Fragmented Securities Regulation: Neglected Insider Trading in Stand-alone Banks *

Sehwa Kim †

Columbia Business School

Seil Kim ‡

Zicklin School of Business
Baruch College-CUNY

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Abstract

We examine whether regulatory fragmentation, by separating disclosure venues, affects stock price efficiency. Stand-alone banks submit filings to bank regulators via FDICconnect rather than to SEC EDGAR. We find that the short-run market reaction to insider-trading filings on FDICconnect is almost non-existent and significantly smaller than for these filings on SEC EDGAR. We also find that retail investors trade less on insider filings on FDICconnect compared to those on SEC EDGAR. These results are potentially due to the lower awareness and higher search costs regarding FDICconnect filings. Our results suggest that regulatory fragmentation undermines market efficiency and disadvantages retail investors.

Keywords: Banks; regulation; fragmentation; insider trading; FDICconnect; SEC EDGAR; filings

JEL Classification Numbers: G14, G21, G28, M41, M48

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†Sehwa Kim: Columbia University (e-mail: sk4663@columbia.edu).

‡Seil Kim: Baruch College-CUNY (e-mail: seil.kim@baruch.cuny.edu).

1 Introduction

The financial regulatory structure in the U.S. is complex, consisting of multiple agencies with overlapping responsibilities. Regulators have raised concerns that regulatory fragmentation may undermine the stability and efficiency of the U.S. financial system (GAO, 2016). Many academic studies examine the consequences of fragmented regulation, focusing on the effect of inconsistent enforcement across different regulators overseeing similar companies (Agarwal et al., 2014; Bischof et al., 2019; Charoenwong et al., 2019; Granja and Leuz, 2019; Rezende, 2016; Rosen, 2003, 2005). Although fragmented regulation can also have effects on the financial system through other channels, we have limited evidence on these effects. In this paper, we study whether fragmented securities regulation increases the costs of searching filed documents, thereby negatively affecting capital markets. Specifically, we examine the consequences of separate disclosure systems due to regulatory fragmentation on stock price efficiency.

Publicly traded stand-alone banks in the U.S. are exempt from Securities and Exchange Commission (SEC) registration under the Securities Act of 1933 and thus do not submit filings to the SEC through EDGAR.[1] Instead, they file with their federal bank regulator through FDICconnect, a separate filing and dissemination system created by federal bank regulators and administered by the Federal Deposit Insurance Corporation (FDIC). To examine the consequences of the fragmented disclosure system on stock price efficiency, we compare the timeliness of market reactions to Form 4 insider-trading filings on FDICconnect with those on SEC EDGAR, for which prior studies found immediate market reactions (Bolandnazar et al., 2019; Du, 2015; Rogers et al., 2016, 2017).

Consequences of the fragmented filing and dissemination system is increasingly important as more bank holding companies consider becoming stand-alone banks. Traditionally, stand-alone banks have formed bank holding companies to expand their non-banking business or to gain flexibility in issuing capital. However, post-crisis regulations such as the

[1] We use the term stand-alone bank to refer to a bank without a bank holding company.

Dodd-Frank Act and Basel III increased the regulatory burden for bank holding companies and thus have motivated banks to shed their holding company structures. Recently, Zions Bancorp, Bank OZK, BancorpSouth, and Northeast Bancorp dissolved their holding companies. Consequently, many banks and regulators are questioning the usefulness of the holding company structure (Noreika, 2017; Rexrode, 2017).[2]

The change in banks' organizational structure accompanies important changes in requirements for their mandatory disclosure. Publicly traded stand-alone banks file the same Securities Exchange Act filings (e.g., 10-K, 8-K, proxy statement, Form 4) as companies registered with the SEC but to federal bank regulators. This arrangement raises the concern that filings on a separate disclosure system designed for stand-alone banks may suffer from lower market awareness and higher search costs, and thus limit the flow of information to financial markets. The SEC expressed concern that filing mandatory disclosures with different regulators "makes it difficult for many investors to know where to find the reports of a particular financial institution" (SEC, 1999).

We focus on insider-trading filings to examine the effects of the fragmented disclosure system on stock price efficiency for several reasons. First, whereas other important disclosures such as earnings announcements mostly occur outside of market hours, a large subset of Form 4 filings occur during market hours. Thus, we can observe intra-day market reactions specific to a certain Form 4 filing. Second, Form 4 filings contain useful information in a simple, homogenous format (Rogers et al., 2017). Hence, we can compare filings containing similar information on the two different disclosure systems. Third, the information in a Form 4 is not preempted by other sources because it is disclosed first through FDICconnect (for stand-alone banks) or SEC EDGAR (for bank holding companies) by regulation. Fourth, sophisticated investors actively trade on information in Form 4 filings. Chen et al. (2019) find that mutual fund managers obtain Form 4 filings and trade in the same direction. Similarly, Crane et al. (2019) find that hedge funds trade on Form 4 filings.

[2]New York Community Bancorp, in its 2017 Q3 earnings call, discussed shedding their holding company to avoid the systemically important financial institution (SIFI) designation.

The main empirical challenge for isolating the effects of the fragmented disclosure system on stock price efficiency is that the market reactions to Form 4 filings may differ not because of the separate disclosure systems but because of other confounding factors such as unobservable bank characteristics. To address this concern, we use three different empirical strategies: a matched-sample analysis, a within-bank analysis, and a placebo test using earnings announcements.

First, for the matched-sample analysis, we match stand-alone banks to bank holding companies consisting of one commercial bank ("single-bank holding companies") based on year and bank characteristics, and then compare market reactions to their Form 4 filings on FDICconnect and SEC EDGAR. We find that the short-run market reaction to insider stock purchases on FDICconnect by stand-alone banks is almost non-existent and significantly smaller than that on SEC EDGAR by bank holding companies. Filings on FDICconnect show smaller returns and abnormal trading volume, by 17.6 basis points and 98.1 percentage points respectively, than those on SEC EDGAR during the fifteen minutes after filing. These differences persist up to around seven trading days after filing. However, the difference in returns disappears in the long run. We find no significant differences in cumulative abnormal returns (CAR) measured from the filing date to 21, 42, and 63 trading days. These results suggest that the short-run difference in market reaction is not driven by different information content of the filings.

Second, for the within-bank analysis, we limit the sample to banks that were once a stand-alone bank and control for bank fixed effects, thereby capturing within-bank variation in market reaction. This approach allows us to compare market reactions to filings on different disclosure venues by the same bank, and thus reduces concern that market reactions differ because banks reporting to FDICconnect and SEC EDGAR are fundamentally different. Consistent with the results in the matched-sample analysis, we find that the short-run market reaction to insider purchases filings on FDICconnect as a stand-alone bank is significantly smaller than that of filings on SEC EDGAR by the same

bank as a bank holding company.

Third, we run a placebo test using earnings announcements to address the concern that the market reaction difference is due to banks' organization structure rather than the disclosure venues because the organization structure of a bank solely determines its disclosure venue. Whereas insider trading activity is initially disclosed through a Form 4 filing by regulation, earnings are mostly announced in press releases first and filed on the disclosure system with a significant delay (Bochkay et al., 2019). If the market differently reacts to information disclosures by banks with different organization structures, we expect to also observe a significant difference in market reactions to earnings announcements. However, consistent with our prediction that the short-run market reactions differ because of the fragmented disclosure system, we find no differences in short-run cumulative abnormal returns (CAR) to earnings announcements by stand-alone banks and bank holding companies.

We next examine whether retail investors are informationally disadvantaged regarding Form 4 filings on FDICconnect compared to those on SEC EDGAR. Retail investors may be less aware of insider trading filings on FDICconnect because news coverage of these filings is limited, and retail investors typically have limited access to other information sources such as analysts and data vendors. We find that less retail investors and more institutional investors trade on Form 4 filings on FDICconnect compared to those on SEC EDGAR. These findings are consistent with retail investors being informationally disadvantaged regarding FDICconnect filings, potentially due to their higher search costs.

Finally, we examine two potential mechanisms for the short-run market reaction difference: media coverage and sophisticated market participants. First, regarding media coverage, we find that fewer information intermediaries cover filings on FDICconnect compared to SEC EDGAR. As summarized in Appendix B, real-time data sources such as Dow Jones Newswires and Bloomberg Terminal's Company Filings do not cover Form 4 filings on FDICconnect, and other non-real time data sources such as WSJ Quotes, Yahoo Finance,

and Thomson Reuters also do not comprehensively cover Form 4 filings on FDICconnect. We test whether the lack of real-time media coverage by Dow Jones Newswires, a well-known market-moving intermediary, drives the short-run difference (Li et al., 2011; Rogers et al., 2017). Because Dow Jones Newswires covers no stand-alone bank, we compare the market reactions to Form 4 filings on FDICconnect by stand-alone banks and those of filings on SEC EDGAR by bank holding companies without Dow Jones Newswires coverage. We find that the market reactions to filings on FDICconnect are still significantly smaller than the market reactions to filings on SEC EDGAR. This result suggests that real-time media coverage alone does not sufficiently explain the short-run market reaction difference. Second, regarding sophisticated market participants, we find that stand-alone banks have lower institutional ownership and fewer analysts following. However, controlling for institutional ownership and the number of analysts following does not change our results regarding the short-run market reaction difference. All these findings are consistent with the possibility that the muted market reaction to filings on FDICconnect persists due to low market awareness and high search costs.

Our study contributes to the discussion on regulatory fragmentation. Prior studies show that fragmented regulation may lead to different levels of enforcement of the same rules (Agarwal et al., 2014; Bischof et al., 2019; Charoenwong et al., 2019; Granja and Leuz, 2019; Rezende, 2016; Rosen, 2003, 2005). We focus on the effect of separate disclosure systems, a different channel through which regulatory fragmentation can affect the financial system. We show that the same securities regulation but with different disclosure systems can negatively affect price efficiency in the stock market.[3] In addition, we find that retail investors are less informed about filings on FDICconnect compared to filings on SEC EDGAR. These findings can be particularly important concerns for the SEC given that the SEC's mission includes

[3]Relatedly, Christensen et al. (2017) documents that mine safety disclosures on SEC filings has real effects on mining companies whereas the same information previously available from the Mine Safety and Health Administration does not. They suggest that the information on SEC filings attracts more public awareness, thereby changing firm behavior.

enhancing market efficiency and providing a "level playing field" to all investors.[4] Our results support the argument by regulators to streamline the administration and enforcement of disclosure regulation (SEC, 1999; Task Group on Regulation of Financial Services, 1984).

Our study also adds to the discussion about a uniform platform to disseminate information. Gao and Huang (2019) finds that the adoption of electronic filing on SEC EDGAR increases information production by outsiders, leading to more informative trading and greater analyst coverage. Cuny (2016) finds that the adoption of the Electronic Municipal Market Access (EMMA) system reduced dissemination costs, resulting in increased disclosure by municipal issuers. Cuny (2018) also documents that EMMA reduced information acquisition costs, thereby increasing the bargaining power of retail investors. Our paper differs by showing that electronic disclosure systems can affect stock price efficiency due to the lack of awareness and high search costs.

In addition, our findings suggest that the fragmentation in disclosure systems can undermine the objective of Section 403 of SOX, which requires insider trading activity to be filed electronically within two business days. Timely electronic filing of insider trading activity was expected to allow timely and transparent dissemination to investors and enhanced market efficiency (FDIC, 2004; SEC, 2002). Prior studies find that market reaction increased after SOX for insider trading filings on SEC EDGAR (Brochet, 2010), and that investors trade on Form 4 filings relying on electronic filings (Jackson and Mitts, 2014; Rogers et al., 2017). However, we find that the immediate market reaction to filings on FDICconnect is almost nonexistent, implying that timely dissemination and market efficiency is hampered.

Finally, our study provides evidence of unintended consequences of post-crisis regulation. Buchak et al. (2018) show that the increased regulatory burden induced banks to move out of mortgage markets and shadow banks not subject to banking regulation filled this gap. Sundaresan and Xiao (2019) show that post-crisis regulations led banks to rely more on

[4]The mission of the U.S. Securities and Exchange Commission is to protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation.

funding from the Federal Home Loan Banks, which in turn borrow more from money market funds, a link that the regulations intended to weaken. Kim et al. (2019) show that the removal of the prudential filter for accumulated other comprehensive income under Basel III induced banks to change their classification and risks of securities, and thus affected their funding, lending, and risk-taking. We provide evidence that the increased regulatory burden can motivate banks to shed their holding company structure, which may create unintended consequences on the capital market.

2 Institutional Background and Hypothesis

2.1 Securities Regulation and Disclosure Requirements for Stand-Alone Banks

Securities issued by stand-alone banks are exempt from SEC regulation under Section 3(a)(2) of the Securities Act of 1933. The exemption was granted in 1933 based on the principle that banks are already heavily regulated and are thus presumed to provide adequate disclosures to their stakeholders even if not obligated to do so by federal securities laws.[5,6] Several decades later, the Securities Acts Amendments of 1964 mandated SEC registration and disclosure for firms with more than $1 million in assets or more than 500 shareholders, a threshold which applied to many banks. As a result, these banks were required to disclose Securities Exchange Act Filings (e.g., 10-K, 8-K, proxy statement). However, due to the SEC registration exemption, federal bank regulators were given jurisdiction over the banks' disclosure and securities regulation under Section 12(i) of the Securities Exchange Act of 1934. In 1974, Section 12(i) was further amended to require federal bank regulators to issue securities regulations substantially similar to those set by the SEC, thereby subjecting banks to the same securities regulations as companies.

[5]See "SEC Regulation of American Depositary Receipts: Disclosure, Ltd." The Yale Law Journal, vol. 65, no. 6, 1956, pp. 861-872; "Banks and the Securities Act of 1933" Virginia Law Review, vol. 52, no. 1, 1966, pp. 117-128; and "Bank Exemption from the 1933 Securities Act" Banking Law Journal, vol. 93, pp. 432-459

[6]However, bank holding companies were subject to SEC registration as they were considered to be companies rather than banks.

Publicly traded stand-alone banks file the same forms with their federal bank regulator as do other public companies with the SEC. National banks file with the Office of the Comptroller of the Currency (OCC), state banks that are a member of the Federal Reserve file with the Federal Reserve Board (FRB), and state banks that are non-members file with the FDIC. Most listed stand-alone banks are non-member state banks and file with the FDIC. As depicted in Figure 1, stand-alone banks' securities regulation is under the jurisdiction of their respective federal bank regulator whereas bank holding companies' securities regulation is overseen by the SEC.

Prior to 2003, the bank regulators did not operate an electronic filing system whereas the SEC had run EDGAR since the early 1990s. As Section 403 of SOX required insiders to electronically file Form 4 with the SEC within two business days, federal bank regulators adopted the same rule. Federal bank regulators (OCC, FRB, and FDIC) jointly developed an electronic platform called FDICconnect that started receiving files on June 30, 2003. As of the end of 2018, 178 stand-alone banks have posted their Form 4 filings on FDICconnect. Stand-alone banks are required to file Form 4 on FDICconnect and encouraged to post other mandatory disclosures such as Forms 10-K, 8-K, and proxy statement on FDICconnect.[7]

2.2 FDICconnect and Stock Price Efficiency

FDICconnect has several features that may affect the stock price efficiency of filers. First, market participants are not fully aware of the existence of FDICconnect. Schmidt (2017) notes that "There are several software programs or services that can be used to monitor merger-related filings on EDGAR, but we aren't aware of any such programs or systems for the FDIC's system." Anecdotal evidence suggests that even experienced bank analysts are not aware of the existence of FDICconnect.[8] We also find numerous cases of Freedom of Information Act (FOIA) requests with the FDIC to access publicly available information such as 8-K, 13D, and 13G filings, which suggests that market participants are not aware

[7] https://www.fdic.gov/news/news/financial/2011/fil11040.pdf
[8] https://www.fool.com/investing/2017/09/21/bank-of-the-ozarks-no-longer-submits-regulatory-fi.aspx

that those filings could be downloaded from FDICconnect.

Second, fewer information intermediaries cover FDICconnect compared to SEC EDGAR. As summarized in Appendix B, many real-time data vendors do not comprehensively collect insider-trading filings from FDICconnect. Newswires such as Dow Jones do not cover insider-trading filings from FDICconnect as they do for most filings on SEC EDGAR.[9] This may have an important implication for market reaction given that prior studies suggest that real-time news feed by Dow Jones Newswires is a major market-moving factor (Li et al., 2011; Rogers et al., 2017). In addition, in the Company Filings section of Bloomberg Terminal we could not find any Form 4 filings on FDICconnect whereas filings on SEC EDGAR are generally updated in real time. Data providers without a real-time feed also have less coverage of stand-alone banks and the contents of filings by stand-alone banks are often inaccurate. WSJ Quotes, which includes insider transactions in its corporate profiles, leaves the space blank for stand-alone banks. Yahoo! Finance does cover insider transactions in stand-alone banks but only shows a subset of transactions filed. Thomson Reuters, which provides a feed of previous days' filings every weekday morning, appears to have started coverage of FDICconnect filings in 2015 but does not cover all banks.[10]

Third, FDICconnect is less user-friendly than SEC EDGAR. FDICconnect does not offer any public dissemination service that pushes disclosures to interested users. In addition, the website requires a legal consent every time to access, and individual filings do not have a separate URL. On top of that, FDICconnect's search query can be confusing. By default, the date is set to search from today to today, which results in no filings. To obtain today's filings, the user has to set the search from today to tomorrow. Banks that file to FDICconnect have

[9]In RavenPack, which we use to access newswires, there are no insider-trading news coverage of stand-alone banks. It has insider transaction news for Towne Bank, a stand-alone bank, but they appear to be a misclassification of insider trades by Franklin Financial Services Corp, a bank holding company.

[10]We also find some discrepancies in the source information on FDICconnect: several insiders are misclassified as a director or officer of other stand-alone banks, and the filing dates coded in Thomson Reuters is sometimes days after the FDICconnect filing date.

commented that the system requires improvement.[11,12]

All these features of FDICconnect can increase search costs of its users and thus we hypothesize that market participants respond to Form 4 filings on FDICconnect less timely than to filings on SEC EDGAR.

3 Research Design and Sample Selection

3.1 Research Design

A potential endogeneity concern is that a certain type of bank operates without a holding company and those unobservable bank characteristics may lead to muted market reaction. However, the holding company structure itself is unlikely to have a direct impact on investor response to insider trading, especially in the short-run, because banks are not likely to switch organizational structure just to change disclosure venues. Typically, banks transition to a bank holding company to expand business areas and transition to a stand-alone bank to avoid FRB regulations imposed on bank holding companies.[13] To the best of our knowledge, none of the banks transitioning to or from a stand-alone bank or considering to do so discuss SEC registration or the disclosure venue as a benefit or cost of transition.

Yet, to mitigate the concern that the difference in organizational structures may drive market reactions to Form 4 filings, we use three different strategies: matched-sample analysis, within-bank analysis, and a placebo test using earnings announcement. For the

[11]See comment letters to the FDIC by the American Bankers Association (December 4, 2018) and the International Bancshares Corporation (December 4, 2018).

[12]There are other differences between FDICconnect and SEC EDGAR in terms of fees and operating hours. FDICconnect does not charge filing fees whereas the SEC charges filing fees proportional to the maximum aggregate price of securities (Sections 6(b) of the Securities Act of 1933 and Sections 13(e) and 14(g) of the Securities Exchange Act of 1934). EDGAR is open from 6:00 am to 10:00 pm EST on weekdays whereas FDICconnect is open from 8:00 am to 10:00 pm EST on weekdays.

[13]Regulatory jurisdiction over the activities of a bank holding company lies with the Federal Reserve regardless of whether the subsidiary bank's federal regulator is the OCC, the FRB, or the FDIC.

matched-sample analysis, we construct a sample of single-bank holding companies.[14,15] Then, we construct a matched-sample by matching on year and several bank characteristics: the natural log of market capitalization, tier 1 capital, loans as a proportion of assets, and deposits as a proportion of assets.

For the within-bank analysis, we examine the difference of market reaction to banks that were once a stand-alone bank. This approach allows us to compare market reactions to filings on different disclosure systems by the same bank, and thus mitigates the concern that market reactions differ because banks reporting to FDICconnect and SEC EDGAR are fundamentally different.[16] Historically, many banks transitioned from a stand-alone bank to a bank holding company. The opposite transition is relatively scarce, but recently, four banks have shed their holding companies: BancorpSouth, Bank OZK, Northeast Bancorp, and Zions Bancorp.[17]

For the placebo test, we compare the market response to earnings announcements for stand-alone banks and a matched control sample of single-bank holding companies. If the market reaction differences to insider-trading filings on FDICconnect and SEC EDGAR are mainly due to the disclosure venues but not due to organizational structures, we expect no difference in market responses to earnings announcements. Earnings announcements are

[14]We identify single-bank holding companies as follows. First, we select all bank holding companies that have one commercial bank. Next, we compare the total assets at the commercial bank level (RCFD2170 or RCON2170 in call reports) to the consolidated total assets at the bank holding company level (BHCK2170 in FR Y-9C or BHSP8519 in FR Y-9SP) and require the commercial bank's assets to be within 1 percent of the holding company's assets.

[15]A potential test to examine whether organizational structure or disclosure venue drives our findings is to compare market reactions to insider-trading filings by Zions Bancorp that transitioned from a bank holding company to a stand-alone bank but did not change its disclosure venue from SEC EDGAR to FDICconnect. Instead, Zions Bancorp opted to become a "voluntary filer" with the SEC and continues to post Form 4 filings on EDGAR. However, as of the writing of this paper, Zions Bancorp has yet to post an open-market purchase within market hours after transitioning. Our speculation is that markets will respond immediately to future filings by Zions Bancorp if market awareness mainly drives the different market reactions to FDICconnect and SEC EDGAR.

[16]We acknowledge that the within-bank analysis does not control for time-varying bank characteristics. For example, being a bank holding company may attract more analysts and institutional investors who are sophisticated and response to any information disclosed by banks in a timely manner. As reported in Section 5.2, we additionally control for institutional ownership and analysts following and find largely similar results.

[17]Northeast Bancorp is not included in our analysis because the transition occurred in 2019, after our sample period. Zions Bancorp is also not included in our analysis because it opted to become a "voluntary filer" with the SEC.

initially disseminated in a press release rather than filed on a disclosure system in most cases. Thus, the difference in disclosure systems is less likely to affect market reaction to earnings announcements as it does for Form 4 filings.

3.2 Sample Selection

We hand-collect Form 4 filings on FDICconnect and obtain filings on SEC EDGAR from Thomson Reuters from 2003 to 2018. We focus on open-market purchases because prior studies suggest that insider sales are less informative and find no significant intra-day market reaction to insider sales (Brochet, 2010; Du, 2015; Rogers, 2008; Rogers et al., 2016, 2017). Since Thomson Reuters does not provide the SEC filing timestamp, we follow Johannesson and Kim (2018) to merge timestamps on the WRDS SEC filing database.[18] Rogers et al. (2017) show that the SEC filing timestamp is on average 62.3 seconds (median 37.8 seconds) later than the time that Form 4 filings are available on the FTP. To address the concern that market reaction to SEC filings may occur earlier than the timestamp, we examine a wider window and also conduct a robustness test limiting the sample period from the end of 2014 when the SEC supposedly modified the system to ensure fair disclosure (Jackson and Mitts, 2014; Patterson et al., 2014).

We provide details of our sample construction in Table 1. We start with 15,545 Form 4 filings by stand-alone banks with a matching CRSP identifier. Next, we drop transactions other than open-market purchases, such as sales, equity grants, and option exercises.[19] Then, we restrict the sample to filings made between 9:40 a.m. to 3:30 p.m. EST to examine intra-day market reactions.[20] After dropping observations without necessary variables and

[18]For all Form 4 filings by sample firms, we reconstruct the URL to each Form 4 and scrape the film number on SEC EDGAR. The film number corresponds to the DCN identifier in the Thomson Reuters dataset allowing us match each filing to a timestamp.

[19]The Form 4 filings at FDICconnect usually omit transaction codes, which makes it more difficult to interpret the filings. We carefully review all filings with share acquisition and drop filings with option exercises, with mention of share grants in the footnotes, and that are amendments (filings with non-missing "Date of Original Filing"). We drop filings when multiple insiders from the same bank have Form 4 filings in one day with the same transaction prices, which are most likely grant-related.

[20]The restriction is to avoid beginning and end of day trading effects (Rogers et al., 2016, 2017). Our results are robust to including all filings within market hours of 9:30 am to 4:00 pm EST.

matching with a control sample of bank holding companies on year and bank characteristics, we have 730 filings by stand-alone banks for the main analysis.

For the timing of filing, we use the filing date timestamp on FDICconnect. We check whether the timestamp accurately reflects when the filing is publicly available. For two weeks in late 2018, we recorded the latest filing on FDICconnect every 10 seconds. We confirm that the Form 4 filing is always posted within 10 seconds of the stamped time. For filings with multiple lines of reported transactions, we take the last transaction date, add all the shares transacted, and calculate a weighted average transaction price.

Out of 178 stand-alone banks with Form 4 filings on FDICconnect, we are able to link 48 banks with CRSP.[21] Among them, 13 banks are publicly listed at the end of 2018. Stand-alone banks are typically small, which may lead to less investor attention on their disclosures. However, some of these banks are or were large enough to be included in the S&P 1500 (e.g., First Republic Bank, Bank OZK, Signature Bank, Opus Bank, and BancorpSouth).

In Table 2, we report summary statistics for the bank and transaction-level characteristics by stand-alone banks and matched bank holding companies. In Panel A, we compare bank-level characteristics to check the matching performance. The average and median of stand-alone bank characteristics are insignificantly different from those of matched bank holding company characteristics on all our matching criteria. On the other hand, In Panel B, transaction-level characteristics show some differences between the two groups. The average trade size, in dollars, is \$46,540 for the stand-alone banks is significantly larger than the average trade size \$24,113 of the matched bank holding companies. In addition, the stand-alone bank sample has more trades by CEOs, directors, and 10% beneficial owners. We explicitly control for transaction-level characteristics in our regression analyses to reduce

[21]The 130 stand-alone banks not linked to CRSP are not listed on a major stock exchange. We also use the CRSP-FRB link provided by the Federal Reserve Bank of New York to identify listed stand-alone banks not filing on FDICconnect. Unexpectedly, we find three banks that submitted hand-written Form 4 filings to the FRB but not electronically through FDICconnect, apparently in violation of Section 403 of SOX. We do not include these filings in our sample because we cannot determine the timing of filing.

concern that these differences at the transaction level may drive our findings.

4 Market Responses to FDICconnect and SEC EDGAR

4.1 Univariate Tests with the Matched Sample

In Panel A of Table 3, we compare daily abnormal returns around the filing date for the stand-alone banks vs. matched single-bank holding companies. Abnormal returns are calculated as raw returns minus the value-weighted size-decile portfolio return from CRSP. Abnormal returns for stand-alone banks' filings on FDICconnect are reported under the column labeled FDIC. None of the daily abnormal returns from one day prior to four days following the filing date is statistically different from zero. In contrast, the bank holding companies' filings on SEC EDGAR reported under the column labeled SEC shows a positive and significant market reaction of 72 basis points on the filing date. The difference in mean abnormal returns on the filing date between filings on FDIC (18 basis points) and SEC EDGAR (72 basis points) is 54 basis points and statistically significant at the 1% level. Mean abnormal returns on the day after the filing date, aggregated around [0,+2], and aggregated around [0,+4] also show that insider-trading filings on FDICconnect have significantly smaller market reaction in the short run.

However, the two groups show insignificant difference in mean abnormal returns in longer windows. Mean abnormal returns around [0,+42] and [0,+63] trading days of the filing date are positive and statistically significant for both filings on FDICconnect and SEC EDGAR and the difference between the two filings is statistically insignificant. The results using median abnormal returns also show significant short-run differences but insignificant long-run differences. Importantly, the insignificant long-run differences suggest that the insider-trading filings have similar information content regardless of the disclosure venue.

In Panel B of Table 3, we compare daily abnormal volume around the filing date for the stand-alone banks to that of matched bank holding companies. Abnormal volume is calculated as the daily volume (as a proportion of shares outstanding) divided by average

daily volume for the same day of the week in the past 52 weeks. We find significantly greater mean and median abnormal volume for SEC EDGAR filings on the filing date. We also find significantly greater mean and median abnormal volume for SEC EDGAR filings aggregated around [0,+2] and [0,+4] of the filing date.

To gauge the economic significance of the money left on the table, we calculate the dollar return available from trading on filings on FDICconnect if they were disclosed on SEC EDGAR. We assume that an investor tracking FDICconnect filings purchases stock on the filing date and sells after two trading days, thereby earning the abnormal return of 112 basis points over [0,+2].[22] We further assume that the abnormal trading volume in response to FDICconnect filings will increase as much as the abnormal trading volume in response to SEC EDGAR filings on the filing date (i.e., 0.43x).[23] Given the mean normal trading volume of $1.2 million on the filing date for filings on FDICconnect (untabulated), the estimated profit from trading is $4.2 million.[24] Although relying on many assumptions, the calculation provide a rough estimate of the trading profits for an investor over the 16-year sample period if Form 4 filings were made on SEC EDGAR instead on FDICconnect.

Next, we conduct intra-day analyses to compare immediate market responses to Form 4 filings on FDICconnect and SEC EDGAR. In Figure 2, we plot average percent returns and average percent abnormal volume on a second-by-second basis from 5 minutes prior to 15 minutes after Form 4 filings of open-market purchases. We include all observations with at least one transaction within the window, which results in 277 filings on FDICconnect and 288 filings on SEC EDGAR. In Panel A, we plot average percent returns, where returns are computed as the raw return from 5 minutes prior to filing to event time. The average returns to filings on FDICconnect (in solid red) show small reaction before and after the filing. On the other hand, the average return to filings on SEC EDGAR (in dotted black) shows small movement for the five minutes prior to the filing but jumps within seconds of the filing. The

[22] In Panel A of Table 3, the difference in mean abnormal returns for [0,+2] is 1.12 (=1.18 - 0.06).
[23] In Panel B of Table 3, the difference in mean abnormal trading volume on day 0 is 0.43 (=1.69 - 1.26).
[24] $4.2 million = 1.12% × $1.2 million × 0.43 × 730 observations.

average return to SEC EDGAR filings increases to around 12 basis points 60 seconds after filing. The instantaneous reaction is consistent with prior studies such as Rogers et al. (2017) that document returns of around 30 basis points after 60 seconds of the filing. Our findings are slightly smaller than their findings, which could be due to the different composition of sample firms or the longer sample period. In any case, the non-reaction to potentially positive information disclosure by stand-alone banks is surprising and notable.

In Panel B, we plot average percent abnormal volume, where abnormal volume is computed as cumulative dollar volume from 5 minutes prior to the filing through event time less the average volume for the exact same day of the week and time (calculated over the prior 52 weeks), deflated by the average cumulative volume for the entire window (calculated over the prior 52 weeks).[25] The average abnormal volume to filings on FDICconnect (in solid red) shows small reaction whereas the average abnormal volume to filings on SEC EDGAR (in dotted bank) immediately increases after the filing.

In Figure 3, we generate plots of average cumulative abnormal returns measured from the filing date to the following 63 trading days, approximately three months, for filings on FDICconnect and SEC EDGAR. Cumulative abnormal returns are calculated as raw returns minus the size-decile value-weighted portfolio returns. The sample includes 730 filings on FDICconnect and 591 filings on SEC EDGAR, the same as in Table 3. Consistent with the univariate comparisons in Table 3, we find that the cumulative abnormal returns to filings on FDICconnect are smaller than to filings on SEC EDGAR in the first several trading days after filing. However, the mean cumulative abnormal returns of filings on FDICconnect and SEC EDGAR converge at around 10 trading days, approximately two weeks, after filing; the 90 percent confidence bands of the cumulative abnormal returns for FDICconnect and SEC EDGAR filings first intersect around the seventh trading day after filing.

[25] The formula for abnormal volume at time t in the current week is: $\{\sum_{m=-5}^{t} Volume_{0,m} - \sum_{w=-52}^{-1}\sum_{m=-5}^{t} Volume_{w,m}/52)\}/(\sum_{w=-52}^{-1}\sum_{m=-5}^{15} Volume_{w,m}/52)$ where, $Volume$ is dollar amount of trading, m is minutes around the filing time, and w is weeks around the filing date.

4.2 Regression Analyses with the Matched Sample

We conduct multivariate analyses to address the concern that our findings in the univariate analyses could be driven by other factors such as bank size, trade size, and insider characteristics. To run this test, we estimate the following model:

$$Raw\ Return\ or\ Abnormal\ Volume\ or\ CAR_{i,j,t} = \beta_1 FDICconnect_{i,t} + \beta_2 X_{i,t} + \beta_3 Y_{i,j,t} + \delta_t + \epsilon_{i,j,t}. \quad (1)$$

The dependent variables are, $Raw\ Return_{i,j,t}$, percent change in price from filing time to event time, $Abnormal\ Volume_{i,j,t}$, cumulative dollar volume from filing time to event time minus the average cumulative dollar volume for the same window for the past 52 weeks, deflated by the average cumulative dollar volume for the entire window, and Cumulative Abnormal Return $(CAR)_{i,j,t}$, cumulative raw return minus the value-weighted size-decile portfolio. The explanatory variable of interest $FDICconnect_{i,t}$, is an indicator variable that equals one for filings on FDICconnect by stand-alone banks. The bank-level characteristics, $X_{i,t}$, include $Log(MVE)$, $Tier1capital$, $Deposits$, $Loans$, and $Amihud\ Illiquidity$. In addition to the bank characteristic variables used to match the control group, we include $Amihud\ Illiquidity$ to control for market depth and trading liquidity (Bolandnazar et al., 2019).[26] The transaction-level characteristics, $Y_{i,t}$, include $Log(TradeSize)$, CEO, and CFO.[27] The year fixed effects, δ_t, are included to control for economic conditions affecting all banks and trades in a given year. All variables are defined in Appendix A.

In Table 4, we examine the intra-day market response to Form 4 filings. In column (1), returns are measured from filing to 1 minute after the filing. The coefficient on our variable

[26] Further controlling for share turnover and idiosyncratic stock volatility does not change our results.

[27] Prior studies also include control variables for pre-planned transactions pursuant to Rule 10b5-1. (Brochet, 2010) finds that insider-purchase filings that are pre-planned have smaller positive abnormal return compared to those that are not pre-planned. We find no cases where stand-alone banks mention that an open-market purchase was scheduled under a 10b5-1 plan. In addition, 10b5-1 plans are relatively rare for purchase transactions. For these reasons, we do not include a control variable for transactions under Rule 10b5-1.

of interest, an indicator variable for stand-alone bank filings ($FDICconnect$), is significantly negative (-0.131, p<0.01). The coefficient implies that returns to FDICconnect filings is 13.1 basis points smaller than that to SEC EDGAR filings after 1 minute of the filing. As we lengthen the window to 5 minutes in column (2), the coefficient on $FDICconnect$ is consistently significantly negative (-0.144, p<0.05). In column (3), where the window is further lengthened to 15 minutes, the coefficient on $FDICconnect$ is more negative and significant (-0.176, p<0.05).

In columns (4) - (6), we repeat the same tests using abnormal volume as the dependent variable. In column (4), abnormal volume is measured from filing to 1 minute after the filing. The number of observations for the abnormal volume tests are smaller than that for the return tests because we require at least ten out of 52 past weeks to have transactions within the window. The coefficient on $FDICconnect$ is significantly negative (-0.417, p<0.01). Similar to the results in the univariate analyses, the coefficient on $FDICconnect$ increases over time in columns (5) and (6). In sum, these results suggest that the market reaction to filings on FDICconnect is significantly smaller than that of filings on SEC EDGAR in the short run.

In Table 5, we test long-term returns to Form 4 filings using the same regression framework in equation (1). The dependent variable is cumulative abnormal returns measured as raw returns minus the size-decile value-weighted portfolio returns. In columns (1) - (3), the coefficients on $FDICconnect$ imply that returns to filings on FDICconnect are 6 to 11 basis points smaller up to four days after the filing compared to returns to filings on SEC EDGAR. In columns (4) - (6), the coefficients on $FDICconnect$ are all statistically insignificant implying that long-term returns measured up to 21, 42, and 63 trading days after filing are not statistically different between filings on FDICconnect and SEC EDGAR. We find consistent results (untabulated) when we extend our sample to include Form 4 filings outside of market hours. These results suggest that controlling for bank, trade characteristics, and year fixed effects, return differences to filings on FDICconnect and SEC EDGAR exist in the short run but disappear in the long run.

4.3 Within-bank Analysis

We conduct within-bank analysis by restricting our sample to banks that were stand-alone banks at one point. This setting allows us to test the difference in market reactions by the same bank on different disclosure venues and thus further control for unobservable bank characteristics that may drive our findings.

In Table 6, we estimate equation (1), but with additional bank fixed effects. We find largely similar results using the matched-sample in Table 4. In columns (1) - (3), we find that short-run returns are smaller for FDICconnect filings compared to SEC EDGAR filings, significant at least at the 10% level. In columns (4) - (6), the abnormal volume difference is significantly negative at the 1% level, consistent with the previous results in Table 4.

4.4 Placebo Test: Market Response to Earnings Announcements

We show that the stock market responds to insider-trading filings on FDICconnect in a less timely way compared to filings on SEC EDGAR. Our matched sample and within-bank analyses suggest that the difference in market responses is likely driven by different disclosure venues, not by unobservable bank characteristics. However, because the organizational structure of a bank solely determines the disclosure venue, we cannot rule out the possibility that the difference in market responses is due to banks' organization structure rather than the disclosure venues.

To address this concern, we run a placebo test by comparing the market response to earnings announcements for stand-alone banks and a matched control sample of bank holding companies. Whereas insider trading is firstly disclosed via Form 4 filing by regulation, earnings are not firstly disclosed on FDICconnect or SEC EDGAR in most cases. For stand-alone banks, only Forms 3, 4, and 5 are required to be filed on FDICconnect; thus, filing earnings announcements on FDICconnect is voluntary. For bank holding companies, while many do file earnings announcements as an 8-K, earnings news is initially disseminated via press releases (Bochkay et al., 2019). Therefore, if the market reaction differences to

insider-trading filings are mainly due to the disclosure venues but not due to organizational structures, we expect no difference in market responses to earnings announcements for stand-alone banks and bank holding companies in the short run.

We test timeliness of market response to earnings announcements based on earnings surprise groups following DellaVigna and Pollet (2009) and Hirshleifer et al. (2009). The empirical design is different from the previous tests on insider-trading filings for two reasons. First, unlike Form 4 filings, earnings are mostly announced outside of market hours and thus we cannot observe intra-day market response. Second, we need to condition the market reaction to the magnitude of earnings surprise. Thus, we measure earnings surprise as actual earnings per share (EPS) minus the mean analysts' forecast EPS divided by price at the end of the fiscal quarter. To reduce noise in unexpected earnings, we divide the sample into nine groups based on earnings surprise: four equal-sized groups with bad news, one group with no surprise, and four equal-sized groups with good news. We continue to use the matched sample of stand-alone banks and bank holding companies from previous analyses. Starting with all quarterly earnings announcement dates within the calendar year, we require at least one analyst forecast in IBES to calculate the earnings surprise. Because some stand-alone banks have no analyst coverage, for this test we have 182 earnings announcements by stand-alone banks and 366 earnings announcements by bank holding companies.

In Figure 4, we plot average two-day abnormal return around the earnings announcement (CAR[0,+1]) for stand-alone banks and bank holding companies by earnings surprise group with the 90% confidence interval. If the market reaction to stand-alone banks' earnings announcements are delayed as it is for their insider-trading filings, we expect to see smaller negative (positive) reaction for stand-alone banks in the bad (good) news groups compared to bank holding companies. However, we find that the average abnormal returns are statistically indifferent for most groups and even larger for stand-alone banks in group 2.

To test the same hypothesis using a regression framework, we estimate the following

model:

$$CAR_{i,t} = \beta_1 FDICconnect_{i,t} \times UE\,Group_{i,t} + \beta_2 FDICconnect_{i,t} + \beta_3 UE\,Group_{i,t} + \beta_4 X_{i,t} + \delta_t + \epsilon_{i,t}. \quad (2)$$

We measure abnormal returns (CAR) in three different windows from the earnings announcement date to 0, 2, and 4 trading days. The explanatory variable of interest is $FDICconnect_{i,t} \times UE\,Group_{i,t}$. $FDICconnect_{i,t}$ is an indicator variable that equals one for stand-alone banks. $UE\,Group$ ranges from -4 to 4 from most negative earnings surprise to most positive earnings surprise. We include the same bank-level characteristics as in equation (1), $X_{i,t}$, include $Log(MVE)$, $Tier1capital$, $Deposits$, $Loans$, and $Amihud\,Illiquidity$. The year-quarter fixed effects, δ_t, are included to control for economic conditions affecting all banks in a given year-quarter. If the market reacts less timely to stand-alone banks' unexpected earnings, we expect a negative coefficient on the interaction term, $FDICconnect_{i,t} \times UE\,Group_{i,t}$.

In Table 7, in columns (1) - (3), we report the results using equation (2). In columns (4) - (6), we additionally include bank fixed effects. The coefficients on the interaction term are statistically insignificant in all but one specification, which suggests that the stock market responds to earnings announcements of stand-alone banks as timely as they do for those of bank holding companies. In column (4), the variable of interest is marginally significant and positive (0.006, $p<0.10$), which is also inconsistent with earnings response being less timely for stand-alone banks. Overall, the placebo test supports our hypothesis that the untimely market reaction to insider-trading filings by stand-alone banks is due to the disclosure venue, FDICconnect, rather than bank organizational structures.

5 Retail and Institutional Trading around the Filing Date

In this section, we examine whether retail investors are informationally disadvantaged regarding Form 4 filings on FDICconnect compared to those on SEC EDGAR. Retail investors may be less informed about insider trading filings on FDICconnect for several reasons. They tend to rely on news coverage (Blankespoor et al., 2019; Bushee et al., 2019), but news coverage of insider trading by stand-alone banks is limited as shown in Appendix B. In addition, retail investors have limited access to other information sources such as analysts and data vendors. Thus, we hypothesize that retail investors trade less on insider trading filings on FDICconnect compared to those on SEC EDGAR.

We also examine how institutional trading changes around Form 4 filings on FDICconnect and SEC EDGAR. One the one hand, institutional trading may increase more for filings on SEC EDGAR because prior studies suggest that high frequency traders, hedge funds, and mutual funds trade on insider trading information (Chen et al., 2019; Crane et al., 2019; Rogers et al., 2017). On the other hand, institutional trading may increase more for filings on FDICconnect because the delayed market reaction may allow them to earn more profits.

In Figure 5, we plot average portion of retail buy volume and institutional buy volume around Form 4 filing dates on FDICconnect and SEC EDGAR. We estimate the retail buy volume following Boehmer et al. (2019), and proxy for institutional purchases as total volume of non-retail trades of $20,000 or greater that are buyer initiated using the Lee and Ready (1991) algorithm.[28,29] We normalize the average daily portions with the average portion at 5 days prior to the filing date. In Panel A, the average portion of retail buy volume increases

[28] We follow Boehmer et al. (2019) to define whether trades on TAQ are retail driven and whether they were buyer or seller initiated. We start by separating potential retail trades, those placed off-exchange and reported to a FINRA Trade Reporting Facility (exchange code "D"). Then we define buyer vs. seller-initiated retail trades based on the transaction price. Retail trades are assumed to be uninformed and thus are given small price improvements of around a fraction of a cent. Based on these institutional details, if the price is higher than a round penny (i.e., fraction of a cent is in the interval of (0, 0.4)) the trade is defined as a retail sale; if the price is lower than a round penny (i.e., fraction of a cent is in the interval of (0.6, 1)) the trade is defined as a retail buy; trades with other prices are undefined.

[29] While some studies use a higher cutoff of $50,000, we use a lower cutoff of $20,000 because many of our sample firms are smaller and thus a higher cutoff potentially misclassifies institutional trades.

after Form 4 filings on SEC EDGAR (in dotted black), but does not increase after filings on FDICconnect (in solid red). In contrast, in Panel B, the portion of institutional buy volume increases after Form 4 filings on FDICconnect (in solid red) but does not increase after filings on SEC EDGAR (in dotted black). These plots suggest that less retail investors and more institutional investors trade on Form 4 filings on FDICconnect compared to those on SEC EDGAR.

To formally test our hypothesis, we estimate the following difference-in-differences model using [-5, +5] trading days around the Form 4 filing date:

$$\begin{aligned} &Retail\ Buy\ or\ Institutional\ Buy_{i,j,t} = \\ &\qquad \beta_1 FDICconnect_{i,t} \times PostFiling_{i,j,t} + PostFiling_{i,j,t} + \gamma_j + \epsilon_{i,j,t}. \end{aligned} \tag{3}$$

The dependent variables are, $Retail\ Buy_{i,j,t}$, retail buy volume divided by total volume and, $Institutional\ Buy_{i,j,t}$, volume of non-retail trades of \$20,000 or greater that are buyer initiated divided by total volume. The explanatory variable of interest is $FDICconnect_{i,t} \times PostFiling_{i,j,t}$. $FDICconnect_{i,t}$ is an indicator variable that equals one for stand-alone banks. $PostFiling_{i,j,t}$ is an indicator variable that equals one for [0, +5] trading days around the Form 4 filing date. We include filing fixed effects to control for any filing-specific unobservables and they subsume bank- and transaction-level characteristics.

In Table 8, we report the results of estimating equation (3). In column (1), the dependent variable is $Retail\ Buy$, and we find that the coefficient on our variable of interest, $FDICconnect_{i,t} \times PostFiling_{i,j,t}$ is negative and significant at the 10% level, suggesting that retail investors buy less in response to insider-purchase filings on FDICconnect than to those filings on SEC EDGAR. This result suggests that retail investors trade less on such information, consistent with our hypothesis that retail investors are informationally disadvantaged potentially due to the higher search costs for FDICconnect filings. In column (2), the dependent variable is $Institutional\ Buy$, and we find that the coefficient on our

variable of interest, $FDICconnect_{i,t} \times PostFiling_{i,j,t}$ is positive and significant at the 1% level. This result, combined with the muted market reaction immediately following FDICconnect filings, suggests that institutional investors trade on this information but in a manner that does not create an instant price reaction after the filing. One caveat of these results is that we cannot observe the identity of the traders and our proxies of retail and institutional buy volume are based on several assumptions. Thus, our findings should be interpreted with this caveat in mind.

6 Potential Mechanisms

6.1 Effect of Real-Time Media Coverage

We examine whether the lack of real-time media coverage is a potential mechanism that explains the less timely market reaction to filings on FDICconnect. Prior studies suggest that media coverage leads to timelier market responses (Li et al., 2011; Rogers et al., 2016). The ideal test would be to compare filings by stand-alone banks that are covered by Dow Jones Newswires to those that are not. However, as described in Appendix B, Dow Jones Newswires does not cover any Form 4 filings by stand-alone banks. Instead, we use an indirect approach by comparing filings on FDICconnect by stand-alone banks to filings on SEC EDGAR by bank holding companies that are not covered by Dow Jones Newswires.

To construct a control sample, we identify single-bank holding companies without Dow Jones Newswires coverage. We include bank-years that have at least one earnings news coverage but no insider-trading news coverage. We find 113 bank-years that have open-market purchases and no Dow Jones Newswires coverage. Most of these bank-years are in 2003, before Dow Jones initiated coverage of insider trading in January 2004 (Rogers et al., 2016). Because of the small number of observations, we do not additionally match on year, size, and bank characteristics.

In Table 9, we estimate equation (1) with FDICconnect filings and SEC EDGAR filings without Dow Jones Newswires coverage. In columns (1) - (3), the dependent variable is raw

return from filing time to 1, 5, and 15 minutes after the filing. The coefficients on our variable of interest, an indicator variable for stand-alone bank filings ($FDICconnect$), ranges from -0.095 to -0.270. The magnitudes are slightly larger than those reported in Table 4 possibly because the control sample includes some larger banks despite no Dow Jones Newswires coverage. In columns (4) - (6), the dependent variable is abnormal volume from filing time to 1, 5, and 15 minutes after the filing. The coefficients on $FDICconnect$ are significantly negative at the 1% level, indicating that the market reaction to filings on FDICconnect is significantly smaller than that of filings on SEC EDGAR without Dow Jones Newswires coverage in the short run. Again, the magnitudes are slightly larger than those reported in Table 4.

In sum, our findings suggest that real-time media coverage alone does not sufficiently explain the different market reactions to filings on FDICconnect and SEC EDGAR. Rather, our findings are consistent with the possibility that the different market reactions persist due to lower market awareness about FDICconnect and higher search costs for filings on FDICconnect.

6.2 The Role of Sophisticated Market Participants

In this section, we test the role of sophisticated investors as a potential mechanism. Anecdotal evidence suggests that even sophisticated market participants such as analysts are not aware of FDICconnect. Potentially due to lack of awareness and higher search costs, filings on FDICconnect by stand-alone banks may draw less attention of analysts and institutional investors. These factors may contribute to the differences in market reaction to filings by stand-alone banks and bank holding companies.

As reported in Panel A of Table 10, we find that stand-alone banks, compared to single-bank holding companies matched on bank characteristics, have significantly less institutional ownership and analyst following. Separately, in untabulated analysis using the sample of banks that transitioned from a stand-alone bank to a bank holding company,

or vice versa, we find no difference in institutional ownership but that stand-alone banks have fewer analysts following.[30]

In Panel B of Table 10, we include additional control variables for institutional ownership and the number of analysts following. Compared to Table 4, the signs and levels of significance on our variable of interest, $FDICconnect$, are unchanged except in column (3) where the significance becomes weaker but is still significant at the 10% level. Importantly, the coefficients on $InstOwnership$ and $NumAnalyst$ are not statistically significant in all columns. In untabulated analysis, we test the robustness of Tables 5 - 8 to including additional controls. The signs and levels of significance on our coefficient of interest are unchanged except in two specifications, where they become marginally significant for the specifications reported in columns (1) and (2) of Table 6. These results suggest that institutional ownership or analyst coverage does not explain the difference in short-run market reaction to insider-trading filings alone. Again, the results are consistent with the possibility that the different market reactions persist due to lower market awareness and higher search costs regarding FDICconnect.

7 Conclusion

Our study finds that the immediate stock market reaction to insider-purchase transactions filed on FDICconnect is almost non-existent and significantly smaller than that to the same filings on SEC EDGAR. We also find that the difference in market reactions between filings on FDICconnect and SEC EDGAR persist for several days. Given that Form 4 filings are easy to interpret and can be traded on, the delayed market response to those filings on FDICconnect is notable. In addition, we find that retail investors trade less on FDICconnect filings than on SEC EDGAR filings, which implies that retail investors are informationally

[30]The difference in the number of analysts following is driven by stand-alone banks that transitioned to bank holding companies. We find no difference in the number of analysts for bank holding companies that transitioned to stand-alone banks. This could be due to stand-alone banks transitioning to a bank holding company as they expand and thus more analysts follow these growing banks.

disadvantaged regarding FDICconnect filings. Our empirical tests suggest that these findings are possibly due to lower market awareness about FDICconnect and higher search costs for filings on FDICconnect.

Our study provides evidence of the effect of fragmented securities regulation on the stock market efficiency. As more banks consider removing their holding company structure and filing on FDICconnect instead of on SEC EDGAR, this trend would bring significant consequences on the price efficiency of the stock market. Our findings are consistent with the concern by the SEC that filing mandatory disclosures to different regulators "makes it difficult for many investors to know where to find the reports of a particular financial institution" (SEC, 1999). Importantly, our findings suggest that such search costs can be higher for retail investors regarding FDICconnect than regarding SEC EDGAR.

While our study focuses on Form 4 filings, other mandatory disclosures filed with federal bank regulators that are not subject to the SEC's oversight could lead to other economic consequences. For example, stand-alone banks are not subject to the periodic review and comment letter process administered by the SEC.[31] Bradley (2011) notes that federal bank regulators do not have authority under Section 10 of the Securities Exchange Act of 1934, an important anti-fraud provision. In addition, the SEC suggests that bank regulators bring relatively few securities enforcement cases, potentially because bank regulators' priority is preventing bank failures rather than protecting investors (SEC, 1999). An open question for future research is whether fragmented securities regulation has other consequences on the stability and efficiency of the U.S. financial system via different mechanisms such as the quality of disclosures.

[31]The authority of the federal bank regulators to administer the Securities Exchange Act of 1934 is limited to specified provisions (Malloy, 1990). One such provision not specified to be administered by federal bank regulators in Section 12(i) of the Securities Exchange Act of 1934 is Section 408 of SOX, which mandates a review of periodic disclosures at least once every three years.

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Appendix A. Description of Variables

Variable	Definition
Raw Return	percent change in price from filing time to event time, calculated from TAQ trades
Abnormal Volume	cumulative dollar volume from filing time to event time minus the average cumulative dollar volume for the same window for the past 52 weeks, deflated by the average cumulative dollar volume for the entire window, calculated from TAQ trades
CAR	cumulative raw return minus the value-weighted size-decile portfolio, calculated from CRSP
FDICconnect	an indicator variable equal to one if the Form 4 is filed on FDICconnect and zero if the Form 4 is filed on SEC EDGAR
Log(MVE)	natural logarithm of the year-end market capitalization in millions, from CRSP
Tier1capital	year-end tier 1 capital divided by risk-weighted assets, from call reports
Loans	year-end loans as a proportion of total assets, from call reports
Deposits	year-end deposits as a proportion of total assets, from call reports
Amihud Illiquidity	$\sqrt{\lvert Return\rvert / Price \times Volume\times}$ $\times$ 1000 measured using daily data during the fiscal year
TradeSize	dollar value of trade
CEO	an indicator variable equal to one if the insider is the CEO, and zero otherwise
CFO	an indicator variable equal to one if the insider is the CFO, and zero otherwise
Director	an indicator variable equal to one if the insider is a director, and zero otherwise
Officer	an indicator variable equal to one if the insider is an officer, and zero otherwise
Tenpercent	an indicator variable equal to one if the insider is a 10% beneficial owner, and zero otherwise
UE Group	Groups -4 to -1 represent four quartiles of negative earnings surprises and groups 1 to 4 represent four quartiles of positive earnings surprises. Group 0 includes banks with zero earnings surprise.
Retail Buy	daily retail buy volume divided by total volume, where retail buy trades are classified following Boehmer et al. (2019): exchange code is "D" in TAQ and the fraction of a cent of the transaction price is in the interval of (0.6, 1)

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Variable	Definition
Institutional Buy	daily institutional buy volume divided by total volume, where institutional buy trades are defined as non-retail trades of $20,000 or greater that are buyer initiated using the Lee and Ready (1991) algorithm
PostFiling	an indicator variable equal to one for [0, +5] trading days around the Form 4 filing date and zero for [-5, -1] trading days around the Form 4 filing date
InstOwnership	institutional ownership as a proportion of shares outstanding, from Thomson Reuters' 13-F database
NumAnalyst	number of analysts following, from IBES

Appendix B. Coverage by information intermediaries

This table summarizes the coverage of insider transactions by various information intermediaries.

	Stand-alone bank	Bank holding company
Real-time data sources		
Dow Jones Newswires	None	Yes
Bloomberg Terminal "Company Filings"	None	Yes
Other data sources		
WSJ Quotes	None	Yes
Yahoo!Finance	Yes, but not comprehensive	Yes
Thomson Reuters Insider Filing Feed	Yes, from 2015	Yes

Figure 1. Regulatory jurisdiction for stand-alone banks and bank holding companies

The figure below depicts the differences in regulatory jurisdiction for stand-alone banks and bank holding companies. A commercial bank's federal bank regulator is the OCC, the FRB, or the FDIC, depending on whether the bank is a national bank, a member state bank, or a non-member state bank, respectively. A stand-alone bank is exempt from SEC registration and has their federal bank regulator as the securities regulator. A bank holding company is not considered as a corporation and thus the SEC is the securities regulator. Additionally, bank holding companies are regulated by the FRB.

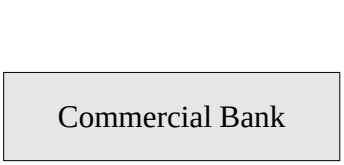
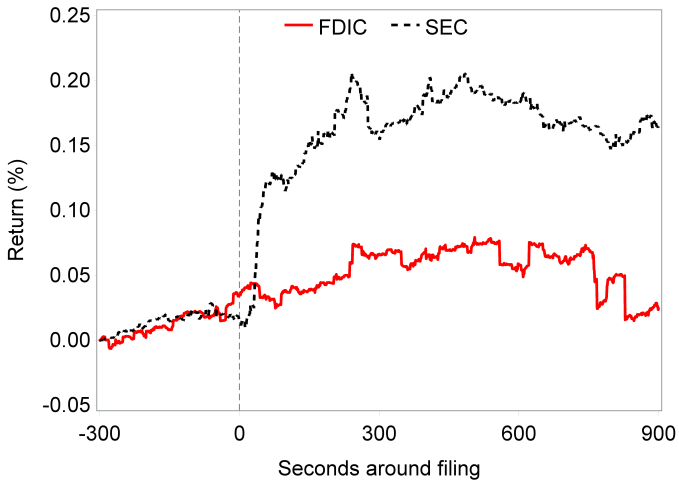
	Stand-alone bank	**Bank holding company**
Organizational structure		
Bank holding company regulator	None	FRB
Federal bank regulator of commercial bank	OCC/FRB/FDIC	OCC/FRB/FDIC
Securities disclosure regulator	OCC/FRB/FDIC	SEC

Figure 2. Short-run market reaction to FDICconnect vs. SEC EDGAR filings

The figures below plot average percent returns (Panel A) and average percent abnormal volume (Panel B) for [-5 minutes,+15 minutes] of Form 4 filings of open-market purchases. The solid red line represents filings by stand-alone banks on FDICconnect and the dotted black line represents filings by matched bank holding companies on SEC EDGAR. The sample includes 277 filings on FDICconnect and 288 filings on SEC EDGAR that has at least one trade on TAQ during [-5 minutes,+15 minutes] of the filing.

Panel A: Average percent returns



Panel B: Average percent abnormal volume

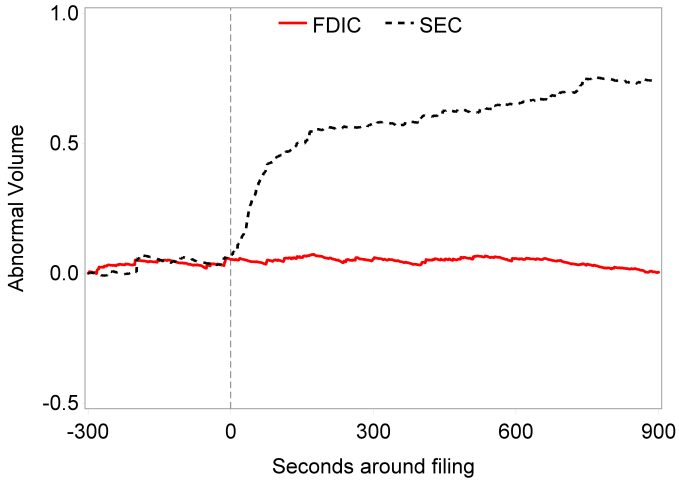


Figure 3. Long-run abnormal returns

The figure below plots average cumulative abnormal returns (CAR) for 63 trading days following Form 4 filings of open-market purchases. The solid red line represents filings by stand-alone banks on FDICconnect and the dotted black line represents filings by matched bank holding companies on SEC EDGAR. The gray area represents the 90 percent confidence bands of the average cumulative abnormal returns. The sample includes 730 filings on FDICconnect and 591 filings on SEC EDGAR. Variable definitions are available in Appendix A.

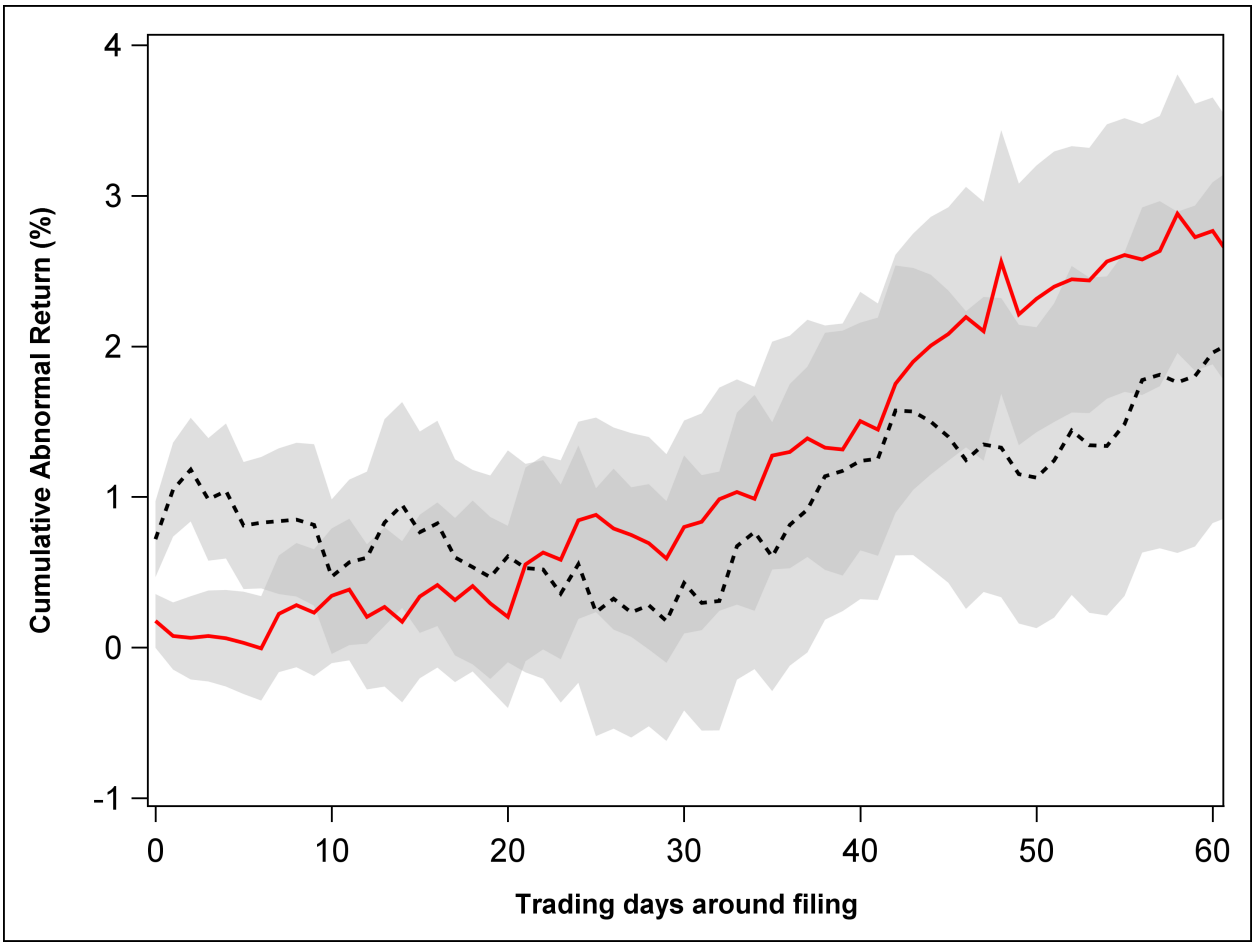


Figure 4. Placebo test: Average earnings announcement returns

The figure below plots average cumulative abnormal returns (CAR) for [0,+1] around earnings announcement dates. The solid red line represents stand-alone banks and the dotted black line represents bank holding companies. The error bar indicates a 90 percent confidence interval. Groups -4 to -1 represent four quartiles of negative earnings surprises and groups 1 to 4 represent four quartiles of positive earnings surprises. Group 0 includes banks with zero earnings surprise. The sample includes 182 earnings announcements by stand-alone banks and 366 earnings announcements by bank holding companies.

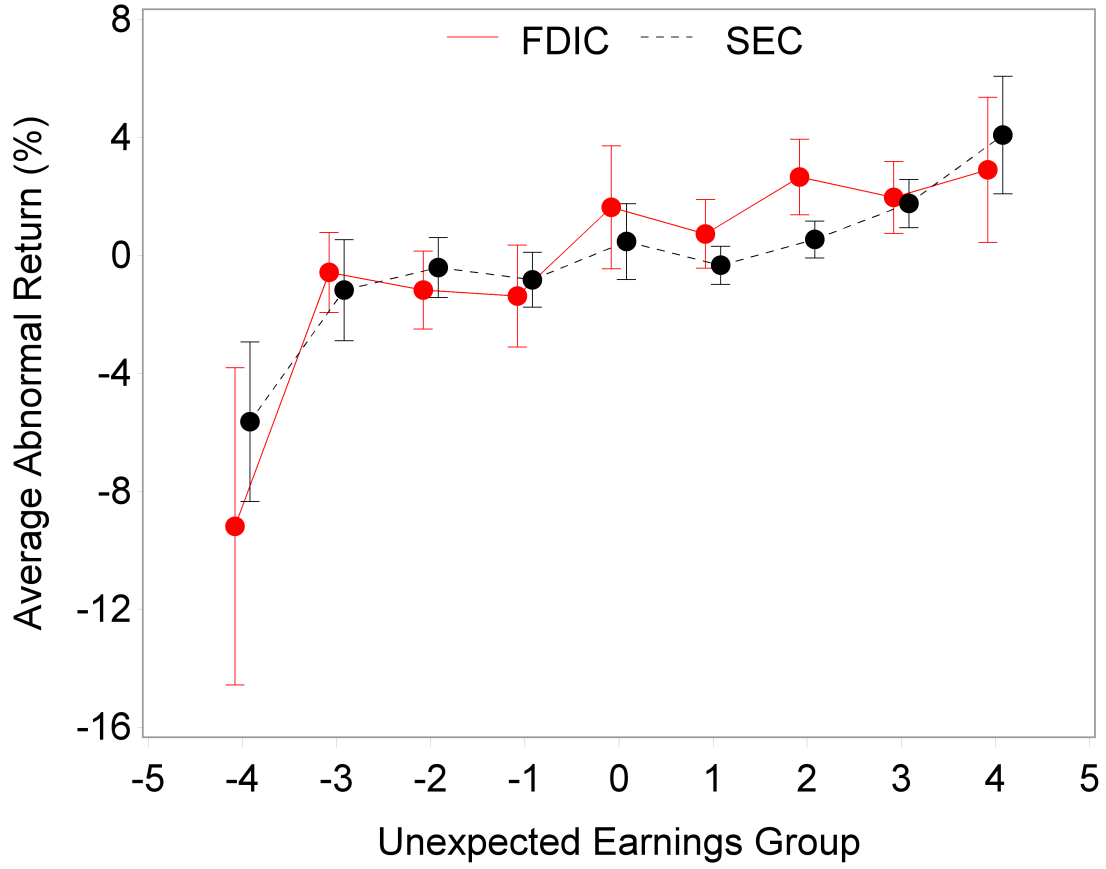
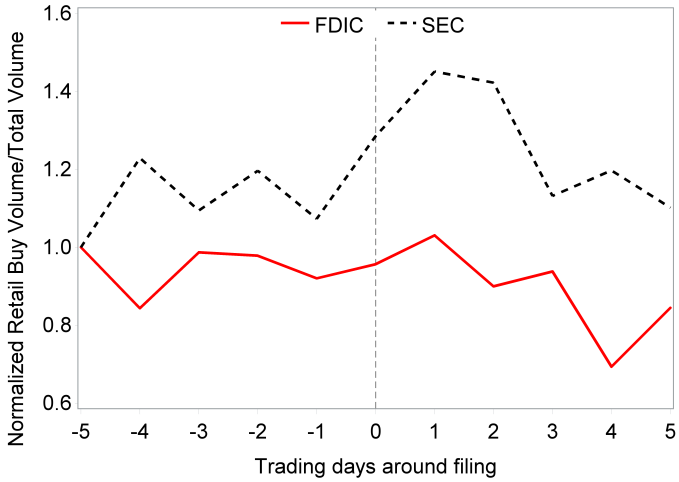


Figure 5. Retail and institutional trading on FDICconnect vs. SEC EDGAR filings

The figures below plot average portion of retail buy volume divided by total volume (Panel A) and average portion of institutional buy volume divided by total volume (Panel B) around Form 4 filing dates on FDICconnect and SEC EDGAR. The average daily portions are normalized by the average portion at 5 days prior to the filing date. The solid red line represents filings by stand-alone banks on FDICconnect and the dotted black line represents filings by matched bank holding companies on SEC EDGAR.

Panel A: Average portion of retail buy volume



Panel B: Average portion of institutional buy volume

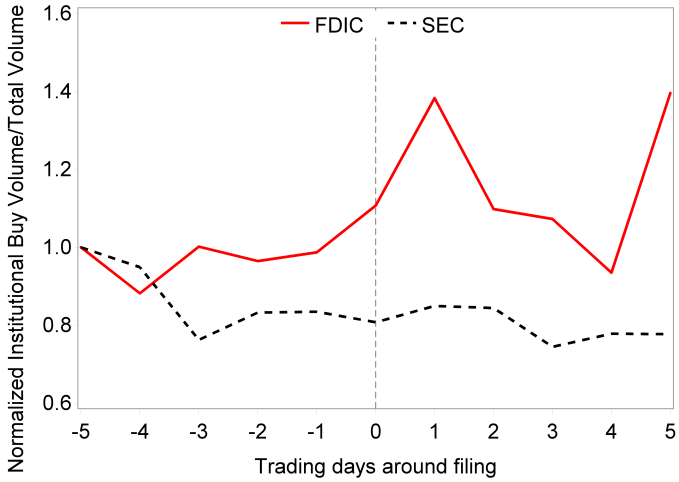


Table 1. Sample construction for Form 4 filings on FDICconnect

This table presents the sample construction process for Form 4 filings on FDICconnect.

	Form 4 filings
Total number of Form 4 filings by stand-alone banks on CRSP	15,545
Less share dispositions, grants, option exercises, etc.	(13,630)
Less filings made outside of 9:40am and 3:30pm	(938)
Less observations without necessary variables	(175)
Less observations dropped from matching process	(72)
Full Sample used in main analyses	730
Less filings without market any trades within 15 minutes of filing	(453)
Subsample used in intra-day plot	277

Table 2. Summary Statistics

This table presents descriptive statistics for our matched sample of banks and insider transactions. Stand-alone banks are matched to bank holding companies in the same year and similar bank characteristics: the natural log of market capitalization, tier 1 capital, loans as a proportion of assets, and deposits as a proportion of assets. All variables are defined in Appendix A.

Panel A: Bank-level characteristics

	Mean			Median		
Variables	FDIC	SEC	t-stat (diff)	FDIC	SEC	z-stat (diff)
Log(MVE)	4.55	4.69	0.79	4.24	4.44	1.26
Tier1capital	0.13	0.12	-1.07	0.12	0.12	-0.72
Loans	0.75	0.74	-1.03	0.77	0.75	-1.58
Deposits	0.78	0.77	-0.7	0.79	0.79	-1.09
n	137	137		137	137	

Panel B: Transaction-level characteristics

	Mean			Median		
Variables	FDIC	SEC	t-stat (diff)	FDIC	SEC	z-stat (diff)
TradeSize	46,540	24,113	-2.84***	8,908	10,110	0.46
CEO	0.15	0.10	-2.72***	0.00	0.00	-2.71***
CFO	0.03	0.05	1.91*	0.00	0.00	1.91*
Director	0.87	0.77	-4.87***	1.00	1.00	-4.83***
Officer	0.33	0.35	0.69	0.00	0.00	0.69
Tenpercent	0.13	0.04	-5.25***	0.00	0.00	-5.20***
n	730	591		730	591	

Table 3. Daily market response to Form 4 filings

This table presents univariate comparisons of daily market reaction using a matched control sample of bank holding companies. Panel A and Panel B report daily mean and median abnormal stock returns and trading volumes, respectively, around Form 4 filing dates of insider purchases. Returns are adjusted using a value-weighted size-decile portfolio. Volume is adjusted using the average volume for the same day of the week over the prior 52 weeks. t-statistics (z-statistics) are reported for the differences in means (medians). In Panel A (B), we additionally report the significance of the mean abnormal returns (volume) against the null of zero abnormal return (volume). ***, **, and * denote significance at the one percent, five percent, and ten percent levels, respectively, in two-tailed tests.

Panel A: Abnormal returns

	Mean			Median		
D-day = Filing	FDIC	SEC	t-stat (diff)	FDIC	SEC	z-stat (diff)
-1	-0.10	0.11	1.04	-0.08	0.07	1.52
0	0.18	0.72***	2.97***	0.11	0.35	2.53***
1	-0.08	0.33***	2.64***	-0.10	0.17	3.41***
2	0.00	0.15	0.98	-0.03	0.01	0.89
3	0.03	-0.18	-1.18	0.15	-0.22	-3.75***
4	0.02	0.06	0.19	-0.08	0.00	1.25
$[0, +2]$	0.06	1.18***	4.23***	-0.05	0.47	3.79***
$[0, +4]$	0.06	1.04***	3.01***	-0.17	0.28	2.57**
$[0, +21]$	0.52	0.53	0.02	0.17	-0.19	-1.20
$[0, +42]$	1.57***	1.57***	0.00	0.55	-0.13	0.05
$[0, +63]$	2.25***	1.80***	-0.52	1.19	1.13	-0.19
n	730	591		730	591	

Table 3. Continued

Panel B: Abnormal volume

	Mean			Median		
D-day = Filing	FDIC	SEC	t-stat (diff)	FDIC	SEC	z-stat (diff)
-1	1.37***	1.39***	0.16	0.76	0.75	0.91
0	1.26***	1.69***	2.24**	0.71	0.79	2.30**
1	1.25	1.35***	0.45	0.64	0.70	2.81**
2	1.06	1.31*	1.48	0.65	0.68	1.42
3	1.04	1.26*	1.38	0.60	0.64	1.70*
4	1.04	1.20**	1.47	0.56	0.65	2.74***
$[0, +2]$	1.14	1.43***	2.26**	0.77	0.89	2.94***
$[0, +4]$	1.08	1.30***	2.40**	0.79	0.87	2.61***
n	730	591		730	591	

Table 4. Intra-day market response to Form 4 filings

This table examines the differences in intra-day market response to Form 4 filings by stand-alone banks vs. matched bank holding companies. The dependent variables in columns (1) - (3) are raw returns measured from filing time to 1, 5, and 15 minutes. The dependent variables in columns (4) - (6) are abnormal trading volume measured from filing time to 1, 5, and 15 minutes. All variables are defined in Appendix A. Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the one percent, five percent, and ten percent levels, respectively, in two-tailed tests.

	(1)	(2)	(3)	(4)	(5)	(6)
	Raw Return			Abnormal Volume		
	1 min	5 min	15 min	1 min	5 min	15 min
FDICconnect	-0.131***	-0.144***	-0.176**	-0.417***	-0.681***	-0.981***
	(0.035)	(0.048)	(0.087)	(0.100)	(0.130)	(0.173)
Log(MVE)	0.039*	0.057*	0.103***	0.162***	0.237***	0.338***
	(0.021)	(0.029)	(0.036)	(0.053)	(0.064)	(0.084)
Tier1capital (%)	-1.771	-1.994	-0.357	0.562	-1.173	-0.236
	(1.282)	(1.618)	(2.203)	(2.256)	(3.586)	(4.654)
Deposits	0.329	0.015	0.098	2.382	1.700	2.870*
	(0.222)	(0.275)	(0.642)	(1.436)	(1.572)	(1.577)
Loans	-0.174	0.132	0.341	-0.137	-0.517	-1.034
	(0.222)	(0.239)	(0.465)	(0.619)	(0.899)	(1.091)
Amihud Illiquidity	0.031	0.092	0.056	0.076	0.194	0.248
	(0.030)	(0.057)	(0.122)	(0.150)	(0.179)	(0.213)
Log(TradeSize)	0.026	0.009	0.023	-0.029	0.01	0.019
	(0.017)	(0.018)	(0.025)	(0.031)	(0.043)	(0.055)
CEO	0.047	0.013	-0.005	0.111	0.093	0.115
	(0.044)	(0.067)	(0.130)	(0.131)	(0.200)	(0.284)
CFO	-0.099	-0.140	-0.026	-0.324***	-0.259	-0.235
	(0.192)	(0.129)	(0.155)	(0.101)	(0.202)	(0.325)
Observations	565	565	565	448	448	448
Year FE	YES	YES	YES	YES	YES	YES
Adj R-squared	0.033	0.009	0.006	0.041	0.058	0.075

Table 5. Long-run market response to Form 4 filings

This table examines the differences in long-term market response to Form 4 filings by stand-alone banks vs. matched bank holding companies. The dependent variables in columns (1) - (6) are abnormal returns measured from filing date to 1, 2, 4, 21, 42, and 63 trading days. All variables are defined in Appendix A. Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the one percent, five percent, and ten percent levels, respectively, in two-tailed tests.

	(1)	(2)	(3)	(4)	(5)	(6)
	Cumulative Abnormal Return (CAR)					
	[0]	[0, +2]	[0, +4]	[0, +21]	[0, +42]	[0, +63]
FDICconnect	-0.006**	-0.011***	-0.011**	-0.006	-0.004	-0.001
	(0.002)	(0.004)	(0.004)	(0.010)	(0.014)	(0.013)
Log(MVE)	-0.002	-0.000	0.001	0.016**	0.016**	0.020**
	(0.002)	(0.002)	(0.003)	(0.007)	(0.008)	(0.008)
Tier1capital (%)	-0.024	-0.031	0.021	0.399**	0.638**	0.716**
	(0.051)	(0.077)	(0.093)	(0.198)	(0.290)	(0.280)
Deposits	0.014	0.015	0.028	-0.057	0.034	0.011
	(0.014)	(0.028)	(0.037)	(0.080)	(0.094)	(0.085)
Loans	-0.000	-0.002	0.029	-0.033	0.072	0.034
	(0.013)	(0.023)	(0.031)	(0.059)	(0.073)	(0.088)
Amihud Illiquidity	-0.000	-0.001	0.002	0.018	0.01	0.016
	(0.002)	(0.003)	(0.004)	(0.013)	(0.016)	(0.016)
Log(TradeSize)	-0.000	-0.001	0.001	-0.004	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.004)	(0.005)	(0.005)
CEO	-0.001	-0.002	0.002	0.018	0.023	0.026
	(0.003)	(0.005)	(0.006)	(0.014)	(0.031)	(0.023)
CFO	-0.000	-0.002	-0.003	0.008	-0.002	-0.008
	(0.005)	(0.007)	(0.007)	(0.013)	(0.023)	(0.028)
Observations	1,321	1,321	1,321	1,320	1,320	1,317
Year FE	YES	YES	YES	YES	YES	YES
Adj R-squared	0.014	0.011	0.012	0.05	0.049	0.117

Table 6. Intra-day market response to Form 4 filings: Within-bank analysis

This table examines the differences in intra-day market response to Form 4 filings by banks that were stand-alone banks at one point. The control group is bank holding companies that transitioned from or to a stand-alone bank. The dependent variables in columns (1) - (3) are raw returns measured from filing time to 1, 5, and 15 minutes. The dependent variables in columns (4) - (6) are abnormal trading volume measured from filing time to 1, 5, and 15 minutes. All variables are defined in Appendix A. Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the one percent, five percent, and ten percent levels, respectively, in two-tailed tests.

	(1)	(2)	(3)	(4)	(5)	(6)
	Raw Return			Abnormal Volume		
	1 min	5 min	15 min	1 min	5 min	15 min
FDICconnect	-0.201**	-0.394**	-0.341*	-1.209***	-1.986***	-3.199***
	(0.097)	(0.183)	(0.179)	(0.350)	(0.464)	(0.660)
Log(MVE)	0.049	0.065	0.285***	0.469**	0.665*	1.441***
	(0.044)	(0.052)	(0.074)	(0.164)	(0.336)	(0.438)
Tier1capital (%)	-0.28	-0.403	1.864	0.154	-3.489	-6.352
	(0.456)	(1.793)	(1.881)	(3.075)	(2.833)	(6.111)
Deposits	-0.302	-0.247	3.697**	-2.744	-6.024	-14.382*
	(0.582)	(1.532)	(1.505)	(2.846)	(5.146)	(7.588)
Loans	-0.973***	-0.438	0.074	-5.635***	-10.823***	-16.351***
	(0.346)	(0.359)	(0.320)	(0.617)	(1.302)	(1.570)
Amihud Illiquidity	0.047	0.170	0.373*	0.518	0.526	3.600*
	(0.053)	(0.213)	(0.198)	(0.824)	(0.933)	(1.742)
Log(TradeSize)	0.032**	0.032*	0.037	0.206**	0.362**	0.557***
	(0.015)	(0.019)	(0.022)	(0.077)	(0.150)	(0.168)
CEO	0.050	0.050	0.145	1.072	1.443	1.792
	(0.055)	(0.102)	(0.139)	(0.781)	(1.231)	(1.215)
CFO	0.087	0.110	0.054	-0.184	-0.439	-0.712
	(0.101)	(0.109)	(0.111)	(0.200)	(0.379)	(0.910)
Observations	406	406	406	326	326	326
Year FE	YES	YES	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES	YES	YES
Adj R-squared	0.209	0.126	0.0951	0.293	0.346	0.37

Table 7. Placebo test: Earnings announcement returns

This table examines the differences earnings response to stand-alone banks and bank holding companies. The dependent variables in columns (1) - (3) and (4) - (6) are abnormal returns measured from the earnings announcement date to 0, 2, and 4 trading days. All variables are defined in Appendix A. Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the one percent, five percent, and ten percent levels, respectively, in two-tailed tests.

	(1)	(2)	(3)	(4)	(5)	(6)
	Cumulative Abnormal Return (CAR)					
	[0]	[0, +2]	[0, +4]	[0]	[0, +2]	[0, +4]
FDICconnect × UE Group	0.003	0.004	0.005	0.006*	0.005	0.006
	(0.004)	(0.004)	(0.005)	(0.003)	(0.004)	(0.004)
FDICconnect	-0.005	-0.011	-0.020**			
	(0.006)	(0.007)	(0.008)			
UE Group	0.008***	0.010***	0.008***	0.006***	0.008***	0.006**
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)
Log(MVE)	0.006**	0.006*	0.006	0.006	0.031	0.028
	(0.003)	(0.004)	(0.005)	(0.018)	(0.031)	(0.031)
Tier1capital (%)	0.416***	0.439**	0.538**	0.677*	0.894*	0.812*
	(0.148)	(0.202)	(0.239)	(0.344)	(0.459)	(0.439)
Deposits	0.066	0.034	0.044	-0.335**	-0.126	0.025
	(0.047)	(0.046)	(0.046)	(0.133)	(0.261)	(0.304)
Loans	0.007	-0.019	-0.003	0.004	-0.047	-0.040
	(0.022)	(0.034)	(0.037)	(0.075)	(0.109)	(0.109)
Amihud	0.023***	0.028***	0.021	0.008	0.032	0.029
Illiquidity	(0.008)	(0.010)	(0.013)	(0.019)	(0.027)	(0.031)
Observations	457	457	457	457	457	457
Bank FE	NO	NO	NO	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES	YES	YES
Adj R-squared	0.210	0.178	0.130	0.232	0.175	0.114

Table 8. Retail investor and institutional investor trading to Form 4 filings

This table examines the retail and institutional buy transactions around [-5, +5] trading days of Form 4 filings. The dependent variable in column (1) is daily retail buy volume divided by total volume. The dependent variable in column (2) is daily institutional buy volume divided by total volume. All variables are defined in Appendix A. Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the one percent, five percent, and ten percent levels, respectively, in two-tailed tests.

	(1) Retail Buy	(2) Institutional Buy
FDICconnect × PostFiling	-0.008*	0.016***
	(0.005)	(0.005)
PostFiling	-0.005	-0.007*
	(0.004)	(0.004)
Observations	13,004	13,004
Filing FE	YES	YES
Adjusted R-squared	0.153	0.107

Table 9. Intra-day market response to Form 4 filings: Without Dow Jones coverage

This table examines the differences earnings response to stand-alone banks and bank holding companies. The dependent variables in columns (1) - (3) and (4) - (6) are abnormal returns measured from the earnings announcement date to 0, 2, and 4 trading days. All variables are defined in Appendix A. Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the one percent, five percent, and ten percent levels, respectively, in two-tailed tests.

	(1)	(2)	(3)	(4)	(5)	(6)
	Raw Return			Abnormal Volume		
	1 min	5 min	15 min	1 min	5 min	15 min
FDICconnect	-0.095***	-0.159***	-0.270**	-0.420***	-0.690***	-1.199***
	(0.035)	(0.046)	(0.111)	(0.123)	(0.196)	(0.239)
Log(MVE)	0.014	-0.005	0.028	-0.003	0.032	0.131
	(0.010)	(0.014)	(0.039)	(0.032)	(0.063)	(0.100)
Tier1capital (%)	-0.055	-0.304	-0.454	-0.473	-2.088	-5.395
	(0.221)	(0.466)	(0.842)	(0.724)	(1.253)	(3.662)
Deposits	-0.033	-0.108	-0.725	0.570**	-0.013	0.937
	(0.082)	(0.305)	(0.630)	(0.266)	(0.725)	(1.732)
Loans	0.013	0.151	-0.109	-0.466	-1.346***	-1.199
	(0.076)	(0.170)	(0.316)	(0.307)	(0.429)	(0.958)
Amihud Illiquidity	0.006	-0.040*	-0.165	-0.167*	-0.218	-0.076
	(0.015)	(0.023)	(0.118)	(0.098)	(0.241)	(0.288)
Log(TradeSize)	0.005	-0.002	0.000	0.034	0.035	0.047
	(0.007)	(0.012)	(0.025)	(0.032)	(0.049)	(0.063)
CEO	-0.031***	-0.019	-0.015	-0.098	-0.033	-0.105
	(0.011)	(0.061)	(0.132)	(0.105)	(0.142)	(0.216)
CFO	-0.035	0.004	0.210	-0.250*	-0.842***	-1.504***
	(0.025)	(0.184)	(0.193)	(0.129)	(0.227)	(0.275)
Observations	386	386	386	316	316	316
Year FE	YES	YES	YES	YES	YES	YES
Adj R-squared	0.047	0.031	0.024	0.097	0.083	0.081

Table 10. The Role of Sophisticated Market Participants

This table examines the role of institutional ownership and analyst following on the differences in intra-day market response to Form 4 filings by stand-alone banks vs. matched bank holding companies. Using the matched sample from Tables 2 - 5, Panel A compares institutional ownership and analyst following for stand-alone banks and bank holding companies. Panel B repeats Table 4 with additional controls for institutional ownership and analyst following. All variables are defined in Appendix A. Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the one percent, five percent, and ten percent levels, respectively, in two-tailed tests.

Panel A: Univariate Analysis

	Mean			Median		
Variables	FDIC	SEC	t-stat (diff)	FDIC	SEC	z-stat (diff)
InstOwnership	0.21	0.30	3.19***	0.16	0.23	4.46***
NumAnalyst	1.85	2.39	1.18	0.00	1.00	2.58***
n	137	137		137	137	

Table 10. Continued

Panel B: Regression with Additional Controls

	(1)	(2)	(3)	(4)	(5)	(6)
	Raw Return			Abnormal Volume		
	1 min	5 min	15 min	1 min	5 min	15 min
FDICconnect	-0.138***	-0.152***	-0.168*	-0.389***	-0.652***	-0.969***
	(0.035)	(0.046)	(0.085)	(0.109)	(0.142)	(0.178)
Log(MVE)	0.047**	0.071*	0.110**	0.147**	0.224***	0.344***
	(0.023)	(0.038)	(0.044)	(0.063)	(0.083)	(0.099)
Tier1capital (%)	-1.754	-2.073	-0.639	-0.015	-1.852	-0.945
	(1.299)	(1.615)	(2.188)	(2.347)	(3.606)	(4.698)
Deposits	0.394	0.111	0.094	2.043	1.329	2.635
	(0.250)	(0.313)	(0.645)	(1.509)	(1.640)	(1.626)
Loans	-0.204	0.081	0.325	-0.035	-0.408	-0.984
	(0.240)	(0.255)	(0.496)	(0.602)	(0.861)	(1.141)
Amihud Illiquidity	0.027	0.012	0.025	-0.029	0.011	0.023
	(0.018)	(0.019)	(0.026)	(0.032)	(0.045)	(0.058)
Log(TradeSize)	0.049	0.02	0.006	0.121	0.106	0.133
	(0.046)	(0.070)	(0.134)	(0.129)	(0.201)	(0.283)
CEO	-0.096	-0.132	-0.019	-0.340***	-0.276	-0.242
	(0.190)	(0.125)	(0.151)	(0.103)	(0.214)	(0.337)
CFO	0.032	0.103	0.079	0.099	0.222	0.288
	(0.032)	(0.062)	(0.124)	(0.135)	(0.190)	(0.233)
InstOwnership	-0.034	0.071	0.329	0.601	0.701	0.704
	(0.117)	(0.212)	(0.255)	(0.368)	(0.459)	(0.662)
NumAnalyst	-0.002	-0.009	-0.017	-0.018	-0.022	-0.029
	(0.007)	(0.012)	(0.014)	(0.014)	(0.018)	(0.022)
Observations	565	565	565	448	448	448
Year FE	YES	YES	YES	YES	YES	YES
Adj R-squared	0.030	0.007	0.006	0.041	0.058	0.073