

Fragmented Securities Regulation, Information-Processing Costs, and Insider Trading

Using a unique setting where stand-alone banks submit filings to bank regulators instead of the SEC, we examine the consequences of fragmented securities regulation on information-processing costs and opportunistic insider trading. We find the market reaction to insider-trading filings on FDICconnect is less timely than to those on SEC EDGAR, suggesting FDICconnect generates higher information-processing costs. We also find only large investors trade more on insider-trading filings on FDICconnect than on those on SEC EDGAR, thus extracting benefits from the delayed market reaction to insider-trading filings on FDICconnect. Finally, we find increased insider selling in stand-alone banks prior to public announcements of banks' enforcement actions and negative earnings news, suggesting insiders' opportunistic use of private information. These findings collectively suggest regulatory fragmentation undermines market efficiency and distorts the level playing field.

Keywords: Banks; regulation; FDICconnect; SEC EDGAR; insider trading; information processing costs

JEL codes: G14, G21, G28, M41, M48

1. Introduction

Regulators raise concerns about the adverse effects of regulatory fragmentation (i.e., multiple agencies overseeing similar entities) regarding financial institutions (GAO, 2016). However, the issue of regulatory fragmentation is complex, and evidence of where and how regulatory fragmentation creates inefficiencies in the financial system is scarce. Prior studies suggest regulatory fragmentation creates inconsistent enforcement by regulators and varied compliance by regulated entities.¹ However, regulatory fragmentation can also affect capital markets, because regulators often have different incentives regarding bank transparency, which may create frictions in disseminating information. In this paper, by studying insider-trading filings, we examine whether having bank regulators oversee disclosure regulation instead of the SEC generates higher information-processing costs and provides insiders with opportunities to use private information.

Stand-alone banks are commercial banks without a holding company. They exist because they were the default organizational structure before bank holding companies became popular. Traditionally, stand-alone banks have formed bank holding companies to expand their nonbanking business or gain flexibility in issuing capital. However, post-crisis regulations such as the Dodd-Frank Act and Basel III increased the regulatory burden for bank holding companies and motivated some banks to shed their holding-company structures.² Recently, banks and regulators have started questioning the usefulness of the holding company structure (Noreika, 2017; Rexrode, 2017).³ From 2017 to 2019, Zions Bancorp, Bank OZK, BancorpSouth, and Northeast Bancorp dissolved

¹ See Rosen (2003, 2005), Agarwal, Lucca, Seru, and Trebbi (2014), Rezende (2016), Charoenwong, Kwan, and Umar (2019), Costello, Granja, and Weber (2019), Granja and Leuz (2022), and Bischof, Daske, Elfers, and Hail (2022).

² Ballew, Iselin, and Nicoletti (2022) and Kim, Kim, and Ryan (2019) document increased regulatory burden on bank holding companies due to the Dodd-Frank Act and Basel III, respectively.

³ For example, New York Community Bancorp, in its 2017 Q3 earnings call, discussed shedding its holding company to avoid the systemically important financial institution (SIFI) designation.

their holding companies. The change in these banks' organizational structure accompanies an important change in the regulator overseeing disclosure. Many stand-alone banks are publicly traded on major stock exchanges; however, they are exempt from SEC registration and thus do not file on EDGAR. Instead, these stand-alone banks are required to disclose the same forms as other publicly traded companies, but they file with their federal bank regulator on FDICconnect, a separate filing and dissemination system administered by the Federal Deposit Insurance Corporation (FDIC).⁴

Having bank regulators instead of the SEC oversee disclosure regulation significantly affects the information environment, including reporting requirements, regulatory enforcement, and the dissemination system, because the SEC and bank regulators have different objectives. The SEC focuses on market efficiency and investor protection, thus promoting complete and timely disclosures. By contrast, bank regulators focus on the prudence and stability of the banking system, which may be at odds with providing complete and timely information to investors, because such disclosure impedes regulators' ability to stem panics (Prescott, 2008; Morrison and White, 2013).

Consistent with these arguments, we find bank regulators' disclosure requirements differ significantly from those of the SEC. For example, on FDICconnect, stand-alone banks are required to electronically post beneficial ownership reports (Forms 3, 4, and 5) but are only encouraged to post other filings such as Forms 8-K, 10-K, and 10-Q electronically.⁵ By contrast, bank holding companies under the SEC's supervision are required to file all these forms on SEC EDGAR electronically. Also, stand-alone banks are not subject to the periodic review and comment-letter

⁴ FDICconnect is a single system jointly developed by three federal regulators (OCC, FRB, and FDIC). Stand-alone banks file with their respective federal bank regulator on FDICconnect, but the system is administered by FDIC. In Appendix A, we provide the front page of the FDICconnect website (<https://efr.fdic.gov/fcxweb/efr/index.html>).

⁵ Stand-alone banks are required to submit these filings (8-K, 10-K, and 10-Q) to their federal bank regulators directly but are only encouraged to submit them electronically on FDICconnect for public view. See FDIC Financial Institution Letter on May 31, 2011. <https://www.fdic.gov/news/news/financial/2011/fil11040.pdf>.

process administered by the SEC.⁶ These findings collectively suggest bank regulators' disclosure requirements are significantly weaker than those of the SEC.

We begin our analyses by examining the impact of fragmented securities regulation on stock market efficiency. Maintaining price efficiency is one of the SEC's primary missions (SEC, 2020) and is crucial to disciplining banks through transparent disclosures (Goldstein and Sapra, 2014). A notable concern regarding FDICconnect is that it may create higher information-processing costs and thus undermine stock market efficiency (Blankespoor, deHaan, and Marinovic, 2020). Consistent with bank regulators not promoting information disclosure of banks under their supervision, FDICconnect is lesser known to market participants, is covered by fewer information intermediaries, and has a less user-friendly interface than SEC EDGAR.

Although the properties of FDICconnect seem to be associated with higher information-processing costs, whether and how much FDICconnect affects stock market efficiency is not obvious. Once sophisticated investors become aware of FDICconnect, acquisition and integration costs are arguably small. Moreover, an experienced programmer can readily develop an algorithm to trade on FDICconnect filings, and ample evidence shows algorithmic traders increase stock price efficiency (Chakrabarty, Moulton, and Wang, 2022; Bhattacharya, Chakrabarty, and Wang, 2020; Chordia and Miao, 2020). Thus, whether and how much the separate disclosure system affects stock market efficiency are ultimately empirical questions.

We focus on insider-trading filings to study the impact of FDICconnect on information-processing costs because studies suggest insider-trading information plays a critical role in market

⁶ 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. Hence, stand-alone banks are not subject to a mandated review of periodic disclosures at least once every three years. Interestingly, Jeans and Larsen (2019) conjecture that the SEC's comment letters on its accounting and disclosure practices prompted Bank OZK to transition to a stand-alone bank.

efficiency. For example, insider trading improves market efficiency, because insiders trade against mispricing (Piotroski and Roulstone, 2005; Ali, Wei, and Zou, 2011), and market participants can correct mispricing by incorporating insider-trading information (Beneish and Vargus, 2002; Core, Guay, Richardson, and Verdi, 2006). Also, insider trades in banks are known to contain nonpublic information about bank operations and regulatory outcomes (Ryan, Tucker, and Zhou, 2016; Jagolinzer, Larcker, Ormazabal, and Taylor, 2020). Thus, by examining stock market reactions around insider-trading filings, we can see whether FDICconnect affects stock market efficiency by increasing information-processing costs.

Insider-trading filings offer several advantages in identifying the impact of different disclosure systems on stock price efficiency. First, whereas other disclosures such as earnings announcements occur mostly outside market hours, a large portion of Form 4 filings occur during market hours. Also, studies suggest sophisticated investors such as mutual funds and hedge funds actively trade on the information in Form 4 filings, so insider-trading filings generate immediate market reactions (Du, 2015; Rogers, Skinner, and Zechman, 2016, 2017; Bolandnazar, Jackson, Jiang, and Mitts, 2020; Chen, Cohen, Gurun, Lou, and Malloy, 2020; Crane, Crotty, and Umar, 2022). Thus, we can observe intraday market reactions specific to a particular Form 4 filing. Second, Form 4 filings contain useful information in a simple and homogenous format (Rogers et al., 2017). Hence, we can compare disclosures with similar information content but are made on two different disclosure systems. Lastly, the information in 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.

Our main empirical challenge is that differences in stock market reactions can be driven by confounding factors such as unobservable bank characteristics, because stand-alone banks and

bank holding companies may differ in several dimensions. To address this concern, we construct the control group using only bank holding companies with one commercial bank (“single-bank holding companies”), which reduces the differences in bank business models and other properties.

Using the sample of insider-purchase filings from 2003 to 2018, we find short-run market reaction to insider purchases disclosed on FDICconnect is almost non-existent and significantly smaller than the reaction to such purchases disclosed on SEC EDGAR. However, the difference in returns reverses or disappears in the long run (three months). These findings suggest the short-run difference in market reaction is unlikely to result from the filings of single-bank holding companies containing more information.

To further isolate the impact of the fragmented disclosure system, we employ two empirical strategies. First, we conduct matched-sample analyses, including coarsened exact matching (CEM), entropy matching, propensity score matching (PSM), and exact matching of insider trades in stand-alone banks and those in single-bank holding companies (Jagolinzer, Larcker, and Taylor, 2011; Gallemore, Gipper, and Maydew, 2019). Second, we conduct a within-bank analysis by restricting the sample to banks that transitioned to or from a stand-alone bank. This approach allows us to compare market reactions to filings on different disclosure venues by the same bank. In all these analyses, we find consistent results: the short-run market reaction to insider-trading filings on FDICconnect is significantly smaller than the reaction to such filings on SEC EDGAR.

We also run a placebo test using earnings announcements to rule out an alternative explanation; stock market investors may generally be less interested in stand-alone banks’ informational events. Earnings are usually announced in press releases first and filed on the disclosure system with a significant delay (Bochkay, Markov, Subasi, and Weisbrod, 2022). If investors’ indifference to stand-alone banks mainly drives the differences in market reaction to

Form 4 filings, we also expect a significant difference in market reactions to earnings announcements. However, we find no difference in two-day cumulative abnormal returns (CAR) to earnings announcements by stand-alone banks and those by single-bank holding companies.

Next, we examine whether the delayed market reaction due to the fragmented disclosure system can distort the level playing field. Given that the short-run difference in market reaction either reverses or disappears in the long run, we examine who benefits from the delayed market reactions to Form 4 filings on FDICconnect. We hypothesize that large institutional investors are more informationally advantaged than retail investors, 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 only large investors trade more on Form 4 filings on FDICconnect than on those on SEC EDGAR, suggesting these large investors are the ones enjoying benefits from the delayed market reaction to Form 4 filings on FDICconnect. This finding suggests the fragmented disclosure system distorts the level playing field.

Finally, we examine whether bank insiders opportunistically use their private information. Studies suggest insiders may opportunistically engage in sales trading before announcements of adverse corporate events (Dechow, Lawrence, and Ryans, 2016; Blackburne, Kepler, Quinn, and Taylor, 2021; Arif, Kepler, Schroeder, and Taylor, 2022). We hypothesize that insiders at stand-alone banks can trade opportunistically because they expect laxer enforcements by bank regulators and less scrutiny by investors due to higher information-processing costs. We examine two adverse corporate events: regulatory enforcement actions and negative earnings news. We find insiders at stand-alone banks are more likely to engage in sales trading during the 20 trading days prior to announcements of adverse events than those at single-bank holding companies. These findings

suggest bank insiders may use their private information opportunistically, corroborating that fragmented securities regulation distorts the level playing field.

Our findings are subject to two important caveats. First, they are based on a period in which relatively few stand-alone banks exist. However, as more banks consider removing their holding-company structure and filing to bank regulators instead of the SEC, investors and information intermediaries may pay more attention to stand-alone banks. Second, our findings on insider-sales trading do not provide evidence of securities-law violations. Instead, these trading patterns suggest insiders at stand-alone banks respond to adverse events before the public announcement by relying on their private information.

Our study contributes to the literature on fragmented regulation. Prior studies primarily focus on the enforcement channel, documenting inconsistent enforcement by regulators and varied compliance by regulated entities (Rosen, 2003, 2005; Agarwal et al., 2014; Rezende, 2016; Charoenwong et al., 2019; Costello et al., 2019; Granja and Leuz, 2022; Bischof et al., 2022). Whereas no panacea for the issue of regulatory fragmentation exists, the first step to resolving regulatory fragmentation is to understand where and how it creates distortions and inefficiencies in the financial system. Our paper suggests regulatory fragmentation adversely affects the market efficiency and level playing field by increasing information-processing costs, identifying a novel mechanism through which regulatory fragmentation creates costs to the financial system.

Our paper also contributes to the literature on information-processing costs. Prior studies suggest information-processing costs matter for capital market efficiency (e.g., Rogers et al., 2017), which is consistent with our findings.⁷ However, understanding the frictions that generate higher

⁷ In Rogers et al. (2017), the friction is caused by different timing of access to Form 4 filings. Some investors have earlier access to Form 4 filings and enjoy a window of trading ahead of other investors. That is, they suggest dissemination timing is essential for market efficiency. On the other hand, friction in our paper is a separate disclosure

information-processing costs is crucial for policy implications, yet empirical evidence on the issue is scarce. Blankespoor et al. (2020) solicit more studies to identify the specific frictions that impair disclosure processing, because knowing what strategies and policies may be effective is challenging without knowing the friction. Our paper answers this call by suggesting regulatory fragmentation can be a source of high information-processing costs.

Our paper also speaks to forensic studies that document insiders' opportunistic behavior in capital markets. Prior studies document insiders' opportunistic behavior in capital markets under different circumstances (Dechow et al., 2016; Blackburne et al., 2021; Kim and Oh, 2021; Arif et al., 2022). Although these studies are descriptive by nature, they can draw attention to concerning patterns and provide opportunities to solve the underlying problems (Arif et al., 2022). Our findings suggest the fragmented disclosure rules provide opportunities for insiders to take advantage of private information, which can be a proxy for a weakness in bank governance (Jagolinzer et al., 2011; Ali and Hirshleifer, 2017). Stand-alone banks are large regional banks and thus play an essential role in the local economy by serving businesses and consumers.⁸ Therefore, evidence of weakness in their governance can provide implications for the welfare of members of local communities, which can be concerning for both the SEC and bank regulators.

Finally, our study provides direct evidence supporting a long-standing call to streamline the administration of disclosure systems and securities regulation by the SEC. In particular, the recent trend of shedding the holding-company structure to avoid the increased regulatory burden after the financial crisis has gained considerable attention and reignited the discussion of consolidating disclosure systems in the banking industry. A separate filing and dissemination

system caused by regulatory fragmentation. Also, our additional tests suggest insiders may trade more profitably and opportunistically if attention to their insider trading disclosures is limited, due to fragmented securities regulation.

⁸ Stand-alone banks in our sample have total assets of \$108 billion and loans of \$81 billion.

system administered by bank regulators is a byproduct of several changes in federal securities laws without clear reasoning or benefits. For that reason, the SEC has been calling to streamline the administration of disclosure systems and securities regulation (SEC, 1999). We support this call by documenting that the separate dissemination system administered by bank regulators creates market inefficiency, and bank insiders exploit these opportunities in their insider-trading decisions.

2. Institutional Background

2.1. Disclosure Regulation of 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 they are not obligated to do so by federal securities laws.^{9,10} 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. As a result, many stand-alone banks were required to begin submitting Securities Exchange Act Filings (e.g., 10-Ks/Qs, 8-Ks, proxy statements). 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 similar to those set by the SEC, thereby subjecting stand-alone banks to the same securities regulations as bank holding companies.

⁹ 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.

¹⁰ However, bank holding companies were subject to SEC registration, because they were considered corporations rather than banks.

Publicly traded stand-alone banks file the same forms with their federal bank regulators as other public companies do 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 their respective federal bank regulator's jurisdiction, whereas bank holding companies' securities regulation is overseen by the SEC.

Before 2003, bank regulators did not operate an electronic filing system, whereas the SEC had run EDGAR since the mid-1990s. However, Section 403 of SOX required insider transactions to be electronically filed within two business days. To accommodate Section 403 of SOX, Federal bank regulators (OCC, FRB, and FDIC) jointly developed an electronic platform called FDICconnect that started receiving files on June 30, 2003. The SEC has expressed concern that filing disclosures with different regulators "makes it difficult for many investors to know where to find the reports of a particular financial institution" (SEC, 1999). Importantly, stand-alone banks are required to electronically file beneficial ownership reports (Forms 3, 4, and 5) via FDICconnect. However, they are only encouraged to post other filings such as Forms 10-K/Q and 8-K on FDICconnect.¹¹ Moreover, stand-alone banks are not subject to the periodic review and comment-letter process administered by the SEC. Overall, our findings suggest bank regulators' disclosure requirements are significantly weaker than those of the SEC.¹²

¹¹ Unexpectedly, we find three banks (Albemarle First Bank, Connecticut Bank & Trust, and Desert Community Bank) that have no presence on FDICconnect and submitted hand-written Form 4 filings to the FRB, in violation of Section 403 of SOX. This finding is also consistent with bank regulators putting less emphasis on disclosures.

¹² In Table OA1 of the online appendix, to formally examine the level of bank regulators' enforcement of disclosure requirements, we compare the disclosure compliance of stand-alone banks and single-bank holding companies. We find that stand-alone banks are more likely to violate filing deadlines for Forms 8-K, 4, and 10-K/Q than single-bank holding companies, consistent with the bank regulators placing less weight on timely disclosure.

2.2. FDICconnect and Information-Processing Costs

FDICconnect has several features that can affect information-processing costs. First, many market participants are unaware of FDICconnect. Schmidt (2017) notes, “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 even some experienced bank analysts are unaware of FDICconnect.^{13, 14} Second, FDICconnect is covered by fewer information intermediaries than SEC EDGAR. Especially for Form 4 filings, as summarized in Appendix B, many real-time data vendors do not comprehensively collect Form 4 filings from FDICconnect. For example, Newswires such as Dow Jones do not cover Form 4 filings from FDICconnect as they do for most filings on SEC EDGAR.¹⁵ Also, 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 content of filings by stand-alone banks is often inaccurate.¹⁶ Thomson Reuters, which feeds the previous day’s filings every weekday morning, appears to have started coverage of FDICconnect filings in 2015 but does not cover all stand-alone banks.¹⁷ Third, FDICconnect is less user friendly than SEC EDGAR, which may also increase information-acquisition costs. FDICconnect does not offer any

¹³ <https://www.fool.com/investing/2017/09/21/bank-of-the-ozarks-no-longer-submits-regulatory-fi.aspx>

¹⁴ 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 that these filings can be downloaded from FDICconnect.

¹⁵ RavenPack, which we use to access newswires, has no insider-trading news coverage of stand-alone banks. It has insider transaction news for Towne Bank, a stand-alone bank, but we find that this is a misclassification of insider trades by Franklin Financial Services Corp, a bank holding company.

¹⁶ WSJ Quotes, which includes insider transactions in its corporate profiles, leaves the space for stand-alone banks blank. Yahoo! Finance does cover insider transactions in stand-alone banks but shows only a subset of transactions filed.

¹⁷ We also find some discrepancies in Thomson Reuters’ database of stand-alone bank filings: several insiders are misclassified as a director or officer of other stand-alone banks, and the filing dates coded in Thomson Reuters are sometimes days after the FDICconnect filing date.

public-dissemination service that pushes disclosures to interested users. Also, access to the website requires legal consent every time, and individual filings do not have a separate URL. Banks that file to FDICconnect have commented that the system needs improvement.^{18,19} Lastly, sometime between July 2019 and July 2021, after we distributed our working paper, the filing-time information was removed from the FDICconnect website, no longer allowing investors to test short-run market reactions to insider-trading filings. All these factors may undermine the stock price efficiency regarding filings on FDICconnect.

On the other hand, the information-processing costs related to FDICconnect may have a negligible effect on stock price efficiency. Once sophisticated investors become aware of FDICconnect, acquisition and integration costs are arguably small, because an experienced programmer can readily develop an algorithm to track and trade on FDICconnect filings. Furthermore, ample evidence that algorithmic traders increase stock price efficiency in response to corporate disclosures exists (Chakrabarty et al., 2022; Bhattacharya et al., 2020; Chordia and Miao, 2020). Ultimately, whether and how much the separate disclosure system affects stock market efficiency are empirical questions.

3. Sample and Determinants of Banks' Organizational Structure

3.1. Sample Selection

We construct our sample starting from stand-alone banks filed on FDICconnect from 2003 to 2018 and identify 48 stand-alone banks listed on a major stock exchange that are covered in

¹⁸ See comment letters to the FDIC by the American Bankers Association (December 4, 2018) and the International Bancshares Corporation (December 4, 2018).

¹⁹ Other differences exist between FDICconnect and SEC EDGAR regarding fees and operating hours. FDICconnect does not charge filing fees, whereas the SEC charges filing fees proportional to the maximum aggregate price of securities (Section 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.

CRSP. In Table 1, we report descriptive statistics to describe the general characteristics of these publicly traded stand-alone banks.²⁰ Most stand-alone banks are listed on NASDAQ (89.58%) and are non-member state banks regulated by the FDIC (79.17%). Stand-alone banks have total assets of \$6.8 billion on average (median \$1.1 billion). Given that more than 87% of commercial banks in the U.S. have under \$1 billion in total assets in 2018 (from FDIC Quarterly Banking Profile), the stand-alone public banks are typically large regional banks rather than small community banks. The average market value of equity is \$845.5 million (median \$103.8 million). On average, stand-alone banks have 35 branches (median 10 branches) and operate in two states (median one state). Some stand-alone banks are large enough to be included in the S&P 1500 (e.g., First Republic Bank, Bank OZK, Signature Bank, Opus Bank, and BancorpSouth).

Our main empirical challenge is that any differences in stock market reactions can be driven by confounding factors such as unobservable bank characteristics because stand-alone banks and bank holding companies may differ in several dimensions. To address this concern, we construct the control group using only bank holding companies consisting of one commercial bank (“single-bank holding companies”), which reduces the differences in bank business models.^{21,22}

We hand collect Form 4 filings on FDICconnect and obtain filings on SEC EDGAR from Thomson Reuters filed from 2003 to 2018. For the market-efficiency analysis, we focus on open-market purchases, because prior studies suggest insider sales are less informative, and studies find

²⁰ The descriptive statistics in Table 1 are measured at the bank level for the most recently available date as of the end of 2018.

²¹ We identify single-bank holding companies as follows. First, we select all bank holding companies with one commercial bank. Then, 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 difference to be within 1% of the holding company’s assets.

²² Because of historical deregulation, restriction on the types of business that stand-alone banks can engage in is lower. Many stand-alone banks engage in brokerage, wealth management, and investment advisory businesses. None of the bank holding companies that became stand-alone banks mention having to divest nonbanking businesses due to the transition.

no significant intraday market reaction to insider sales (Rogers, 2008; Brochet, 2010; Du, 2015; Rogers et al., 2016, 2017).²³ For the opportunistic insider-trading analysis, we focus on open-market sales. For the timing of filing on FDICconnect, we use the filing timestamp.²⁴ For filings on EDGAR, because Thomson Reuters does not provide the SEC filing timestamp, we follow Johannesson and Kim (2021) to merge timestamps on the WRDS SEC filing database.²⁵ Rogers et al. (2017) show 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 file transfer protocol (FTP). To address the concern that market reaction to SEC filings may occur earlier than the timestamp prior to 2015 (Jackson and Mitts, 2014; Patterson, Tracy, and Ackerman, 2014), we conduct a robustness test limiting the sample period starting from the end of 2014, when the SEC supposedly modified the system to ensure fair disclosure, to the end of 2018.²⁶ In addition, we restrict the sample to filings made between 9:40 a.m. and 3:30 p.m. EST to examine intraday market reactions.²⁷ As a result, our primary sample for the market-efficiency analysis consists of 746 insider purchases by 35 stand-alone banks and 7,009 insider purchases by 419 single-bank holding companies. Over 90% of the insider-purchase filings are the only such filing for a bank-filing day, with a small fraction of filings made on the same day.

²³ The Form 4 filings at FDICconnect usually omit transaction codes, which makes interpreting the filings more difficult. We carefully review all filings with share acquisition, and we drop the filings that have option exercises, that mention 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.

²⁴ 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 the Form 4 filing is always posted within 10 seconds of the stamped time.

²⁵ 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, which allows us to match each filing to a timestamp.

²⁶ In Table OA2 of the online appendix, we find our results for the market efficiency analysis are robust to limiting the sample period to 2015 to 2018.

²⁷ The restriction is to avoid beginning- and end-of-day trading effects (Rogers et al., 2016, 2017). In Table OA3 of the online appendix, we find our results for the market reaction to insider-trading filings are robust to including all filings within the market hours of 9:30 am to 4:00 pm EST.

We obtain banks' enforcement-action data from S&P Capital IQ. We identify five enforcement actions for stand-alone banks and 420 for single-bank holding companies from 2003 to 2018, accompanying insider trading around the enforcement-action issuance date.²⁸ In addition, quarterly earnings-announcement dates to identify negative earnings announcements are from Compustat. Finally, bank characteristics are from Call Reports.

Table 2 provides descriptive statistics of the primary sample at the Form 4 filing level by stand-alone banks and single-bank holding companies. Panel A provides descriptive statistics for the full sample, and Panel B compares the means of each variable for stand-alone banks and single-bank holding companies. Bank size, measured as the natural log of market cap, is smaller for stand-alone banks than for single-bank holding companies. Tier 1 capital ratio and deposits as a proportion of assets are similar for the two groups. Loans as a proportion of assets are larger for stand-alone banks than for single-bank holding companies. Importantly, stock market illiquidity proxied by the Amihud illiquidity measure (Amihud, 2002) is higher for stand-alone banks, which could be a concern for testing the short-run market reaction. We address this concern using various matching procedures and within-bank analysis to minimize differences in bank characteristics between stand-alone banks and single-bank holding companies in section 4.2.

3.2. Determinants of Banks' Organizational Structure

Before examining the consequences of fragmented securities regulation, we examine characteristics that drive banks' organizational structure to understand better why banks may

²⁸ The types of enforcement actions included in the sample are 181 sanctions against personnel (43%), 75 cease and desists (18%), 49 other fines (12%), formal agreements/consent orders (10%), 38 fines levied against a person (9%), 13 prompt corrective actions (3%), 8 sanctions due to HMDA violations (2%), 4 deposit insurance threats (1%), and 4 hearing notices or other actions (1%). Among these types of enforcement actions, formal agreements/consent orders, cease and desists, and prompt corrective actions are considered severe.

strategically choose to become a stand-alone bank or a bank that is part of a holding company. We hypothesize that a bank may transit to a holding company for different reasons: to grow and raise capital, diversify and expand the business, and take more risks. To examine these motives, we run the following regression:

$$SABtoBHC_{i,t+1} = \alpha + \beta_1 X_{i,t} + \delta_t + \epsilon_{i,t}. \quad (1)$$

The dependent variable $SABtoBHC_{i,t+1}$ is an indicator variable that equals 1 if the bank transitions from a stand-alone bank to a bank holding company in the following year. We include various determinants: $\log(Asset)$, $Tier1capital$, and $Deposits$ to capture the size and funding structure; $Loans$, $C\&I\ Loans$, and $Noninterest\ Income$ to capture the business model; $Nonaccrual$ and $Past\ Due$ to capture the quality of loan portfolios; and $Institutional\ Ownership$, $Amihud\ Illiquidity$, and $Number\ of\ Analysts$ to capture internal and external monitoring scrutiny. We do not include fixed effects, because their inclusion leads to limited variation and significant sample attrition. Our determinants model is similar to that used in Rosen (2005) to predict the charter-change decision by commercial banks. All variables are defined in Appendix C.

Table 3 reports estimations of equation (1) using both OLS and logit regressions. In columns (1) and (2), we find the coefficients of $\log(Assets)$ are negative and significant (-0.006, $p<0.05$; -1.365, $p<0.01$), and the coefficients of $Tier1capital$ are negative and at least weakly significant (-0.018, $p<0.10$; -20.162, $p<0.01$), suggesting smaller banks and banks with capital constraints are more likely to transition from a stand-alone bank to a bank holding company. This result suggests the bank-holding-company structure was more advantageous for expansion and capital raising. The coefficients of variables proxying for loan quality, $Nonaccrual$ and $Past\ Due$, are negative and statistically significant in some specifications, implying banks with high-quality loans are likely to transition to a bank holding company. The coefficient of $Number\ of\ Analysts$ is

positive and significant when using OLS, but negative and insignificant when using logit regression. Also, the coefficients of two other variables proxying for monitoring scrutiny are insignificant, suggesting no evidence for less monitoring scrutiny for stand-alone banks.

In Figure 2, we further examine how bank characteristics change around three years before and after the transition from SAB to BHC. The figures suggest stand-alone banks that transit to holding companies exhibit an increase in assets and equity (growth motives), a decrease in the proportion of C&I loans and an increase in noninterest income (diversification and expansion motives), and an increase in nonaccrual and past-due loans (risk-taking motives).

For the BHC to SAB transitions, we have only three cases in our sample—BancorpSouth, Bank OZK, and Zions Bancorp—which makes regression analysis infeasible. These transitions are all concentrated in the years after 2017, a period when large bank holding companies have become subject to additional financial regulations, such as stress tests and the liquidity coverage ratio (LCR), under Dodd-Frank and Basel III. BancorpSouth, Bank OZK, and Zions Bancorp had assets of \$15 billion, \$19 billion, and \$66 billion prior to their transition from BHC to SAB, respectively, and they were large enough to be subject to many of these regulations. Thus, the increased regulatory burden at the bank-holding-company level is a plausible motivation for these cases. In their earnings conference calls, all three banks state that eliminating duplicative regulatory oversight is their purpose of reorganization.

4. Empirical Results

4.1. Stock Market Efficiency: Market Response to Insider-Trading Filings

We begin our analyses by examining the impact of fragmented securities regulation on stock market efficiency. In Panel A of Table 4, we compare daily mean abnormal returns around

the insider-purchase filing date for stand-alone banks and single-bank holding companies. Abnormal returns are calculated as raw returns minus the value-weighted size-decile portfolio return from CRSP. Mean abnormal returns for stand-alone banks' filings on FDICconnect are reported under the SAB column. None of the daily mean abnormal returns from one day prior to four days following the filing date are statistically different from zero. By contrast, the bank holding companies' filings on SEC EDGAR reported under the BHC column show a positive and significant market reaction of 41 basis points ($p < 0.01$) on the filing date. Mean abnormal returns on the day after the filing date, aggregated around $[0,+2]$ and around $[0,+4]$, are also insignificant for stand-alone banks but significantly positive for filings by single-bank holding companies.²⁹

However, mean abnormal returns around $[0,+42]$ and $[0,+63]$ trading days of the filing date are positive and statistically significant for filings by both stand-alone banks and bank holding companies. Interestingly, mean abnormal returns around $[0,+63]$ are larger for filings by stand-alone banks. The reverse in the long-run returns may be driven by the bank size difference, as prior studies suggest insider trading is most informative in small firms (Seyhun, 1986; Lakonishok and Lee, 2001; Jeng, Metrick, and Zeckhauser, 2003). Consistent with bank size driving the difference in long-run returns to Form 4 filings, we find no significant difference in CAR measured from the filing date to 21, 42, and 63 in our robustness tests in which the samples are matched on bank size

²⁹ We note mean abnormal returns on the insider-purchase filing date are smaller for banks than nonbanks. For example, Brochet (2010) documents about 2% mean abnormal returns around the $[0,+4]$ window for nonbanks. In untabulated analysis, we confirm the market reaction to banks—including stand-alone banks, single-bank holding companies, and multi-bank holding companies—is smaller than nonbank firms. The size-adjusted CAR around the $[0,+4]$ window for insider purchases is 0.73% for banks versus 1.95% for nonbank firms during 2003–2018. The difference is statistically significant in univariate comparison and regressions controlling for firm size, trade size, CEO trades, CFO trades, and liquidity. Relatedly, prior studies such as Spargoli and Upper (2018) also document that insider purchases in banks yield lower long-term returns than nonbanks. Overall, banks' lower returns to insider purchases are partly due to bank stocks' lower idiosyncratic volatility, which appears to be an industry characteristic. However, the lower market returns do not diminish the importance of information conveyed from Form 4 filings to investors. Several studies have shown insider trading in banks has predictive power of future stock returns (Ryan et al., 2016; Cziraki, 2018; Jagolinzer et al., 2020; Akin, Coleman, Fons-Rosen, and Peydro, 2021).

and other characteristics. These results suggest the short-run difference in market reaction either reverses or disappears in the long run. Therefore, it is unlikely that the short-run difference can be attributed to more informative filings by single-bank holding companies.

In Panel B of Table 4, we compare the daily mean abnormal volume around the filing date for stand-alone banks and single-bank holding companies. Abnormal volume is calculated as the daily volume (as a proportion of shares outstanding) divided by the average daily volume for the same day of the week in the past 52 weeks. We find significantly greater mean abnormal volume, aggregated around $[0,+2]$ and $[0,+4]$ of the filing date, for filings by single-bank holding companies. These findings are consistent with the results for abnormal returns.

Next, we conduct intraday analyses to compare immediate market responses to Form 4 filings by stand-alone banks and single-bank holding companies. In Figure 3, we plot mean returns and cumulative abnormal volume (CAV) on a second-by-second basis from five minutes prior to 15 minutes after the Form 4 filings of open-market purchases. We include all observations with at least one transaction within the window, resulting in 285 filings by stand-alone banks and 3,973 by single-bank holding companies. In Panel A of Figure 3, we plot mean returns, where returns are computed as the raw return from five minutes prior to filing to event time. The returns to filings by stand-alone banks (in solid red) are small after the filing. On the other hand, the returns to filings by single-bank holding companies (in dotted black) jump immediately after the filing. The mean return to bank holding companies' filings increases to around 20 basis points within 60 seconds of the filing. The instantaneous reaction to the filings by single-bank holding companies is consistent with the findings of Rogers et al. (2017), who document returns of around 30 basis points after 60 seconds of the filing. The magnitudes of the market reaction in our sample are slightly smaller than the findings in Rogers et al. (2017), which could be due to the different

composition of sample firms or the more extended sample period. In any case, the non-reaction to potentially positive information disclosure by stand-alone banks is surprising and notable.

In Panel B of Figure 3, we plot the mean CAV.³⁰ Similar to the returns, the CAV of filings by stand-alone banks (in solid red) shows a small reaction. By contrast, the CAV of filings by single-bank holding companies (in dotted black) increases immediately after the filing.

Next, 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:

$$\text{Raw Return or } CAR_{i,j,t} = \beta_1 SAB_{i,j,t} + \beta_2 X_{i,t} + \beta_3 Y_{i,j,t} + \delta_t + \epsilon_{i,j,t}. \quad (2)$$

The dependent variables are *Raw Return*_{*i,j,t*}, percent change³¹ in price from filing time to event time; and *Cumulative Abnormal Return (CAR)*_{*i,j,t*}, cumulative raw return minus the value-weighted size-decile portfolio. The explanatory variable of interest, *SAB*_{*i,j,t*}, is an indicator variable that equals 1 for filings by stand-alone banks. The bank-level characteristics, *X*_{*i,t*}, include *Log(MVE)*, *Tier1capital*, *Deposits*, *Loans*, and *Amihud Illiquidity*. We include *Amihud Illiquidity* to control for market depth and trading liquidity (Bolandnazar et al., 2019). The transaction-level characteristics, *Y*_{*i,j,t*}, include *Log(TradeSize)*, *CEO*, and *CFO*. Prior studies also include control variables for pre-planned transactions pursuant to Rule 10b5-1.³² However, we find no cases in which stand-alone banks mention an open-market purchase was scheduled under a 10b5-1 plan,

³⁰ CAV is computed as cumulative dollar volume from five 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). The formula for CAV at time *t* in the current week is

$$\left\{ \sum_{m=-5}^t \text{Volume}_{0,m} - \left(\sum_{w=-52}^{-1} \sum_{m=-5}^t \text{Volume}_{w,m} / 52 \right) \right\} / \left(\sum_{w=-52}^{-1} \sum_{m=-5}^{15} \text{Volume}_{w,m} / 52 \right),$$

Where *Volume* is the dollar amount of trading, *m* is minutes around the filing time, and *w* is weeks around the filing date.

³¹ We define *Raw Return* as the percent change (i.e., multiplied by 100) for the intraday market-response analysis, because the market reactions within several minutes are generally smaller than 1%.

³² Jagolinzer (2009) finds higher returns to 10b5-1 trades. By contrast, Brochet (2010) finds insider-purchase filings that are pre-planned have smaller positive abnormal returns than those that are not pre-planned.

and 10b5-1 plans are relatively rare for purchase transactions. Thus, we do not include a control variable for transactions under Rule 10b5-1. The year fixed effects, δ_i , control for economic conditions affecting all banks and trades in a given year. All variables are defined in Appendix C.

In column (1) of Table 5, returns are measured from filing to one minute after filing for the main sample. The coefficient of *SAB* is significantly negative (-0.137, $p < 0.01$). The coefficient implies returns on filings by stand-alone banks are 13.7 basis points smaller than returns on filings by single-bank holding companies one minute after the filing. As we lengthen the window to five minutes in column (2), the coefficient of *SAB* is consistently significantly negative (-0.135, $p < 0.01$). In column (3), where the window is further lengthened to 15 minutes, the coefficient of *SAB* is more negative and significant (-0.203, $p < 0.01$). In columns (4)–(6), we repeat the same tests using CAV as the dependent variable. In column (4), CAV is measured from filing to one minute after the filing. Fewer observations are available for the CAV tests than for the return tests, because we require at least 10 out of the 52 past weeks to have transactions within the window. The coefficient of *SAB* is significantly negative (-0.619, $p < 0.01$). Similar to the results in the univariate analyses, the coefficient of *SAB* increases over time in columns (5) and (6). In sum, these results suggest that in the short run, the market reaction to filings on FDICconnect is significantly smaller than the reaction to filings on SEC EDGAR.

In Table 6, we test long-term returns to Form 4 filings, using the same regression framework as in equation (2). The dependent variable is CAR measured as raw returns minus the size-decile value-weighted portfolio returns. In columns (1)–(3), the coefficients of *SAB* imply returns to filings by stand-alone banks are 0.4 to 0.8 percentage points smaller up to four days after the filing than returns to filings by single-bank holding companies. However, in columns (4)–(5), the coefficients of *SAB* are statistically insignificant, implying long-term returns measured up to

21 and 42 trading days after filing are not statistically different for stand-alone banks and single-bank holding companies. In column (6), the coefficient of *SAB* is significantly positive for the [0,+63] window. However, once we run the same analyses after applying matching procedures in our robustness tests in section 4.2., we find no significant difference in CAR measured from the filing date to 21, 42, and 63 trading days. In addition, in Table OA4 of the table, we find consistent results when extending our sample to include Form 4 filings outside market hours. Overall, the smaller short-run market reaction to filings by stand-alone banks suggests FDICconnect creates higher information-processing costs and thus undermines stock market efficiency.³³

In addition, in the online appendix, we examine whether the delayed reactions affect information asymmetry. Prior studies document that insider trading increases bid-ask spreads around the filing until the information contained in the trade is reflected in the price (e.g., Rogers et al., 2017). Because the market reaction to informed trading is delayed for filings on FDICconnect, we hypothesize that the abnormal bid-ask spread would be smaller for filings on FDICconnect than EDGAR. To test this hypothesis, we construct abnormal bid-ask spreads as the spread at time t divided by the spread at five minutes prior to filing, using the intraday quote database in TAQ, following Rogers et al. (2017). In Figure OA3 and Table OA6, we find the abnormal bid-ask spread change following the filing is smaller for stand-alone banks, suggesting the delayed market reaction also affects the information asymmetry.

³³ We note prior studies provide mixed evidence on three important control variables: *Log(TradeSize)*, *CEO*, and *CFO*. We find the informativeness of trade size is positively associated with both returns and trading volumes, suggesting the trade size contains information in the short run. However, Brochet (2010) finds the coefficient on the trade size is insignificant for the three-day abnormal stock return around the Form 4 filing. Regarding the informativeness of insider trades by CEOs and CFOs, whereas insider trading by top executives may be more informative because they have an informational advantage compared to other insiders, studies find little or no difference in the market reaction to CEOs' purchases (Jeng, Metrick, and Zeckhauser, 2003; Fidrmuc, Goergen, and Renneboog, 2006), which is possibly due to greater market scrutiny on CEOs' transactions. Wang, Shin, and Francis (2012) find long-run returns to insider purchases by CFOs are larger than the returns to insider purchases by CEOs. However, Hillier, Korczak, and Korczak (2015) find those effects disappear when considering other personal characteristics. Overall, the coefficients of these control variables are somewhat sensitive to the sample composition and the setting.

4.2. Robustness Tests: Matching and Within-Bank Analysis

We address concerns that differences in stock market reactions may be driven by confounding factors such as unobservable bank characteristics. First, we conduct various matched-sample analyses using CEM, entropy matching, PSM, and exact matching. In the first three matching procedures, we match stand-alone banks and single-bank holding companies on *Log(MVE)*, *Tier1capital*, *Deposits*, *Loans*, *Amihud Illiquidity*, *Log(TradeSize)*, *CEO*, and *CFO*. For exact matching, we match on *Log(MVE)*, *Tier1capital*, *Deposits*, *Loans*, *Amihud Illiquidity*, and *Log(TradeSize)*, but not on *CEO* and *CFO* due to sample attrition. With CEM, we coarsen the data by dividing observations into five evenly spaced bins of all continuous variables and two bins of all binary variables, so that stand-alone banks and single-bank holding companies have similar weighted histograms of these variables. Then, the weights are applied in a weighted least-squares regression. With entropy matching, we calculate weights for each observation such that the weighted means for all control variables are equal across stand-alone banks and single-bank holding companies. Then, the weights are applied in a weighted least-squares regression. With PSM, we estimate the probability that a bank is a stand-alone bank, using a probit model with all control variables, and we match without replacement at the transaction level using a caliper of 0.001. Finally, with exact matching, we match at the transaction level to minimize the sum of absolute distances between the treatment and control firms for all continuous control variables.

In Panel A of Table 7, we re-run the intraday market-response analysis in Table 5 using the four matching procedures.³⁴ In columns (1)–(3) of Panel A of Table 7, we find the coefficients

³⁴ In Panel A of Table OA5 of the online appendix, we assess the covariate balance for PSM and exact matching. For PSM, we find all covariates are balanced except for *Tier1capital*. However, the difference is only 0.006 (0.123 for SAB vs. 0.129 for BHC) and significant at the 10% level. For exact matching, we find all covariates are balanced.

of *SAB* are all significantly negative for returns, and their magnitudes change slightly depending on the matching procedure but are largely consistent with those in Table 5. The magnitude is the largest for the exact matching, arguably the tightest matching procedure. In columns (4)–(6) of Panel A of Table 7, we find consistent results for *CAV*, and the coefficients of *SAB* are all significantly negative. Again, their magnitudes change slightly depending on the matching procedure but are broadly consistent with those in Table 5. Given that we lose about 10% of stand-alone bank observations and 90% of single-bank holding company observations for PSM and exact matching, the results are robust to the sample selection and composition. Notably, the results mitigate the concern that the difference in short-run market reaction is driven by the stock-market illiquidity of stand-alone banks, because we match the sample based on the Amihud illiquidity measure.

In Panel B of Table 7, we re-run the long-run market-response analysis in Table 6 using four matching procedures.³⁵ Again, we find a similar pattern: the difference in returns reverses or disappears in the long run, suggesting the short-run difference in market reaction is unlikely to be attributable to filings by single-bank holding companies containing more information.

In addition, we conduct a within-bank analysis by restricting our sample to banks that transitioned to or from a stand-alone bank. 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 time-invariant bank characteristics that may drive our findings. In Table 8, we estimate equation (2) with additional bank fixed effects but exclude year fixed effects because of limited yearly observations for FDICconnect filings in the within-analysis sample. The results are similar to those

³⁵ Similarly, in Panel B of Table OA5 of the online appendix, we assess covariate balance for PSM and exact matching. For PSM, we find all covariates are balanced. For exact matching, we find all covariates are balanced except for *CFO*, because we exclude *CEO* and *CFO* from the matching covariates due to the sample attrition. The difference is 0.032 (0.039 for *SAB* vs. 0.071 for *BHC*) and significant at the 5% level.

in Table 5. In columns (1)–(3), we find short-run returns are smaller for FDICconnect filings than for SEC EDGAR filings, significant at the 5% level, except for column (3). In columns (4)–(6), the cumulative-abnormal-volume difference is significantly negative, at least at the 5% level, consistent with the results in Table 5.

In Table 9, we divide the within-bank sample into those banks that switched from a stand-alone bank to a bank holding company, and vice versa. We find short-run market reaction in terms of raw return and CAV is positive and significant only for bank holding companies in both samples.

4.3. Alternative Explanation: Investor Indifference to Stand-Alone Banks

Our matched sample and within-bank analyses suggest the difference in market responses is likely driven by different disclosure venues, not by unobservable bank characteristics. However, because the organizational structure solely determines the disclosure venue, we cannot rule out the possibility that stock market investors are generally less interested in any informational events by stand-alone banks.

To address this concern, we run a placebo test using earnings announcements to rule out an alternative explanation: stock market investors may generally be less interested in stand-alone banks' informational events. We compare the market response to earnings announcements, which are informational events that are not first disclosed via disclosure systems. Whereas insider trading is first disclosed via Form 4 filing by regulation, earnings are not first disclosed on disclosure systems. Instead, earnings news is initially disseminated via press releases in most cases (Bochkay et al., 2022). Therefore, if the market-reaction differences to Form 4 filings are mainly due to the disclosure venues rather than organizational structures, we expect no difference in market responses to the earnings announcements of stand-alone banks and bank holding companies.

We test the timeliness of market response to earnings announcements based on earnings-surprise groups following DellaVigna and Pollet (2009) and Hirshleifer, Lim, and Teoh (2009).³⁶ We measure earnings surprise as actual earnings minus the mean analysts' forecast earnings per share (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. 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. Excluding banks with no analyst coverage, for this test, we have 297 earnings announcements by stand-alone banks and 8,743 earnings announcements by single-bank holding companies.

In Figure 4, we plot the average two-day abnormal return around the earnings announcement ($CAR[0,+1]$) for stand-alone banks and single-bank holding companies by earnings-surprise group with a 90% confidence interval. If the market is not interested in stand-alone banks' earnings announcements, we expect to see a smaller negative (positive) reaction for stand-alone banks in the bad (good) news groups, relative to single-bank holding companies. However, we find the mean abnormal returns (CAR) of all groups are not statistically different.

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

$$CAR_{i,q} = \beta_1 SAB_{i,q} \times UE\ Group_{i,q} + \beta_2 SAB_{i,q} + \beta_3 UE\ Group_{i,q} + \beta_4 X_{i,q} + \delta_q + \gamma_i + \epsilon_{i,t}. \quad (3)$$

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 $SAB_{i,t} \times UE\ Group_{i,t}$. $SAB_{i,t}$ is an indicator variable that equals 1 for earnings announcements by stand-alone banks. UE

³⁶ The empirical design is different from the previous tests on Form 4 filings for two reasons. First, unlike Form 4 filings, earnings are usually announced outside of market hours; thus, we cannot observe intraday market response. Second, we need to condition the market reaction on the magnitude of the earnings surprise.

$Group_{i,t}$ ranges from -4 to 4, from most-negative earnings surprise to most-positive earnings surprise. The bank-level characteristics, $X_{i,t}$, include $Log(MVE)$, $Tier1capital$, $Deposits$, $Loans$, and $Amihud\ Illiquidity$. The year-quarter fixed effects, δ_q , control for economic conditions affecting all banks in a given year-quarter. The bank fixed effects, γ_i , absorb time-invariant bank characteristics. If the market reacts more slowly to stand-alone banks' unexpected earnings, we expect a negative coefficient on the interaction term, $SAB \times UE\ Group$.

In Table 10, in columns (1)–(3), we report the estimation results of equation (3). In columns (4)–(6), we also include bank fixed effects. The coefficients of $SAB \times UE\ Group$ are statistically insignificant in all columns. The results suggest the stock market responds to earnings announcements by stand-alone banks as quickly as they respond to those by single-bank holding companies. One concern may be that the insignificant coefficients of $SAB \times UE\ Group$ can be due to noise or lack of power, because the number of earnings announcements for stand-alone banks is small. Although this concern cannot be entirely eliminated, we argue that noise or lack of power is unlikely to drive the insignificant results for two reasons. First, the coefficients of $SAB \times UE\ Group$ are positive in all columns, although they are statistically insignificant. Second, Figure 4 shows the market reaction increases almost monotonically for better earnings surprises. Moreover, the magnitude of the average CAR is similar for most groups and even larger for stand-alone banks in the worst group. Overall, the test supports that the untimely market reaction to Form 4 filings by stand-alone banks is more likely due to the disclosure venue, FDICconnect, rather than the general lack of investor interest in stand-alone banks.

4.4. Level Playing Field: Who Benefits from Form 4 Filings on FDICconnect?

Next, we examine whether the delayed market reaction due to a fragmented disclosure system can distort the level playing field. Given that the short-run difference in market reaction either reverses or disappears in the long run, we examine who benefits from the delayed market reactions to Form 4 filings on FDICconnect. We hypothesize that large institutional investors are more informationally advantaged than retail investors regarding Form 4 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. Thus, we predict that larger investors extract most trading benefits from the delayed market reactions to Form 4 filings on FDICconnect. We estimate the retail volume following Boehmer et al. (2021).³⁷ Also, we define informed buy (sell) volume as the volume of non-retail trades of \$20,000 or greater that are buyer (seller) initiated, using the Lee and Ready (1991) algorithm.³⁸ Then, we estimate the following difference-in-differences model using [-5, +5] trading days around the Form 4 filing date:

$$Net\ Retail\ or\ Net\ Large_{i,j,t} = \beta_1 SAB_{i,t} \times PostFiling_{i,j,t} + \beta_2 PostFiling_{i,j,t} + \gamma_j + \epsilon_{i,j,t}. \quad (4)$$

The dependent variables are $Net\ Retail_{i,j,t}$, retail buy minus sell volume divided by total retail volume, and $Net\ Large_{i,j,t}$, the volume of non-retail trades of \$20,000 or greater that are buyer initiated minus those that are seller initiated divided by total large volume. The explanatory variable of interest is $SAB_{i,t} \times PostFiling_{i,j,t}$. $SAB_{i,t}$ is an indicator variable that equals 1 for stand-alone banks. $PostFiling_{i,j,t}$ is an indicator variable that equals 1 for [0, +5] trading days around the

³⁷ We follow Boehmer et al. (2021) 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- versus 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.

³⁸ Many studies use the \$50,000 cutoff to define large trades. However, for our sample firms, on average, 0.55% of trades are over \$50,000 and several trading days have little or no trades over \$50,000, which distorts our measure. Hence, we use the \$20,000 cutoff to define large trades, which account for, on average, 1.87 percent of trades.

Form 4 filing date. We include filing fixed effects to control for any filing-specific unobservables, and they subsume bank- and transaction-level characteristics. All variables are defined in Appendix C.

In Table 11, we report the results of estimating equation (4). In columns (1) and (3), the dependent variable is *Net Retail*. The coefficients of *SAB*×*PostFiling* are statistically insignificant (-0.003, $p > 0.10$; -0.003, $p > 0.10$), suggesting retail investors' purchases in response to insider-purchase filings on FDICconnect do not differ from their purchases in response to filings on SEC EDGAR. On the other hand, in columns (2) and (4), the dependent variable is *Net Large*, and we find the coefficients of *SAB*×*PostFiling* are statistically positive (0.021, $p < 0.05$; 0.021, $p < 0.05$). This result, combined with the muted market reaction immediately following FDICconnect filings, suggests large informed investors trade on this information, but they do so in a manner that does not create an instant price reaction after the filing.

In Figure OA4 of the online appendix, in both full and matched samples, we find that returns to filings by stand-alone banks are almost zero or somewhat negative within five days of the filing. Thus, investors who purchase stock during this muted period can enjoy significant abnormal positive returns in the long run, and larger investors are likely to extract trading benefits from the delayed market reactions. By contrast, retail investors do not seem to trade during the muted period, likely because they face higher information-processing costs. These findings corroborate that FDICconnect distorts the level playing field. One caveat of this analysis is that we cannot observe the traders' identity, and our proxies for retail and large informed volume are based on several assumptions. Thus, our findings should be interpreted with this caveat in mind.

To gauge the economic significance of potential trading gains by large investors, we calculate the dollar return available from trading on filings by stand-alone banks based on the

results in Table 4. We assume an investor tracking FDICconnect filings purchases stocks on the filing date and holds them for 42 (63) trading days, thereby earning the abnormal return of 139 (220) basis points over [0,+42] ([0,+63]). Given that the average trading volume on the filing date for filings on FDICconnect is \$1.6 million (untabulated), the aggregate estimated profit from this trading is \$16.59 (\$26.26) million over [0,+42] ([0,+63]).³⁹ The calculation provides a rough estimate of the lost trading opportunities driven by the increased information-processing costs due to FDICconnect, and thus speaks to the economic magnitude of the effects of the fragmented disclosure system on stock price efficiency and the level playing field.⁴⁰

4.5. Level Playing Field: Do Insiders Trade Opportunistically?

Finally, we examine whether bank insiders opportunistically use their private information. We hypothesize that insiders at stand-alone banks can opportunistically use their private information in their trading, because they expect laxer enforcements by bank regulators and less scrutiny over their insider trading by investors, due to higher information-processing costs. We examine insider selling activity before two important adverse events: regulatory enforcement actions and negative earnings announcements.

To test whether insider-trading activity prior to enforcement-action issuance is heightened for stand-alone banks, we estimate the following regression pooling trading days in the [-20,+20]

³⁹ \$16.59 (\$26.26) million = 1.39% (2.20%) × \$1.6 million × 746 observations.

⁴⁰ We also estimate abnormal dollar profits only for insider trading. Given that the average size of an insider purchase for filings on FDICconnect is \$46,312 (untabulated), the abnormal dollar profit from this trading is \$644 (\$1,019) over [0,+42] ([0,+63]). Also, over the entire sample, the aggregate abnormal profit from all insider purchases is \$480,228 (\$760,073) over [0,+42] ([0,+63]). These numbers, in absolute terms, may appear small but are consistent with prior studies. For example, Cziraki and Gider (2021) document that the median insider earns abnormal dollar profits of \$464 per year by engaging in three insider transactions. Our findings, along with existing evidence in prior studies, suggest direct benefits from insider purchases are small (Armstrong, Blackburne, and Quinn, 2021). Rather, insider purchases seem to work as a signal to the market, and our findings in Table 11 suggest only large investors respond to that signal. For that reason, we focus on the entire trading by large investors to provide a rough estimate of the lost trading opportunities driven by the increased information-processing costs due to FDICconnect.

window around negative corporate news, following the event-study approach in Blackburne et al. (2021) and Arif et al. (2022):

$$\begin{aligned}
 & \text{Net Buy or Net Sell or } BSI_{i,t,d} \\
 & = \beta_1 SAB_{i,t} \times Day[-20, -1]_{i,t,d} + \beta_2 Day[-20, -1]_{i,t,d} + \beta_3 SAB_{i,t} + X_{i,t} \\
 & + \theta_{i,q} + \epsilon_{i,t,d}.
 \end{aligned} \tag{5}$$

*Net Buy (Net Sell)*_{*i,t,d*} is an indicator variable that equals 1 if the insiders are net buyers (sellers) on that day, and *BSI*_{*i,t,d*} is the insider buy-sell imbalance on that day, calculated as the number of shares bought by insiders minus the number of shares sold by insiders, divided by total insider volume. The explanatory variable of interest is *SAB*_{*i,t*} × *Day[-20, -1]*_{*i,t,d*}. *SAB*_{*i,t*}, an indicator variable that equals 1 for filings by stand-alone banks, and *Day[-20, -1]*_{*i,t,d*}, an indicator variable that equals 1 for the 20 trading days prior to negative news. The bank-level characteristics, *X*_{*i,t*}, include *Log(MVE)*, *Tier1capital*, *Deposits*, *Loans*, and *Amihud Illiquidity*. We also include bank-quarter fixed effects, $\theta_{i,q}$, to control for time-varying bank characteristics. All variables are defined in Appendix C.

In Panel A of Table 12, we report the estimation results of equation (5) using enforcement-action issuances. In column (2), where the dependent variable is *Net Sell*, we find the coefficient of *SAB* × *Day[-20, -1]* is positive and statistically significant (0.051, $p < 0.01$), consistent with insiders in stand-alone banks being more likely to sell prior to enforcement-action disclosures. In column (3), where the dependent variable is *BSI*, we find the coefficient of *SAB* × *Day[-20, -1]* is negative and marginally significant (-0.041, $p < 0.10$). These results are consistent with bank-quarter fixed effects in columns (5) and (6), suggesting bank insiders may use their private information opportunistically to avoid losses due to the disclosure of regulatory enforcement actions. However, we state a caveat that this analysis is based on five enforcement actions for stand-alone banks and 420 for single-bank holding companies from 2003 to 2018.

To address the potential issue regarding the small sample of enforcement actions, we employ earnings announcements, which are more frequent and can be a source of private information. We define opportunistic insider trading as transactions before the earnings announcement (Ali and Hirshleifer, 2017), a period generally considered a blackout period because insiders are likely to possess private information. We define negative earnings announcements as earnings announcements within the bottom 10th percentile three-day abnormal returns.⁴¹ We also check that the average long-run abnormal returns are around twice the magnitude of the earnings-announcement returns, confirming the insiders can avoid losses from selling before negative earnings announcements.

In Panel B of Table 12, we report the estimation results of equation (5) using negative earnings announcements. We find the coefficient of $SAB \times Day[-20, -1]$ is statistically positive for *Net Sell* (0.023, $p < 0.01$) and statistically negative for *BSI* (-0.051, $p < 0.05$), consistent with more insider sales in stand-alone banks prior to negative earnings announcements. These results are consistent with bank-quarter fixed effects in columns (5) and (6). Overall, the findings in Table 12 suggest bank insiders may use their private information opportunistically, corroborating that fragmented securities regulation distorts the level playing field.⁴²

5. Conclusion

In this study, we examine the consequences of fragmented securities regulation on information-processing costs and opportunistic insider trading. We find the market reaction to

⁴¹ The bottom 10th percentile three-day abnormal earnings announcement returns is -4.21%.

⁴² In untabulated analysis, we examine positive earnings announcements, defined as earnings announcements within the top 10th percentile three-day abnormal returns. We find the coefficient of $SAB \times Day[-20, -1]$ for *Net Buy* is positive and statistically significant, consistent with more insider purchases in stand-alone banks prior to good news. However, the coefficient of $SAB \times Day[-20, -1]$ for *Net Sell* is also positive, although statistically insignificant. Thus, we do not draw a strong implication for the insider purchases around positive earnings announcements.

insider-trading filings by stand-alone banks is less timely. We also find only large investors trade more on insider-trading filings on FDICconnect than on those on SEC EDGAR, thus extracting benefits from the delayed market reaction to insider-trading filings on FDICconnect. Finally, we find increased insider selling at stand-alone banks prior to public announcements of enforcement actions and negative earnings news, suggesting the opportunistic use of private information by bank insiders. These findings collectively suggest regulatory fragmentation undermines market efficiency and distorts the level playing field.

Understanding the adverse effects of regulatory fragmentation is crucial for the stability of the financial system. However, the issue of regulatory fragmentation is complex, and evidence of where and how regulatory fragmentation creates inefficiencies in the financial system is scarce. Our findings suggest regulatory fragmentation adversely affects the market efficiency and level playing field by increasing information-processing costs, a novel mechanism through which regulatory fragmentation creates costs to the financial system. However, we state a caveat that, as more banks consider removing their holding-company structure and filing with bank regulators instead of the SEC, investors and information intermediaries may increase their attention to stand-alone banks. An open question for future research is whether these effects will persist if stand-alone banks receive more attention as more banks shed their holding-company structure.

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Appendix A. FDICconnect Website

The screenshot shows the top portion of the FDICconnect website. At the top left is the FDIC logo with the text "Federal Deposit Insurance Corporation" and "Each depositor insured to at least \$250,000 per insured bank". To the right are social media icons for RSS, YouTube, Facebook, and Twitter, along with an "Advanced Search" button. Below this is a navigation menu with tabs for "FDIC", "Banks", "Reports & Analysis", "Reference Tables", "Data Download", "Help", and "BankFind". A breadcrumb trail below the menu reads: "FDIC.gov > Industry Analysis > Bank Data & Statistics > Banks > Securities Exchange Act Filings > Securities Exchange Act Filings".

Securities Exchange Act Filings

Welcome to the Securities Exchange Act Filings System. This system, which is administered by the Federal Deposit Insurance Corporation (FDIC), contains two groups of securities disclosure filings:

1. Beneficial ownership report filings on Forms 3, 4, and 5 by directors, officers, and principal shareholders of depository institutions with a class of securities registered with the appropriate federal banking agency under the Securities Exchange Act of 1934 (Exchange Act); and
2. Other securities disclosure documents filed by or pertaining to FDIC-supervised depository institutions with a class of securities registered under the Exchange Act.

[Search for Beneficial Ownership Filings](#)

NOTICE TO USERS OF THE BENEFICIAL OWNERSHIP FILINGS SYSTEM

The Beneficial Ownership Filings System is presented by the FDIC, the Federal Reserve Board (FRB), and the Office of the Comptroller of the Currency (OCC). The information available to the public in this system was submitted by directors, officers, and principal shareholders of FDIC-insured depository institutions with a class of securities registered with the appropriate federal banking agency under the Exchange Act, as mandated by federal law. The Exchange Act, as amended by the Sarbanes-Oxley Act of 2002, requires the FDIC, the FRB, the the OCC to make these beneficial ownership reports available to the public on the Internet.

You are advised that beneficial ownership information is presented by the appropriate federal banking agency for the filer's institution in the same form as it was submitted. For public availability purposes, the FDIC, the FRB, and the OCC have not reviewed the information presented in these filings, and thus make no warranties or representations regarding its accuracy or sufficiency.

The Beneficial Ownership Filings system contains only beneficial ownership reports that have been electronically submitted to the appropriate federal banking agency (FDIC, FRB, or OCC). Reports submitted on paper pursuant to a federal banking agency's applicable hardship exemption provisions or submitted under previously applicable paper filing requirements may be obtained by contacting the appropriate agency office as follows: FDIC - Accounting and Securities Disclosure Section, 550 17th Street, NW, Washington, DC 20429; FRB - Division of Banking Supervision and Regulation, 20th Street and Constitution Avenue, NW, Washington, DC 20551; OCC - Disclosure Officer, Communications Division, 400 7th Street SW, Washington, DC 20219.

[Search for Other Securities Exchange Act Filings by FDIC-Supervised Depository Institutions](#)

NOTICE TO USERS OF THE OTHER SECURITIES EXCHANGE ACT FILINGS SYSTEM

The Other Securities Exchange Act Filings System is presented by the FDIC. The information available to the public in this system includes periodic reports (e.g., annual reports on Form 10-K, quarterly reports on Form 10-Q, and current reports on Form 8-K), proxy soliciting material, and other securities disclosure documents submitted electronically by FDIC-supervised depository institutions and associated parties reporting to the FDIC under the Exchange Act. The Exchange Act requires the FDIC to make these securities disclosure filings available to the public.

[List of FDIC-supervised depository institutions currently reporting to the FDIC under the Exchange Act and Part 335.](#)

You are advised that the other Securities Exchange Act information is presented by the FDIC in the same form as it was submitted. For public availability purposes, the FDIC has not reviewed the information presented in these filings prior to their submission, and thus makes no warranties or representations regarding its accuracy or sufficiency.

The Other Securities Exchange Act Filings system contains only information that has been electronically submitted to the FDIC by FDIC-supervised depository institutions and associated parties under the Exchange Act. Other Securities Exchange Act filings submitted on paper to the FDIC may be obtained by contacting the FDIC in writing at FDIC, Accounting and Securities Disclosure Section, 550 17th Street, NW, Washington, DC 20429, or by email at PublicBankReports@FDIC.gov.

NOTICE TO USERS OF THE SECURITIES EXCHANGE ACT FILINGS SYSTEM

Appendix B. Coverage by Information Intermediaries

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

	SAB	BHC
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

Appendix C. Variable Definitions

Variable	Definition
<i>SAB</i>	An indicator variable equal to 1 for filings by stand-alone banks, and 0 otherwise.
<i>BHC</i>	An indicator variable equal to 1 for filings by bank holding companies, and 0 otherwise.
<i>SABtoBHC</i>	An indicator variable equal to 1 if a stand-alone bank transitions to a bank holding company, and 0 otherwise.
<i>Cumulative Abnormal Return (CAR)</i>	Cumulative raw return minus the value-weighted size-decile portfolio, calculated from CRSP.
<i>Daily Abnormal Volume</i>	Daily volume (as a proportion of shares outstanding) divided by average daily volume (as a proportion of shares outstanding) for the same day of the week in the past 52 weeks, calculated from CRSP.
<i>Raw Return</i>	Percent change in price from filing time to event time, calculated from TAQ trades.
<i>Cumulative Abnormal Volume (CAV)</i>	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.
<i>Net Retail</i>	Daily retail buy minus sell volume divided by total retail volume, where retail transactions are defined following Boehmer et al. (2021).
<i>Net Large</i>	Daily large buy minus sell volume divided by the total large volume, where large transactions are defined as those above \$20,000 that are not retail transactions.
<i>Net Buy</i>	An indicator variable equal to 1 if the insiders are net buyers on that day, and 0 otherwise.
<i>Net Sell</i>	An indicator variable equal to 1 if the insiders are net sellers on that day, and 0 otherwise.
<i>BSI</i>	The number of shares bought by insiders minus the number of shares sold by insiders, divided by total insider volume.
<i>Log(MVE)</i>	Natural logarithm of market capitalization in millions from CRSP.
<i>Log(Asset)</i>	Natural logarithm of total assets in millions from Call Reports.
<i>Tier1capital</i>	Tier 1 capital divided by risk-weighted assets from Call Reports.
<i>Deposits</i>	Deposits as a proportion of total assets from Call Reports.
<i>Loans</i>	Loans as a proportion of total assets from Call Reports.

<i>C&I Loans</i>	Commercial and industrial loans as a proportion of total loans from Call Reports.
<i>Noninterest Income</i>	Noninterest income divided by total interest income from Call Reports.
<i>Nonaccrual</i>	Nonaccrual loans as a proportion of total loans from Call Reports.
<i>Past Due</i>	Loans past 30 days due as a proportion of total loans from Call Reports.
<i>Amihud Illiquidity</i>	$\sqrt{ Return /Price \times Volume} \times 1000$ measured using daily data during the fiscal year.
<i>Log(TradeSize)</i>	Natural logarithm of dollar value of trade.
<i>CEO</i>	An indicator variable equal to 1 if the insider is the CEO, and 0 otherwise.
<i>CFO</i>	An indicator variable equal to 1 if the insider is the CFO, and 0 otherwise.
<i>UE Group</i>	Groups -4 to -1 represent four quartiles of negative earnings surprises. Groups 1 to 4 represent four quartiles of positive earnings surprises. Group 0 includes banks with zero earnings surprise. Earnings surprises are calculated from I/B/E/S.
<i>InstOwnership</i>	Institutional ownership as a proportion of shares outstanding, from Thomson Reuters' 13-F database.
<i>Log(Analysts)</i>	Natural logarithm of 1 plus the number of analysts following, from IBES.
<i>PostFiling</i>	An indicator variable equal to 1 for days after Form 4 filing, and 0 otherwise.
<i>Day[-20,-1]</i>	An indicator variable equal to 1 for the [-20,-1] trading days prior to the event date, and 0 otherwise.

Figure 1. Regulatory Jurisdiction for Stand-Alone Banks and Bank Holding Companies

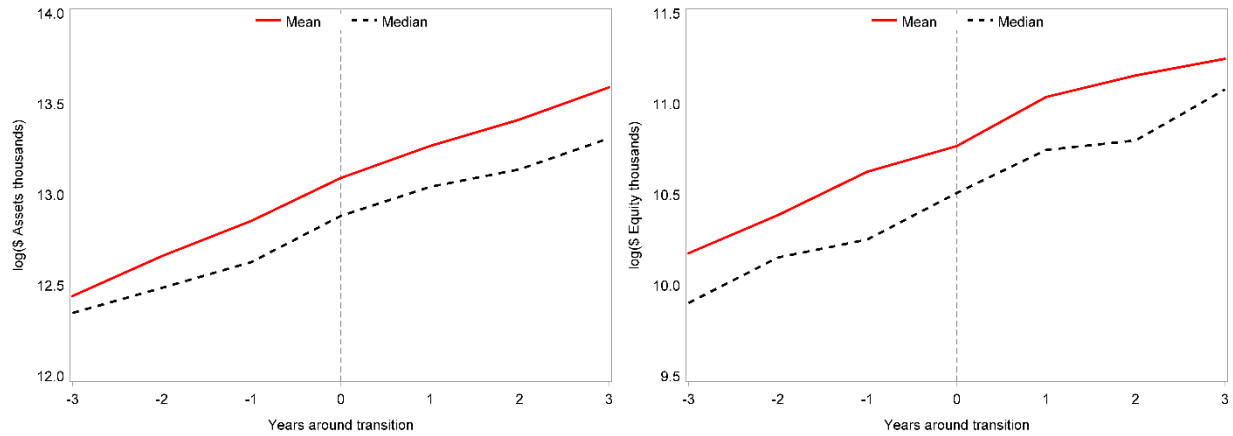
This figure describes differences in regulatory jurisdiction for stand-alone banks and bank holding companies. A commercial bank’s federal bank regulator is OCC, FRB, or FDIC, depending on whether the bank is a national bank, a member state bank, or a nonmember state bank, respectively. Stand-alone banks are exempt from the SEC registration and have their federal bank regulator as the securities regulator. Bank holding companies are considered companies rather than banks; thus, the SEC is the securities regulator. In addition, bank holding companies are regulated by FRB.

	SAB	BHC
Organizational structure	<div style="border: 1px solid black; width: 150px; height: 50px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> Commercial Bank </div>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; width: 150px; height: 30px; margin-bottom: 5px; display: flex; align-items: center; justify-content: center;"> Bank Holding Company </div> <div style="width: 1px; height: 20px; margin: 0 5px;"></div> <div style="border: 1px solid black; width: 150px; height: 50px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> Commercial Bank </div> </div>
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

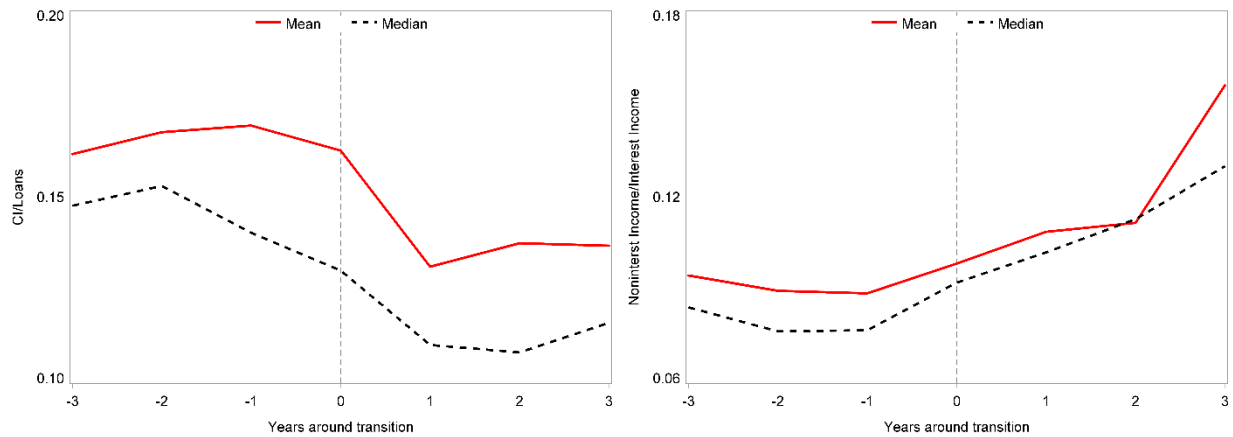
Figure 2. Change in Bank Characteristics around SAB to BHC Transition

These figures present how bank characteristics change around three years before and after the transition from SAB to BHC. Panel A presents assets and equity (growth motives), Panel B presents the proportion of C&I loans and noninterest income (diversification and expansion motives), and Panel C presents nonaccrual and past-due loans (risk-taking motives).

Panel A. Growth – Assets and Equity



Panel B. Diversification and Expansion – C&I Loan and Noninterest Income



Panel C. Risk-Taking – Nonaccrual Loans and Past-Due Loans

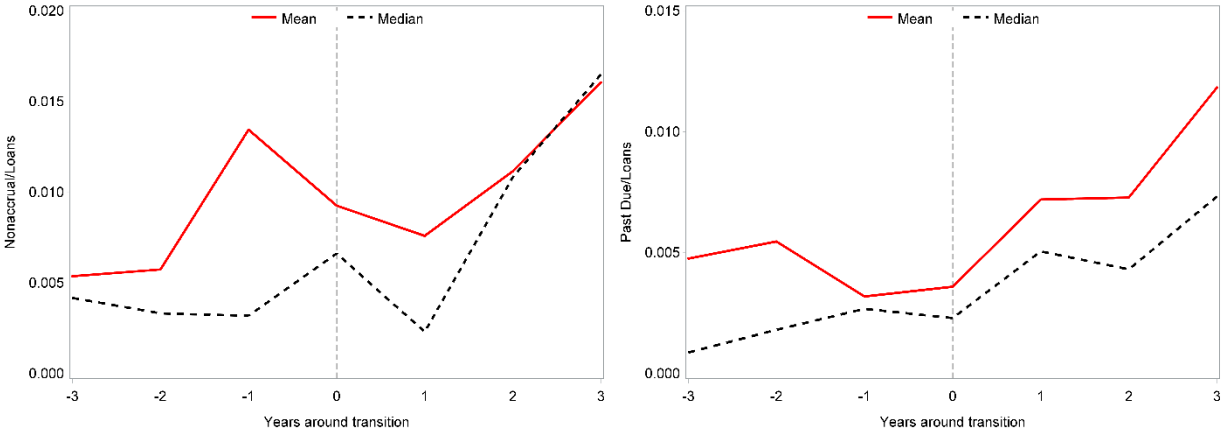
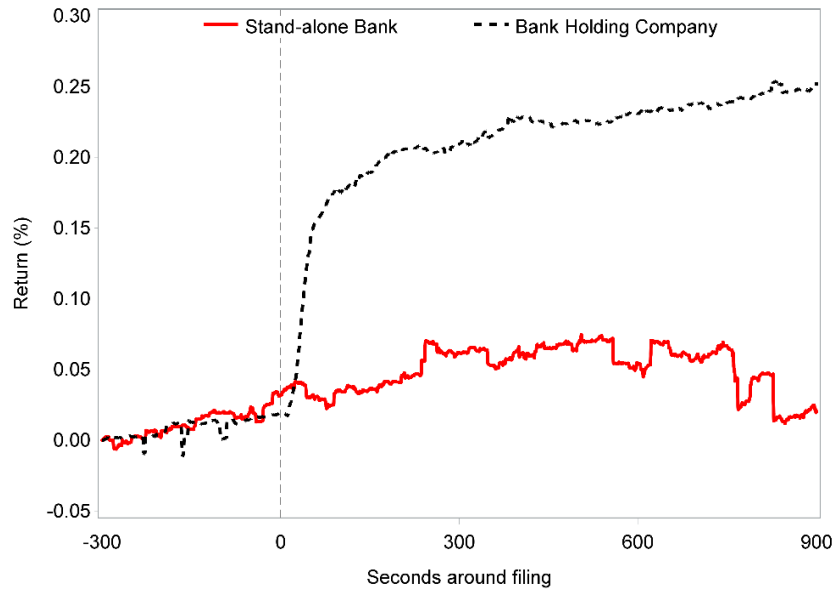


Figure 3. Intraday Market Reaction to Form 4 Purchase Filings

These figures present mean returns (Panel A) and mean cumulative abnormal volume (Panel B) for [-5 minutes,+15 minutes] of Form 4 filings of open-market purchases for the full sample. The solid red line represents filings by stand-alone banks on FDICconnect, and the dotted black line represents filings by single-bank holding companies on SEC EDGAR. The sample includes 285 filings by stand-alone banks and 3,973 filings by bank holding companies with at least one trade on TAQ within [-5 minutes,+15 minutes] of the filing.

Panel A. Mean Returns



Panel B. Mean Cumulative Abnormal Volume

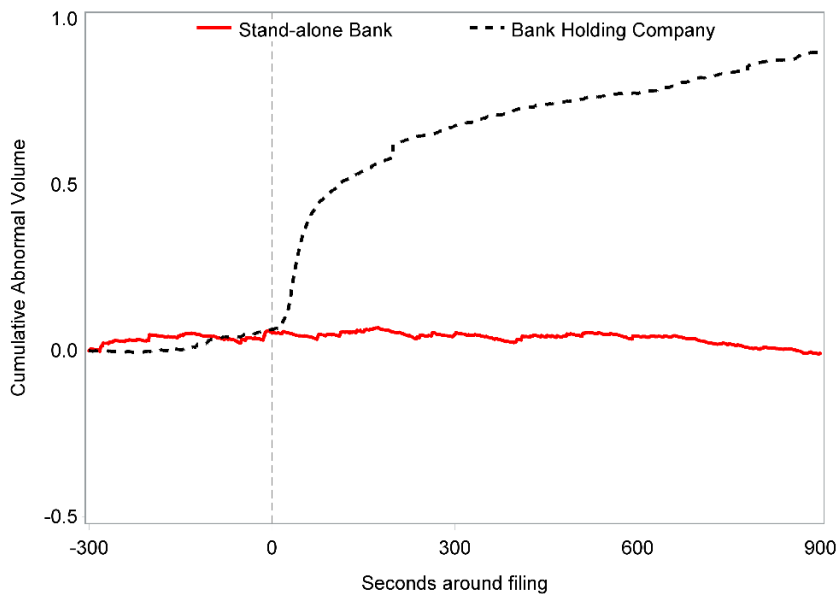


Figure 4. Placebo Test: Average Earnings-Announcement Returns

This figure presents mean cumulative abnormal returns (CAR) for [0,+1] days around earnings-announcement dates. The solid red line represents stand-alone banks, and the dotted black line represents single-bank holding companies. The error bar indicates a 90% 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 297 earnings announcements by stand-alone banks and 8,743 earnings announcements by bank holding companies.

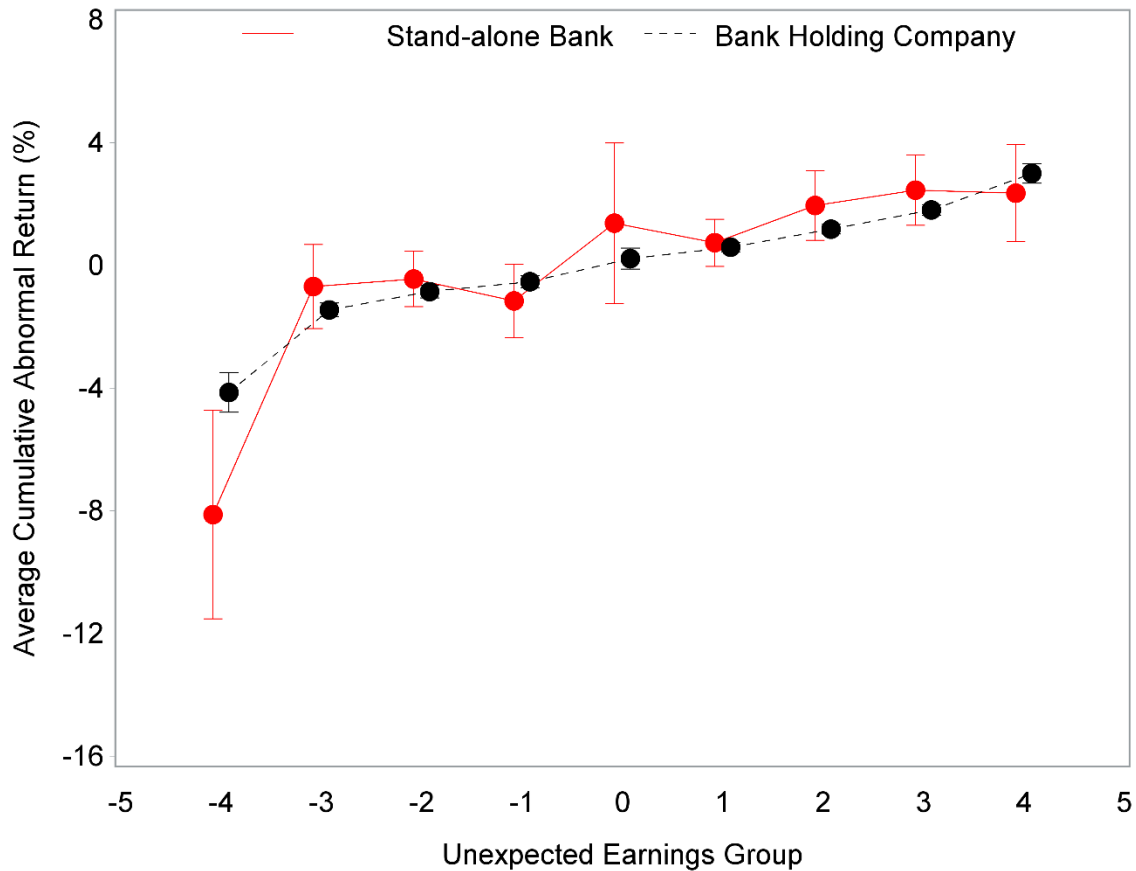


Table 1. Descriptive Statistics of Stand-Alone Banks

This table reports descriptive statistics for 48 publicly listed stand-alone banks. The descriptive statistics in Panels A and B are measured at the bank level for the most recently available date in the sample. Panel A reports the number and proportion of stand-alone banks' listed exchange and federal bank regulators. Panel B reports different measures of bank size: total assets (in \$ millions), market capitalization (in \$ millions), the number of deposit-taking branches, and the number of states with deposit-taking branches.

Panel A. Listing Stock Exchange and Federal Bank Regulator

	Number	Percent
Listed Stock Exchange		
NYSE	3	6.25%
AMEX	2	4.17%
NASDAQ	43	89.58%
Federal Bank Regulator		
OCC	5	10.42%
FRB	5	10.42%
FDIC	38	79.17%

Panel B. Bank Size

	Mean	P1	P25	P50	P75	P99
Total Assets (\$ millions)	6,752.03	106.80	438.03	1,110.33	4,327.93	99,205.20
MVE (\$ millions)	845.52	6.91	35.43	103.82	443.62	14,319.47
Number of branches	35.27	1.00	5.00	10.00	27.00	394.00
Number of states	2.08	1.00	1.00	1.00	2.00	8.00

Table 2. Sample Characteristics

This table presents descriptive statistics of the sample at the transaction level for stand-alone banks and single-bank holding companies. The sample consists of 746 insider purchases by 35 stand-alone banks and 7,009 insider purchases by 419 single-bank holding companies. Panel A provides descriptive statistics for the full sample. Panel B provides the mean differences for stand-alone banks and single-bank holding companies. *t*-statistics are reported for the differences in means. All variables are defined in Appendix C. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

Panel A. Full Sample

	Mean	Std Dev	p25	p50	p75
<i>Log(MVE)</i>	4.91	1.36	3.95	4.89	5.81
<i>Tier1capital</i>	0.12	0.03	0.10	0.12	0.13
<i>Deposits</i>	0.78	0.07	0.75	0.80	0.83
<i>Loans</i>	0.71	0.11	0.65	0.73	0.79
<i>Amihud Illiquidity</i>	0.83	1.12	0.15	0.35	1.07
<i>Log(TradeSize)</i>	9.24	1.63	8.20	9.28	10.28
<i>CEO</i>	0.10	0.30	0.00	0.00	0.00
<i>CFO</i>	0.05	0.23	0.00	0.00	0.00

Panel B. Mean Differences between Stand-Alone Banks and Single-Bank Holding Companies

	SAB	BHC	t-stat (diff)
<i>Log(MVE)</i>	4.46	4.96	-0.50***
<i>Tier1capital</i>	0.13	0.12	0.00**
<i>Deposits</i>	0.77	0.79	-0.02***
<i>Loans</i>	0.77	0.71	0.06***
<i>Amihud Illiquidity</i>	1.12	0.80	0.32***
<i>Log(TradeSize)</i>	9.16	9.25	-0.09
<i>CEO</i>	0.15	0.09	0.05***
<i>CFO</i>	0.03	0.06	-0.03***
Observations	746	7,009	

Table 3. Determinants of Transition from Stand-Alone Bank to Bank Holding Company

This table examines the determinants of banks transitioning from a stand-alone bank to a bank-holding-company organizational structure. The dependent variable $SABtoBHC_{t+1}$ equals 1 if the bank transitions from a stand-alone bank to a bank holding company in the next year. The explanatory variables include bank-level characteristics. OLS estimation is used in column (1), and logit estimation is used in column (2). Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

	(1) OLS <i>SABtoBHC</i>	(2) Logit <i>SABtoBHC</i>
<i>Log(Assets)</i>	-0.006** (0.002)	-1.365** (0.637)
<i>Tier1capital</i>	-0.019* (0.011)	-20.162** (10.229)
<i>Deposits</i>	0.001 (0.014)	-1.657 (4.943)
<i>Loans</i>	0.009 (0.008)	3.357 (2.987)
<i>C&I Loans</i>	0.006 (0.010)	0.436 (3.499)
<i>Noninterest Income</i>	0.003 (0.007)	0.836 (2.299)
<i>Nonaccrual</i>	-0.087** (0.039)	-133.213** (62.306)
<i>Past Due</i>	-0.049 (0.043)	-98.907* (58.480)
<i>Amihud Illiquidity</i>	-0.000 (0.001)	-0.014 (0.260)
<i>Institutional Ownership</i>	-0.004 (0.004)	-2.635 (3.211)
<i>Number of Analysts</i>	0.001** (0.000)	-0.377 (0.334)
Constant	0.042** (0.021)	6.739 (7.954)
Observations	3,283	3,283
Adj/Pseudo R-squared	0.007	0.328

Table 4. Daily Market Response to Form 4 Purchase Filings

This table presents univariate comparisons of daily market reaction to Form 4 purchase filings by stand-alone banks and single-bank holding companies. Panels A and B report daily mean and abnormal stock returns and trading volumes, respectively, around the filing dates. Abnormal returns are adjusted using a value-weighted size-decile portfolio. Daily abnormal volume is the trading volume (as a proportion of shares outstanding) divided by average daily volume (as a proportion of shares outstanding) for the same day of the week in the past 52 weeks. *t*-statistics are reported for the differences in means. Panel A (B) also reports the significance of the mean abnormal returns (volume) against the null of zero abnormal return (volume). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

Panel A. Mean Abnormal Returns

Filing	SAB	BHC	t-stat (diff)
-1	-0.10	0.10**	1.53
0	0.17	0.41***	1.74*
+1	-0.09	0.18***	2.22**
+2	-0.06	0.08**	0.27
+3	0.03	0.06	0.80
+4	0.01	0.00	0.92
[0,+2]	0.00	0.62***	3.28***
[0,+4]	-0.03	0.64***	2.99***
[0,+21]	0.54	0.48***	-0.16
[0,+42]	1.39***	0.55***	-1.47
[0,+63]	2.20***	0.89***	-2.00**
Observations	746	7,009	

Panel B. Mean Abnormal Volume

Filing	SAB	BHC	t-stat (diff)
-1	1.36***	1.51***	1.37
0	1.25***	1.56***	2.08**
+1	1.25	1.34***	0.75
+2	1.08	1.23***	1.30
+3	1.12	1.18***	0.69
+4	1.07	1.23***	1.34
[0,+2]	1.14*	1.32***	2.27**
[0,+4]	1.09	1.24***	2.60***
Observations	746	7,009	

Table 5. Intraday Market Response to Form 4 Purchase Filings

This table examines differences in intraday market response to Form 4 purchase filings by stand-alone banks and to those by single-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 cumulative abnormal trading volumes measured from filing time to 1, 5, and 15 minutes. The explanatory variable of interest is *SAB*, an indicator variable that equals 1 for filings by stand-alone banks. The bank-level characteristics include *Log(MVE)*, *Tier1capital*, *Deposits*, *Loans*, and *Amihud Illiquidity*. The transaction-level characteristics include *Log(TradeSize)*, *CEO*, and *CFO*. All variables are defined in Appendix C. Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

	(1)	(2)	(3)	(4)	(5)	(6)
	1 min	5 min	15 min	1 min	5 min	15 min
<i>SAB</i>	-0.137*** (0.021)	-0.135*** (0.032)	-0.203*** (0.061)	-0.619*** (0.090)	-0.961*** (0.123)	-1.396*** (0.165)
<i>Log(MVE)</i>	0.027*** (0.009)	0.001 (0.014)	0.006 (0.024)	0.106** (0.054)	0.159** (0.069)	0.257*** (0.090)
<i>Tier1capital</i>	0.131 (0.383)	-0.561 (0.448)	-0.999 (0.614)	1.558 (1.634)	0.273 (2.749)	-1.100 (3.343)
<i>Deposits</i>	0.107 (0.122)	-0.007 (0.178)	0.118 (0.235)	0.457 (0.566)	0.785 (0.982)	1.074 (1.384)
<i>Loans</i>	-0.103 (0.120)	-0.168 (0.156)	-0.133 (0.180)	-0.505 (0.624)	-0.859 (1.217)	-0.944 (1.547)
<i>Amihud Illiquidity</i>	0.046*** (0.004)	0.049*** (0.007)	0.046*** (0.008)	0.063 (0.224)	0.368 (0.295)	0.649** (0.322)
<i>Log(TradeSize)</i>	0.049** (0.022)	0.102** (0.046)	0.118** (0.053)	0.190*** (0.018)	0.256*** (0.041)	0.350*** (0.058)
<i>CEO</i>	0.023 (0.022)	0.076 (0.052)	0.083 (0.073)	0.339** (0.161)	0.550** (0.270)	0.625* (0.320)
<i>CFO</i>	-0.015 (0.013)	0.024 (0.031)	-0.019 (0.062)	0.183** (0.072)	0.449* (0.231)	0.349 (0.267)
Observations	4,044	4,044	4,044	3,477	3,477	3,477
Year FE	YES	YES	YES	YES	YES	YES
Adj R-squared	0.098	0.047	0.033	0.168	0.031	0.037

Table 6. Long-Run Market Response to Form 4 Purchase Filings

This table examines differences in long-term market response to Form 4 filings by stand-alone banks and those by single-bank holding companies. The dependent variables in columns (1)–(6) are cumulative abnormal returns (CAR) measured from the filing date to 1, 2, 4, 21, 42, and 63 trading days. The explanatory variable of interest is *SAB*, an indicator variable that equals 1 for filings by stand-alone banks. The bank-level characteristics include *Log(MVE)*, *Tier1capital*, *Deposits*, *Loans*, and *Amihud Illiquidity*. The transaction-level characteristics include *Log(TradeSize)*, *CEO*, and *CFO*. All variables are defined in Appendix C. Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Cumulative Abnormal Return (CAR)</i>					
	[0]	[0,+2]	[0,+4]	[0,+21]	[0,+42]	[0,+63]
<i>SAB</i>	-0.004*** (0.001)	-0.007*** (0.002)	-0.008** (0.003)	0.003 (0.009)	0.017 (0.010)	0.020** (0.009)
<i>Log(MVE)</i>	-0.001 (0.001)	-0.003** (0.001)	-0.003** (0.001)	0.001 (0.003)	0.005 (0.003)	0.008* (0.004)
<i>Tier1capital</i>	0.002 (0.017)	-0.006 (0.028)	-0.004 (0.031)	0.084* (0.049)	0.154** (0.070)	0.235** (0.108)
<i>Deposits</i>	-0.002 (0.007)	-0.012 (0.011)	-0.014 (0.013)	0.019 (0.034)	0.089* (0.052)	0.088* (0.052)
<i>Loans</i>	0.006 (0.004)	0.002 (0.006)	0.003 (0.007)	0.005 (0.021)	0.013 (0.034)	0.018 (0.034)
<i>Amihud Illiquidity</i>	0.001** (0.000)	0.001*** (0.000)	0.002*** (0.001)	0.002 (0.001)	0.001 (0.001)	0.001 (0.002)
<i>Log(TradeSize)</i>	0.001 (0.001)	-0.000 (0.002)	-0.001 (0.002)	0.005 (0.005)	0.002 (0.009)	0.009 (0.008)
<i>CEO</i>	-0.001 (0.001)	-0.000 (0.003)	0.000 (0.003)	0.003 (0.008)	0.011 (0.015)	0.012 (0.014)
<i>CFO</i>	0.000 (0.001)	-0.002 (0.002)	-0.001 (0.002)	-0.003 (0.004)	-0.009 (0.006)	-0.012* (0.007)
Observations	7,754	7,754	7,753	7,749	7,744	7,734
Year FE	YES	YES	YES	YES	YES	YES
Adj R-squared	0.008	0.006	0.008	0.018	0.034	0.060

Table 7. Matched-Sample Analyses

This table applies four matching procedures to improve covariate balance: coarsened exact matching (CEM), entropy matching, propensity score matching (PSM), and exact matching. With CEM, we coarsen the data by dividing observations into five evenly spaced bins of all continuous variables and two bins of all binary variables so that stand-alone banks and single-bank holding companies have similar weighted histograms of these variables. With entropy matching, we calculate weights for each observation such that the weighted means for all control variables are equal across stand-alone banks and single-bank holding companies. With PSM, we estimate the probability that a bank is a stand-alone bank using a probit model with all control variables, and we match at the transaction level without replacement using a caliper of 0.001. With exact matching, we match at the transaction level to minimize the sum of absolute distances between stand-alone banks and single-bank holding companies for all continuous control variables. Panel A re-estimates the results in Table 5, and Panel B re-estimates the results in Table 6. All variables are defined in Appendix C. Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

Panel A: Robustness Tests for the Intraday Market Response (Table 5)

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Raw Return</i>			<i>Cumulative Abnormal Volume (CAV)</i>		
	1 min	5 min	15 min	1 min	5 min	15 min
Coarsened Exact Matching (CEM)						
<i>SAB</i>	-0.139*** (0.028)	-0.158*** (0.058)	-0.187** (0.074)	-0.773*** (0.144)	-1.119*** (0.176)	-1.546*** (0.231)
Observations	2,603	2,603	2,603	2,282	2,282	2,282
Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.163	0.078	0.046	0.245	0.023	0.039
Entropy Matching						
<i>SAB</i>	-0.140*** (0.018)	-0.142*** (0.021)	-0.199*** (0.061)	-0.656*** (0.069)	-0.987*** (0.096)	-1.382*** (0.139)
Observations	4,044	4,044	4,044	3,477	3,477	3,477
Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.127	0.044	0.054	0.241	0.051	0.067
Propensity Score Matching (PSM)						
<i>SAB</i>	-0.130*** (0.022)	-0.115** (0.047)	-0.173** (0.086)	-0.654*** (0.091)	-0.947*** (0.178)	-1.541*** (0.530)
Observations	434	434	434	345	345	345
Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.147	0.009	0.007	0.253	0.148	0.045
Exact Matching						
<i>SAB</i>	-0.179*** (0.030)	-0.195*** (0.053)	-0.188*** (0.054)	-0.600*** (0.108)	-1.032*** (0.132)	-1.321*** (0.173)
Observations	362	362	362	301	301	301
Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.143	0.053	0.042	0.150	0.148	0.126

Panel B: Robustness Tests for the Long-run Market Response (Table 6)

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Cumulative Abnormal Return (CAR)</i>					
	[0]	[0,+2]	[0,+4]	[0,+21]	[0,+42]	[0,+63]
Coarsened Exact Matching (CEM)						
<i>SAB</i>	-0.004*** (0.002)	-0.007*** (0.003)	-0.006* (0.003)	0.006 (0.010)	0.015 (0.013)	0.018 (0.012)
Observations	5,410	5,410	5,410	5,408	5,406	5,402
Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.062	0.033	0.017	0.032	0.042	0.073
Entropy Matching						
<i>SAB</i>	-0.004*** (0.001)	-0.007*** (0.003)	-0.008** (0.003)	0.001 (0.010)	0.018 (0.013)	0.026** (0.010)
Observations	7,754	7,754	7,753	7,749	7,744	7,734
Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.007	0.007	0.010	0.031	0.061	0.104
Propensity Score Matching (PSM)						
<i>SAB</i>	-0.005** (0.002)	-0.008*** (0.003)	-0.008** (0.004)	0.002 (0.010)	0.015 (0.013)	0.015 (0.012)
Observations	1,346	1,346	1,346	1,345	1,344	1,341
Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.003	-0.001	0.000	0.032	0.060	0.104
Exact Matching						
<i>SAB</i>	-0.006** (0.002)	-0.008** (0.004)	-0.007 (0.005)	-0.000 (0.013)	0.017 (0.018)	0.013 (0.014)
Observations	822	822	822	822	822	820
Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.014	-0.002	0.006	0.057	0.064	0.119

Table 8. Within-Bank Analysis

This table examines differences in intraday market response to Form 4 purchase filings by banks transitioned to or from a stand-alone bank, including bank fixed effects but excluding year fixed effects because FDICconnect filings show up only once or are nonexistent in multiple years. 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 cumulative abnormal trading volumes measured from filing time to 1, 5, and 15 minutes. The explanatory variable of interest is *SAB*, an indicator variable that equals 1 for filings by stand-alone banks. The bank-level characteristics include *Log(MVE)*, *Tier1capital*, *Deposits*, *Loans*, and *Amihud Illiquidity*. The transaction-level characteristics include *Log(TradeSize)*, *CEO*, and *CFO*. All variables are defined in Appendix C. Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

	(1)	(2)	(3)	(4)	(5)	(6)
	1 min	5 min	15 min	1 min	5 min	15 min
<i>SAB</i>	-0.237**	-0.380**	-0.260	-1.118**	-1.976***	-3.417***
	(0.100)	(0.158)	(0.165)	(0.361)	(0.558)	(0.786)
<i>Log(MVE)</i>	0.041	0.045	0.029	0.394***	0.581**	1.484***
	(0.027)	(0.061)	(0.066)	(0.096)	(0.182)	(0.309)
<i>Tier1capital</i>	-0.262	0.249	1.371	1.938	1.469	-3.696
	(0.853)	(1.371)	(1.579)	(3.320)	(5.720)	(8.390)
<i>Deposits</i>	0.126	0.296	2.242*	5.803	9.707*	-0.651
	(0.776)	(1.145)	(1.254)	(3.317)	(4.570)	(9.476)
<i>Loans</i>	-1.382***	-0.789**	0.418	-7.282***	-13.965***	-21.838***
	(0.285)	(0.337)	(0.306)	(0.684)	(0.989)	(2.170)
<i>Amihud Illiquidity</i>	0.071	0.610	0.493	-0.837	-1.039	4.632***
	(0.102)	(0.482)	(0.523)	(0.519)	(0.667)	(1.304)
<i>Log(TradeSize)</i>	0.050***	0.059**	0.047	0.235***	0.473***	0.762***
	(0.015)	(0.022)	(0.031)	(0.062)	(0.092)	(0.150)
<i>CEO</i>	0.153	0.255*	0.387	2.774***	3.998**	3.918**
	(0.095)	(0.140)	(0.270)	(0.768)	(1.264)	(1.283)
<i>CFO</i>	0.125	0.153	0.138	-0.202	-0.569	-0.706
	(0.121)	(0.133)	(0.143)	(0.246)	(0.411)	(1.123)
Observations	182	182	182	145	145	145
Bank FE	YES	YES	YES	YES	YES	YES
Year FE	NO	NO	NO	NO	NO	NO
Adj R-squared	0.209	0.126	0.095	0.293	0.346	0.370

Table 9. Within-Bank Analysis – Univariate Comparisons by Transition

This table examines differences in intraday market response to Form 4 purchase filings by stand-alone banks and to those by single-bank holding companies. The dependent variables in columns are raw returns measured from filing time to 1, 5, and 15 minutes. All variables are defined in Appendix C. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

Panel A: Short-run return reaction

Variables	SAB	BHC	t-stat (diff)
SAB to BHC transition			
<i>Raw Return 1 min</i>	-0.023	0.155***	1.64
<i>Raw Return 5 min</i>	-0.043	0.272***	1.72*
<i>Raw Return 15 min</i>	0.126	0.233***	0.56
Observations	17	142	
BHC to SAB transition			
<i>Raw Return 1 min</i>	-0.066	0.240***	3.34***
<i>Raw Return 5 min</i>	-0.077	0.261***	2.89***
<i>Raw Return 15 min</i>	0.037	0.338***	1.59
Observations	6	35	

Panel B: Short-run abnormal volume reaction

Variables	SAB	BHC	t-stat (diff)
SAB to BHC transition			
<i>CAV 1 min</i>	-0.005	0.872***	0.62
<i>CAV 5 min</i>	-0.266	1.613***	0.83
<i>CAV 15 min</i>	-0.425*	2.373***	0.98
Observations	4	108	
BHC to SAB transition			
<i>CAV 1 min</i>	0.014	1.041***	2.06**
<i>CAV 5 min</i>	-0.042	1.771***	2.15**
<i>CAV 15 min</i>	0.425	2.844***	1.66
Observations	6	35	

Table 10. Alternative Explanation: Investor Indifference to Stand-Alone Banks

This table examines differences in the market reaction to earnings announcements of stand-alone banks and single-bank holding companies. The dependent variables in columns (1)–(3) and (4)–(6) are cumulative abnormal returns (CAR) measured from the earnings announcement date to 0, 2, and 4 trading days, respectively. The explanatory variable of interest is $SAB \times UE\ Group$. SAB is an indicator variable that equals 1 for earnings announcements by stand-alone banks. $UE\ Group$ ranges from -4 to 4, from most negative earnings surprise to most positive earnings surprise. The bank-level characteristics include $Log(MVE)$, $Tier1\ capital$, $Deposits$, $Loans$, and $Amihud\ Illiquidity$. All variables are defined in Appendix C. Standard errors in parentheses are corrected for heteroscedasticity and clustered by bank. ***, **, and * denote significance at the 1%, 5%, and 10% 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]
$SAB \times UE\ Group$	0.003 (0.002)	0.003 (0.003)	0.004 (0.003)	0.004 (0.002)	0.003 (0.003)	0.004 (0.003)
SAB	-0.004 (0.005)	-0.006 (0.006)	-0.011* (0.006)			
$UE\ Group$	0.006*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.006*** (0.000)	0.007*** (0.000)	0.008*** (0.000)
$Log(MVE)$	0.002** (0.001)	0.002** (0.001)	0.003** (0.001)	0.009*** (0.003)	0.012*** (0.004)	0.014** (0.006)
$Tier1\ capital$	0.078*** (0.026)	0.094*** (0.031)	0.112*** (0.040)	0.063* (0.037)	0.055 (0.054)	0.072 (0.071)
$Deposits$	0.003 (0.009)	0.003 (0.010)	0.005 (0.012)	0.006 (0.023)	0.028 (0.030)	0.033 (0.032)
$Loans$	0.011* (0.006)	0.018*** (0.007)	0.024*** (0.007)	0.005 (0.013)	0.000 (0.017)	-0.001 (0.019)
$Amihud$	0.006** (0.002)	0.005* (0.003)	0.007** (0.003)	0.009** (0.004)	0.009* (0.005)	0.008 (0.005)
$Illiquidity$						
Observations	9,040	9,040	9,040	9,040	9,040	9,040
Bank FE	NO	NO	NO	YES	YES	YES
Quarter FE	YES	YES	YES	YES	YES	YES
Adj R-squared	0.105	0.124	0.114	0.132	0.148	0.137

Table 11. Retail vs. Large Trading Response to Form 4 filings

This table examines the retail and large informed buy transactions within [-5, +5] trading days of Form 4 filings. The dependent variable in columns (1) and (3), *Net Retail*, is defined as daily retail buy minus sell volume divided by total retail volume, where retail transactions are defined following Boehmer et al. (2021). The dependent variable in columns (2) and (4), *Net Large*, is defined as daily large buy minus sell volume divided by the total large volume, where large transactions are defined as those above \$20,000. The explanatory variable of interest is $SAB \times PostFiling$. *SAB* is an indicator variable that equals 1 for stand-alone banks. *PostFiling* is an indicator variable that equals 1 for [0, +5] trading days around the Form 4 filing date. All variables are defined in Appendix C. Standard errors in parentheses are corrected for heteroscedasticity and double-clustered by bank and calendar date. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

Variables	(1) <i>Net Retail</i>	(2) <i>Net Large</i>	(3) <i>Net Retail</i>	(4) <i>Net Large</i>
$SAB \times PostFiling$	-0.003 (0.011)	0.021** (0.010)	-0.003 (0.011)	0.021** (0.010)
<i>PostFiling</i>	0.001 (0.009)	-0.000 (0.006)		
Observations	78,513	78,513	78,513	78,513
Filing FE	YES	YES	YES	YES
Calendar Date FE	YES	YES	YES	YES
Trading Date FE	NO	NO	YES	YES
Adj R-squared	0.065	0.167	0.065	0.167

Table 12. Opportunistic Insider Trading

This table examines whether insiders at stand-alone banks are more likely to trade in possession of private information prior to the disclosure of negative news. We use the [-20,+20] trading day period around announcement dates and define the [-20,-1] period when insiders possess private information. *Net Buy* (*Net Sell*) is an indicator variable that equals 1 if the insiders are net buyers (sellers) on that day, and *BSI* is the insider buy-sell imbalance on that day, calculated as the number of shares bought by insiders minus the number of shares sold by insiders, divided by total insider volume. The explanatory variable of interest is the interaction between $SAB_{i,t}$, an indicator variable that equals 1 for filings by stand-alone banks, and $Day[-20,-1]_{i,t,d}$, an indicator variable that equals 1 for the 20 trading days prior to an enforcement-action issuance or an earnings announcement. The bank-level characteristics, $X_{i,t}$, include $Log(MVE)$, $Tier1capital$, $Deposits$, $Loans$, and $Amihud Illiquidity$. All variables are defined in Appendix C. Panel A estimates the results regarding enforcement actions, and Panel B estimates the results regarding negative earnings announcements. Standard errors in parentheses are corrected for heteroscedasticity and double-clustered by bank and calendar date. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

Panel A: Enforcement Actions

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Net Buy</i>	<i>Net Sell</i>	<i>BSI</i>	<i>Net Buy</i>	<i>Net Sell</i>	<i>BSI</i>
$SAB \times Day[-20,-1]$	0.010 (0.022)	0.051*** (0.015)	-0.041* (0.022)	0.010 (0.022)	0.051*** (0.015)	-0.041* (0.022)
$Day[-20,-1]$	0.001 (0.002)	0.002 (0.004)	-0.001 (0.005)	0.001 (0.002)	0.002 (0.004)	-0.001 (0.005)
SAB	0.002 (0.015)	0.020 (0.029)	-0.017 (0.035)			
$Log(MVE)$	-0.004** (0.002)	0.004 (0.002)	-0.008** (0.004)			
$Tier1capital$	-0.043 (0.055)	-0.073 (0.075)	0.029 (0.117)			
$Deposits$	0.014 (0.014)	-0.028 (0.030)	0.041 (0.037)			
$Loans$	0.015 (0.012)	-0.010 (0.025)	0.024 (0.031)			
$Amihud Illiquidity$	0.002 (0.003)	-0.010*** (0.003)	0.012** (0.006)			
Observations	17,425	17,425	17,425	17,425	17,425	17,425
Bank \times Year Quarter FE	NO	NO	NO	YES	YES	YES
Adj R-squared	0.004	0.004	0.006	0.021	0.025	0.037

Panel B: Negative Earnings Announcements

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Net Buy</i>	<i>Net Sell</i>	<i>BSI</i>	<i>Net Buy</i>	<i>Net Sell</i>	<i>BSI</i>
<i>SAB</i> × <i>Day</i> [-20,-1]	-0.028 (0.023)	0.023*** (0.008)	-0.051** (0.025)	-0.028 (0.023)	0.023*** (0.008)	-0.051** (0.025)
<i>Day</i> [-20,-1]	-0.040*** (0.003)	-0.030*** (0.003)	-0.009** (0.005)	-0.040*** (0.003)	-0.030*** (0.003)	-0.009** (0.005)
<i>SAB</i>	0.030 (0.021)	-0.024*** (0.006)	0.053** (0.023)			
<i>Log</i> (<i>MVE</i>)	-0.006*** (0.001)	0.006*** (0.001)	-0.012*** (0.002)			
<i>Tier1</i> capital	-0.062 (0.065)	0.000 (0.070)	-0.060 (0.113)			
<i>Deposits</i>	0.004 (0.017)	-0.005 (0.019)	0.009 (0.029)			
<i>Loans</i>	-0.002 (0.013)	-0.006 (0.015)	0.004 (0.023)			
<i>Amihud Illiquidity</i>	-0.001 (0.001)	0.000 (0.001)	-0.001 (0.002)			
Observations	22,386	22,386	22,386	22,386	22,386	22,386
Bank × Year Quarter FE	NO	NO	NO	YES	YES	YES
Adj R-squared	0.020	0.014	0.009	0.032	0.041	0.042