.189)	(0.395)	(0.102)	(0.121)	(0.168)
EJR follower	-0.202	0.388*	-1.424***	-0.005	-0.263	0.489**
	(0.329)	(0.225)	(0.500)	(0.343)	(0.278)	(0.202)
Trading size	0.106	0.271	0.039	-0.018	0.112	-0.055
	(0.178)	(0.243)	(0.093)	(0.191)	(0.151)	(0.076)
Inflows	-0.143	-0.038	-0.275	-0.079	0.215	-0.075
	(0.155)	(0.122)	(0.317)	(0.095)	(0.187)	(0.093)
Trade [-10, -6]	0.277***	0.268***	0.415***	0.616***	0.209***	0.313***
	(0.025)	(0.032)	(0.067)	(0.041)	(0.043)	(0.031)
Announcement-rating change pair fixed effects/Forecast revision-rating change pair fixed effects/Firm-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Institution fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	29,502	27,732	9,432	30,286	35,540	42,514
R-squared	0.061	0.043	0.118	0.246	0.029	0.049

Table 8. Regression analyses of institutional trading around S&P rating changes versus earnings announcements, earnings forecast revisions, and analyst recommendation changes

This table presents OLS regressions of institutions' trades surrounding S&P rating changes versus earnings announcements (columns (1) and (2)), earnings forecast revisions (columns (3) and (4)), and analyst recommendation changes (columns (5) and (6)), in the event window [0, 5]. An institution is classified as an S&P follower during the period spanning four consecutive event quarters if it has abnormal buys for S&P upgrades or abnormal sells for S&P downgrades for the majority (i.e., over 50%) of firms in each quarter, persistently during all of the four quarters. The sample in columns (1) and (2) consists of all S&P rating changes and earnings announcements that are adjacent to each other, where an earnings announcement is either preceded or followed by an S&P change of the same firm during the 90 days around (i.e., 45 days before or 45 days after) the earnings announcement date. Columns labeled as "S&P preceding" pertain to cases where S&P rating changes precede the earnings announcements of the same firms. Columns labeled as "S&P following" consists of cases where S&P rating changes occur after the earnings announcements of the same firms. The sample in columns (3) and (4) consists of S&P rating changes proceeding an earnings announcement (i.e., 45 days before the earnings announcement date) and earnings forecast revisions regarding the earnings announcement. Columns labeled as "Agree" pertain to cases where an S&P rating upgrade (downgrade) coincides with an upward (downward) forecast revision. Columns labeled as "Disagree" pertain to cases where an S&P rating upgrade (downgrade) coincides with a downward (upward) forecast revision. The sample in columns (5) and (6) consists of all S&P rating changes and analyst recommendations that are in the same firm-quarters. Columns labeled as "Diverse" ("Unanimous") pertain to firm-quarters when analysts report a mix of (unanimous) buy or sell recommendations. The dependent variable is an institution's signed trades, scaled by the stock's one-month-lagged market capitalization (in basis points), around S&P rating changes and earnings announcements (columns (1) and (2)), earnings forecast revisions (columns (3) and (4)), and analyst recommendation changes (columns (5) and (6)). *S&P changes* is a dummy variable that equals 1 for trades corresponding to S&P rating changes, and equals 0 for trades corresponding to earnings announcements (columns (1) and (2)), earnings forecast revisions (columns (3) and (4)), and analyst recommendation changes (columns (5) and (6)). *S&P follower* is a dummy variable that equals 1 if the institution is classified as an S&P follower, and equals 0 otherwise. All other control variables are defined the same as Table 4, Tale 5, and Table 6, respectively. Robust standard errors clustered at the firm and year levels are in parentheses. Within-group R-squared are reported. ***, **, and * indicate statistical significance at the 1%, 5%, and 10 % levels, respectively.

	Earnings announcements		Earnings forecast revisions		Analyst recommendation changes	
	(1) S&P preceding	(2) S&P following	(3) Disagree	(4) Agree	(5) Diverse	(6) Unanimous
S&P changes * S&P follower	-0.018	0.051	-0.706	0.358	0.311	-0.013
	(0.431)	(0.573)	(0.993)	(0.528)	(0.466)	(0.341)
S&P changes	-0.585***	-0.312**	-0.123	0.076	-0.250	-0.206
	(0.220)	(0.140)	(0.435)	(0.164)	(0.194)	(0.198)
S&P follower	-0.021	-0.065	0.467	0.219	-0.788	0.447
	(0.361)	(0.373)	(0.787)	(0.494)	(0.713)	(0.277)
Trading size	0.179	0.013	-0.053	-0.086	0.096	0.021
	(0.160)	(0.073)	(0.145)	(0.086)	(0.185)	(0.083)
Inflows	-0.282*	0.017	-1.450***	0.315	-0.539**	-0.264
	(0.150)	(0.125)	(0.460)	(0.319)	(0.240)	(0.188)
Trade [-10, -6]	0.203***	0.170***	0.465***	0.588***	0.145	0.268***
	(0.030)	(0.034)	(0.091)	(0.045)	(0.091)	(0.038)
Announcement-rating change pair fixed effects/Forecast revision-rating change pair fixed effects/Firm-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Institution fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,834	15,712	3,860	14,360	12,510	14,212
R-squared	0.040	0.029	0.191	0.249	0.027	0.056

Table 9: Institutional trading around EJR cross-threshold rating changes

This table presents regression analyses of institutional trading around cross-threshold EJR rating changes. The dependent variable is an institution's signed trading imbalance surrounding EJR rating changes during the event window [0, 5], scaled by the stock's one-month-lagged market capitalization (in basis points). EJR followers and non-EJR followers are defined as in Table 3. *Cross* is a dummy variable that equals 1 if in an EJR rating change moves a firm's EJR rating across the investment-speculative grade threshold, and 0 for all other EJR rating changes. *Ln (Sales)* is the natural logarithm of the firm's total sales. *Leverage* is the ratio of total debt from the balance sheet to total assets. *M-B ratio* is the ratio of the market value to book value of total assets, where the numerator is defined as the sum of market equity and total debt. *ROA* is the ratio of operating income before depreciation to total assets. All firm characteristics are measured as of the prior quarter end. *Trading size* is an institution's dollar trades scaled by the total number of trades during the past four quarters. *Inflows* is an indicator variable that equals 1 if an institution has net buying during the past four quarters, and 0 otherwise. *Trade [-10, -6]* is the net trades of an institution during the period of 10 days before to 6 days before the event. *Quarter fixed effects* are indicators for year-quarters. *Institution fixed effects* are indicators for Ancerno institutional investors. Robust standard errors clustered at the firm and year level are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10 % levels, respectively.

	EJR followers		non-EJR followers	
	(1)	(2)	(3)	(4)
Cross	0.451***	0.420***	-0.018	0.015
	(0.115)	(0.107)	(0.069)	(0.061)
Ln (Sales)		-0.044		-0.050**
		(0.069)		(0.020)
Leverage		0.363		-0.088
		(0.514)		(0.319)
M-B Ratio		-0.084*		-0.050**
		(0.045)		(0.021)
ROA		-0.319		-0.251
		(2.154)		(2.001)
Trading size		0.509**		0.079*
		(0.251)		(0.046)
Inflows		-0.127		-0.011
		(0.127)		(0.072)
Trade [-10, -6]		0.115***		0.246***
		(0.036)		(0.021)
Quarter fixed effects	No	Yes	No	Yes
Institution fixed effects	No	Yes	No	Yes
Observations	15,711	14,335	107,579	97,490
R-squared	0.000	0.014	0.000	0.037

Table 10. Monthly abnormal returns to trades of EJR revised stocks by EJR followers and non-followers

This table presents monthly average abnormal returns (in percentage) to institutional trades of EJR revised stocks by EJR followers and non-followers. EJR followers and non-followers are defined as in Table 3. In each month, we first compute an institution's trading imbalance on each stock revised by EJR in the month. We then compute the weighted average Daniel et al. (1997) characteristics-adjusted abnormal returns of each institution's trades of the revised stocks during various holding periods, with the weight being the dollar amount of the trade standardized by the stock's market capitalization as of the prior month end. We report average cumulative abnormal returns over 1-month, 3-month, 6-month, 9-month, and 12-month horizons, respectively. Standard errors are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10 % levels, respectively.

	1-month	3-month	6-month	9-month	12-month
EJR followers	1.057	0.988	2.455*	4.143*	4.914**
	(0.755)	(1.046)	(1.475)	(2.203)	(2.299)
non-EJR followers	-0.294	-0.598	-0.389	-0.853	-1.409
	(0.303)	(0.567)	(0.740)	(0.851)	(0.881)
Difference	1.352**	1.586*	2.843**	4.995**	6.324***
	(0.687)	(0.921)	(1.275)	(2.041)	(2.177)

Table 11. Monthly abnormal returns of trades by EJR followers and EJR followers to-be

This table compares monthly average abnormal returns (in percentage) of institutional trades before and after an institution is classified as an EJR follower. EJR followers are defined as in Table 3. In each month, we first compute an institution's trading imbalance on each stock in the month. We then compute the weighted average DGTW (1997) characteristics-adjusted abnormal returns of each institution's trades of EJR revised stocks and other stocks, respectively, during various holding periods, with the weight being the dollar amount of the trade standardized by the stock's market capitalization as of the prior month end. Panel A reports the average cumulative abnormal returns to trades of EJR revised stocks over various horizons, before and after an institution is classified as an EJR follower (i.e., EJR follower to-be versus EJR follower). Panel B reports their average cumulative abnormal returns to trades of other stocks before and after an institution is classified as an EJR follower. Differences between the returns of EJR followers and EJR followers to-be are reported at the bottom of each panel. The differences in these differential returns between EJR revised and non-EJR revised stocks (i.e., difference-in-differences) are reported at the end of the table. We report abnormal returns over 1-month, 3-month, 6-month, 9-month, and 12-month horizons, respectively. Standard errors are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10 % levels, respectively.

Panel A: Trades of EJR revised stocks					
	1-month	3-month	6-month	9-month	12-month
EJR followers	1.057	0.988	2.455*	4.143*	4.914**
	(0.755)	(1.046)	(1.475)	(2.203)	(2.299)
EJR followers to-be	-1.089**	-2.189**	-3.373**	-3.214*	-3.486
	(0.467)	(1.087)	(1.576)	(1.825)	(2.441)
Difference	2.146***	3.177**	5.828***	7.357**	8.400**
	(0.774)	(1.242)	(1.888)	(2.902)	(3.290)
Panel B: Trades of non-EJR revised stocks					
	1-month	3-month	6-month	9-month	12-month
EJR followers	0.442***	0.719**	0.217	0.452	0.714*
	(0.158)	(0.288)	(0.340)	(0.369)	(0.398)
EJR followers to-be	0.136**	0.157	-0.109	0.317	0.393
	(0.0636)	(0.129)	(0.220)	(0.275)	(0.369)
Difference	0.306*	0.562*	0.326	0.135	0.321
	(0.170)	(0.302)	(0.345)	(0.442)	(0.523)
Diff-in-Diff	1.840**	2.615**	5.502***	7.222**	8.079**
	(0.756)	(1.287)	(1.953)	(2.935)	(3.352)

Table 12. Monthly abnormal returns to trades by S&P followers, non-S&P followers and S&P followers to-be

This table presents monthly average abnormal returns (in percentage) to institutional trades of S&P revised stocks by S&P follower, non-followers (Panel A) and S&P followers to-be (Panel B). S&P followers and non-followers are defined as in Table 8. In each month, we first compute an institution's trading imbalance on each stock revised by S&P in the month. We then compute the weighted average DGTW (1997) characteristics-adjusted abnormal returns of each institution's trades of the revised stocks during various holding periods, with the weight being the dollar amount of the trade standardized by the stock's market capitalization as of the prior month end. Panel A reports the average cumulative abnormal returns to trades of S&P revised stocks over various horizons for S&P followers and non-followers, respectively. The top section of Panel B reports the average cumulative abnormal returns to trades of S&P revised stocks over various horizons, before and after an institution is classified as an S&P follower (i.e., S&P follower to-be versus S&P follower). The bottom section of Panel B reports their average cumulative abnormal returns to trades of other stocks before and after an institution is classified as an S&P follower. Differences between the returns of S&P followers versus non-followers or S&P followers versus followers to-be are reported at the bottom of each panel. The differences in the differential returns of S&P followers relative to followers-to-be between S&P revised and non-S&P revised stocks (i.e., difference-in-differences) are reported at the end of Panel B. We report average cumulative abnormal returns over 1-month, 3-month, 6-month, 9-month, and 12-month horizons, respectively. Standard errors are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10 % levels, respectively.

Panel A: Trades of S&P revised stocks by S&P followers and non-followers

	1-month	3-month	6-month	9-month	12-month
S&P followers	-0.303	-1.589	-1.950	-1.735	-0.957
	(1.468)	(1.999)	(2.755)	(2.835)	(2.767)
non-S&P followers	-0.619	-0.975	-1.353	-1.483	-2.277
	(0.570)	(0.856)	(1.298)	(1.517)	(1.630)
Difference	0.316	-0.613	-0.597	-0.252	1.320
	(1.489)	(1.871)	(2.700)	(2.811)	(2.890)

Panel B: Trades of S&P revised and non-revised stocks by S&P followers and S&P followers to-be

Trades of S&P revised stocks					
	1-month	3-month	6-month	9-month	12-month
S&P followers	-0.303	-1.589	-1.950	-1.735	-0.957
	(1.468)	(1.999)	(2.755)	(2.835)	(2.767)
S&P followers to-be	-0.754	-1.057	-0.636	-0.521	-2.277
	(1.109)	(1.871)	(2.022)	(2.853)	(2.786)
Difference	0.452	-0.532	-1.314	-1.215	1.320
	(1.570)	(2.494)	(3.418)	(4.210)	(4.045)
Trades of non-S&P revised stocks					
	1-month	3-month	6-month	9-month	12-month
S&P followers	0.085	-0.407	0.057	0.088	-0.123
	(0.145)	(0.387)	(0.572)	(0.736)	(0.718)
S&P followers to-be	0.183*	0.225	-0.177	-0.386	-0.473
	(0.095)	(0.158)	(0.208)	(0.242)	(0.306)
Difference	-0.099	-0.632*	0.233	0.475	0.350
	(0.149)	(0.377)	(0.623)	(0.812)	(0.848)
Diff-in-Diffs	0.550	0.101	-1.548	-1.689	0.969
	(1.600)	(2.456)	(3.546)	(4.313)	(4.114)

Table 13: Abnormal returns of rating-based bond portfolios

This table presents the abnormal returns of rating-based bond portfolios. It reports average cumulative abnormal returns (in percentage) for EJR (Panel A) and S&P (Panel B) rating-based bond portfolios during the 1-month, 3-month, 6-month, 9-month, and 12-month holding periods following an upgrade or downgrade, respectively. Abnormal bond returns are calculated as the difference between a portfolio's holding period returns and the returns of the Barclay bond index for bonds with similar maturity and in the same credit rating category during the same period. Bond price and return information is from Trade Reporting and Compliance Engine (TRACE). Standard errors are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10 % levels, respectively.

Panel A: Portfolios Formed on EJR Ratings					
	1-month	3-month	6-month	9-month	12-month
Downgrades	-0.838***	-0.872**	-1.137***	-1.091**	-0.794*
	(0.282)	(0.362)	(0.431)	(0.462)	(0.478)
Upgrades	0.539***	0.714***	1.032***	1.001***	0.739***
	(0.120)	(0.162)	(0.195)	(0.243)	(0.227)
Panel B: Portfolios Formed on S&P Ratings					
	1-month	3-month	6-month	9-month	12-month
Downgrades	-1.107***	-0.170	-0.048	0.385	1.054*
	(0.415)	(0.505)	(0.543)	(0.600)	(0.600)
Upgrades	0.469**	0.513	0.814**	0.452	0.441
	(0.202)	(0.360)	(0.396)	(0.443)	(0.458)