Accounting Information Usage and Trading by Retail Investors: Evidence from Integrated Trading Platform

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REP Proposal Summary

The study aims to investigate the usage of accounting information and trading patterns of retail investors on an integrated trading platform that provides timely and convenient access to accounting information. The research setting provides unique opportunities to directly observe both the information access and trading decisions of its platform users when there are accounting disclosures. The study will address several questions regarding the usage of accounting information by retail investors. First, how much interest do retail investors display in accounting disclosures? Through which channels do they access timely accounting information? Second, can retail investors benefit from accessing accounting information through different channels? Third, do retail investors using integrated trading platforms perform better than those that do not? Overall, the study hopes to enhance our understanding of the usage of accounting information by retail investors and the potential role of trading platforms in facilitating their use of accounting information in trading decisions.
1. Motivation

Prior literature finds that retail investors could be prone to behavioral biases such as overconfidence (e.g. Barber and Odean [2000]; Staman et al. [2006]), the disposition effect (e.g., Shefrin and Statman [1986]; Odean [1998]) and attention-driven purchase (e.g., Barber and Odean [2007]). They also appear to be naïve about analyst incentives (Malmendier and Shanthikumar, [2007]) and neglect value-relevant accounting information (e.g., Hirshleifer et al. [2008]; Blankespoor et al. [2019]). Early evidence mostly suggests that retail investors are likely unsophisticated noise traders who may underperform relative to the market (e.g. Kumar and Lee [2006]; Hvidkjaer [2008]; Barber et al. [2009]).

However, more recent research suggests that retail investor trades could be informative. Kaniel et al. [2012] present the first evidence of informed trading by retail investors around earnings announcements. Kelley and Tetlock [2013, 2016] find that the trades by retail investors are predictive of stock returns. Boehmer et al. [2020] also suggest that retail marketable orders contain firm-level information that is not yet incorporated into prices. While the sources of informativeness of retail investor trades are not exactly clear, the mixed evidence on their sophistication suggests that retail investors are likely not a homogenous group of investors.

The proliferation of low-cost online trading platforms has enabled retailer investors to directly trade with much less friction. Retail investors represent a significant portion of market participants in emerging markets. Even in the U.S., retail investors could be on the rise and may no longer be a sideshow to the market.¹ Prior studies mostly rely on either small trades or brokerage proprietary trading data to identify retail investors. Recently, multiple contemporaneous studies utilize data

¹ See Martin and Wigglesworth [2021].
from Robinhood to study the trading patterns of retail investors (e.g., Welsh [2020]; Ozik et al. [2020]; Moss et al. [2020]; Barber et al. [2021]; Michels [2021]).

Robinhood provides a simple and commission-free mobile-centric platform for retail investors to directly invest in stocks, with gamified features introduced to make trading fun. As half of its users are first-time investors, the Robinhood app focuses on providing a convenient trading platform without inundating users with too much information. Trading statistics such as price and volume information and their associated graphs are the primary focus in Robinhood’s user interface. Accounting information provided in the Robinhood interface is rather limited.\(^2\) Critics, however, are concerned with its gamification feature which may induce inexperienced investors to trade too frequently.\(^3\)

Many other brokerages offer different trading experiences by providing an integrated trading platform that also serves as an information hub for traders.\(^4\) Through the convenience and ease of access, these integrated trading platforms likely lower the information awareness, acquisition, and integration cost for retail investors using accounting information. Compared to Robinhood, integrated trading platforms such as Fidelity could attract a different segment of retail investors or even induce retail investors to pay more attention to accounting information. While Robinhood had 13 million users in 2020, Fidelity had 26 million retail accounts in 2020. Therefore, the usage of integrated trading platforms is not uncommon among retail investors.

\(^2\) Robinhood’s interface only includes price-to-earnings ratios as well as quarterly EPS actuals/estimates for firms that are well-covered by analysts. Investors cannot directly get access to more timely or more detailed accounting information from its app interface.

\(^3\) In December 2020, Massachusetts state regulators launched a case against Robinhood citing its “aggressive tactics to attract inexperienced investors” and “use of strategies such as gamification to encourage and entice continuous and repetitive use of its trading application.”

\(^4\) For example, while providing zero-commission trading services, Fidelity’s online trading platform provides a variety of accounting information to traders, including a *Fundamental Analysis* section from S&P Global Market Intelligence, a *Key Statistics* section covering over 45 accounting ratios, a *Financial Statements* section containing detailed balance sheet, income statement, and cash flow items, and an SEC Filings section with direct links to SEC Edgar filings.
Because retail investors are likely not a homogenous group of investors, findings using Robinhood data may not extrapolate to other retail investors who are using the integrated trading platforms, especially concerning the extent to which retail investors utilize accounting information in their trading decisions. It is therefore important to understand more about those retail investors who are using the integrated trading platforms in getting a more complete picture. For instance, if retail investors on integrated trading platforms indeed display considerable interest in accounting information, standard setters and regulators may need to consider their needs in policymaking.\(^5\)

To complement studies that utilize Robinhood data, this study aims to study the information usage and trading patterns of retail investors from integrated trading platforms. Prior studies can usually directly observe either the information usage or trading decisions of retail investors and rely on proxies to infer the other construct of interests.\(^6\) This study will take advantage of a unique setting in which the researchers can observe both the information usage and aggregate daily trades of retail investors for each listed firm on an integrated trading platform. The institutional setting allows researchers to test whether retail investors can benefit from accessing accounting information in their trading decisions.

The research setting also provides a unique opportunity to observe the granular channels through which retail investors access accounting information, ranging from mandatory disclosures to various information intermediaries such as summary reporting articles, narratives from analyst

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\(^5\) In the U.S., Securities and Exchange Commission (SEC) often states that protecting retail investors is part of its core missions. However, Financial Accounting Standards Board (FASB) does not list retail investors as one of the parties that it actively solicits opinions from on its website (https://www.fasb.org/investors&pf=true).

\(^6\) Studies that utilize proprietary trading data from brokerages typically cannot directly observe their information usage and rely on trading patterns to infer their information consumption. Other studies that examine information access such as using Google searches (Drake et al. [2012]), EDGAR filing searches (Drake et al. [2015]), and pageviews on Yahoo Finance analyst information (Lawrence et al. [2017]) cannot directly observe the trades by retail investors. For example, Drake et al. [2012] relies on trade size to proxy for retail investors. These studies also cannot observe who initiates the searches or views. For EDGAR searches, Ben-Rephael et al. [2017] believes that they likely represent information requests from institutional investors instead of retail investors.
reports, crowdsourced research reports, and Robo-journalism articles. Prior studies have largely examined variations within each channel in isolation with few insights on the relative importance of different channels for retail investors. In the setting of this study, retail investors have access to different information channels aggregated within the same news feeds. This allows researchers to assess the relative importance of each information channel under similar information awareness costs in the same event window and to investigate the factors underlying retail investors’ information access through different channels.

2. Research Questions and Hypotheses

2.1 How much interest do retail investors exhibit towards accounting disclosures?

Prior research suggests that accounting numbers are value-relevant and can be useful in predicting future returns (e.g., Ball and Brown [1968]; Bernard and Thomas [1989]; Sloan [1996]; Lewellen [2004]). However, retail investors are sometimes regarded as “naïve” investors or noise traders. The proposed study will first address the basic question regarding whether retail investors display much interest in accounting-related disclosures in an environment with low-cost information access. More specifically, are retail investors on integrated trading platforms interested in reading accounting-related disclosures?

Information usage costs could impede retail investors from acquiring information from accounting-related disclosures. Retail investors may not display interest in accounting information if the cost of using accounting information outweighs the benefit (Bloomfield [2002]; Blankespoor et al. [2019]). Some prior studies find that retail investors tend to rely on technical

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7 For example, it is not clear the extent to which investors rely on Robo-journalism articles used in Blankespoor et al. [2019] relative to those that search for SED Edgar filings in Drake et al. [2015]) or those that views Yahoo Finance analyst information in Lawrence et al. [2017].

8 As a result, some regulators have attempted to enhance the readability in mandatory filings. For instance, the SEC has sought to modernize the disclosures in 10-K filings (https://www.sec.gov/news/press-release/2020-290).
analysis in trading decisions (Grinblatt and Keloharju [2000], Barber and Odean [2008], Kaniel, et al. [2008]) but appear to ignore value-relevant earnings information (e.g., Blankespoor et al. [2019]). Blankespoor et al. (2019) formulate a sequential framework breaking down information usage costs into awareness cost, acquisition cost, and integration cost. In their setting, lowering awareness and acquisition costs does not seem to promote significantly higher usage of earning information in investor trades.

Over time, the proportion of the world’s population receiving tertiary education has steadily increased, with business education being a popular choice for undergraduate studies in many countries. As accounting is an integral part of business education, a sizable portion of individual investors could have received substantial training in business and developed exposure to basic accounting knowledge. Therefore, retail investors who possess knowledge in basic financial accounting could be interested in accessing accounting-related disclosures. The advancement of information technologies should have greatly reduced the cost of information usage. Retail investors could also pick up basic accounting knowledge from the abundant free online resources. These developments could lower all three components of information costs for retail investors.

Integrated trading platforms could further reduce trading frictions by providing easy access to information and low-cost transaction execution for retail investors within the same platform interface. Instead of delegating their investment to professional fund managers, individual investors could conduct their own securities analyses and execute their trades directly through online or mobile trading platforms. Thus, users of intergraded trading platforms could be facing

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9 In the U.S., 19.5% of Bachelor's degrees conferred in 2017/2018 were in business, according to data from the Digest of Education Statistics. In China, 25.3% of undergraduates who graduated in 2020 majored in either economics or management, according to most recent data from Ministry of Education.
10 For instance, when information dissemination changes from a paper-based system to an electronic system. Retail investors nowadays could easily use their mobile devices to gain access to accounting disclosures or even set up to push notifications to receive news of stocks they follow.
even lower information awareness and acquisition costs on accounting disclosures. It is unclear if the lower information usage cost can induce higher usage of accounting information. The proposed study aims to first provide descriptive evidence on the extent to which retail investors who utilize integrated trading platforms display an interest in accessing accounting-related disclosures.

2.2 Through which channels do retail investors access accounting information?

Retail investors on integrated trading platforms have convenient access to a variety of accounting information. The information can vary in form, ranging from summary financial numbers (e.g., revenue and net income) to the full detailed financial statements and footnotes. The sources of information consist of mandatory disclosures (e.g., regulatory filings), voluntary disclosure (e.g., press releases), and information intermediaries such as summary by media journalists, synthesis by sell-side analysts, or even automated reports by algorithmic bots. Furthermore, there could be variations in the timeliness, precision, and level of verification in different types of documents.

Unlike institutional investors, many retail investors could only afford limited time and resources in investing activities. These retail investors could be sensitive to the costs of information usage. If the information usage cost is the major impediment, the pattern of accounting information access by retail investors should generally follow their cost-benefit tradeoffs (e.g., Bloomfield [2002]). Based on the framework proposed by Blankespoor et al. [2019], the interest displayed by retail investors towards accounting information should increase with lower costs of information usage. In other words, their views on a specific piece of accounting information would likely increase as the awareness costs or the expected acquisition/integration costs decrease.

In regulatory filings, preparers may err on the side of caution and incorporate as many items as possible to satisfy the disclosure requirements without paying much attention to the
readability. For instance, Dyer et al. (2017) show that worldwide mandatory filings appear to have become more boilerplate and less readable over time. Listed firms also often issue press releases providing the highlights of earnings announcements. Additionally, prior studies have documented the importance of the media as an information intermediary (e.g., Bushee et al. [2010]). Financial journalists can choose to cover the earnings news and summarize the financial performance in media articles. Due to the rise of Robo-journalism, some reports are even generated by software bots (e.g., Blankespoor et al. [2018]).

As regulatory filings are often longer with lower readability, retail investors could take a much longer time in locating and extracting the relevant information for their trading decisions from regulatory filings relative to summary media reports. Retail investors could thus perceive higher expected information acquisition costs from regulatory filings. On the other hand, articles from information intermediaries are much shorter in length, often offering a succinct summary of earnings news. To the extent that the information extraction cost is an important consideration, retail investors are more likely to view the summary highlights in media reports first before delving into regulatory filings during earnings announcements.

*H1: Retail investors display higher interests in viewing summary media reports than the raw regulatory filings during financial results announcements.*

Lacking the expertise to analyze the detailed financial statements, many retail investors could face high integration costs directly utilizing the vast amount of information disclosed in regulatory filings during earnings announcements. These retail investors could be interested in soliciting expert opinion from sell-side analysts, investigative journalists, or even industry specialists to help interpret the news from earnings announcements. Consistent with this, Lawrence et al. [2017] find

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11 It is common to find regulatory filings that report periodic financial performance with >100 pages in length.
that investors have a higher demand for analyst information on Yahoo Finance during management guidance and earnings announcement relative to the average trading day. To the extent that integrating information from the financial statement is an important cost barrier, retail investors may rely more on expert opinion instead of conducting their independent analyses on the raw regulatory filings during earnings announcements.

**H2: Retail investors display higher interests in viewing reports containing expert opinions than the raw regulatory filings on financial results announcements.**

Additionally, retail investors could exhibit differential interests among different types of accounting-related regulatory filings. Beyond earnings announcements, there are two other occasions in which major accounting information is provided to the market: earnings guidance/pre-announcement and the filing of full periodic financial reports. Following the cost-benefits arguments, retail investors could display higher interests in viewing the regulatory filings on earnings guidance/pre-announcements than the official earnings announcements, due to the lower information extraction cost from a shorter document focusing only the key accounting metrics as well as the higher information timeliness (despite often with less information precision). Retail investors could display lower interests in viewing the full periodic financial reports due to the higher information extraction/integration costs from a more complex and lengthy document as well as the lower information timeliness (despite likely containing a much richer information set).

Between summarized reports and expert opinion, it will be an empirical question whether retail investors generally display higher interest in viewing summary media reports or reports covering expert opinion during earnings announcements. Summary media reports likely provide more timely information with low information extraction costs than expert opinion. However,
expert opinions could provide more contextual information beyond summary figures and ease the integration cost in utilizing the mosaic of information disclosed during earnings announcements.

The third hypothesis relates to whether media articles providing summary reports or expert opinion substitute or complement the readership of regulatory filings by retail investors. On one hand, media coverage could reduce retail investors’ awareness costs on the presence of regulatory filings. More sophisticated retail investors could be prompted to seek further information from the more detailed regulatory filings after reading the summary reports or expert opinions from media articles. On the other hand, less sophisticated retail investors could directly utilize the information from media articles instead of delving into the raw filings. The question is whether these less sophisticated retail investors would have read the raw filings even in the absence of media articles. If not, these media articles could exhibit a complementary relationship with the use of regulatory filings by retail investors, primarily driven by the more sophisticated retail investors.

**H3: Media articles providing summary reports or expert opinions facilitate higher retail investor interest in viewing accounting-related regulatory filings.**

**2.3 Do retail investors benefit from acquiring accounting information?**

Prior research suggests that retail investors often process accounting information differently from professional investors. For example, Maines and McDaniel [2000] find that the information disclosed in a note has less effect on the judgment of non-professional investors than those recognized on the statement. Frederickson and Miller [2004] also find that non-professional investors react to pro forma earnings differently from analysts. Ernst et al. [2009] further find that retail investors seem to discard the notes of the financial statements almost completely. In contrast, survey evidence suggests that professional equity investors and analysts regard the notes to
financial statements as important sources of information (e.g., Olbert [1989]; Ernst et al. [2009]; Gassen and Schwelder [2010]).

Even if retail investors display an interest in acquiring accounting information from different sources, retail investors do not necessarily have the requisite expertise to make informed trading decisions based on the information. After acquiring the accounting information, they can still be trading against more informed traders and suffer from worse trading profitability if they either ultimately ignore or fail to integrate value-relevant accounting information into their trading decisions. However, if retail investors could properly integrate the accounting information into their trading decisions, their trading profitability should exhibit a positive association with the amount of interest they have shown towards viewing the value-relevant accounting information.

\textit{H4: Retail investors on integrated trading platforms conduct more profitable trades when they display higher interest in the disclosure of value-relevant accounting information.}

Among the different channels through which retail investors acquire accounting information, it is ultimately an empirical question whether retail investors benefit more by acquiring accounting information from a particular channel. Utilizing investor surveys, Elliott et al. [2008] find that a higher proportion of unfiltered relative to filtered information used by non-professional investors is associated with lower investment returns, with the relationship mitigated by more investing experience. The survey evidence suggests that retail investors could misinterpret the raw accounting information due to the lack of expertise and end up in a worse state. It is also possible that retail investors are aware of the limitations in their expertise and choose the appropriate channel in accessing accounting information. In equilibrium, those that acquire more detailed accounting information from raw regulatory filings could be the more sophisticated type that stands to benefit more from narrowing the information gap against professional investors.
2.4 Do retail investors benefit from easier access to accounting information?

The last hypothesis is concerned with whether trading platforms can play a role in facilitating the usage of accounting information by retail investors. Retail investors on non-integrated trading platforms that provide little or no accounting information on the platform interface could face much higher awareness and acquisition costs in utilizing the accounting information in trading decisions. As a result, retail investors on non-integrated platforms may not incorporate value-relevant accounting information into their trading decisions as much as those that utilize integrated trading platforms. If retail investors on integrated trading platforms can largely adequately integrate the accounting information into their trading decisions, retail investors on non-integrated trading platforms could be in a more informationally disadvantaged position and perform worse in their trading performance.

*H5: Retail investors on integrated trading platforms conduct more profitable trades than those on non-integrated trading platforms when value-relevant accounting information is disclosed.*

3. Research Setting

3.1. Institutional Features

The proposed study will utilize the data from an integrated trading platform named FutuBull from Hong Kong (HK). Similar to the United States (US), there has been an emergence of discount online brokers in Hong Kong in the 2010s. Founded in 2011, FutuBull is a digitized brokerage platform that provides low-cost trading services and rich financial information for retail investors. Its holding company is listed on NASDAQ with ticker FUTU and has 0.79 million paying clients as of March 31, 2021. Its clients mainly trade in stock markets in the US and HK. Trading volume in the first quarter of 2021 reached 105 billion USD in the Hong Kong Stock

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12 [https://hk.futuhk.com/](https://hk.futuhk.com/)
Exchange (HKSE). The median age of its clients was 34, with 34% working in the internet, information technology, or financial services industries. The average asset balance per client is 75,000 USD.14

Besides trading statistics and graphs, FutuBull’s trading platform provides retail investors with ready access to a variety of accounting-related information. Similar to Fidelity, FutuBull provides detailed historical accounting items within its platform, along with handy visualization tools for trend and margin analyses. FutuBull provides a section for ratio analyses, covering over 45 accounting ratios. More importantly, FutuBull provides timely news article feeds covering all regulatory filings and media articles from a variety of information intermediaries (including major financial news media outlets, selected sell-side research brokers, a crowdsourced equity research platform, or even Robo-publishers) in a unified interface for retail investors, with views tracked for each document. This enables researchers to trace the cumulative views on each regulatory filing and online media article. Appendix A provides some snapshots of its interface.

The study will also take advantage of a unique institutional feature in HK regarding its data availability on daily broker-level holdings. In other words, the study can directly observe the aggregate holdings of all retail investors for each public listed company at FutuBull each day. The view tracking feature of FutuBull’s trading platform combined with the institutional feature that mandates the disclosure of daily brokerage-level holdings in HK provides a unique opportunity for this study to simultaneously observe both the information usage and trading decisions of retail investors. The setting of the study itself is also important economically, with the HK stock market ranked fifth worldwide by total market capitalization in 2020. Moreover, the HK stock market also

13 https://ir.futuholdings.com/corporate/company-profile
14 Converted from HKD 585,000 using exchange rate of 7.8 HKD to 1 USD. The number is extracted from 2021Q1 Earnings Call Transcript (https://seekingalpha.com/article/4430081-futu-holdings-limited-futu-ceo-leaf-li-on-q1-2021-results-earnings-call-transcript).
has relatively wide participation by retail investors, providing a powerful setting to study the behavior of retail investors.\textsuperscript{15}

3.2. Sample Selection

The proposed study will scrape the number of views on each regulatory filing and news article issued between July 1, 2014, and June 30, 2021, for all HK-listed stocks from FutuBull’s integrated trading platform.\textsuperscript{16} As of July 2021, there were a total of 2,579 firms listed on the HKSE. There were 1,752 listed firms at the end of 2014. With seven years of data, it is estimated that the study can obtain the number of views for approximately 14,000 annual reports, 14,000 semi-annual reports, and at least 28,000 earnings announcements to be included in the sample, providing sufficient statistical power to test the hypotheses. Data on each broker’s daily aggregate holdings for each firm will be obtained from the HK stock exchange. Variables representing other firm-level characteristics will be constructed using the data from Capital IQ, Thomson Reuters, and Bloomberg. Important missing data from these databases will be hand-collected from filings.

3.3. Main Variables

Documents with Accounting Information

The study considers two broad types of documents available on FutuBull’s trading platform with view tracking features: regulatory filings and media articles.\textsuperscript{17} An indicator named Accounting Documents will be used to denote all accounting-related regulatory filings (Regulatory Filings) and media articles. The study will use a combination of textual analyses on article titles

\textsuperscript{15} According to the Retail Investor Survey 2014 conducted by Hong Kong Exchanges and Clearing Limited, about 36.4% of HK adults (around 2.3 million) are retail investors and 73% of stock traders traded through online medium. According to the Cash Market Transaction Survey 2016 conducted by Hong Kong Exchanges and Clearing Limited, retail investors contributed to 29.89% of total investor trading value in 2016.

\textsuperscript{16} The study will exclude one company Tencent (HKSE:700) in the final sample for analyses. Tencent is a major strategic investor of Futu. To prevent contaminating the “views” data on the platform, the study will use Tencent to test the data scraping routines in the development phase.

\textsuperscript{17} This study uses the term “media articles” to refer to all articles generated by information intermediaries that are captured by the news feeds on the FutuBull app.
using keyword searches and the timing of media articles around the release of accounting-related regulatory filings to determine whether the media article covers accounting-related topics. Among different types of articles, the study will specifically consider two types introduced below: Summary Reports and Expert Opinion. On the FutaBull platform, all regulatory filings and media articles appear under the same “News” tabs and thus should have similar information awareness and access costs for retail investors once they open the app interface.18

Regulatory Filings

Under documents under mandatory disclosure requirements, the study will categorize “Annual Report”, “Semi-Annual Reports”, “Results Announcements”, and “Profit Warnings” as accounting-related regulatory filings. A substantial proportion of these filings is expected to contain accounting information. Regulatory filings on “Results Announcements” are filed when firms announce their periodic financial performance during earnings announcements. Results Announcements filings typically have 10 to 70 pages in length, with the level of detail in-between the earnings announcement press releases and 10-Q filings in the U.S. setting. Assuming that the complexity of the document is negatively related to information extraction/integration costs, Results Announcements will be regarded as having medium extraction/integration costs.

“Annual Report” is analogous to 10-K filings while “Semi-Annual Reports” is analogous to 10-Q filings in the U.S. setting. These full periodic reports are filed in a few weeks after Results Announcements and can often reach over a hundred pages in length with detailed financial statement footnotes. Annual Reports and Semi-Annual Reports are regarded as one group named Financial Reports that have high information extraction/integration costs. “Profit Warnings” are typically filed several weeks before Results Announcements when insiders possess knowledge that

18 There is a parallel tab named “Announcements” that provides access to regulatory filings only. Retail investors have in-house access to regulatory filings within the app instead of having to visit the official site outside the app.
the financial performance in the current reporting period significantly deviates from the comparable period in the previous fiscal year. Firms typically provide rough range estimates of the upcoming reported revenue and/or earnings in *Profit Warnings*. These filings are typically concise, focusing on the estimates on a few summary accounting items. Thus, *Profit Warnings* should have low information extraction/integration costs for retail investors.

*Summary Reports*

Among media articles that cover accounting information, the study will classify those providing the summary highlight of earnings news as *Summary Reports* based on a combination of word counts (e.g., fewer than 200 Chinese characters) and publisher type. *Summary Reports* will be regarded as having low information extraction costs with respect to key accounting items. Due to the emergence of Robo-journalism in recent years, *Summary Reports* could also be generated by software bots. To investigate whether retail investors display much interest in viewing reports generated by algorithms, the study will also create an indicator *Robo Summary Reports* for reports generated by Robo-journalism outlets.

*Expert Opinion*

Among media articles that cover accounting information, the study will classify those providing more in-depth analyses by sell-side analysts, investigative journalists, or industry specialists as *Expert Opinion* based on a combination of word counts (e.g., more than 500 Chinese characters) and publisher types.¹⁹ *Expert Opinion* will be regarded as having low information integration costs as retail investors could free-ride on the synthesis of information by these

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¹⁹ Certain Chinese research brokerage firms publish the narratives in sell-side analyst reports directly on the FutuBull platform. The articles published by these sell-side research brokers will be directly treated as *Expert Opinion* regardless of word counts. Sell-side analyst reports from non-Chinese research brokerage firms are typically non-public. However, their recommendation and target prices are often summarized by several media outlets, with clear labels available for identification. Thus, these media articles will also be regarded as *Expert Opinion* regardless of word counts. Analyses by investigative journalists and or industry specialists will be classified into *Expert Opinion* using both word counts and publisher type.
seemingly more professional parties. Due to the emergence of crowdsourced platforms in recent years, *Expert Opinion* may also come from online crowdsourced platforms. To investigate whether retail investors display much interest in viewing reports generated by crowdsourced analysts, the study will also create an indicator *Crowdsourced Expert Opinion* for articles that come from the crowdsourced platform.\(^{20}\)

**Number of Views**

The study will extract the number of views on regulatory filings and media articles from *FutuBull’s* trading platform (#Views).\(^{21}\) To mitigate the concerns that some views are generated by bots, the study will adjust the number of views on accounting-related regulatory filings and news articles by the number of views on regulatory filings that are likely not value-relevant. Specifically, the study will subtract the number of views on regulatory filings or media articles by the minimum number of views on any of the regulatory filings during the quarter. To further provide a benchmark for comparison, the study will utilize the views on regulatory filings regarding “monthly return of equity issuer on movement in securities” (*Benchmark Regulatory Filings*). These periodic reports summarize the changes of the company’s share capital at the end of each month and typically contain not much new information to the market.\(^{22}\)

**Retail Investor Holdings**

The study will use the aggregate daily holdings by the clients of *FutuBull* in each listed company as an instance to represent retail investor holdings that utilize the integrated trading

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\(^{20}\) The crowdsourced platform is similar to *SeekingAlpha* in the U.S., with articles written by authors using pseudo names. As public sell-side analyst reports from certain Chinese research brokerage firms may also be distributed through the crowdsourced platform, the *Crowdsourced Expert Opinion* indicator will exclude these analyst reports.

\(^{21}\) If the distribution is skewed, the study will take natural logarithm transformation on the number of views.

\(^{22}\) In most cases, there are no changes to a firm’s share capital on a monthly basis. Significant changes in share capital are typically announced immediately. However, it is possible that some sophisticated investors may pay attention to these documents to obtain information on the amount of option exercised or shares converted from convertible bonds during the month.
platform. Changes in aggregate daily holdings by FutuBull’s investors within the first trading day or first two trading days after the release of regulatory filings or media articles reflect the trading decisions by retail investors using FutuBull’s trading platform. The study will also use the aggregate daily holdings by the clients of I-Access in each company as an instance to represent retail investor holdings that utilize the non-integrated trading platform. Similar to FutuBull, I-Access is an online stock broker that also offers a low-cost trading environment for retail investors. However, unlike FutuBull, the trading platform of I-Access provides no access to any financial information.23

In mid-July 2021, retail investors at FutuBull collectively hold shares in 2,709 listed and delisted firms in Hong Kong while retail investors at I-Access FutuBull collectively hold shares in 2,679 listed and delisted firms in Hong Kong. The aggregate stakes by FutuBull users in each company have a mean of 1.08% with a standard deviation of 2.63% in mid-July 2021, suggesting the presence of large variations across firms. The aggregate stakes by I-Access users in each company have a mean of 0.10% with a standard deviation of 0.25% in mid-July 2021, suggesting that I-Access has a smaller scale of operations currently. However, at the beginning of the sample period, the aggregate stakes by FutuBull users in each company have a mean of 0.0022% with a standard deviation of 0.0054% while the aggregate stakes by I-Access users in each company have a mean of 0.04% with a standard deviation of 0.15% in early July of 2013.

This preliminary feasibility investigation supports substantial cross-sectional and time-series variations in retail holdings at both the FutuBull and I-Access trading platforms. These variations should provide sufficient power in testing the hypotheses. The pattern also suggests that there has

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23 Both FutuBull and I-Access are likely the leading brokers for retail investor in Hong Kong. They both offer extremely low-cost trading for retail investors and use “zero-commission” as their customer acquisition strategies. I-Access is a private company founded in 2004. I-Access once announced that it reached 17th place in terms of market turnover among all brokers in HK in the first quarter of 2020.
been enormous growth in online trading platforms that target retail investors in Hong Kong over the past several years, especially for integrated trading platforms such as *FutuBull*.

**Trading Profitability**

The study will examine the trading profitability from two perspectives. First, the study will examine the contemporaneous association between earnings news and the changes in *FutuBull*’s aggregate daily holdings on the day of regulatory filing or media articles. Having a positive association suggests that retail investors are trading in direction of the news (i.e., net buyers/sellers when there is positive/negative earnings surprise). Bernard and Thomas [1990] find evidence consistent with post-earnings-announcement drift (PEAD), suggesting that stock prices fail to reflect fully the implications of current earnings for future earnings. If PEAD holds, trades in the same direction of earnings surprises should generate higher profits.

Second, the study will directly examine whether the changes in aggregate holdings can be predictive of future stocks returns. According to Retail Investor Survey 2014, the medium number of transactions conducted by retail investors is six in a year. Thus, the study will examine the cumulative market-adjusted returns in the two months after the release of *Accounting Documents* for aggregate retail investor trades at *FutuBull*. As firms are only required to report earnings every six months in the HK stock exchange, the study will also examine the cumulative market-adjusted return in six months for aggregate retail investor trades at *FutuBull* after the release of *Accounting Documents*. Trading profitability using alternative horizons such as one week or until when the trade reverses (with a maximum of six months) will also be computed for robustness checks.

**Investor Attention**

Lawrence et al. [2018] find that investor attention affects the trading decisions of retail investors. The study will include proxies for investor attention as key control variables in
regressions. In addition to common proxies such as firm size, trading volume, stock volatility, and distraction from other concurrent earnings announcements using the number of other earnings announcements on the same day (e.g., Hirshleifer et al. [2009]), the study will also proxy for the differences in information awareness costs by the number of times the company is tagged by media articles that cover multiple firms (#Co-Tagged News) or the total number of views in these co-tagged articles (Co-Tagged Views) within the two days [0,+1] after the release of regulatory filing or media article. These co-tagged articles could increase investors’ awareness of the company concerned and its recent development among retail investors who follow other firms tagged in the same article.

4. Empirical Specifications

4.1 How much interest do retail investors exhibit towards accounting disclosures?

The study will start with descriptive analyses to examine whether the views on accounting-related regulatory filings Annual Report, Semi-Annual Reports, Results Announcements, Profit Warnings are significantly more than the views on Benchmark Regulatory Filings regarding “monthly return of equity issuer on movement in securities”. If retail investors on FutuBull pay attention to accounting-related disclosures, the number of views on Accounting Disclosures should be significantly higher than that on Benchmark Regulatory Filings.

Next, the study will conduct multivariate analyses using two separate samples using Model (1). The first sample will pool the views for Accounting Disclosures and Benchmark Regulatory Filings. The second sample will pool the views for all regulatory documents. In this sample, all other types of regulatory filings serve as the omitted category. The main independent variables of interest are the indicator for Accounting Disclosures. The specification will control for various proxies for investor attention, sentiment-driven attention using the absolute value of trailing one-
week market-adjusted returns and same-day market-adjusted returns as proxies (e.g., Barber and Odean [2007]), monitoring incentives by retail investors at \textit{FutuBull} using its aggregate stake in the company as a proxy, the strength of information intermediaries proxied by analyst following, and other key firm characteristics such as firm size, growth opportunity, profitability, and leverage. The specification will also control for other stable latent firm characteristics with firm fixed effects as well as time trends using year-quarter fixed effects.\footnote{One limitation of the proposed study is that it can only acquire the cumulative views on each document as of the data acquisition date, not the historical daily views on each document.} If retail investors exhibit interest in accounting disclosures, $\beta_1$ should be positive in Model (1).

$$
#\text{Views} = \beta_1 \text{Accounting Disclosures} + \beta_2 \text{Controls} + \epsilon \quad --- \quad (1)
$$

2.2 Through which channels do retail investors access accounting information?

Besides the direct access to disclosures in regulatory filings, the study will examine to what extent retail investors on \textit{FutuBull} rely on different types of information intermediaries in accessing accounting information. Specifically, the study will compare different channels through which retail investors access accounting information, such as \textit{Accounting Disclosures}, \textit{Summary Reports}, or \textit{Expert Opinion}.

In this section, the primary analysis will focus on earnings announcements. The sample will consist of all regulatory filings on \textit{Results Announcements} as well as accounting-related media articles providing summary reports and expert opinions captured by the “News” feed of \textit{FutuBull} platform within the \([0,+2]\) window of earnings announcements.\footnote{If there are multiple outlets providing summary reports or expert opinion, some of the contents can be quite similar. Three versions of analyses will be conducted: (1) treating each individual media article as the unit for analysis; (2) averaging the views within each category as the unit for analysis; (3) taking the maximum views within each category as the unit for analysis.} Model (2) describes the specification with the controls similar to those described in section 2.1. The main independent
variables of interest are the indicator for Summary Reports and Expert opinions, with regulatory filings on Results Announcements as the omitted category.

\[ \text{Views} = \beta_1 \text{Summary Reports} + \beta_2 \text{Expert Opinion} + \beta_x \text{Controls} + \varepsilon \quad \text{--- (2)} \]

If information extraction costs are important concerns for retail investors, they are more likely to access accounting information through Summary Reports. To be consistent with H1, \( \beta_1 \) should be positive in Model (2). If retail investors tend to face difficulties integrating information from raw filings, they are more likely to consult Expert Opinions to facilitate their interpretation of the information released during earnings announcements. To be consistent with H2, \( \beta_2 \) should be positive in Model (2). In addition, the difference between \( \beta_1 \) and \( \beta_2 \) could indicate whether retail investors rely more on summary reports or expert opinion in accessing accounting information.

Besides earnings announcements, the study will consider two other occasions regarding accounting-related regulatory filings. The first occasion is the filing of full periodic financial reports: Semi-Annual Reports and Annual Report. The second occasion is the filing of Profit Warnings. The study will respectively run Model (2) on these two occasions to understand whether the importance of Summary Reports and Expert Opinion differs according to the nature of accounting-related regulatory filings.

After understanding the channels through which retail investors access accounting information on the three occasions, the study will investigate which type of accounting-related regulatory filings that retail investors display the most interest in. Specifically, the sample will pool Profit Warnings, Results Announcements, Semi-Annual Reports, Annual Report, along with Benchmark Regulatory Filings. Model (3) describes the specification with controls similar to those in section 2.1. Annual Reports or Semi-Annual Reports are typically longer and more complex than Results Announcements while Profit Warnings are usually quite concise and provide the estimates
of key financial metrics in Results Announcements. The differences in the coefficients in Model (2) could shed light on the tradeoff between information extraction/integration costs and the properties of accounting information in those filings (e.g., timeliness, precision, level of detail). for retail investors. Findings in the form of $\beta_1 > \beta_2 > \beta_3 > \beta_4$ will be consistent with information extracting/integration cost being an important factor in retail investors’ access to accounting information. Since only Annual Reports are audited, the difference between $\beta_4$ and $\beta_3$ can also tell us whether retail investors pay more attention to audited accounting information.

$$#Views = \beta_1 \text{Profit Warnings} + \beta_2 \text{Results Announcements} + \beta_3 \text{Semi-Annual Reports} + \beta_4 \text{Annual Reports} + \beta_5 \text{Controls} + \varepsilon \quad (3)$$

In additional analyses, the study can utilize the setting to examine how much interest retail investors display towards Robo-journalism and crowdsourced analyses. Among the sample of Summary Reports, the study can test whether the coefficient on Robo Summary Reports is significantly different from 0 (the omitted category being the other Summary Reports). A positive/negative coefficient would suggest that retail investors display more/fewer interests in summary reports generated by automatic algorithms. The non-significance of the coefficients could suggest that retail investors do not distinguish between Robo- and human-generated reports.

Within the sample of Expert Opinion, the study can also test whether the coefficient on Crowdsourced Expert Opinion is significantly different from 0 (the omitted category being other Expert Opinion). A positive/negative coefficient would suggest that retail investors display more/less interest in articles from crowdsourced platforms relative to more traditional media outlets. The non-significance of the coefficients could suggest that retail investors do not distinguish between analyses from crowdsourced platforms and traditional channels.

Finally, the study will examine whether information intermediaries can also facilitate the direct access of accounting information from regulatory filings. In the first specification, the study
will examine whether the viewership of regulatory filings exhibit positive or negative association with that of *Summary Reports* or *Expert Opinion* when firms provide accounting-related regulatory filings on each of the three occasions, using controls and fixed effects as in previous models. Finding a positive association would be consistent with H3 while finding a negative association would be consistent with a substitutive relationship between information intermediaries and retail investor access to mandatory disclosures.

However, the first specification is subject to the concern that there could be some latent event-related characteristics that drive the viewership of both regulatory filings and media articles. Thus, the study also considers the second specification which utilizes the plausibly exogenous introduction of new media outlets to FutuBull’s “News” feeds over time. If the newly added media outlets do not uniformly cover all listed firms, there will be variations in “treated” and “non-treated” firms for each “event”. The study will stack all these “events” and include the two years of observations before and after each “event” to conduct a difference-in-difference analysis as specified in Model (4). To be consistent with H3, the coefficient on the interaction term $\beta_3$ should be significantly positive.

$$\text{#Views of Accounting Disclosures} = \beta_1 \text{Post} + \beta_2 \text{Treated} + \beta_3 \text{Post*Treated} + \beta_x \text{Controls} + \epsilon$$ --- (4)

### 4.3 Do retail investors benefit from acquiring accounting information?

Next, the study will assess whether retail investors on integrated trading platforms stand to gain from trading from accessing accounting information. The study will first examine whether retail investors on FutuBull trade in the same direction as the news content, similar in spirit to Hirshleifer et al. [2008]. In Model (5), the study will use the change in aggregate holdings of FutuBull’s users during the first trading day or the first two trading days after Results Announcements as the dependent variable. The variable $\Delta \text{Holdings}$ will be scaled by the weighted
average of aggregate holdings of *Futu* before and after the first or first two trading days. The key independent variable of interest is the news contained in *Results Announcements* proxied by the firm’s market-adjusted returns on the release date (*News*). If the returns exhibit patterns of PEAD, net trades in the same direction of news contained in *Results Announcements* should on average generate positive returns. To be consistent with H4, \( \beta_1 \) in Model (5) should be positive.

\[
\Delta \text{Holdings} = \beta_1 \text{News} + \beta_x \text{Controls} + \varepsilon \quad \text{--- (5)}
\]

As returns may not necessarily exhibit PEAD for all firms, the study will also directly examine the trading profitability of *FutuBull* users. This sample will be limited to those *Results Announcements* that contain value-relevant information as proxied by generating over \(|5\%|\) of market-adjusted stock price movement on the first or first two trading days after their releases and those with clear trading direction exhibited by *Futu* users in the corresponding time horizon. If \( \Delta \text{Holdings} \) is over +5\%, we consider the trading direction to be a “net buy”. If \( \Delta \text{Holdings} \) is below -5\%, we consider the trading direction to be a “net sell”. *Trading profitability* is thus calculated depending on the trading direction by *FutuBull* users.

Model (6) describes the regression specification. The dependent variable *Trading profitability* will be computed as the cumulative market-adjusted return of aggregate retail investor trades using *FutuBull* across different time horizons (e.g. one week, two months, six months). The key independent variable of interest is the number of views concerned on each type of accounting-related documents. To be consistent with H4, a higher number of views on accounting information should be associated with more profitable trades by *FutuBull* users in aggregation. Furthermore, if retail investors benefit from viewing certain types of documents containing accounting information,

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26 To prevent the denominator to be zero when acquiring shares from zero position.
27 The proposed study uses stock returns to proxy for news content instead of earnings surprises due to the lack of analyst coverage for public firms listed in Hong Kong compared to those listed in the US.
28 Alternative thresholds will be used for robustness checks if the \(|5\%|\) threshold yields too few observations.
βx that correspond to that specific type of accounting-related documents should be positive in Model (6).\(^{29}\)

\[ \text{Trading Profitability} = \beta_x \#\text{Views} + \beta_y \text{Controls} + \varepsilon \quad \text{--- (6)} \]

4.4 Do retail investors benefit from easy access to accounting information?

The last set of analyses aims to examine whether retail investors that utilize integrated trading platforms could gain an information advantage in trading relative to those that utilize non-integrated trading platforms which do not provide convenient access to accounting information. Specifically, the study will compare the trading profitability of retail investors at \textit{FutuBull} as an instance of integrated trading platforms against the retail investors at \textit{I-Access} as an instance of non-integrated trading platforms.

First, the proposed study will extend the analyses of Model (5) to retail investors utilizing the \textit{I-Access} trading platform. The analyses can shed light on whether retail investors who do not use an integrated trading platform also conduct net trades in the same direction as the news contained in \textit{Results Announcements}. The $\beta_1$ coefficient in Model (5) can be compared between \textit{FutuBull} and \textit{I-Access} users to assess the differences in the sensitivity of their holding positions to earnings news.

Next, the study will more directly compare the trading profitability between \textit{FutuBull} and \textit{I-Access} platform users. Model (7) will pool the trading profitability of both \textit{FutuBull} and \textit{I-Access} users. Similar to Model (6), the sample will be limited to those \textit{Results Announcements} that contain value-relevant information as proxied by generating over $|5\%|$ of market-adjusted stock price movement on the first or first two trading days after their releases, and those with clear trading direction exhibited by \textit{FutuBull} or \textit{I-Access} platform users using $|5\%|$ as the cutoff for $\Delta$\textit{Holdings}. To facilitate the comparison, the sample will only include firms with a comparable level of

\(^{29}\) Model (6) is a joint test of the value relevance of these accounting documents and whether the retail investors can properly extract and integration the accounting information into their trading decision.
ownership between *FutuBull* and *I-Access* users before the announcements. For consistency with H5, $\beta_1$ should be positive in Model (7). In additional analyses, *I-Access* could be replaced by brokers that specialize in institutional investors to facilitate our understanding of the gap against institutional investors.

$$\text{Trading Profitability} = \beta_1 F \text{utu} + \beta_2 \text{Controls} + \varepsilon \quad \cdots \quad (7)$$

5. **Potential Contributions**

The proposed study can contribute to the literature regarding whether and to what extent retail investors utilize accounting information. Prior literature provides mixed evidence on the extent of accounting information usage by retail investors. Kaniel et al. [2012] find some evidence of informed trading by retail investors around earnings announcements. However, Blankespoor et al. [2019] suggests that retail investors in their sample neglect value-relevant accounting information presented in articles generated by Robo-journalism. This study conjectures that retail investors are likely not a homogenous group of investors. By utilizing a setting that lowers the acquisition costs for accounting information, the study provides a powerful setting to elicit whether there is a substantial group of retail investors that care about accounting information and can benefit from accessing accounting information. This question has important implications for accounting standard setters and regulators.

The study also has the potential to shed light on the specific channels through which retail investors acquire accounting information. Prior literature has examined information acquisition through different channels largely in isolation, such as SEC Edgar filings (e.g., Drake et al. [2015]), Robo-journalism (e.g., Blankespoor et al. [2018]). However, the relative contribution across different channels is not clear. Taking advantage of the unique feature in the setting, the study can assess the relative importance of different information channels for retail investors under a unified
viewership scale. Furthermore, the study has the potential to elucidate the underlying factors that drive information access through different channels. For example, is information acquisition cost or integration cost an important impediment to the usage of accounting information by retail investors?

The study could also enhance our understanding of the trading behavior of retail investors, particularly with regards to whether retail investors can properly utilize accounting information in making informed trading decisions. Some recent literature suggests that retail investor trades can be information-driven (e.g., Kelley and Tetlock [2013, 2017]; Boehmer et al. [2020]). However, it is not clear whether their use of accounting information can contribute to their informative trades. This study has the potential to address this question by taking advantage of a unique setting in which researchers can directly and simultaneously observe their information usage and trades in a highly popular online trading platform for retail investors. Prior studies typically can only directly observe either the information usage or trading decisions in the same setting, but not both. The setting also provides a unique opportunity to examine to what extent retail investors can properly utilize accounting information from different channels, such as media articles that provide summary earnings reports or expert opinions, official filings on results announcements, and the more detailed semi-annual reports or audited annual reports.

Last but not least, the study could help us better understand the information role of trading platforms. Multiple recent studies (e.g., Welsh [2020]; Ozik et al. [2020]; Moss et al. [2020]; Barber et al. [2021]; Michels [2021]) utilize Robinhood data to examine the behaviors of retail investors. However, Robinhood does not provide convenient access to detailed accounting information on its app interface and may capture more inexperienced retail investors. To complement these studies, the proposed study examines another type of trading platform, which
are termed as “integrated trading platforms” in this proposal. Also serving as information platforms, integrated trading platforms provide retail investors easy and timely access to accounting information. The study will test whether retail investors trading on an integrated trading platform can better incorporate accounting information than those trading on a non-integrated trading platform that provides no direct access to any accounting information. These findings can shed light on the potential heterogeneity of retail investors and whether the type of trading platforms matters regarding whether and how retail investors utilize accounting information. The findings should also be relevant to regulators who are recently showing more interest in understanding the behaviors of retail investors, especially the role of brokers in their trading behaviors.

6. Limitations and Caveats

There are several limitations to the data used in this study. First, the proposed study cannot observe the amount of time retail investors spent reading and analyzing the information contained in each document on the FutuBull trading platform. Therefore, not all viewership of accounting information necessarily represents retail investors’ diligent efforts in information extraction and integrations. Based on its corporate disclosures, users with a positive account balance on FutuBull on average spent over 30 minutes on the trading platform each day.

Second, the proposed study cannot observe the behavior of an individual investor, but only the aggregate viewership and net trading behavior by retail investors at the broker-level for different listed firms across different information channels in different disclosure events. The findings may be attributable to only a subset of retail investors that are more sophisticated on the platform while the other group largely engages in noise trading. There is no way to further disaggregate viewership and trading behaviors of retail investors into individual levels using the data.
Third, the study cannot observe the information access and the trading behavior of *FutuBull* users outside the *FutuBull* platforms. This could lead to the loss of statistical power by introducing noise as well as potential unknown bias in estimating the raw magnitude of the benefits in accessing accounting information. As the noise and bias are likely similar across different information channels, the analyses should still be able to shed light on the differential benefits of accessing accounting information using different channels.
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Appendix A: Futu Trading Platform

Appendix A provides some snapshots of the integrated trading platform interface at *Futu* using Tencent as an example on July 30.

- The “News” tab provides timely news feeds of regulatory filings and media articles from different information intermediaries related to Tencent.

- The “Announcement” tab separately provides timely feeds of regulatory filings filed by Tencent.

- The “Analysis” tab provides visualization of main historical accounting items.
- Further in-depth tabs provide segment analyses, ratio analyses, and detailed financial items.