

Disciplining Banks through Disclosure: Evidence from CFPB Consumer Complaints

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Motivation

- Disclosure provides a potential disciplinary mechanism
- Disclosure increases monitoring by funding providers and improves bank operations (Diamond and Dybvig, 1983; Chen et al., 2022; Granja and Leuz, 2024; Kleymenova and Tomy, 2022)
 - These studies focus on regulator or firm-initiated disclosures
 - We study a different source: *consumer-submitted complaints*
- Does disclosure of information provided by consumers have any impact on banks' depositors?
- Can AI tools extract features that allow for depositors to impose market discipline?

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
- AI tools can potentially help classify and evaluate complaints
- If depositors impose market discipline using consumer complaints, what do they react to?

Research Questions

- 1) What is the impact of public disclosure of consumer complaints?
 - How do depositors respond?
- 2) Does the content of disclosure matter?
 - Do depositors react to complaints' content?
- 3) Do banks respond?
 - Does the intensity and content of complaints matter to banks?

Why Use LLMs?

- CFPB complaint narratives are heterogeneous, often informal, and vary in clarity and tone
- Traditional text analysis relies on specific keywords or patterns – may miss nuance, or context
- LLMs provide a context-aware, flexible way to extract meaning from unstructured text
- We use LLMs to construct structured variables from narrative complaints

Related Literature

- Disclosure as a disciplining mechanism
 - Depositors discipline banks (Anbil 2018; Chen et al. 2022; Chen et al. 2025; 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)
- Using AI tools to enhance analysis and classification of unstructured data
 - Summarize complex corporate disclosures or uncover new information (Bybee 2023; Kim et al. 2023; Kim et al. 2024)

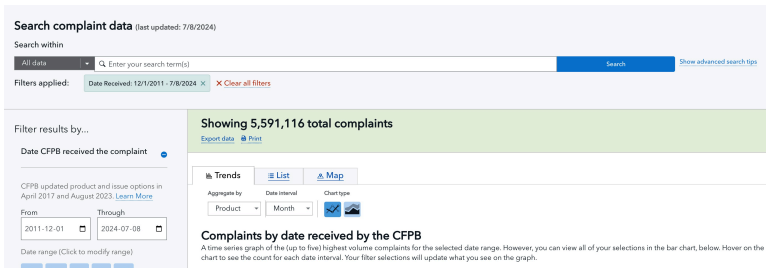
Institutional Setting: Creation of CFPB

- 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



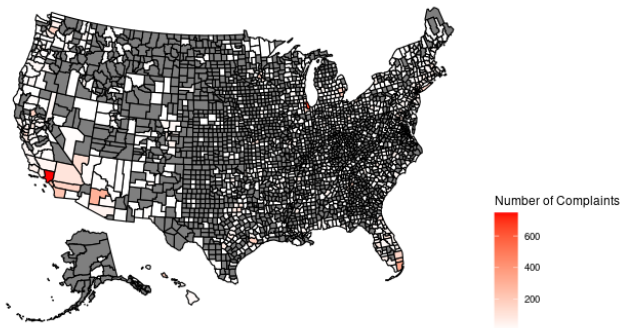
CFPB Complaints Narrative: Example 1

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 reponsability 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

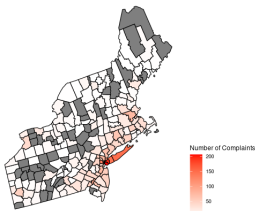
To Whom It May Concern, I am writing to formally lodge a complaint against Bank of America concerning an incident that I believe constitutes a violation of the Expedited Funds Availability Act (EFAA) and Regulation CC. On XX/XX/2023, I deposited a cashier's check into my account at Bank of America. Despite 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

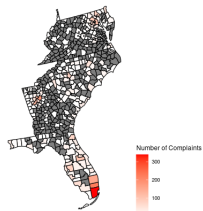


Geographical Distribution of Complaints by Region

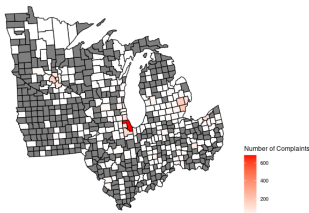
(a) Northeast



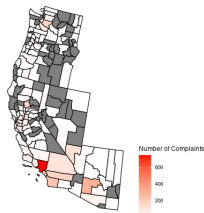
(b) Southeast



(c) Midwest

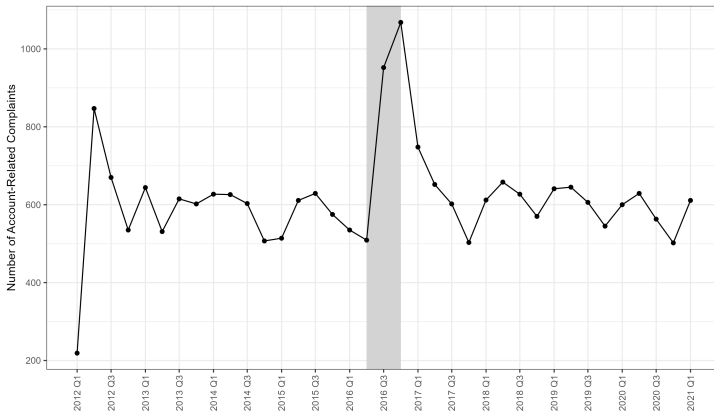


(d) West



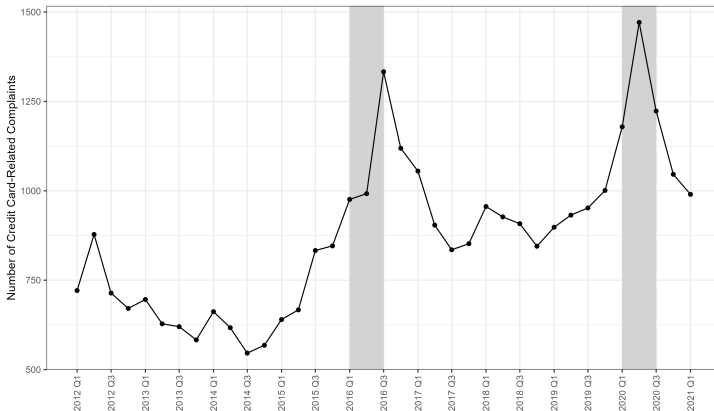
Stylized Fact 1

Figure: Wells Fargo 2016 Scandal



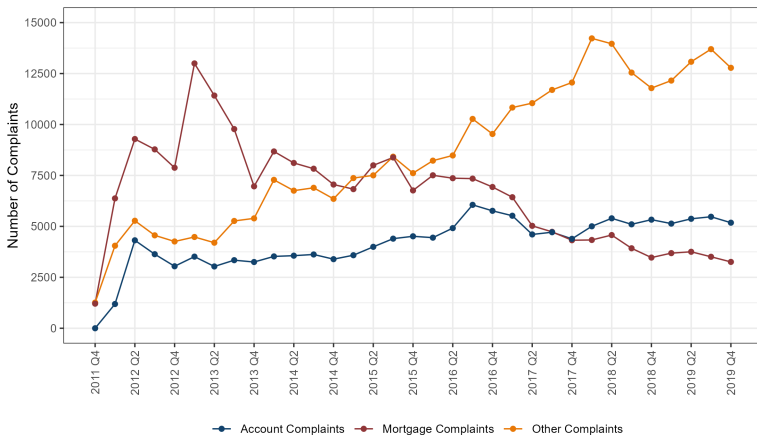
Stylized Fact 2

Figure: Citibank AA Rewards Cards



Stylized Fact 3

Figure: Complaints Trends by Product

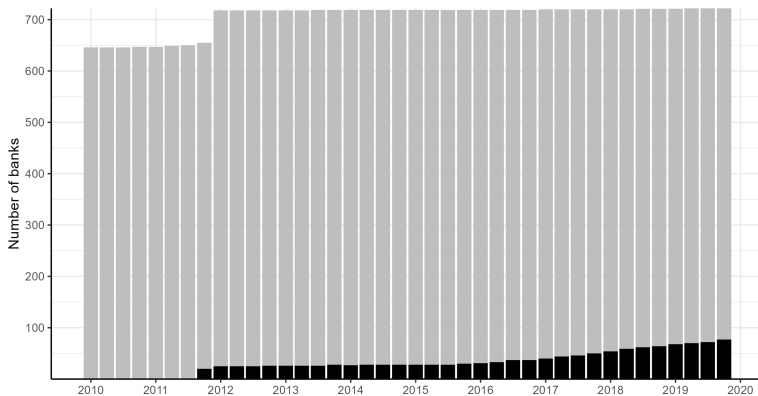


Data Sources

- 1) CFPB Complaints Database (public and confidential)
- 2) Call Reports
- 3) RateWatch
- 4) U.S. Census Bureau

Sample Construction

- Focus on a subset of firms subject to CFPB oversight
- Banks with assets between \$1 and \$25 billion
- 79 unique banks were under CFPB supervision for at least one quarter in our sample



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 (as of 2019 Q4)

	\$1B-\$5B	\$5B-\$10B	\$10B-\$15B	\$15B-\$20B	\$20B-\$25B	\$25B+	Total
Complaints	116	22	2,530	2,432	4,952	516,685	526,737

Sample Construction Methodology

- 1) Identify banks with \$1–\$25B in assets between 2010:Q1 and 2019:Q4
- 2) 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

Do Consumers React to Complaints?

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

$$Y_{b,t} = \alpha + \beta_1 \text{Complaints}_{b,t} + \gamma X_{b,t-1} + \theta_t + \epsilon_{b,t},$$

where:

- b, t correspond to *bank* and *year-quarter*
- $Y_{b,t}$ = deposits (in log levels)
- $\text{Complaints}_{b,t}$ = total number of complaints received by bank b at time t
- Bank controls (*size, liquidity, asset quality, profitability, and capital ratio*)

Depositor Reaction

Do depositors react to complaints?

	Total Deposits (1)	Insured Deposits (2)	Uninsured Deposits (3)
Total complaints	-0.001 (0.001)	0.001 (0.001)	-0.002* (0.001)
Bank Controls	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes
Observations	28,136	28,136	28,136
Adjusted R ²	0.964	0.911	0.946

- Some evidence of declining deposits
- Declines come from uninsured depositors

Depositor Reaction

Does the type of complaint matter?

	Total Deposits (1)	Insured Deposits (2)	Uninsured Deposits (3)
Account complaints	-0.042** (0.018)	-0.011 (0.024)	-0.066** (0.032)
Bank Controls	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes
Observations	28,136	28,136	28,136
Adjusted R ²	0.964	0.911	0.946

- Some evidence of declining deposits
- Declines come from uninsured depositors
- Some evidence that poor performance is associated with a higher likelihood of withdrawals

Bank Performance

Complaint Narratives

Do complaints with narratives elicit a different reaction?

	Total Deposits (1)	Insured Deposits (2)	Uninsured Deposits (3)	Total Deposits (4)	Insured Deposits (5)	Uninsured Deposits (6)
Complaint narratives	-0.074*** (0.024)	-0.025 (0.037)	-0.088* (0.046)	-0.067*** (0.024)	-0.040 (0.036)	-0.075* (0.044)
Total complaints				-0.001 (0.001)	0.002 (0.001)	-0.001* (0.001)
Bank Controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	28,136	28,136	28,136	28,136	28,136	28,136
Adjusted R ²	0.964	0.911	0.946	0.964	0.911	0.946

- *Complaint narratives* is the proportion of complaints relative to total complaints received by bank b at time t
- Results are similar for banks with more account-related narratives

Using AI to Classify Unstructured Text

- Goal: Derive insights on how the content of complaint narratives shapes depositor behaviors
- We used Large Language Models (LLMs) to generate measures from consumer complaint narratives
- We followed the following steps:
 - ➊ Initialization: feed CFPB public supervisory documents related to narratives
 - ➋ Collaborative process: explore the narrative, define key dimensions, impose structure, incorporate Term Frequency-Inverse Document Frequency (TF-IDF), iterate, and explain how to treat redaction
 - ➌ Dimensionality
 - ➍ Integration of NLP, TF-IDF, and LLM techniques
 - ➎ Validation and refinement

Tractability Classification

How tractable are consumer complaints?

- We used an LLM to analyze each complaint and measure the tractability of a consumer's problem.
- Classes:

{Fully Tractable, Partially Tractable, Untractable}

- For each complaint and class, we obtain a probability.
 - Confidence in LLM Output
 - Probability Calibration
- Given the complaint tractability, can we predict ...
 - Bank response time and resolution?
 - Narrative disclosure?

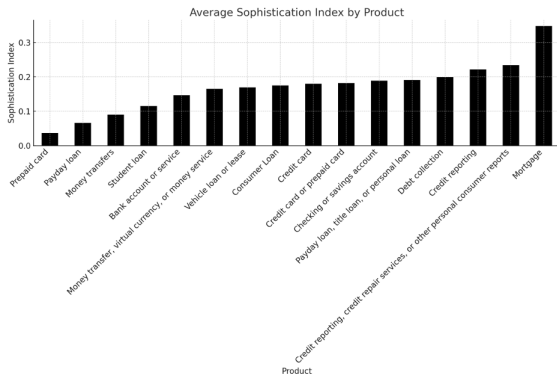
Descriptive Statistics of Measures Suggested by ChatGPT

- The sample includes 79 banks that the CFPB has ever supervised
- The sample period begins in 2015 Q1, the first quarter the CFPB started collecting complaint narratives, and ends in 2019 Q4, the end of our sample period.
- There are 2,669 complaints with narratives

Variable	Min.	p1	p25	Median	Mean	p75	p99	Max.	SD
Action Orientation	0.00	0.00	0.00	0.00	0.31	0.40	2.64	7.14	0.62
Escalation Tendency	0.00	0.00	0.00	0.00	0.03	0.00	0.68	4.00	0.18
Frustration Urgency	0.00	0.00	0.00	0.00	0.05	0.00	0.90	4.76	0.25
Resolution Expectation	0.00	0.00	0.00	0.00	0.32	0.43	2.91	7.14	0.65
Sophistication Index	0.00	0.02	0.10	0.14	0.24	0.36	0.81	0.90	0.18

Complaint Sophistication

Example of scores generated by ChatGPT as complaint sophistication (score of 0-1)



- *Sophistication score* is the average sophistication score of complaint narratives for bank b in quarter t .

Complaint Sophistication

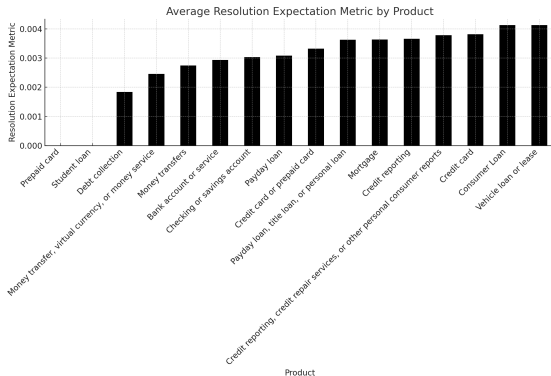
Using one of the scores generated by ChatGPT as complaint sophistication (score of 0-1), repeat previous analyses with deposits

	Total Deposits (1)	Insured Deposits (2)	Uninsured Deposits (3)
Sophistication score	0.017 (0.130)	0.139 (0.144)	0.090 (0.192)
Bank Controls	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes
Observations	1,547	1,547	1,547
Adjusted R ²	0.909	0.880	0.907

- *Sophistication score* is the average sophistication score of complaint narratives for bank b in quarter t .

Complaint Resolution

Using one of the scores generated by ChatGPT as a complaint resolution expectation (score from 1-10), repeat previous analyses with deposits



- *Resolution expectation* is the average resolution expectation of complaint narrative for bank b in quarter t .

Complaint Resolution

Using one of the scores generated by ChatGPT as a complaint resolution expectation (score from 1-10), repeat previous analyses with deposits

	Total Deposits (1)	Insured Deposits (2)	Uninsured Deposits (3)
Resolution expectation	0.018 (0.013)	0.014 (0.020)	0.025* (0.014)
Bank Controls	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes
Observations	1,547	1,547	1,547
Adjusted R ²	0.909	0.880	0.907

- *Resolution expectation* is the average resolution expectation of complaint narrative for bank b in quarter t .

Complaint Controllability

Using LLM-generated textual analysis of confidential consumer complaint narratives, repeat previous analyses with deposits

	Total Deposits (1)	Insured Deposits (2)	Uninsured Deposits (3)
Controllability	-0.044*** (0.016)	-0.014 (0.021)	-0.040 (0.033)
Bank Controls	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes
Observations	28,136	28,136	28,136
Adjusted R ²	0.964	0.911	0.946

- *Controllability* is the mean proportion of “Partially Controllable” and “Fully Controllable” complaints relative to total complaints for bank b in quarter t . The measure is classified as both publicly available and confidential complaints

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) _{CD}		
	(1)	(2)	(3)
Public Disclosure	0.007*** (0.003)		
High Complaint		0.007*** (0.003)	
Total Complaints			0.003*** (0.001)
Bank and County Controls	Yes	Yes	Yes
Quarter, County, Bank FE	Yes	Yes	Yes
Observations	153,886	153,886	153,886
Adjusted R ²	0.801	0.801	0.801

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

Does Controllability Correlate with Response Time?

Using confidential complaints, we evaluate banks' response times (measured in days)

	Bank Response Time		
	(1)	(2)	(3)
Fully Controllable	-0.447 (0.523)	-0.492 (0.495)	-0.579 (0.437)
Uncontrollable	-0.910** (0.297)	-0.923** (0.303)	-0.915** (0.282)
Narrative disclosed		1.949* (1.034)	1.630** (0.643)
Bank Controls	No	No	Yes
Observations	12,127	12,125	12,032
Adjusted R ²	0.002	0.011	0.033

- Banks with a higher share of complaints relating to events outside of their control appear to resolve complaints faster

Next Steps

- Using LLM classifications of the confidential version of the Complaints Database:
 - Identify the likelihood of a complaint narrative being disclosed
 - Using a DID framework, identify the impact of disclosure of complaints vs. disclosure of the narrative
- Use the intensity of content disclosure
- Additional complaints classifications (e.g., AI-based classification of content using LLM)
 - Test the robustness of probability estimators by LLM
 - Test the robustness of LLM classifications

Conclusion

- Disclosure of consumer complaints is associated with declines in **uninsured** deposits
 - Stronger association for complaints relating to customer accounts
 - Complaint intensity and narrative, rather than an instance of complaint, seem to matter more
- Utilizing AI tools to classify complaints provides new insights
 - New classification based on regulatory intent
 - Some classifications have better explanatory power than others
- Banks with more complaints try to attract longer-term deposits
- **Potential policy implications:** disclosure of consumer complaints provides additional market discipline
 - AI could provide powerful tools to classify unstructured information that could be used for regulatory oversight

Appendix

Summary Statistics

Variable	Min.	p1	p25	Median	Mean	p75	p99	Max.	SD
<i>CFPB supervised banks:</i>									
Bank size (\$m)	71.26	840.75	9,003.64	12,559.98	11,118.80	15,201.64	15,308.52	15,308.52	4,489.57
Deposits (\$m)	17.62	17.62	6,125.46	9,645.42	8,311.34	11,638.84	11,638.84	11,638.84	3,720.80
Insured deposits (\$m)	4.13	4.13	4,078.83	5,544.56	4,988.04	7,344.66	7,344.66	7,344.66	2,412.66
Liquidity ratio	0.00	0.00	0.02	0.04	0.07	0.08	0.35	0.35	0.09
NPL ratio	0.00	0.00	0.00	0.01	0.01	0.01	0.06	0.06	0.02
ROA	-0.009	-0.003	0.002	0.003	0.004	0.004	0.015	0.015	0.003
T1 capital ratio	0.06	0.06	0.09	0.10	0.12	0.13	0.32	0.32	0.05
Uninsured deposits (\$m)	0.50	0.50	985.99	3,726.67	3,177.85	5,398.57	5,398.57	5,398.57	2,002.24
<i>Non-CFPB supervised banks:</i>									
Bank size (\$m)	71.26	202.03	868.85	1,260.23	2,029.45	2,311.05	9,654.61	15,308.52	2,021.91
Deposits (\$m)	17.62	126.02	718.60	1,040.19	1,628.17	1,879.29	7,339.04	11,638.84	1,555.04
Insured deposits (\$m)	4.13	24.55	432.84	649.05	977.47	1,136.08	4,589.92	7,344.66	950.92
Liquidity ratio	0.00	0.01	0.02	0.04	0.06	0.08	0.35	0.35	0.06
NPL ratio	0.00	0.00	0.00	0.01	0.01	0.01	0.06	0.06	0.01
ROA	-0.009	-0.004	0.002	0.002	0.003	0.003	0.014	0.015	0.002
T1 capital ratio	0.06	0.06	0.09	0.10	0.10	0.11	0.23	0.32	0.03
Uninsured deposits (\$m)	0.50	1.16	206.75	374.81	647.05	760.04	3,821.92	5,398.57	757.00

Impact of Total Complaints on Bank Deposits by Bank Profitability

	High ROA			Low ROA		
	Total Deposits	Insured Deposits	Uninsured Deposits	Total Deposits	Insured Deposits	Uninsured Deposits
	(1)	(2)	(3)	(4)	(5)	(6)
Total complaints	-0.002 (0.001)	0.000 (0.002)	-0.002 (0.001)	-0.001 (0.001)	0.002 (0.001)	-0.003* (0.001)
Bank size	0.879*** (0.044)	0.806*** (0.077)	0.921*** (0.054)	0.946*** (0.016)	0.867*** (0.045)	0.985*** (0.045)
Liquidity ratio	0.395 (0.357)	0.933 (1.065)	0.349 (0.397)	-0.136 (0.139)	-0.555* (0.323)	-0.174 (0.303)
NPL ratio	-1.181 (0.820)	-4.691 (4.982)	-3.574*** (1.196)	0.007 (0.373)	0.896 (0.728)	-2.597** (1.094)
ROA	-1.572 (8.079)	-6.275 (11.330)	3.205 (7.809)	-3.207 (3.284)	-8.469 (5.079)	3.289 (3.745)
T1 capital ratio	-2.104* (1.182)	-2.875* (1.481)	-1.167 (1.401)	-1.336*** (0.472)	-2.325 (1.557)	-0.529 (0.750)
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14,070	14,070	14,070	14,066	14,066	14,066
Adjusted R ²	0.958	0.897	0.948	0.979	0.941	0.951

Impact of Account-Related Complaints on Bank Deposits by Bank Profitability

	High ROA			Low ROA		
	Total Deposits	Insured Deposits	Uninsured Deposits	Total Deposits	Insured Deposits	Uninsured Deposits
	(1)	(2)	(3)	(4)	(5)	(6)
Account complaints	-0.036 (0.023)	-0.022 (0.034)	-0.048 (0.041)	-0.042** (0.019)	-0.025 (0.031)	-0.033 (0.036)
Bank size	0.879*** (0.044)	0.806*** (0.077)	0.922*** (0.055)	0.946*** (0.016)	0.867*** (0.045)	0.986*** (0.045)
Liquidity ratio	0.392 (0.357)	0.934 (1.064)	0.347 (0.396)	-0.138 (0.139)	-0.556* (0.323)	-0.175 (0.304)
NPL ratio	-1.203 (0.824)	-4.695 (4.990)	-3.598*** (1.198)	0.000 (0.375)	0.914 (0.725)	-2.624** (1.096)
ROA	-1.498 (8.062)	-6.284 (11.306)	3.271 (7.795)	-3.190 (3.286)	-8.463 (5.084)	3.307 (3.758)
T1 capital ratio	-2.107* (1.181)	-2.875* (1.480)	-1.169 (1.400)	-1.338*** (0.471)	-2.322 (1.557)	-0.534 (0.750)
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14,070	14,070	14,070	14,066	14,066	14,066
Adjusted R ²	0.958	0.897	0.948	0.979	0.941	0.951

Complaint Action

	Total Deposits (1)	Insured Deposits (2)	Uninsured Deposits (3)
Action score	0.015 (0.014)	0.008 (0.021)	0.023 (0.015)
Bank size	1.025*** (0.176)	1.156*** (0.188)	0.900*** (0.282)
Liquidity ratio	-1.962* (0.938)	-2.365** (1.094)	-2.571* (1.423)
NPL ratio	-1.879 (2.462)	-4.904 (3.085)	7.763 (5.316)
ROA	-23.260 (30.673)	-36.571 (41.049)	32.057 (34.546)
T1 capital ratio	-4.504 (2.607)	-5.382 (3.153)	-7.075* (3.997)
Bank FE	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes
Observations	1,547	1,547	1,547
Adjusted R ²	0.909	0.880	0.907

Complaint Escalation

	Total Deposits	Insured Deposits	Uninsured Deposits
	(1)	(2)	(3)
Escalation tendency	0.072 (0.089)	0.039 (0.151)	0.154 (0.107)
Bank size	1.026*** (0.176)	1.156*** (0.187)	0.900*** (0.282)
Liquidity ratio	-1.962* (0.938)	-2.364** (1.094)	-2.570* (1.424)
NPL ratio	-1.895 (2.472)	-4.913 (3.095)	7.736 (5.307)
ROA	-23.200 (30.634)	-36.537 (40.995)	32.154 (34.523)
T1 capital ratio	-4.504 (2.606)	-5.382 (3.152)	-7.073* (3.996)
Bank FE	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes
Observations	1,547	1,547	1,547
Adjusted R ²	0.909	0.880	0.907

Complaint Urgency

	Total Deposits	Insured Deposits	Uninsured Deposits
	(1)	(2)	(3)
Frustration urgency	0.029 (0.078)	0.251 (0.246)	0.020 (0.118)
Bank size	1.026*** (0.176)	1.156*** (0.187)	0.900*** (0.282)
Liquidity ratio	-1.962* (0.938)	-2.364** (1.095)	-2.570* (1.424)
NPL ratio	-1.892 (2.470)	-4.918 (3.088)	7.744 (5.310)
ROA	-23.222 (30.651)	-36.688 (41.036)	32.132 (34.530)
T1 capital ratio	-4.505 (2.607)	-5.385 (3.154)	-7.076* (3.997)
Bank FE	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes
Observations	1,547	1,547	1,547
Adjusted R ²	0.909	0.880	0.907