

# Disciplining Banks through Disclosure: Evidence from CFPB Consumer Complaints

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The views expressed in this presentation are those of the authors and do not necessarily reflect the views of the Federal Reserve Board, the Federal Reserve System, the Consumer Financial Protection Bureau (CFPB), or any other institutions related to the authors.

# Motivation

- Disclosure provides a potential disciplinary mechanism
  - Changes to lending
  - Spillover effects on credit access
- Disclosure increases monitoring by funding providers and improves bank operations (Diamond and Dybvig, 1983; Chen et al., 2022; Granja and Leuz, 2024; Kleyменова and Tomy, 2022)
- Does disclosure of information provided by consumers have any impact on banks?

# Motivation

- CFPB was created to provide oversight of financial consumer markets
  - Regulator dedicated to consumer finance
  - Discloses and investigates consumer complaints
  - Refers complaints to other regulators if required
- Is public disclosure of complaints an effective tool?
  - Disclosure could signal potential problems with the banks
  - However, disclosure without regulatory action may not have any material impact
  - CFPB has been called “unaccountable and ineffective” (NY Times 2017 article)
  - Political cycles can influence the CFPB’s approach to supervision and enforcement

# Research Questions

- 1) What is the impact of public disclosure of consumer complaints?
  - How do depositors respond?
- 2) Is there an impact on bank behavior?
  - Do banks change interest rates or other features of consumer products?
- 3) Are the reactions driven by the “existence” of deficiencies, or the “disclosure” of these deficiencies in the complaints?

## Related Literature

- Disclosure as a disciplining mechanism
  - Depositors discipline banks (Anbil 2018; Chen et al. 2022; Diamond and Dybvig 1983; Iyer and Puri 2012)
  - Funding providers discipline banks (Acharya and Ryan 2016; Bushman and Williams 2012; Flannery 1998)
  - Capital market participants respond to change in disclosure regime by other regulators (Duro et al. 2019)
- Spillover effects from supervision and regulation
  - Changes in regulatory incentives (Granja and Leuz 2024; Kleymenova and Tomy 2022; Passalacqua et al. 2022)
  - Spillover effects from CFPB enforcement (Hayes et al. 2021; Fuster et al. 2022; Dou and Roh 2020; Mazur 2022; Dou et al. 2023)

# Institutional Setting: Creation of CFPB

- CFPB was formed with the passing of the Dodd-Frank Act in July 2010
- Began operating in July 2011
- Authority over banks and nonbanks, with powers in three areas:
  - Rulemaking
  - Supervision and examination
  - Enforcement
- CFPB supervises depository institutions and their affiliates with total assets greater than \$10B

## CFPB Complaints Database

- The public database includes data from *certain* consumer complaints submitted on or after December 1, 2011
- Consumers submit their complaints about financial products and services through the CFPB website
- CFPB sends complaints to companies for a response
- Complaints are published after the company responds, confirming a commercial relationship with the consumer or after 15 days, whichever comes first
- These disclosures are intended to
  - Provide consumers with “timely and understandable information to make responsible decisions about financial transactions” and
  - Ensure that markets for consumer financial products and services “operate transparently and efficiently”

# CFPB Complaints Database

## Search complaint data (last updated: 7/8/2024)

Search within

All data  [Search](#) [Show advanced search tips](#)

Filters applied: Date Received: 12/1/2011 - 7/8/2024 [Clear all filters](#)

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Filter results by...

**Date CFPB received the complaint**

CFPB updated product and issue options in April 2017 and August 2023. [Learn More](#)

From:  Through:

Date range (Click to modify range)

**Showing 5,591,116 total complaints**

[Export data](#) [Print](#)

Trends [List](#) [Map](#)

Aggregate by: Date Interval: Chart type

Product:

### Complaints by date received by the CFPB

A time series graph of the (up to five) highest volume complaints for the selected date range. However, you can view all of your selections in the bar chart, below. Hover on the chart to see the count for each date interval. Your filter selections will update what you see on the graph.



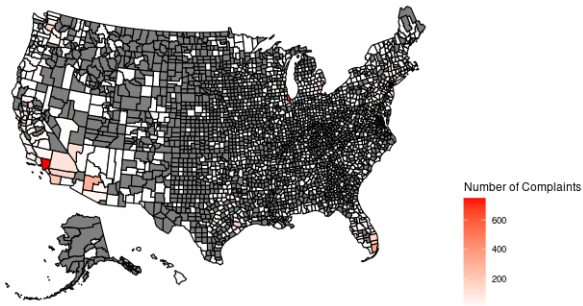
# CFPB Complaints Narrative: Example 1

An unauthorized charge was made on my debit card using the PIN on XXXX XXXX. The same day, I disputed the charge, filed a police report and filed a report with the security at the location of the ATM. The bank closed the dispute claiming that because my PIN was used there was no evidence of fraud and the claim could not proceed. This is a direct violation of XXXX XXXX XXXX It is not my responsibility to make guesses as to how the culprit got my PIN, nor is it my responsibility to tell the police what to write into reports. Most importantly, because I reported the violation within XXXX hours, my liability remains at a maximum of \$50.00 XXXX pin or no pin ) and under the banks own " XXXX liability " policy, I should receive full reimbursement of \$400.00.

## CFPB Complaints Narrative: Example 2

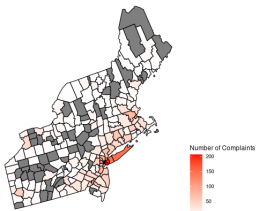
To Whom It May Concern, I am writing to formally lodge a complaint against Bank of America concerning an incident that I believe constitutes a violation of the Expedited Funds Availability Act (EFAA) and Regulation CC. On XX/XX/2023, I deposited a cashier's check into my account at Bank of America. Despite the nature of the instrument being a cashier's check, which typically warrants a shorter hold period due to its near-equivalent status to cash, Bank of America has placed an extended hold on these funds, with a release date set for XX/XX/XXXX. This extended hold is considerably longer than the standard timeframes outlined in Regulation CC, which generally requires XXXX XXXX to make funds from cashier's checks available within one business day after the deposit is made. The delay in the availability of my funds has caused significant inconvenience and potential financial hardship, as I am unable to access my own money. I have attempted to resolve this issue directly with Bank of America, but have not received a satisfactory explanation or resolution. Therefore, I am seeking assistance from the Consumer Financial Protection Bureau to investigate this matter. It is my understanding that the CFPB is committed to ensuring fair and lawful practices in the banking sector, and I believe this situation warrants such attention. [...]

# Geographical Distribution of Complaints, 2011-2020

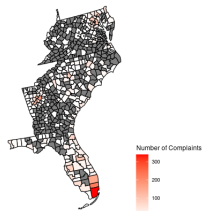


# Geographical Distribution of Complaints by Region

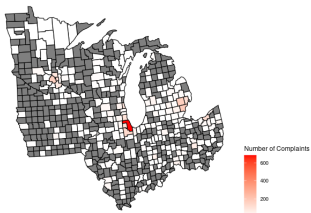
(a) Northeast



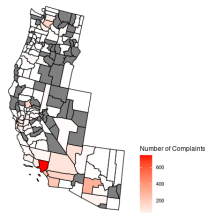
(b) Southeast



(c) Midwest

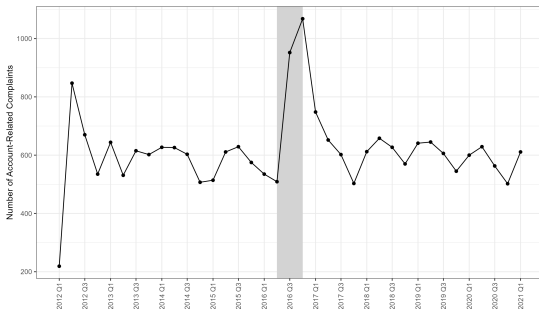


(d) West



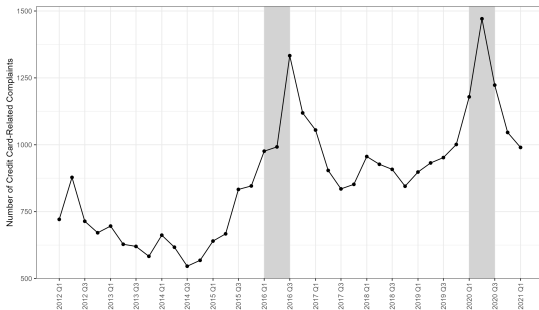
# Stylized Fact 1

Figure: Wells Fargo 2016 Scandal



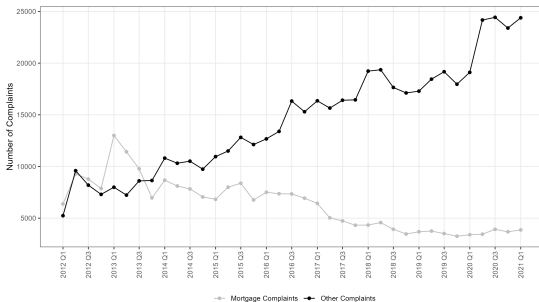
# Stylized Fact 2

Figure: Citibank Scenario



# Stylized Fact 3

Figure: Mortgage Complaints vs Other Complaints

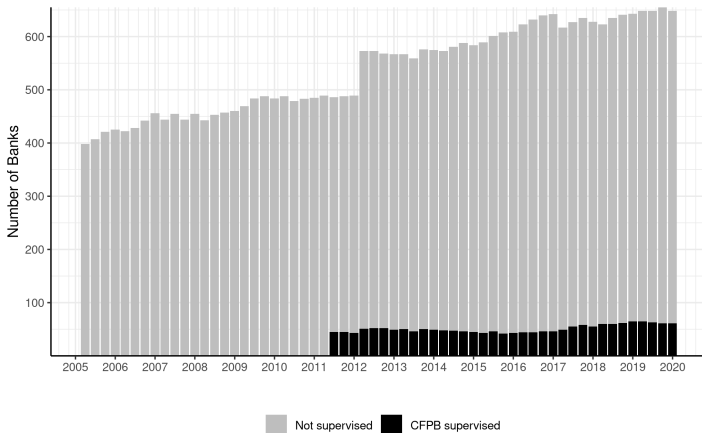


- 1) CFPB Complaints Database (public and confidential)
- 2) Call Reports
- 3) RateWatch
- 4) U.S. Census
- 5) CRSP
- 6) Summary of Deposits (SOD)
- 7) Home Mortgage Disclosure Act (public and confidential HMDA) data



# Sample Construction

- Focus on a subset of firms subject to CFPB oversight
- Follow Fuster et al. (2022) identification process



## Distribution of Complaints by Bank Assets

- The largest banks receive the highest number of complaints
- Follow Fuster et al. (2022) and focus on a subset of banks below \$25B in total assets

|                 | \$1B-\$5B | \$5B-\$10B | \$10B-\$15B | \$15B-\$20B | \$20B-\$25B | \$25B+  | Total   |
|-----------------|-----------|------------|-------------|-------------|-------------|---------|---------|
| CFPB Complaints | 134       | 1,940      | 6,195       | 7,407       | 6,575       | 609,146 | 631,397 |
| Sample          | 134       | 1,928      | 6,060       | 7,089       | 6,347       | -       | 21,558  |

# Sample Construction Methodology

- 1) Identify banks with \$1–\$25B in assets between 2005:Q1 and 2020:Q1
- 2) Remove banks that are subsidiaries of Bank Holding Companies with total assets greater than \$50B in assets
- 3) Merge with the list of CFPB-supervised institutions.
  - Identify banks supervised by CFPB using the public list of depository institutions and their affiliates published on CFPB's website

# Does Disclosure Matter?

Is disclosure of complaints material?

$$Y_{b,t} = \alpha + \beta_1 \text{Public Disclosure}_{b,t} + \gamma X_b + \epsilon_{b,t} \quad (1)$$

where

- $b, t$  correspond to *bank* and *date of complaint disclosure*
- $Y_{b,t}$  is the daily stock price, bid-ask spread, trading volume, or abnormal returns in the  $(-3, +3)$  event window
- *Public Disclosure* is an indicator for the date of the complaint publication and subsequent 3 days
- $X_b$  includes bank-level controls: liquidity ratio, ROA, capital ratio, and size

# Market Reaction

Is disclosure of complaints material?

|                         | Stock Price<br>(1) | Bid-Ask Spread<br>(2) | log(Volume)<br>(3) | Abnormal Return<br>(4) |
|-------------------------|--------------------|-----------------------|--------------------|------------------------|
| Public Disclosure       | -0.036<br>(0.047)  | 0.0005**<br>(0.0002)  | 0.010*<br>(0.005)  | 0.0002<br>(0.0004)     |
| Bank Controls           | Yes                | Yes                   | Yes                | Yes                    |
| Bank FE                 | Yes                | Yes                   | Yes                | Yes                    |
| Quarter FE              | Yes                | Yes                   | Yes                | Yes                    |
| Observations            | 15,658             | 15,658                | 15,658             | 15,658                 |
| Adjusted R <sup>2</sup> | 0.976              | 0.198                 | 0.741              | 0.031                  |

- Increase in uncertainty
- Increase in trading volume

## Do Consumers React to Complaints?

Compare banks around the threshold of \$10B in total assets (Fuster et al. 2022)

$$Y_{b,c,t} = \alpha + \beta CFPB\ Oversight_{b,c,t} + \gamma X_{c,t} + \beta_2 Public\ Disclosure_t + \beta_3 CFPB\ Oversight \times Public\ Disclosure_t + \eta W_{b,c,t} + \epsilon_{b,c,t},$$

where:

- $b, c, t$  correspond to *bank, county, and year-quarter*
- $Y_{b,c,t}$  = deposits (in log levels) or mortgage market shares (based on county-level applications)
- $CFPB\ Oversight_{b,c,t}$  = indicator for whether  $b$  is a bank above the \$10B size threshold
- $Public\ Disclosure$  = indicator if a bank has a complaint in a given quarter
- Bank and county controls (*population, median household income, and unemployment rate*)

# Depositor Reaction

Do depositors react to complaints?

|                                    | log(Deposits)       |                     |                     |                     |                     |
|------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                                    | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 |
| CFPB Oversight                     | 1.380***<br>(0.170) | 1.469***<br>(0.124) | 1.478***<br>(0.125) | 0.449***<br>(0.080) | 0.423***<br>(0.085) |
| Public Disclosure                  | 1.014***<br>(0.357) | 1.154***<br>(0.338) | 1.150***<br>(0.361) | 0.274**<br>(0.126)  | 0.259**<br>(0.137)  |
| CFPB Oversight x Public Disclosure | -0.359<br>(0.400)   | -0.600*<br>(0.360)  | -0.613<br>(0.382)   | -0.238**<br>(0.141) | -0.211<br>(0.153)   |
| Bank and County Controls           | No                  | Yes                 | Yes                 | Yes                 | Yes                 |
| Year FE                            | No                  | No                  | Yes                 | Yes                 | Yes                 |
| Bank FE                            | No                  | No                  | No                  | Yes                 | Yes                 |
| County FE                          | No                  | No                  | No                  | No                  | Yes                 |
| Observations                       | 7,192               | 6,766               | 6,766               | 6,766               | 6,766               |
| Adjusted R <sup>2</sup>            | 0.275               | 0.314               | 0.317               | 0.907               | 0.901               |

- Some evidence of declining deposits
- SOD data might not fully capture shorter-term reactions

# Depositor Reaction

Does the intensity of complaints matter to depositors?

|                                 | log(Deposits)       |                     |                     |                     |                     |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                                 | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 |
| CFPB Oversight                  | 1.473***<br>(0.151) | 1.553***<br>(0.111) | 1.159***<br>(0.112) | 0.460***<br>(0.079) | 0.437***<br>(0.084) |
| High Complaint                  | 0.991**<br>(0.445)  | 1.144***<br>(0.420) | 1.125**<br>(0.449)  | 0.303**<br>(0.147)  | 0.288*<br>(0.160)   |
| CFPB Oversight x High Complaint | -0.447<br>(0.476)   | -0.695<br>(0.437)   | -0.689<br>(0.465)   | -0.319**<br>(0.157) | -0.304*<br>(0.170)  |
| Bank and County Controls        | No                  | Yes                 | Yes                 | Yes                 | Yes                 |
| Year FE                         | No                  | No                  | Yes                 | Yes                 | Yes                 |
| Bank FE                         | No                  | No                  | No                  | Yes                 | Yes                 |
| County FE                       | No                  | No                  | No                  | No                  | Yes                 |
| Observations                    | 7,192               | 6,766               | 6,766               | 6,766               | 6,766               |
| Adjusted R <sup>2</sup>         | 0.270               | 0.311               | 0.314               | 0.907               | 0.901               |

- Some evidence of declining deposits
- Intensity is the above-median number of complaints for a bank in a given year-county



## Specific Complaints and Depositor Reaction

Is there a difference across the types of complaints?

|  | log(Deposits)       |                     |                     |                     |                     |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|
|  | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 |
| CFPB Oversight                                   | 1.49***<br>(0.142)  | 1.56***<br>(0.105)  | 1.57***<br>(0.105)  | 0.449***<br>(0.070) | 0.425***<br>(0.074) |
| % of Account-Related Complaints                  | 4.61***<br>(0.058)  | 4.71***<br>(0.143)  | 4.73***<br>(0.150)  | 1.25***<br>(0.262)  | 1.20***<br>(0.279)  |
| CFPB Oversight x % of Account-Related Complaints | -3.89***<br>(0.190) | -4.10***<br>(0.186) | -4.15***<br>(0.179) | -1.20***<br>(0.271) | -1.14***<br>(0.288) |
| Bank and County Controls                         | No                  | Yes                 | Yes                 | Yes                 | Yes                 |
| Year FE  | No                  | No                  | Yes                 | Yes                 | Yes                 |
| Bank FE  | No                  | No                  | No                  | Yes                 | Yes                 |
| County FE  | No                  | No                  | No                  | No                  | Yes                 |
| Observations                                     | 7,192               | 6,766               | 6,766               | 6,766               | 6,766               |
| Adjusted R <sup>2</sup>                          | 0.270               | 0.310               | 0.313               | 0.907               | 0.901               |

- *% of Account-Related Complaints* is % of the total number of complaints for a specific bank, in a specific county, in a given year
- Banks with accounts-related complaints in a given quarter show an increasing decline in deposits

# Mortgage Market Reaction

Using a similar approach, evaluate mortgage market shares utilizing cHMDA

|                                    | Mortgage Share       |                      |                      |                       |                     |                      |
|------------------------------------|----------------------|----------------------|----------------------|-----------------------|---------------------|----------------------|
|                                    | (1)                  | (2)                  | (3)                  | (4)                   | (5)                 | (6)                  |
| CFPB Oversight                     | -0.039***<br>(0.001) | -0.032***<br>(0.002) | -0.039***<br>(0.002) | -0.005***<br>(0.0009) | -0.002**<br>(0.001) | 0.0004<br>(0.0006)   |
| Public Disclosure                  | -0.064***<br>(0.005) | -0.043***<br>(0.004) | -0.036***<br>(0.005) | 0.004*<br>(0.002)     | 0.005**<br>(0.003)  | 0.007***<br>(0.001)  |
| CFPB Oversight x Public Disclosure | 0.041***<br>(0.005)  | 0.030***<br>(0.005)  | 0.027***<br>(0.005)  | -0.006**<br>(0.002)   | -0.006**<br>(0.003) | -0.007***<br>(0.001) |
| Bank and County Controls           | No                   | Yes                  | Yes                  | Yes                   | Yes                 | Yes                  |
| Quarter FE                         | No                   | No                   | Yes                  | No                    | Yes                 | No                   |
| County FE                          | No                   | No                   | No                   | Yes                   | Yes                 | No                   |
| County x Quarter FE                | No                   | No                   | No                   | No                    | No                  | Yes                  |
| Observations                       | 36,867               | 36,867               | 36,867               | 36,867                | 36,867              | 36,867               |
| Adjusted R <sup>2</sup>            | 0.029                | 0.188                | 0.186                | 0.004                 | 0.004               | 0.009                |

- Banks with consumer complaints lose market share
- This analysis is using a random cHMDA sample

# Do Banks React to Complaints?

Using RateWatch data, investigate if banks change their deposit rates

|                                    | 3-month<br>(1)    | 6-month<br>(2)      | 12-month<br>(3)      | 24-month<br>(4)   | 60-month<br>(5)     |
|------------------------------------|-------------------|---------------------|----------------------|-------------------|---------------------|
| CFPB Oversight                     | 0.010<br>(0.034)  | 0.040<br>(0.031)    | 0.029<br>(0.031)     | 0.023<br>(0.026)  | 0.005<br>(0.023)    |
| Public Disclosure                  | -0.060<br>(0.126) | -0.470**<br>(0.196) | -0.421***<br>(0.145) | -0.297<br>(0.187) | -0.187**<br>(0.083) |
| CFPB Oversight x Public Disclosure | 0.112<br>(0.124)  | 0.472**<br>(0.196)  | 0.530***<br>(0.143)  | 0.312*<br>(0.187) | 0.191**<br>(0.082)  |
| Bank and County Controls           | Yes               | Yes                 | Yes                  | Yes               | Yes                 |
| Quarter FE                         | Yes               | Yes                 | Yes                  | Yes               | Yes                 |
| County FE                          | Yes               | Yes                 | Yes                  | Yes               | Yes                 |
| Bank FE                            | Yes               | Yes                 | Yes                  | Yes               | Yes                 |
| Observations                       | 3,035             | 3,067               | 3,093                | 3,069             | 3,062               |
| Adjusted R <sup>2</sup>            | 0.754             | 0.775               | 0.761                | 0.741             | 0.682               |

- Banks appear to increase rates for less liquid deposits, on longer-term CD
- Possibly reducing some declines in deposits

## Does the Intensity of Complaints Matter?

Using RateWatch data, we further focus on banks with complaints to see if some of the changes are driven by banks with a higher intensity of complaints

|                          | log(Deposit Rate) <sub>CD</sub> |                     |                     |
|--------------------------|---------------------------------|---------------------|---------------------|
|                          | (1)                             | (2)                 | (3)                 |
| Public Disclosure        | 0.007***<br>(0.003)             |                     |                     |
| High Complaint           |                                 | 0.007***<br>(0.003) |                     |
| Total Complaints         |                                 |                     | 0.003***<br>(0.001) |
| Bank and County Controls | Yes                             | Yes                 | Yes                 |
| Quarter FE               | Yes                             | Yes                 | Yes                 |
| County FE                | Yes                             | Yes                 | Yes                 |
| Bank FE                  | Yes                             | Yes                 | Yes                 |
| Observations             | 153,886                         | 153,886             | 153,886             |
| Adjusted R <sup>2</sup>  | 0.801                           | 0.801               | 0.801               |

- Banks with above median complaints in a given quarter appear to increase rates more

## Additional Analyses

# Textual Analyses

- Starting from 2015, CFPB publishes the full narrative of complaints by consumers who opt-in for disclosure
  - Use the BERT model to understand emotions from complaints
  - Identify probabilities for the three highest likelihood of complaints
  - Examine whether sentiment has explanatory power in understanding the response of depositors

# Textual Analyses: BERT

## Deposit Results using BERT Emotion Output (bank level)

|                         | log(1-qtr Lagged Deposits) |                    |                    |                    | 1-qtr Lagged Deposits/Assets |                   |                   |                   |
|-------------------------|----------------------------|--------------------|--------------------|--------------------|------------------------------|-------------------|-------------------|-------------------|
|                         | (1)                        | (2)                | (3)                | (4)                | (5)                          | (6)               | (7)               | (8)               |
| Disappointment          | -0.001<br>(0.020)          | -0.003<br>(0.014)  | -0.003<br>(0.014)  | -0.014*<br>(0.007) | 5.343<br>(4.698)             | 3.280<br>(2.428)  | 3.219<br>(2.359)  | -0.173<br>(0.121) |
| Disapproval             | -0.012<br>(0.030)          | -0.021<br>(0.017)  | -0.021<br>(0.016)  | -0.003<br>(0.007)  | -4.404<br>(3.600)            | -2.935<br>(2.294) | -2.937<br>(2.269) | -0.135<br>(0.127) |
| Realization             | 0.022<br>(0.016)           | 0.022<br>(0.013)   | 0.023<br>(0.012)   | -0.006<br>(0.007)  | -0.467<br>(1.732)            | -0.302<br>(1.588) | -0.212<br>(1.535) | 0.155<br>(0.184)  |
| Gratitude               | 0.007<br>(0.029)           | 0.00<br>(0.024)    | 0.008<br>(0.024)   | -0.005<br>(0.006)  | 1.513<br>(2.243)             | 1.212<br>(1.887)  | 1.784<br>(2.195)  | -0.271<br>(0.276) |
| Annoyance               | 0.050**<br>(0.019)         | 0.030**<br>(0.015) | 0.033**<br>(0.014) | -0.007<br>(0.004)  | 7.230<br>(6.764)             | 6.356<br>(4.954)  | 6.748<br>(5.081)  | -0.229<br>(0.156) |
| Approval                | -0.042<br>(0.032)          | -0.039*<br>(0.020) | -0.036*<br>(0.019) | -0.008<br>(0.006)  | -2.564<br>(2.081)            | -2.735<br>(2.410) | -2.315<br>(2.213) | -0.387<br>(0.265) |
| Confusion               | 0.017<br>(0.034)           | -0.004<br>(0.024)  | -0.001<br>(0.023)  | -0.006<br>(0.008)  | 7.646<br>(7.881)             | 4.241<br>(4.102)  | 4.762<br>(4.261)  | -0.320<br>(0.266) |
| Bank Controls           | No                         | Yes                | Yes                | Yes                | No                           | Yes               | Yes               | Yes               |
| Quarter FE              | No                         | No                 | Yes                | Yes                | No                           | No                | Yes               | Yes               |
| Bank FE                 | No                         | No                 | No                 | Yes                | No                           | No                | No                | Yes               |
| Observations            | 4,348                      | 4,348              | 4,348              | 4,348              | 4,348                        | 4,348             | 4,348             | 4,348             |
| Adjusted R <sup>2</sup> | 0.001                      | 0.281              | 0.286              | 0.931              | 0.005                        | 0.125             | 0.131             | 0.995             |

# Textual Analyses: BERT

## Impact on Deposits Using BERT Emotions Disappointment

|                                 | log(Deposits)       |                     |                     |                     | 1-qtr Lagged log(Deposits) |                     |                     |                    |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|----------------------------|---------------------|---------------------|--------------------|
|                                 | (1)                 | (2)                 | (3)                 | (4)                 | (5)                        | (6)                 | (7)                 | (8)                |
| CFPB Oversight                  | 0.599***<br>(0.087) | 0.548***<br>(0.104) | 0.551***<br>(0.102) | 0.163***<br>(0.060) | 0.596***<br>(0.088)        | 0.545***<br>(0.104) | 0.545***<br>(0.101) | 0.164**<br>(0.063) |
| Disappointment                  | -0.011<br>(0.065)   | -0.141<br>(0.096)   | 0.118<br>(0.095)    | 0.078**<br>(0.031)  | -0.041<br>(0.066)          | 0.114<br>(0.095)    | 0.094<br>(0.095)    | 0.072**<br>(0.036) |
| CFPB Oversight x Disappointment | 0.251**<br>(0.101)  | 0.039<br>(0.122)    | 0.059<br>(0.127)    | -0.076**<br>(0.034) | 0.261**<br>(0.102)         | 0.044<br>(0.124)    | 0.063<br>(0.129)    | -0.072*<br>(0.037) |
| Bank Controls                   | No                  | Yes                 | Yes                 | Yes                 | No                         | Yes                 | Yes                 | Yes                |
| County Controls                 | No                  | No                  | Yes                 | Yes                 | No                         | No                  | Yes                 | Yes                |
| Quarter FE                      | No                  | No                  | No                  | Yes                 | No                         | No                  | No                  | Yes                |
| County FE                       | No                  | No                  | No                  | Yes                 | No                         | No                  | No                  | Yes                |
| Bank FE                         | No                  | No                  | No                  | Yes                 | No                         | No                  | No                  | Yes                |
| Observations                    | 1,470               | 1,470               | 1,470               | 1,470               | 1,470                      | 1,470               | 1,470               | 1,470              |
| Adjusted R <sup>2</sup>         | 0.121               | 0.201               | 0.220               | 0.971               | 0.116                      | 0.198               | 0.212               | 0.967              |

- Banks with CFPB oversight and a higher percentage of complaints with disappointment show a relative decrease in deposits

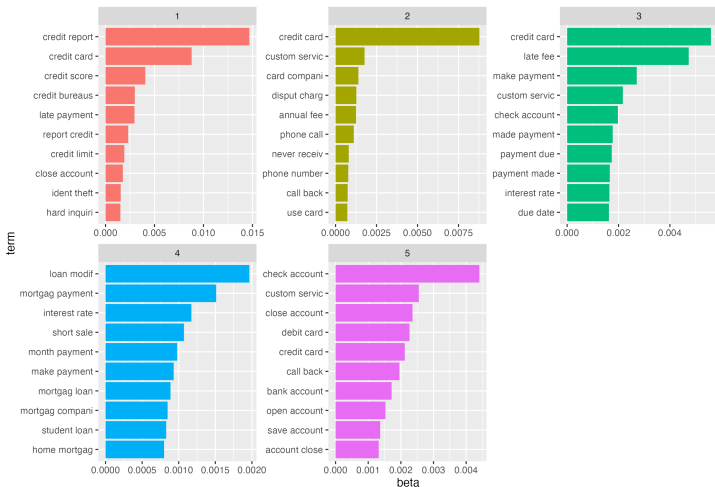


# Textual Analyses

- Use LDA to identify the main topics contained in the corpus of the text of the complaints narrative
  - Each complaint is a mixture of topics, and each topic is a mixture of words
  - Allows complaints to contain multiple topics rather than being separated into discrete groups

# Textual Analyses: LDA

Figure: Topic Results from LDA using public CFPB Data



# LDA Analysis using Public Database

|                         | log(Total Deposits) |                    |                    |                    |
|-------------------------|---------------------|--------------------|--------------------|--------------------|
|                         | (1)                 | (2)                | (3)                | (4)                |
| Credit Score (%)        | -0.17<br>(0.31)     | -0.24<br>(0.31)    | -2.04***<br>(0.57) | -2.06***<br>(0.57) |
| Customer Service (%)    | 0.06<br>(0.36)      | 0.08<br>(0.38)     | 1.81***<br>(0.51)  | 1.81***<br>(0.51)  |
| Credit Cards (%)        | -0.55***<br>(0.11)  | -0.59***<br>(0.11) | -0.59**<br>(0.21)  | -0.57**<br>(0.21)  |
| Mortgages (%)           | 0.13<br>(0.22)      | 0.19<br>(0.22)     | 2.01***<br>(0.55)  | 2.03***<br>(0.54)  |
| Bank Accounts (%)       | 0.04<br>(0.40)      | 0.07<br>(0.42)     | -0.07<br>(0.29)    | -0.02<br>(0.29)    |
| Bank Controls           | Yes                 | Yes                | Yes                | Yes                |
| Quarter FE              | No                  | Yes                | No                 | Yes                |
| Bank FE                 | No                  | No                 | Yes                | Yes                |
| Observations            | 432,352             | 432,352            | 432,352            | 432,352            |
| Adjusted R <sup>2</sup> | 0.65                | 0.66               | 0.98               | 0.98               |

- Topics on total deposits – coefficient estimates are relative to banks that did not receive complaints in that quarter

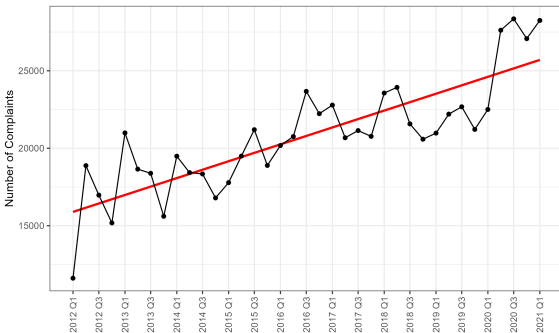
# Full CFPB Database - Confidential CFPB Database

Difference between publicly disclosed CFPB and full CFPB database

- CFPB withholds complaints from public disclosure upon request from banks or customers
- CFPB redacts any identifying information before publicly disclosing the complaints
- Our initial analysis shows a significant difference between the two databases

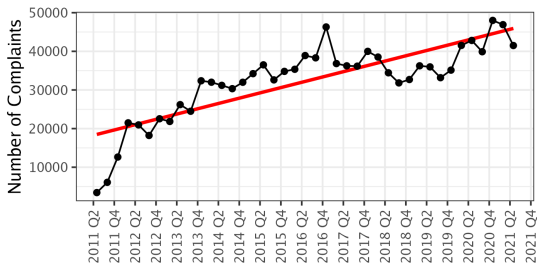
# Number of Complaints, Public Database

Figure: Number of Complaints, Public CFPB Database



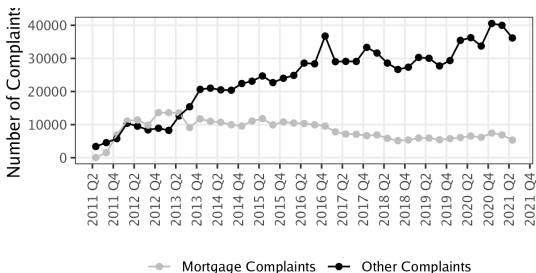
# Number of Complaints, Full CFPB Database

Figure: Number of Complaints, Full CFPB Database



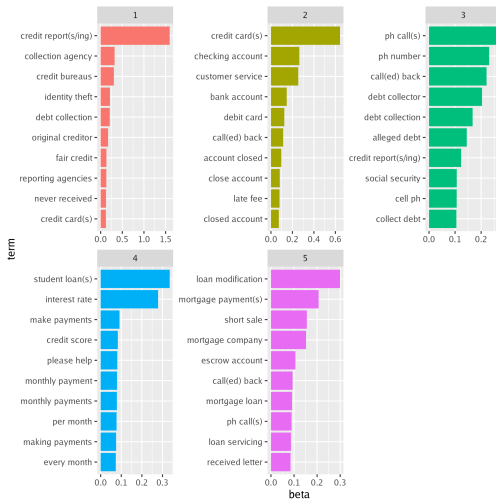
# Stylized Fact 2, Full CFPB Database

Figure: Mortgage Complaints vs Other Complaints



# Additional Analyses

Figure: Topic Results from LDA using full CFPB Data





# LDA Analysis Using The Full Database

- 1) Credit Reporting
- 2) Bank services/Credit cards
- 3) Customer service
- 4) Student loans
- 5) Loan modification

## Next Steps

- Utilize differences in disclosure timing
  - Complaints narratives is disclosed starting in 2015
  - Using a DID framework, identify the impact of disclosure of complaints vs. disclosure of the narrative
  - Consider using fuzzy RDD
- Use the intensity of content disclosure
- Additional complaints classifications (e.g., AI-based classification of content)

# Conclusion

- Disclosure of consumer complaints is **material**
  - Some evidence of increased uncertainty in the equity market
  - Some evidence of depositors' response
  - Some evidence of loss of market share in the mortgage market
- Banks with more complaints try to attract longer-term deposits
- Textual analysis
  - BERT analysis: disappointment associated with declining deposits
  - LDA analysis: credit scores and credit card-related complaints result in a decrease in deposits, while customer service and mortgages result in an increase in deposits relative to banks that have no complaints
  - Emotions inferred from the text of complaints do not empirically show a differential reaction from depositors
  - Most complaints represent a negative sentiment
- **Potential policy implications:** disclosure of consumer complaints provides additional market discipline

# Appendix

## Summary Statistics - Non-CFPB vs. CFPB

Table: Sample summary statistics (Non-CFPB vs. CFPB)

| Variable            | Non-CFPB Supervised | CFPB Supervised |
|---------------------|---------------------|-----------------|
| Number of Banks     | 1,646               | 144             |
| Total Complaints    | 2,096               | 19,462          |
| Avg. Complaints     | 1.3                 | 135.1           |
| Assets              | 3,754.8             | 17,365.6        |
| Cash (% of assets)  | 0.09                | 0.06            |
| Loans (% of assets) | 0.60                | 0.64            |
| Net income          | 8.6                 | 52.1            |
| Number of employees | 559                 | 2,981           |

## Summary Statistics - Full Sample

Table: Sample summary statistics (full sample)

| Variable            | Banks without complaints | Banks with complaints |
|---------------------|--------------------------|-----------------------|
| Complaints          | 0                        | 225                   |
| Assets              | 6,412.4                  | 10,217.6***           |
| Cash (% of assets)  | 0.07                     | 0.05***               |
| Loans (% of assets) | 0.65                     | 0.66                  |
| Net income          | 18.6                     | 25.9***               |
| Number of employees | 883                      | 1,733***              |
| Bank <i>N</i>       | 46                       | 88                    |
| Mortgage <i>N</i>   | 20,769                   | 65,727                |

## Summary Statistics - Balanced Sample

Table: Sample summary statistics

| Variable            | Banks without complaints | Banks with complaints |
|---------------------|--------------------------|-----------------------|
| Complaints          | 0                        | 147                   |
| Assets              | 6,399.8                  | 8,727.4***            |
| Cash (% of assets)  | 0.06                     | 0.05***               |
| Loans (% of assets) | 0.78                     | 0.67***               |
| Net income          | 16.1                     | 21.5***               |
| Number of employees | 1,680                    | 1,644                 |
| Bank $N$            | 4                        | 35                    |
| Mortgage $N$        | 1,921                    | 23,426                |

## Full Sample Baseline Tests

|                                    | log(Deposits)      |                     |                    |                     |                     |
|------------------------------------|--------------------|---------------------|--------------------|---------------------|---------------------|
|                                    | (1)                | (2)                 | (3)                | (4)                 | (5)                 |
| CFPB Oversight                     | 2.91***<br>(0.329) | 3.05***<br>(0.220)  | 2.43***<br>(0.231) | 0.522***<br>(0.067) | 0.457***<br>(0.065) |
| Public Disclosure                  | 3.35***<br>(0.406) | 3.09***<br>(0.304)  | 2.37***<br>(0.383) | 0.308*<br>(0.150)   | 0.271<br>(0.158)    |
| CFPB Oversight x Public Disclosure | -0.827<br>(0.508)  | -1.77***<br>(0.343) | -1.14**<br>(0.440) | -0.226<br>(0.166)   | -0.170<br>(0.170)   |
| Bank and County Controls           | No                 | Yes                 | Yes                | Yes                 | Yes                 |
| Year FE                            | No                 | No                  | Yes                | Yes                 | Yes                 |
| Bank FE                            | No                 | No                  | No                 | Yes                 | Yes                 |
| County FE                          | No                 | No                  | Yes                | No                  | Yes                 |
| Observations                       | 68,926             | 67,769              | 67,769             | 67,769              | 67,769              |
| Adjusted R <sup>2</sup>            | 0.176              | 0.329               | 0.591              | 0.971               | 0.973               |

- Results qualitatively similar to the baseline analysis with restricted sample banks.



## Full Sample Baseline Tests

|                                  | log(Deposits)      |                     |                    |                     |                     |
|----------------------------------|--------------------|---------------------|--------------------|---------------------|---------------------|
|                                  | (1)                | (2)                 | (3)                | (4)                 | (5)                 |
| CFPB Oversight                   | 2.93***<br>(0.328) | 3.07***<br>(0.221)  | 2.44***<br>(0.231) | 0.521***<br>(0.067) | 0.457***<br>(0.065) |
| High Complaints                  | 3.33***<br>(0.491) | 3.17***<br>(0.415)  | 2.42***<br>(0.466) | 0.404**<br>(0.160)  | 0.371*<br>(0.170)   |
| CFPB Oversight x High Complaints | -0.815<br>(0.571)  | -1.88***<br>(0.430) | -1.19**<br>(0.499) | -0.319<br>(0.177)   | -0.266<br>(0.183)   |
| Bank and County Controls         | No                 | Yes                 | Yes                | Yes                 | Yes                 |
| Year FE                          | No                 | No                  | Yes                | Yes                 | Yes                 |
| Bank FE                          | No                 | No                  | No                 | Yes                 | Yes                 |
| County FE                        | No                 | No                  | Yes                | No                  | Yes                 |
| Observations                     | 68,926             | 67,769              | 67,769             | 67,769              | 67,769              |
| Adjusted R <sup>2</sup>          | 0.175              | 0.328               | 0.591              | 0.971               | 0.973               |

- Results qualitatively similar to the baseline analysis with restricted sample banks.