



Consumer, bank, and stock market reaction to CFPB's complaint data disclosure

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Abstract

With the signing of the Dodd-Frank Wall Street and Consumer Protection Act in 2011, and the accompanying Consumer Financial Protection Bureau, there is now a public database filled with US bank complaints and their resolution process. While the disclosure created ripples in the news media, research on the reaction to this disclosure by consumers, banks, and the stock market was scant. This paper examines how these multiple stakeholders reacted to the public disclosure of bank complaint data. Analyses indicate that more consumers complain and dispute a case post-data disclosure even though banks respond to complaints in a more timely fashion. The stock market reactions to the complaint data disclosure are positive in the short run, driven by the brand value and the extant internal governance mechanisms present in the financial firm.

Keywords CFPB · Event study · Complaint · Data disclosure · Abnormal return

Introduction

The last financial crisis severely damaged economies and financial markets around the world, revealing major weaknesses in their financial regulatory systems. In January 2009, the Obama administration announced a plan to create a new financial regulation. One year later, on 21 July 2010, former US President Obama signed the Dodd-Frank Wall Street and Consumer Protection Act into law (DFA or Act thereafter). The Act, a legislative response to the 2007–2009 American financial crisis, brought a new regulatory framework to improve accountability within the financial services industry (Skeel 2010). The passage of the Act marked a significant milestone in financial regulation. The Act's primary goal was “to promote the financial stability of the United States by improving accountability and transparency in the financial system, to end ‘too big to fail’, to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial service practices, and for other purposes.”¹

The DFA led to the formation of several new government agencies meant to oversee several components of the Act. Among these agencies is the Consumer Financial Protection

Bureau (CFPB). Its goal, according to the official CFPB website is “to make sure banks, lenders, and other financial companies treat you fairly.”² The duties of this agency are to prevent predatory mortgage lending and to support consumers in their understanding of the terms associated with mortgages, before signing any paperwork. Besides, the law requires the CFPB to establish a single, toll-free telephone number, a website, and a database to facilitate the centralized collection, monitoring, and response to consumer complaints regarding consumer financial products or services.³ The CFPB has continued to spur research where studies have looked at its effect on bank performance as well as from a customer perspective. For instance, Begley and Purnanandam (2021) study service quality with a focus on minority borrowers, and Bertsch et al. (2020) study the effect of bank misconduct on the shift of credit demand to online lending. In this context, the current study focuses on the public disclosure of an initial part of the CFPB complaints database related to credit card complaints on their website on June 19, 2011, when consumers were provided with this type of data for the first time.

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¹ The Dodd Frank Wall Street Reform and Consumer Protection Act (Enrolled Final version – HR 4173).

² Website—<https://www.consumerfinance.gov>

³ The Dodd Frank Wall Street Reform and Consumer Protection Act (Enrolled Final version – HR 4173).



Open access to such data could have enabled consumers to access previously undisclosed information and aid them in making smarter decisions. Further, it could have resulted in banks being more accountable for their actions and encouraged them to adopt fairer practices. However, contagion effects (e.g., Matkovskyy and Jalan 2019) might have led to financial firm⁴s copying undesirable behavior. Overall, there is a lack of understanding of whether and how such data disclosure impacted bank behavior and their subsequent performance, measured through the stock market, financial and customer-based indicators.

In general, complaints and their resolution are a major topic in marketing and have been investigated in past literature (e.g., Hsiao et al. 2016) though literature focusing specifically on consumer complaints in the banking industry and the consequences for consumer behavior is limited. One exception is the work done by Casado-Díaz et al. (2009), who is a Spain-based study on stock market reactions to third-party complaints, found that the release of an annual report by the Complaints Service (a regulatory body in Spain) negatively affected the stock market's assessment of future cash flow. An understanding of the consequences of a publicly available database on complaints is thus needed, both owing to the unique context of the industry and our present lack of understanding of how such disclosures affect the subsequent bank, customer, and stock market reactions.

In this study, using a detailed dataset on a large number of complaints filed with a federal agency, the impact of disclosure on complaint resolution on financial firms' stock market performance was empirically assessed. By analyzing the financial firm's as well as the stock market's response to this disclosure of consumer complaints, insights are provided on how data disclosure impacts the number of subsequent complaints and their resolution as well as the stock market's long- and short-term reaction to the same. The paper contributes to the extant literature in financial services marketing and financial regulation in two major ways.

First, little is known about the customer response to the availability of complaint information. In all likelihood, the CFPB presents a unique context that has not been replicated elsewhere. The paper shows that while an initial surge in customer complaints and disputes occurs after the disclosure, subsequent numbers decrease. This makes the current context somewhat dissimilar to other online contexts such as product reviews where it is noted that negative reviews continue to spur other negative reviews (e.g., Shin and Larson 2020). Combined with the finding that response times (an indicator of the banks' complaint resolution willingness

and efficiency) decrease post-disclosure, it appears that such a regulation has been effective in achieving its goals without exposing banks to unwarranted customer retribution. It also appears that the visibility of complaints does not, on average, lead to increase complacency among banks themselves as the timely resolution of complaints increased.

Second, the treatment of governance laws has typically been viewed as a negative event in past literature (for instance environmental regulations are typically viewed as negative events; see Ramiah et al. (2015) for an overview). However, the CFPB disclosure was viewed as a positive event by the stock market (at least initially) leading to higher stock returns. Thus, managers need not be apprehensive about market reactions to regulations which may lead to better governance and increased transparency. Further, banks with strong brands (and consequent reputations) as well as those who are known to have strong internal governance may look to reap higher returns owing to such disclosures. Similarly, it was observed that greater numbers of complaints reduce the positive return, especially for banks with stronger brands. Thus, having lower levels of complaints is doubly important for financial firms which have a better reputation and likely trade higher (i.e., a higher price-to-earnings ratio) for whom the expectations of customer service performance are presumably greater.

The remainder of this paper is structured as follows: The next section provides the theoretical foundations concerned with consumer complaint behavior, financial firm complaint resolution, and stock market reactions to data disclosure. This will result in the development of several hypotheses. The subsequent sections elaborate on the data, empirical strategy, and methodology needed to conduct the research. A discussion of the results follows. This article concludes with some theoretical and managerial implications, research limitations, and recommendations for further research.

Hypothesis

In this section, an overview of academic literature concerned with consumer behavior and firm reaction to complaints is presented to motivate the hypotheses. More specifically, it is theorized how both financial firms and their consumers might react to disclosure of the Act and the associated consequences concerning the number of future complaints and their resolution. Then, an analysis of the current literature concerned with the stock market's reaction to events related to the DFA disclosure is presented.

⁴ Throughout the article, the terms bank and financial firms are used interchangeably since banks often offer other financial services in addition to core banking.



Data disclosure and consumer reactions

Consumer complaint behavior

Forbes (2008) describes customer complaints as a measure of dissatisfaction with the product. For financial firms, this would translate into dissatisfaction with their service quality. The disclosure of a financial firm's complaint data can be considered as an event of negative publicity. From prospect theory (e.g., Kahneman and Tversky 2013), it is known that people tend to put more weight on negative compared to positive information. Additionally, the fact that the data come from a federal agency makes it highly credible. A combination of these two factors makes it very likely that the disclosure of data on complaints hurts the corporate image of financial institutions (Dean 2004). Besides the potential for damaging the corporate image, consumer trust is also a factor that deserves attention. Sirdeshmukh et al. (2002) view consumer trust as the expectation that a firm is dependable and will deliver on its promises. The easy availability and visibility of complaint data may lead consumers to believe (a) that the customer service record of the bank is not as high as previously thought or (b) that the customer's perception of weak customer service is vindicated through objective data. In both these scenarios, customer trust would be impeded and lead to an increase in complaints even for minor transgressions (e.g., Kaabachi et al. 2017). Securing a high level of trust (Raval 2020) is important for all firms but even more so in financial services, since consumers associate the products and services offered by banks to be riskier compared to non-financial products. This means that for banks, it is even more critical to maintain a high level of consumer trust and a strong corporate image.

In this context, banks would benefit from a reduction of the number of complaints received post-disclosure. Unfortunately for banks, there is reason to believe that the opposite will occur. When banks' complaint data come publicly available, its image could be damaged. Consumers may also sense a lack of ability in banks' future efforts to deliver proper service. Hence, consumers might lose trust in their financial institutions. In both cases, the attitude in the consumers' minds toward the banks might get more negative. Lee et al. (2008) confirm this in their study where they find that an increase in negative reviews increases consumers' negative attitude toward the firm. A negative review is comparable to a complaint, as they are both written notions of discontent addressed to a certain firm.

There are also more reasons to believe that the subsequent number of complaints will increase post-information disclosure. Two of these reasons follow the theory on consumer information search. Beatty and Smith (1987) view information search as "the degree of attention, perception, and effort directed toward obtaining environmental data or

information related to the specific purchase under consideration." In the context of this study, it would translate into the effort that consumers direct toward obtaining information related to filing complaints regarding a product or service. The amount of effort consumers are willing to put into this search, according to Srinivasan (1990), derives from three theoretical streams of consumer information search literature. One of three approaches has an economic background, using the cost-benefit framework to explain information search. Linking the literature stream to the current context, one may argue that it translates into an evaluation of the costs and benefits of complaining that affect a consumer's motivation to complain. The likelihood to complain decreases in case of higher costs and will increase in case of higher benefits. Many consumers do not complain because the complaint process is usually not easy (costs) and the consumer must believe that there is a reasonable probability of success (benefits) (Huppertz 2014). In this case, according to Schmidt and Spreng (1996), the marginal costs to complain are equal to or lower than the marginal benefits of complaining. With the introduction of the CFPB, the process of filing a complaint was made easier with the provision of a centralized place where consumers can file them. The fact that a federal agency handles and monitors the complaints makes it likely that the probability of success of a complaint also increases. This implies that the marginal benefits for consumers to complain increase. After the first disclosure of complaints data, one can reasonably expect an increasing number of consumers that take note of the new complaint platform. Consumers, noticing the decrease in costs and increased benefits, are more motivated to file a complaint. Hence, an increase in the subsequent number of complaints post-information disclosure may be expected. Hence:

Hypothesis 1 *The number of complaints received by banks increases post-CFPB disclosure.*

Complaint resolution by financial firms

It is of paramount importance for banks to maintain a high level of perceived service quality as it affects banks' image and customer loyalty (Markovic et al. 2018). Complaint handling is a key component of such service quality. Handling complaints in the right manner usually results in the resolution of a complaint. Superior problem resolution of a customer complaint may even result in a stronger bond between customer and bank than would exist when no customer service problem occurred at all (Collier et al. 2017).

With the disclosure of the DFA, the CFPB keeps track of the complaint process, including whether or not banks find a resolution for their customer complaints. With a federal agency in the form of the CFPB monitoring the complaint process, US banks may experience added pressure to



figure a resolution to their customer complaints (Locke et al. 2007). This external governance may be beneficial for the banks. External monitoring, in this case by the government, provides an incentive mechanism. An example of such an incentive is that firms may experience increased financial performance where external monitoring has been in place. Okamuro and Nishimura (2018) found evidence for significant improvement of innovation performance in an R&D consortium monitored by the government. More specifically, they found that strict progress checks and evaluations are important for project performance. Consequently, one may assume that complaint resolution improves when a monitoring mechanism is in place.

Other research also leads to the assumption that the complaint resolution of US banks improves with the introduction of the DFA and the subsequent disclosure of complaint-related information. Among this research is the work of Moorman et al. (2012) on firm responses to the Nutrition Labeling and Education Act. This act required food manufacturers to provide nutrition information about their products. The authors found that the nutritional content of firms' food items increased post-disclosure of the act. In the context of this study, it would mean that the public disclosure of complaint data is giving banks motivation to improve the quality of their complaint mechanism. If banks do not improve their service quality, the public likely discovers this lack of improvement when subsequent disclosure follows which might lead to a loss of trust in the bank. It may hence be assumed that banks improve their complaint handling processes (i.e., they can handle more customer complaints and come up with a resolution in timelier fashion post-information disclosure). Hence:

Hypothesis 2 *Complaint resolution time for banks decreases post-CFPB disclosure.*

The increasing amount of complaints that banks are expected to face comes along with several consequences. With a strong mandate to resolve complaints timely and efficiently, an increase in complaints might mean that the financial firm tries to provide a solution that is hurried and not well thought through. Further, Homburg and Fürst (2005) show that an increase in customer complaints can result in companies taking on defensive organizational behavior (DOB). With an increased barrage of complaints, employees may take on such an approach and avoid contact with dissatisfied customers or even try to ignore customer complaints. This behavior would negatively affect customers' "complaint satisfaction"—the extent to which the complainant perceives the complaint handling service to meet up to its expectations or not (McCollough et al. 2000). The distance between the banks and their customers will increase as a result. As a result, the attitude of customers toward their banks gets

worse. The combination of bad complaint handling and increasingly dissatisfied customers gives reason to believe that the number of disputed cases will rise over time (i.e., customers will exceedingly feel their complaints have not been resolved to their satisfaction). Thus:

Hypothesis 3 *Consumers dispute more complaint cases with banks post-CFPB disclosure.*

Data disclosure and stock market reactions

The disclosure of complaint data is likely to affect those financial firms whose complaints and related issues are now publicly available. The nature of publicly available data compels financial firms to react to it as it is a potential source of threat. Besides, investors are known to react to information disclosures (e.g., Sorescu et al. 2017), and in this case, maybe disposed to believe that the future growth and profitability of banks might be hurt post-disclosure of complaint information. This is due to two reasons: (a) Customers might lose faith in banking services after reading complaints and may complain more due to the increased ease of making complaints; (b) banks would have to now expend more time and effort to resolve complaints satisfactorily such that elicit a positive customer response.

Konar and Cohen (1997), in their study on the effect of mandatory disclosure requirements on firm behavior, found that firm behavior changed post-information disclosure requirements. Firms that turned out to be in a negative position post the information disclosure needed to change. Firms cannot ignore negative reports that are publicly available because of the external pressure placed on these firms (Konar and Cohen 1997). Similarly, the banks included in this study cannot ignore the publication of complaint data. Banks might have to take corrective measures such as upgrading the complaint system, hiring more customer care personnel, or setting up complaint redressal centers. The costs that come along with these measures might hurt banks' financial performance.

There might also be a negative direct effect following the data disclosure due to the informational content in the disclosure. This explanation follows from studies measuring stock market reactions to public disclosure of firm pollution figures (e.g., Guo et al. 2020). Firms are seen to experience negative, significant abnormal returns upon the first public release of pollution figures. Similar reactions might occur after the disclosure of complaint data of financial firms. Stockholders could lose faith in the performance of banks when finding out the number of complaints banks receive. This will then result in a decline in the stock returns. The assumed, negative, direct, and indirect effect of complaint information disclosure leads to the following hypothesis:



Hypothesis 4 *Market returns of banks will decrease after the public disclosure of bank complaint data.*

There are also reasons to believe that bank stock returns increase post-information disclosure. The disclosure of complaint data by the CFPB can be seen as some sort of mandatory disclosure requirement. According to Fishman and Hagerty (2003), mandatory disclosure requirements result in increased transparency and efficiency in the market and reduce the volatility of stock returns. From an investor's approach, the disclosure of complaint data is an additional piece of information that may be used to measure more precise stock market indications. One may also look at public disclosure as a form of external monitoring. This monitoring comes from the CFPB who regulates the governmental complaint system that they set up. The public, however, also acts as an external monitor because of their free access to the data. According to Katz et al. (2009), external monitoring reduces the asymmetry of information between the firm and the public, which in turn reduces the risks of purchase (since customers have more confidence in knowing how good or bad the firm is). Further, if banks are forced to improve their quality of service, it would result in more satisfied customers who are more likely to widen and deepen their portfolio with the bank. Overall:

Hypothesis 5 *Market returns for banks will increase after the public disclosure of bank complaint data.*

Methodology

In this section, a brief elaboration on the data sources, variables, and samples that together form the input for the empirical tests is provided. Then, a discussion of the research methods that are used to test the above-derived hypotheses is also proffered.

Data source and sample

Title X of The Dodd-Frank Act Wall Street Reform and Consumer Protection Act of 2010 (Pub.L. 111–203, H. R. 4173) established the Consumer Financial Protection Bureau (CFPB). The CFPB began accepting consumer complaints from January 2011 and released a database related to complaints to the public from June 2012. The public disclosure of the complaints database was to further promote financial education through the collection and dissemination of information on financial products. To measure the first

three hypotheses, secondary data were gathered on US bank complaints from the CFPB website.⁵ These variables show how many complaints banks received pre (i.e., between January 2011 and June 2012) and post the data disclosure (i.e., beyond June 2012) (variable named Complaint), how often banks replied to complaints promptly (variable named Response), and how many times customers decided to dispute a case (variable named Dispute). The entire data were obtained at a monthly level of aggregation and concerned complaints concerning credit cards only. This was because the initial data release on June 2012 concerned credit cards only. This release was followed up by one concerning mortgages in March 2013, credit reporting in May, debt collection in November, and student loans in December of the same year, and a variety of other products in the months and years to come. Investigating the initial impact of the complaint data release, which concerned only credit cards, would provide the truest test of the even since follow-up events (concerning data release of other products and services) might be more anticipated.⁶

The initial sample contained data for 378 different US-based banks (at the bank level, which after accounting for missing data led to 167 banks being retained. These banks are comprised of all the top 100 banks in the USA and more than 85% of the total banking assets (within the USA). The average asset value of the banks in the sample was \$0.41 billion. For this study, data pertaining to 12 months before and 24 months after the disclosure was retained. Within the first 6 months, nearly 14,000 complaints had been filed by customers to the CFPB. The CFPB data have been used widely in past literature in finance and marketing (e.g., Ayres et al. 2013; Horn 2017) which also bears testimony to its validity and strength though empirical analyses of CFPB complaints data are conspicuously rare (an exception is Bastani et al. 2019 who derive broad topics to categorize the complaint). A summary of the variables used in the study is provided in "Appendix 5".

Data on stock returns were obtained from the Wharton Research Data Services (WRDS), specifically, the Center for Research in Security Prices (CRSP), and data used for post hoc tests (described in the appropriate sections) were obtained from the KLD and BAV databases (see Appendix 5 for a complete list of variables and their measures).

T test analyses

Several paired tests were used to measure whether there were differences between the number of complaints that banks receive pre- and post-information disclosure; how often banks replied promptly; and the change in the number

⁵ <https://www.consumerfinance.gov/data-research/consumer-complaints/>

⁶ Post hoc tests confirm such an expectation to be true.



of consumers who disputed a case. A paired t test compares the means of a population that are divided into two samples. The number of complaints that a particular bank receives pre-information disclosure is placed in one sample, and the post-disclosure number of complaints received by the same is placed in the second. The same procedure applies to the number of timely responses and disputed cases. T tests are used as a simple first test to investigate whether the publication of the complaint database caused any changes in the number of complaints, their resolution by banks, and subsequent stock market behavior (an ANOVA approximates to a t test in a 2 group before–after scenario).

Event study

For the second part of this study, an event study methodology was used to test the reaction of the stock market on the disclosure of the CFPB bank complaint data. The event study methodology as suggested by MacKinlay (1997), with extensions by Carhart (1997), is the basis for this study. The estimation window for the daily stock return data is as long as 120 trading days $[(t_{-139}, t_{-20})]$ preceding the event date $[(t_0)]$. The stock market's response to the disclosure of complaint data is reflected through market returns around the event. Thus, in order to cover a considerable wide range of possible empirical impacts, several so-called event windows were tested: (1) $[t_{-1}, t_{+1}]$; (2) $[t_{-2}, t_{+2}]$; (3) $[t_{-5}, t_{+5}]$; and a single post-event window (4) $[t_{+1}, t_{+6}]$. The estimation window for monthly stock return data is as long as 18 months, ending 7 months before the event date $[(t_{-22}, t_{-7})]$. To check if the information disclosure has a more long-term effect on bank stock returns, post-event windows of $[t_0, t_{+1}]$; and $[t_1, t_{+6}]$ are considered. A more detailed discussion on the event study methodology is available in Sorescu et al. (2017).

The objective of an event study is to ascertain the extent to which investors earn excess stock returns from an event that carries new informational content. In essence, an event study assumes that stock prices adjust immediately to reflect newly available information. The dependent variable is the bank's abnormal stock returns, which reflects shareholder value (e.g., Skiera et al. 2017), and was measured using the Fama–French–Carhart model (Carhart 1997). This model indicates the expected stock return of the bank and the difference between the real stock value (after an announcement) and the expected value for the same date provides us an estimate of the “abnormal” stock return. This abnormal stock return is in expectation of future cash flows to increase (before materially seeing such an increase). To estimate the parameters in the model, a range of 1 trading day before to 6 trading days after the focal event as the estimation window was considered. The Fama–French 4 factor equation is:

$$E(R_{it}) = \alpha_i + \beta_{1i}(R_{mt}) + \beta_{2i}(SMB_t) + \beta_{3i}(HML_t) + \beta_{4i}(UMD_t) \quad (1)$$

where $E(R_{it})$ is the normal or expected daily returns for bank i and day t , R_{mt} is the average rate of return of all stocks trading in the stock market at time t , R_{ft} is the risk-free rate of return at time t , SMB_t represents the difference in returns between the rate of returns of small- and large-market capitalization stock portfolios during day t , HML_t is the difference in returns between high and low book-to-market ratio stocks, and UMD_t is the momentum factor defined as the difference in returns between banks with high and low past stock performance. α , β_1 , β_2 , β_3 , and β_4 are the parameters of the model to be estimated by the regression of R_{it} on the four factors.

For each bank on the event date, the abnormal return is estimated using the difference between the actual return and the expected return:

$$AR_{it} = R_{it} - E(R_{it}) = R_{it} - (\alpha_i + \beta_{1i}(R_{mt}) + \beta_{2i}(SMB_t) + \beta_{3i}(HML_t) + \beta_{4i}(UMD_t)) \quad (2)$$

The proper event window was determined based on two considerations—first, the event window should be as short as possible to capture the significant effect of the event and avoid the false inferences stemming from a long event window (McWilliams and Siegel 1997; Sorescu et al. 2017), and second, one should expand the event window $[(-t_1, t_2)]$ to at least one day before and one day after the event day. This is to take into account the leakage of the announcement content before the focal day, and the need for the dissemination of the content after the event day (some announcements need more time to be absorbed, and some releases occur after the stock market closes on the announcement day) (Sorescu et al. 2017).

To ascertain longer-term effects, the cumulative average abnormal returns for multiple event windows are calculated (+1 month to +6 months). Significance was assessed using t tests as specified by Brown and Warner (1985). The cumulative abnormal return (CAR_i) and cumulative average abnormal return ($CAAR$) are as follows:

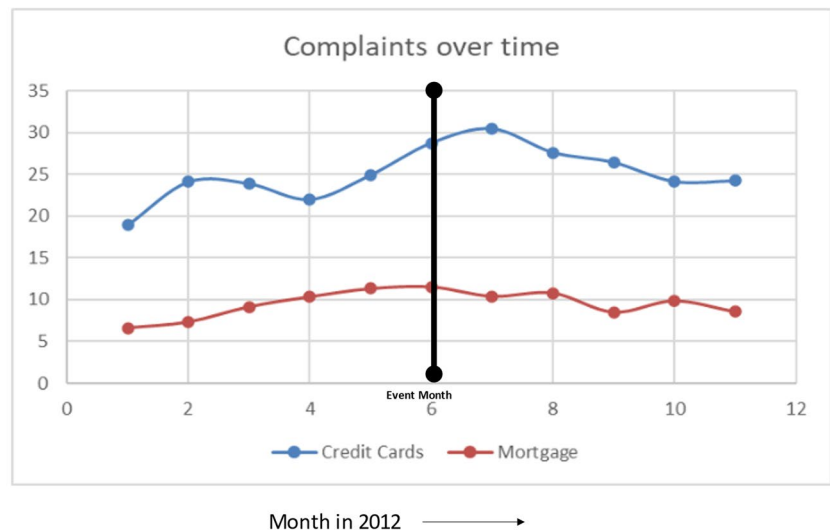
$$CAR_i[-t_1, t_2] = \sum_{t=-t_1}^{t_2} AR_{it} \quad (3)$$

$$CAAR[-t_1, t_2] = \frac{\sum_{i=1}^N CAR_i[-t_1, t_2]}{N} \quad (4)$$

The standard deviation of abnormal returns over the estimation window was used to standardize the cumulated abnormal returns ($SCAR_i$). $SCAR_i$ was used for hypotheses testing to correct for the bank's differences in variance

Fig. 1 Model free evidence: change in number of complaints due to CFPB data release

No. of
Complaints



in the daily closing prices and to address this heteroscedasticity (Homburg et al. 2015).

Endogeneity

No confounding concurrent events were observed in the short run which might have otherwise biased the event study results. A variety of events were scrutinized for using news reports from LexisNexis Database. Since the sample size is manageable, each bank was individually searched for during the window of the event to investigate whether news on any substantial event was revealed. These included whether there were any shareholder disclosures, investor meetings, negative press on events such as lawsuits or class action cases, Merger and Acquisition deals, and so on.

Unfortunately, long-run results do suffer from such biases and such results should be interpreted with care. However, *t* tests used to test for differences in complaints and their resolution times might have been driven by unobservable factors even in the short time window. For instance, banks the financial pressure on banks to comply might have resulted in greater complaints. It may also have been the case that the complaints grew simply due to seasonal effects such as Summer Breaks when customers have more time; the growth might also have been a result of a growing trend in complaints as the CFPB body had been set up in July 2011, almost a year before the release of the complaints database. To that extent, complaints regarding mortgages were utilized. These were collected by CFPB but not released for public consumption until March 2013. While the CFPB reported data on a wide variety of banking services, mortgages were chosen because mortgage complaints had the highest ex-ante correlation with credit card complaints. (The correlation was 0.78 for the months preceding the data release event.) The correlation between credit card

complaints and student loans was the lowest at around 0.42, while that between credit cards and auto loans was 0.69. It is reasonable to assume that a higher correlation would make for a stronger pseudo control group that could be compared with the focal product, i.e., credit cards. It was found that the average complaints about mortgages did not increase substantially from the month during the focal event in June 2012 to the month after (i.e., July 2012). The mean complaints per firm decreased from 11.56 in June to 10.41 in July (difference in means not significant at $p=0.05$) and then increased slightly to 10.81 in August (difference in means not significant at $p=0.05$). This indicates that seasonal variations or a time trend are not completely explaining the difference in (credit card) complaints owing to the release of the CFPB database. In fact in the short run (± 6 months), a time trend is not observed (regressing complaints on time, a β of 0.127 and p -value 0.695 is obtained). Complaints over time for the 11 months (i.e., January 2012 to November 2012) during the release of the complaints data are presented graphically in Fig. 1. The event was in month 6 (June), and the data clearly show a jump from month 6 to 7 for credit cards (i.e., the category where complaint data was released) but not for mortgages (the category where complaint data was not released at that time). Lastly, a rolling window regression was performed with a window of 6 months to smoothen time trends. Predictions of complaints were obtained for the first month post-disclosure. The predicted value was 26.32. When comparing it to the realized value of 28.73 (difference significant at $p=0.05$), it is evident that a jump in complaints was realized due to the disclosure.

Significance tests

While standard Brown and Warner (1985) *t* tests are used for hypotheses testing, such tests are not robust against



event-induced volatility and cross-correlation. In this context, a negative stock reaction faced by one financial firm may spread to other financial firms not due to the event itself but due to contagion effects (e.g., Kashmiri et al. 2017). Corrado and Zinvey (1992) thus recommend nonparametric rank and sign tests that are expected to be robust. Thus, a nonparametric test of significance was also incorporated—the Wilcoxon signed rank test (e.g., Sichtmann and Stingel 2007). The first step here is to transform abnormal stock returns into ranks. The abnormal returns for the event period and also the estimation period are incorporated in the ranking process. The mid-rank is used in the case of tied ranks. The ranks are standardized by the number of non-missing values plus 1 to take into account any missing values (Corrado and Zinvey 1992). The results are shown in "Appendix 2" and are largely consistent.

Results

In this section, the output of the different statistical analyses performed to test the hypotheses is presented. The first subsection gives a general overview of the data in the form of descriptive statistics. Next, to provide an answer to the first three hypotheses, the outcome of multiple t tests is provided. The fourth and fifth hypotheses are tested through an event study. Post hoc tests were performed to identify factors that contributed to abnormal returns as well as to establish the robustness of the findings.

Descriptive statistics

"Appendix 1" displays the descriptive statistics for the complaint data and the data regarding bank stock returns and other performance indicators. A first glance at the data on bank complaints reveals that there are differences between pre- and post-information disclosure. The total number of complaints that a bank received in the 6 months post-information disclosure (6988 complaints) is higher compared to the maximum number of complaints in the same time frame before the information disclosure (6627 complaints). The mean number of complaints per bank is also higher in the post-information disclosure time frame (161.51) than before the event (149.55). Furthermore, the appendix shows that banks' timely response to complaints increases post-disclosure and that more consumers decided to dispute a case post-disclosure.

The appendix also provides some insights into the development of the increased number of complaints, timely responses, and disputed cases every month. The mean number of complaints per bank increases in the first two months after the information disclosure from 28.71 at month 1 (t_1)

to 30.43 at month 2 (t_2). The mean number of complaints banks received pre-information disclosure is 24.92 per month. Banks also seem to reply to complaints more often in the first two months after the disclosure [$(t_1 = 27.46)$, $(t_2 = 29.20)$] compared to pre-disclosure (23.71) and consumer dispute cases more often [$(t_1 = 7.49)$, $(t_2 = 7.51)$] than before information disclosure (5.81). In the third and fourth months, the number of complaints, timely responses, and disputed cases are lower compared to two months before but stay above the pre-disclosure numbers. The numbers keep decreasing in the last two months post-information disclosure and some even get below pre-disclosure numbers. Later t tests conducted show these differences to be significant.

The bottom of "Appendix 1" displays the descriptive statistics of the bank-specific variables abnormal stock returns and other bank performance indicators. One case finds that the highest mean abnormal return occurred within 6 months post the event date ($AR_{t+6} = -4.29$). The mean tells us that the abnormal stock returns are 4.29% lower over the six months post the event date compared to the expected stock return. The first month after the information disclosure displays a mean CAR of 0.83 (AR_{M1}) which implies that, on average, banks experienced an increase in stock returns of approximately 0.83% above the expected stock return. The positive CAR over the first month turns into a negative CAR over a wider period. Zooming in to the daily level shows a mean CAR of 0.62 around one day of the event window. The mean increases to 1.25 for two days around the event day and then decreases to 1.05 for 5 days around the event date. There seems to be an overall positive reaction on the stock market around the information disclosure. The minimum (maximum) ARs are below (above) zero for both the daily and monthly data.

T tests results

To answer the first three hypotheses, multiple t tests were conducted. Table 1 shows the results. The first time window, pre_Di_M1/post_Di_M1, shows whether the first month post-information disclosure displays significantly different means compared to the average of complaints (Co), timely responses (TR), and disputed cases (DC) compared to 1 month pre-information disclosure. The second variable (pre_Di_M2/post_Di_M2) displays the same but for the mean of a total of two months post-information disclosure and the equivalent of two months pre-information disclosure. This was repeated up to a total of 6 months of complaints. Table 1 shows that all the t test regarding post-information disclosure consumer complaints behavior is significantly different from zero. The mean number of complaints is significantly higher compared to the pre-information disclosure time frame. From this information, one may conclude that



Table 1 Paired-samples *t* tests showing the impact of disclosure

Month 1	Complaints	Timely responses	Consumer disputed
Pre-disclosure (mean)	24.93	23.71	5.81
Post-disclosure (mean)	28.73	27.46	7.49
Paired <i>t</i> test	−3.136	−2.972	−3.363
<i>P</i> -value	0.002	0.003	0.001
Month 2			
Pre-disclosure (mean)	24.93	23.71	5.81
Post-disclosure (mean)	30.43	29.20	7.51
Paired <i>t</i> test	−2.616	−2.950	−2.807
<i>P</i> -value	0.010	0.004	0.006
Month 3			
Pre-disclosure (mean)	24.93	23.71	5.81
Post-disclosure (mean)	27.62	26.69	6.69
Paired <i>t</i> test	−1.980	−2.242	−2.195
<i>P</i> -value	0.049	0.026	0.030
Month 4			
Pre-disclosure (mean)	24.93	23.71	5.81
Post-disclosure (mean)	26.44	25.75	6.17
Paired <i>t</i> test	−1.470	−1.901	−1.144
<i>P</i> -value	0.144	0.059	0.254
Month 5			
Pre-disclosure (mean)	24.93	23.71	5.81
Post-disclosure (mean)	24.17	23.54	5.19
Paired <i>t</i> test	0.693	0.181	1.460
<i>P</i> -value	0.490	0.856	0.146
Month 6			
Pre-disclosure (mean)	24.93	23.71	5.81
Post-disclosure (mean)	24.25	23.76	4.95
Paired <i>t</i> test	0.560	−0.045	0.964
<i>P</i> -value	0.576	0.964	0.067

P-value set at 5%

the H_1 is confirmed and that banks receive more complaints post-information disclosure. However, the significance levels gradually decrease over time. It thus seems that banks receive fewer complaints when one moves further away from the event date. The mean number of complaints in the first, second, and third months is all significantly higher compared to the mean numbers of complaints banks received before the event date. The fourth, fifth, and sixth months post the event date show different results. Although banks received more complaints in the fourth month (26.44 compared to 24.93), this difference is not significant ($p = 0.144$). The mean number of complaints even slightly drops beneath the pre-disclosure mean for the fifth and sixth months. The difference is, however, not significant. Hence, it appears that the effect of information disclosure seems to fade over time.

Hypotheses 2 and 3 were tested similarly. At first, the total number of banks' timely responses and consumers' disputed cases per month are combined over a time frame

of six months. The results in Table 1 show that banks reply to a complaint in time more often after the information disclosure. This holds for all six months post-disclosure as indicated by *p*-values that are well below the threshold of 0.05. Similar results were also obtained with regard to complain resolution times as well as a similar dissipation of the effect from Month 4. Overall, companies respond to complaints in a more timely manner and consumers dispute more cases post-information disclosure. H_2 (complaint resolution time decreases post-information disclosure) and H_3 (consumers dispute more cases post-information disclosure) are thereby confirmed. The results were reconfirmed using regression analyses with 2 periods of data, the relevant dummy for the event as well as a host of firm-level covariates that could impact the outcome variable(s) of interest. The results show that the database release led to an increase in the number of complaints and disputes but also their time of resolution

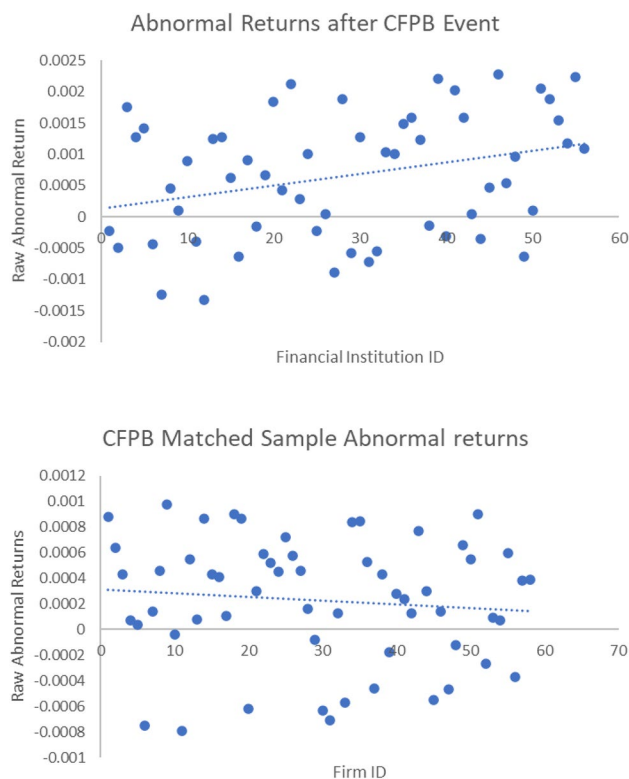


Fig. 2 Spread of abnormal returns after CFPB data release

($\beta = 3.081$, $p < 0.001$; $\beta = 3.264$, $p < 0.001$; $\beta = 1.331$, $p < 0.05$, respectively).

Event study results

As described before, event studies typically use abnormal returns as the outcome of interest since deviations from an expected return on a very short term may be attributed to a particular shock or so-called event. For comparison, the firms in the sample were matched with equivalent firms in related industries. The related industries chosen were other continuous service industries including insurance, utilities, telecom, and cable. Firms were matched using size (total assets), net profit, stock price, and Tobin's Q (measured as $Q = (AT + MVE + -BE - DT) / AT$, where AT is the book value of assets, MVE is the market value of common stock, BVE is the book value of common equity, and DT are balance sheet deferred taxes; Q provides an approximation of the value of intangibles within a firm). Figure 2 shows that abnormal returns using a 1-day window. Around 60 firms could be matched. It is seen that they are positive on average for financial firms covered by the CFPB but are mostly close to 0 on average for matched firms present in other industries. This provides initial model-free evidence that the complaint data release did cause a stir in the financial markets.

Table 2 Regressions explaining differences in complaint level factors

Variable	Complaint	Timely response	No. of disputes
<i>Event</i>	3.081*** (0.598)	3.264*** (0.988)	1.331* (0.590)
<i>Firm size</i>	-0.006 (0.017)	-0.003 (0.006)	0.261*** (0.063)
<i>CSR Governance</i>	-0.015 (0.009)	0.007 (0.015)	-0.007 (0.009)
<i>Brand equity</i>	-0.016* (0.008)	0.051** (0.017)	-0.105*** (0.029)
<i>P/E ratio</i>	-0.010 (0.017)	-0.213 (0.129)	-0.006(0.007)
<i>Leverage</i>	1.910 (3.346)	2.040 (4.774)	0.746(1.396)
<i>Liquidity</i>	-0.002 (0.008)	-0.146 (0.351)	-0.028(0.107)
<i>R²</i>	18.10	14.37	22.31

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, Standard errors in parentheses. Event refers to CFPB release date

The 4th and 5th hypotheses were formally tested using an event study. First, it was tested whether the disclosure of complaint data had a short-term effect on the banks' stock return. The results of the event study are displayed in Table 2. The three event windows considered, $[-1, +1]$, $[-2, +2]$, $[-5, +5]$, are all significant. 13.33% of all the financial firms turned out to have significantly positive CAR, while only 5.55% display significantly negative CARs. Overall, the financial firms in the sample had an average CAR of 0.65% over the 1-day event window as shown by the MCAR. These positively skewed CARs are only amplified over a 2-day event window. Although most financial firms managed to have a positive CAR, only 8.33% of the financial firms in the sample have a significant positive CARs against 4.12% of the financial firms that got a negative CAR. Overall, over a 2-day event window, the financial firms in the sample had a mean CAR of 1.02%. In the 5-day event window, there are again more financial firms with positive CARs (33), compared to firms with a negative CAR (15). The difference is significant ($p < 0.05$). From the 2-day event window to the 5-day event window, there is thus a slight decrease of financial firms with a positive CAR. 4.12% of the financial firms got a significantly positive CAR while 2.1% of the financial firms display a significant negative CAR. Taking all financial firms together over a 5-day event window results in a positive mean CAR of 1.07%.

With regard to hypotheses 4 and 5 (which are competing hypotheses regarding the effect on stock returns), it is observed that in the shorter term the returns go up which confirms Hypothesis 5 and not 4.

Post hoc studies were conducted to investigate whether differences among financial firms with regard to short-term abnormal returns are influenced by the specific financial firm characteristics. Variables were chosen to test the validity of the two competing theories presented in H_4 and H_5 . H_4 stated

Table 3 Event study results—day level

Days	N	Mean CAR (%)	Positive/negative	P-value	Std. t test	Banks sig. CAR (%)	Sig. negative CAR (%)
– 1, + 1	167	0.65	104:63	$p < 0.01$		8.33	2.1
– 2, + 2	167	1.02	125:42	$p < 0.001$		8.33	4.12
– 5, + 5	167	1.07	115:52	$p < 0.05$		4.12	2.1
+ 1, + 6	167	0.34	91:76	$p > 0.10$		4.12	0.00

that a negative return could be posited as the costs to address complaints would now be visible to investors. H_3 stated that a positive return could be theorized as the release of the CFPB database might signal an improvement in the governance of banks. Since the data is a panel (large n , small t) and suffered from some of the usual issues plaguing such data such as autocorrelation. The Hausman test indicated that a fixed-effects correction is appropriate ($\chi^2 = 10.92$). Thus, a fixed-effects panel regression was performed with correction for autocorrelation of the 1st order. Such a specification also helped account for unobservable and unaccounted for heterogeneity that was fixed over time. The control variables used in the model incorporate bank fundamentals that are dynamic (and hence not accounted for by our FE specification) and include sales expense (XSGAQ), leverage (debt/equity), liquidity (cash flow/sales), firm size (log of total assets) and price-to-earnings ratio (P/E) for the financial firm. The focal variables included are the number of complaints, brand value, and firm governance. Brand value data were obtained from the Brand Asset Valuator Database (BAV), and governance scores were obtained from the Kinder, Lydenberg, Domini & Co., Inc. (KLD) database. The BAV database is a syndicated panel that provides a measure of the brand value of a variety of firms across industries. The KLD database provides CSR scores across a wide range of categories among which firms are also rated on their internal governance mechanisms in place. Both databases have been widely used in past literature in marketing (e.g., Mizik and Jacobson 2008; Luo and Du 2015). Financial firms in the sample had a mean governance score of 0.61 on 1.0 (SD 0.51) and a brand value of 5.27 on 9 (SD 3.01). Unfortunately, combining the various data resulted in fewer observations (89 as opposed to 167) as some banks were not represented in one or the other databases.

The effect of complaints on CAR is negative ($\beta = -0.049$, $p < 0.001$), as expected. This indicates that information on complaints is valued by shareholders and informs their expectations of future returns. Results also showed that higher brand equity increased returns ($\beta = 0.089$, $p < 0.001$). Financial firms which have stronger brands are likely expected to cope better with the regulations due to greater resource slack; they should also be more willing to comply with regulations and address the complaints to protect

their brand. However, it is also observed that the interaction between brand value and complaints is negative ($\beta = -0.023$, $p < 0.05$). This is probably due to investor surprise as they might have expected that higher reputation financial firms would have lower levels of complaints. Finally, governance has a significant positive impact on financial firm abnormal returns ($\beta = 0.028$, $p < 0.05$). It appears that shareholders believe financial firms with stronger internal governance already in place would be better equipped to comply with regulations regarding complaint handling and reduction. The results are shown in Table 3.

Robustness checks and additional results

Besides testing whether there would be an initial reaction to the disclosure of complaints, it is relevant to test the effect of information disclosure over the long term. Table 4 shows the results of this second event study. First, the abnormal returns over a period of 1 month post-information disclosure were calculated. On average, the financial firms in the sample seem to benefit from the first month post-information disclosure as the mean CAR is positive (1.25%). A large change, however, occurs when a more long-term view is tested. A total of 36.17% of financial firms turn out to have a significant negative CAR over the 6 months post-information

Table 4 Explaining across-firm differences in CAR

Variable	CAR	CAR
Complaint	-0.049^{***} (0.004)	-0.048^{***} (0.004)
Firm size	-0.034 (0.024)	-0.036 (0.026)
CSR governance	0.028^* (0.013)	0.027^* (0.013)
Brand equity	0.089^{***} (0.017)	0.086^{***} (0.019)
Brand equity*complaint		-0.023^* (0.011)
P/E ratio	-0.039^* (0.015)	-0.036^* (0.015)
Leverage	0.008 (0.013)	0.010 (0.012)
Liquidity	0.001 (0.004)	0.001 (0.004)
R^2	42.31	43.82
χ^2	187.04	192.11
AR(1)	0.51	0.52

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, Standard errors in parentheses (sub-sample of 119 firms)



Table 5 Event study results—month level

Months	N	Mean CAR	Positive/negative	<i>P</i> -value	Std. t test	Banks Sig. positive CAR	Banks Sig. negative CAR
0, +1	167	1.25%	106:61	$p < 0.10$		2.13%	4.26%
+1, +6	167	−5.05%	68:99	$p < 0.10$		14.89%	36.17%

disclosure against only 14.89% with a significant positive CAR. All financial firms combined have a lower stock return than expected over the 6 months post-information disclosure period with a mean CAR of −5.05% (Table 5)

To increase the robustness of the results from the t test and the event study, several extra tests were performed. The Wilcoxon signed ranks test is used to check the robustness of the t test results in the absence of normal distribution of the variables of interest. Although violations of normality are not a big issue in the case of a paired sampled t test, an extra nonparametric test adds validity to the test results. Similar to the initial t tests, the total of 6 months post-information disclosure is measured first. All 6 time windows result in significantly higher means for the variables “complaints,” “timely response,” and “cases disputed.” The results are therefore the same as the parametric t test. Next, the same nonparametric t test is applied to compare the means of each month post-disclosure with an average month pre-disclosure. The first three months post-disclosure display similar significant results as the parametric t tests. The fourth month post-information disclosure did not have significantly higher numbers of complaints and cases disputed according to the parametric tests. The results of the nonparametric test, however, result in significantly higher means for both variables compared to pre-disclosure. One may therefore conclude that the number of complaints, timely response, and disputed cases is significantly higher in the fourth month post-information disclosure compared to pre-disclosure, giving extra support for the first three hypotheses. These results are provided in “Appendices 3 and 4”.

Multiple parametric and nonparametric significance tests are performed to increase the robustness of the event study. In almost all cases, the results from these tests confirm the findings of the initial measurement. The results of the day level event windows $[t_{-1}, -t_{+1}]$; $[t_{-2}, -t_{+2}]$ and $[t_{-5}, -t_{+5}]$ were confirmed by the parametric StdCsect test and the nonparametric Jackknife test. The StdCsect Z test (Boehmer et al. 1991) compensates for a potential variance increase by including a cross-sectional variance adjustment. This significance test is hence robust to variance induced by the event. The jackknife test (Giaccotto and Sfridis 1996) is robust to potential changes in information flow around a financial event. The results of the event study are largely similar even when these two more

restrictive tests of significance are used “(Appendices 3 and 4”).

Discussion and implications

The following section provides a general discussion of the results of this study. Then, the managerial implications that follow from this discussion are presented.

Theoretical implications

This is the first time that the downstream effects of the public information disclosure on complaints from the Dodd-Frank Act have been analyzed. As hypothesized, it was found that banks receive more complaints after the disclosure. One explanation assumes an increase of customers with a negative attitude toward the bank. The negative attitude or dissatisfaction is a result of the data disclosure confronting customers with their bank’s complaint numbers. According to Um and Kim (2018), dissatisfaction will result in a higher probability of complaining customers. The number of complaints that banks receive is thus expected to increase following the event date. This would in turn result in a feedback process such that the corresponding growth in complaints would further increase customer dissatisfaction and hence future complaints. The study by Lee et al. (2008) agrees with this explanation as they find that a growing number of negative reviews increases negative attitudes. However, then one would expect the number of complaints to continue increasing over the long term. That is not the case in this context as the last months of data see a decrease in the number of complaints. For that reason, additional arguments need to be provided to justify the increase in complaints. Following Srinivasan’s (1990) cost–benefit framework, a customer is more likely to complain when the benefits of complaining exceed the costs. These costs are usually high because of a complex complaint process (Huppertz 2014). One of the goals of the creation of the CFPB and the website that came with it was to lower the costs by making it easier for customers to file a complaint

against their banks. When the CFPB publishes the complaint data, more customers become aware of this increase in benefits and decrease in costs. This led to more customers that were motivated to complain. However, customers who were happy with their service (or not as dissatisfied) had lower benefits from complaining about minor issues such that the costs of issuing the complaint and following up were more. Hence, an initial surge in complaints was not followed up with a continuous stream of complaints. This finding is important since it means that the regulation does not necessarily reduce the confidence or trust of all the customers; rather it only makes the grievance process easier such that customers with genuine difficulties can easily complain.

The increase in timely responses and disputed cases is explained through relevant theories as well. Similar to a recent study by Okamuro and Nishimura (2018), a business process (in this case complaint handling) shows improvements under governmental monitoring. Similarly, banks could take measures to improve their complaint handling or to make sure that a complaint receives a timely response. It was also found that more customers dispute a case post-information disclosure, despite the increase in timely responses. Following Homburg and Fürst (2005), this might be a result of the increase in complaints that banks receive, resulting in employees not having the expertise or time to address a large volume of complaints effectively. Thus, the chances are higher that a customer will dispute a case. Another explanation comes again from the consumer information search theory. Similar to the reasoning that was provided for observing an increase in the number of complaints, here too customers might experience a decrease in costs and an increase in benefits to dispute a case. Overall, the results imply that the disclosure has been an effective tool in monitoring banks as well as facilitating an easier and more open grievance redressal process for customers. From a public policy perspective, such tools may find use in other industries. For instance, while forums exist for complaints against airlines, the visibility and ease of the process could be further improved by the regulatory boards. With regard to marketing theory, the results of this study seem to imply that the impact of even a strong negative disclosure may be short. Further, the visibility of negative information to customers may not necessarily lead to lower long-term stock market performance, provided the firm (bank) takes steps to address the issues.

It was also observed that the initial effect of the CFPB disclosure on financial firms' stock returns is positive. The positive stock market reaction in the days post the information disclosure is possibly the result of an increased image of transparency (Fishman and Hagerty 2003). Increased transparency in the banking industry is an opportunity for investors because it provides them a clearer picture of the future potential of the

bank. Further, with an external monitor in place, investors may be less afraid that a bank will be able to hide customer service failures successfully (thus reducing the risks of investment for the investor). Post hoc tests using firm governance scores cement such reasoning as it was observed that firms with greater internal governance scores have a higher abnormal return. Further, it was seen that firms with stronger brands have higher abnormal returns. This is likely due to investors believing such firms to be more willing and able to protect their reputation for the quality of service in the future given the greater transparency about the information on complaints.

The abnormal returns were still positive one month after the disclosure. This is probably still the aftermath of the data disclosure. Over a longer period, 6 months post-information disclosure, the overall stock returns turn out to be negative. While one must exercise caution while interpreting long-term returns due to the likely presence of confounding events unobserved by the researcher, one reason that could explain the overall drop of over 5% is that markets that initially expected a degree of enhanced stability through oversight, now feared overreaction by legislators and increased restriction on the freedom of banks to operate and earn future profits. This explanation gains further credence based on the finding that stronger banks that might be expected to grow faster (based on a higher price-earnings ratio) have lower CARs on average.

Managerial implications

In this research, concrete evidence is obtained that the public disclosure of bank complaint data affects both banks and customers. This in turn induces both near and far-term stock market reactions. The public disclosure of complaints not only causes more customers to complain in the near term but also elicits a short-term positive stock market reaction. While the findings, in this case, relate to the banking industry, the implications can apply to other industries as well. First, public disclosure of complaints might lead to more complaints since customers see the proliferation of complaints and get greater confidence to file their misgivings. Banks and firms, in general, should ideally have a robust and efficient complaint handling system in place in anticipation of such disclosures or even the (now) ready availability of online forums for complaint dissemination. Unfortunately, if such systems are not in place, employees could easily be overworked and look for quick solutions if consumer complaints increase post-disclosure leading to a vicious circle of increasing complaints and disputes. To avoid this, managers may recast complaints as an opportunity to reduce satisfaction and encourage repeated business (Ngai et al. 2007). Further, it is known from past literature (e.g., Haj-Salem and Chebat 2014) that customers who are restricted from switching or are unable to complain carry a grudge and are inimical to firm future success. Thus, laws allowing easier



complaints may be a blessing in disguise and turn such customers to be truly loyal to the bank. Further, any business improvements created to reduce customer complaints might increase the efficiency and quality of service of the firm, leading to presumably greater future profitability and stock market success.

Results of the event study, somewhat surprisingly, show that the stock market reaction to such a disclosure law is positive. This means that managers, instead of bracing for a stock return hit, can look to enjoy greater returns in the short run. Similar laws may thus elicit positive responses and are not a negative event for the industry. At a broader level, greater transparency and stronger governance structures are viewed as favorable to firm success. Thus, individual banks looking to gain rewards from the stock market may look to have a transparent business approach while also ensuring efficient governance (such as through having external board members involved in executive decisions). While having lower complaints is in general beneficial, it is even more critical for financial firms with stronger brands. Investors expect such banks to have strong customer service, and evidence of a large number of complaints from such banks reduce confidence and lead to negative returns. While such financial firms ostensibly have more resources at their disposal, they also have more to lose by doing a poor job at addressing complaints.

Limitation and further research

This research is subject to several limitations that must be considered. The first limitation concerns the use of the event study methodology. The event study methodology is most powerful when the exact date is known regarding investors' beliefs about stock market changes. This implies that the stock market reactions to a certain event should all be captured in a single moment. However, while the exact date was unknown, there might have been rumors as to the publication of such a database which might have reduced the overall impact of the event. However, the fact that a strong stock market reaction is still evidenced bears testimony to the importance of the disclosure event and that complaints and their handling are regarded as important, by investors, to financial firm success.

Second, while a few bank characteristics were considered in this paper, it was beyond the scope of this paper to have an extensive understanding of all the reasons why specific banks may gain and lose. A recommendation for further research then is to look at whether results differ depending on bank characteristics such as customer satisfaction. Investors may expect that banks high on satisfaction would be better able to resolve complaints and the availability of data may either confirm or

disconfirm their prior notion. Similarly, studies on regulatory disclosures in other markets may provide insights into the generalizability of such investor reactions. For instance, investigations into stock market reactions corresponding to complaints through social media might be beneficial to study.

The CFPB database also includes several more complaint-related variables such as those pointing out different types of complaints (e.g., mortgage, credit card, savings account, etc.). Investigating whether investors care more about specific portfolios of complaints may provide a more nuanced understanding of the effects of the data disclosure. Further, media attention might play a key role in the visibility of published complaints and the consumers' propensity to file complaints. A quick analysis of relevant Google trends data reveals that attention for the CFPB increased permanently after June 2011. However, it appears to have taken some time for the media attention to build up. Future research could investigate whether scandals affecting top banks' reputation kindled further interest in the CFPB which in turn spurred more complaints.

Lastly, while most large banks operating in the USA were captured in the data and analyses, several smaller banks were omitted, in part due to the unavailability of related data from CRSP. Future studies could leverage a more comprehensive database and investigate whether small banks (or even other types of banks such as credit unions) are better able to form closer relationships with customers and are thus less affected by such a disclosure. Future studies could also investigate the effect of similar disclosure requirements in other countries. For instance, in countries where consumer protection laws are weak, such regulatory actions may have a more pronounced effect.

Conclusion

Disclosure of the CFPB complaint data had important consequences for bank customers and shareholders. Post-disclosure, it was found that more consumers complain and more consumers dispute cases. Banks, at the same time, often respond to a complaint more quickly. The data disclosure also made an impact on the banks' stock returns such that an initial positive stock market reaction was evidenced around the moment of disclosure.

Appendix

Appendix 1

Table 6



Table 6 Descriptive statistics

# Com-plaints	Observations	Mean	St. deviation	Min	Max
Pre_Di_Co_M1	167	24.93	108.80	0.16	1104.5
Pre_Di_Co_tot	167	149.55	652.83	1	6627
Post_Di_Co_tot	167	161.65	682.26	1	6988
Post_Di_Co_M1	167	28.71	119.13	0	1163
Post_Di_Co_M2	167	30.43	134.24	0	1401
Post_Di_Co_M3	167	27.62	120.72	0	1260
Post_Di_Co_M4	167	26.76	109.63	0	1131
Post_Di_Co_M5	167	24.17	101.69	0	1039
Post_Di_Co_M6	167	24.25	98.90	0	994
# Timely responses					
Pre_Di_TR_M1	167	23.71	102.13	0	1009
Pre_Di_TR_tot	167	142.29	612.79	0	6054
Post_Di_TR_tot	167	156.40	646.85	0	6418
Post_Di_TR_M1	167	27.46	109.90	0	1005
Post_Di_TR_M2	167	29.20	124.51	0	1249
Post_Di_TR_M3	167	26.69	114.408	0	1158
Post_Di_TR_M4	167	25.75	104.86	0	1054

Table 6 (continued)

# Com-plaints	Observations	Mean	St. deviation	Min	Max
Post_Di_TR_M5	167	23.54	98.82	0	994
Post_Di_TR_M6	167	23.76	96.68	0	958
# Consumer disputed					
Pre_Di_CD_M1	167	5.81	26.33	0	268.5
Pre_Di_CD_tot	167	34.87	157.98	0	1611
Post_Di_CD_tot	167	38.01	162.58	0	1672
Post_Di_CD_M1	167	7.49	31.41	0	307
Post_Di_CD_M2	167	7.51	33.23	0	345
Post_Di_CD_M3	167	6.69	30.05	0	321
Post_Di_CD_M4	167	6.17	25.74	0	258
Post_Di_CD_M5	167	5.19	21.76	0	221
Post_Di_CD_M6	167	4.95	21.10	0	220
Financial indicators					
AR_M1	167	0.83	9.02	-27.84	28.80
AR_M6	167	-4.29	22.65	-45.18	35.67
AR_D1	167	0.62	1.85	-3.06	7.35
AR_D2	167	1.25	2.57	-6.02	12.84
AR_D5	167	1.05	2.68	-5.93	7.49

Appendix 2

Table 7

Table 7 Wilcoxon signed ranks test—months individually

Month 1	Complaints	Timely responses	Consumer disputed
Pre-disclosure (mean)	24.93	23.71	5.81
Post-disclosure (mean)	28.73	27.46	7.49
Wil.Sig.Rank Test-Z	−3.268	−3.481	−4.318
P-Value	0.001	0.000	0.000
Month 2			
Pre-disclosure (mean)	24.93	23.71	5.81
Post-disclosure (mean)	30.43	29.20	7.51
Wil.Sig.Rank Test	−4.054	−4.740	−3.478
P-value	0.000	0.000	0.001
Month 3			
Pre-disclosure (mean)	24.93	23.71	5.81
Post-disclosure (mean)	27.62	26.69	6.69
Wil.Sig.Rank Test-Z	−2.509	−3.337	−3.780
P-value	0.012	0.001	0.000
Month 4			
Pre-disclosure (mean)	24.93	23.71	5.81
Post-disclosure (mean)	26.76	25.75	6.17
Wil.Sig.Rank Test-Z	−3.141	−3.697	−2.825
P-value	0.002	0.000	0.005
Month 5			
Pre-disclosure (mean)	24.93	23.71	5.81
Post-disclosure (mean)	24.17	23.54	5.19
Wil.Sig.Rank Test-Z	−1.317	−1.979	−0.170
P-value	0.188	0.048	0.865
Month 6			
Pre-disclosure (mean)	24.93	23.71	5.81
Post-disclosure (mean)	24.25	23.76	4.95
Wil.Sig.Rank Test-Z	−1.359	−2.027	−3.36
P-Value	0.174	0.043	0.737

P-value set at 5%

Appendix 3

Table 8

Table 8 Event study results—day level

Days	N	Mean CAR	Positive/negative	StdCsect Z	Jackknife Z
−1, +1	167	0.65%	105:62	2.498***	2,425***
−2, +2	167	1.02%	125:42	3.437****	3,233****
−5, +5	167	1.07%	115:52	2.272**	2,093**
+1, +6	167	0.34%	92:75	0.947	1,600*

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$



Appendix 4

Table 9

Table 9 Event study results—month level

Months	N	Mean CAR	Positive/negative	StdCsect Z	Jackknife Z
0, +1	167	1.25%	107:60	4.215	1.016
+1, +6	167	−5.05%	68:99	−1.685**	−1.792**

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Appendix 5

Table 10

Table 10 Variable descriptions

Variable	Description	Source
Complaint	Total number of complaints lodged by consumers against a bank. (Lower is better)	CFPB
Timely responses	Total number of cases where the bank lodged a timely response. (Higher is better)	CFPB
Consumer disputed	Total number of cases where consumers disputed the "bank-provided resolution." (Lower is better)	CFPB
Abnormal returns	Excess returns not explained by the Fama–French equation	CRSP
P/E Ratio	Price-to-earnings ratio measured as the ratio of market capitalization to net income	COMPUSTAT
Brand value	BAV's overall brand asset metric is the sum of brand strength and brand stature ranging from 0 to 36	BAV
Firm governance	Rating of internal governance of firms	KLD
Leverage	The ratio of debt to equity (variables LT and TEQ in COMPUSTAT)	COMPUSTAT
Liquidity	The ratio of operating cash flow to sales (variables OPCFA and Sale in COMPUSTAT)	COMPUSTAT

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