
Bank Branch Density and Bank Runs

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SVB Banking Panic 2023



3/10/2023



3/12/2023



5/1/2023

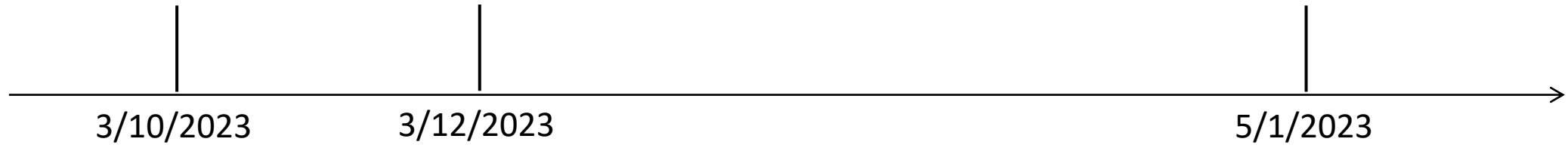
- Failed banks were exposed to various challenges and sources of risk on the assets side (interest rate risk, cryptocurrency, commercial real estate)
- But at the same time characteristics of their liabilities (deposits) contributed to the likelihood of the run

Branch Density

$$\text{Branch Density of Bank } i = \frac{\text{\# of branches of Bank } i}{\text{Value of Deposits in Bank } i \text{ [\$B]}}$$

N	Mean	Std	10%	25%	50%	75%
294	9.23	5.783	1.95	4.992	9.026	12.961

Branch Density and SVB Banking Panic



SVB

- 15th largest
- \$175B in deposits
- 17 branches

Branch Density (10th percentile = 1.95)

→ 0.1

Signature

- 32nd largest
- \$104B in deposits
- 38 branches

→ 0.36

First Republic

- 19th largest
- \$166B in deposits
- 87 branches

→ 0.53

Paper Overview



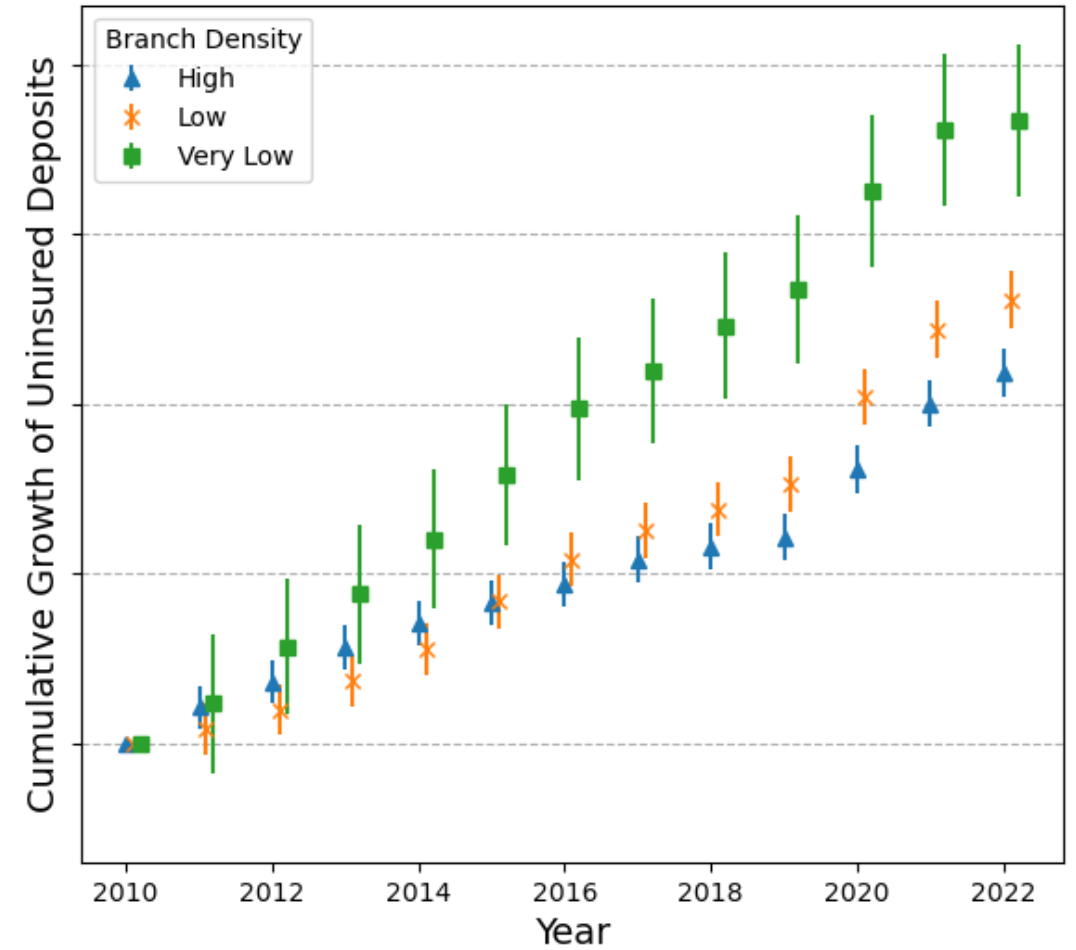
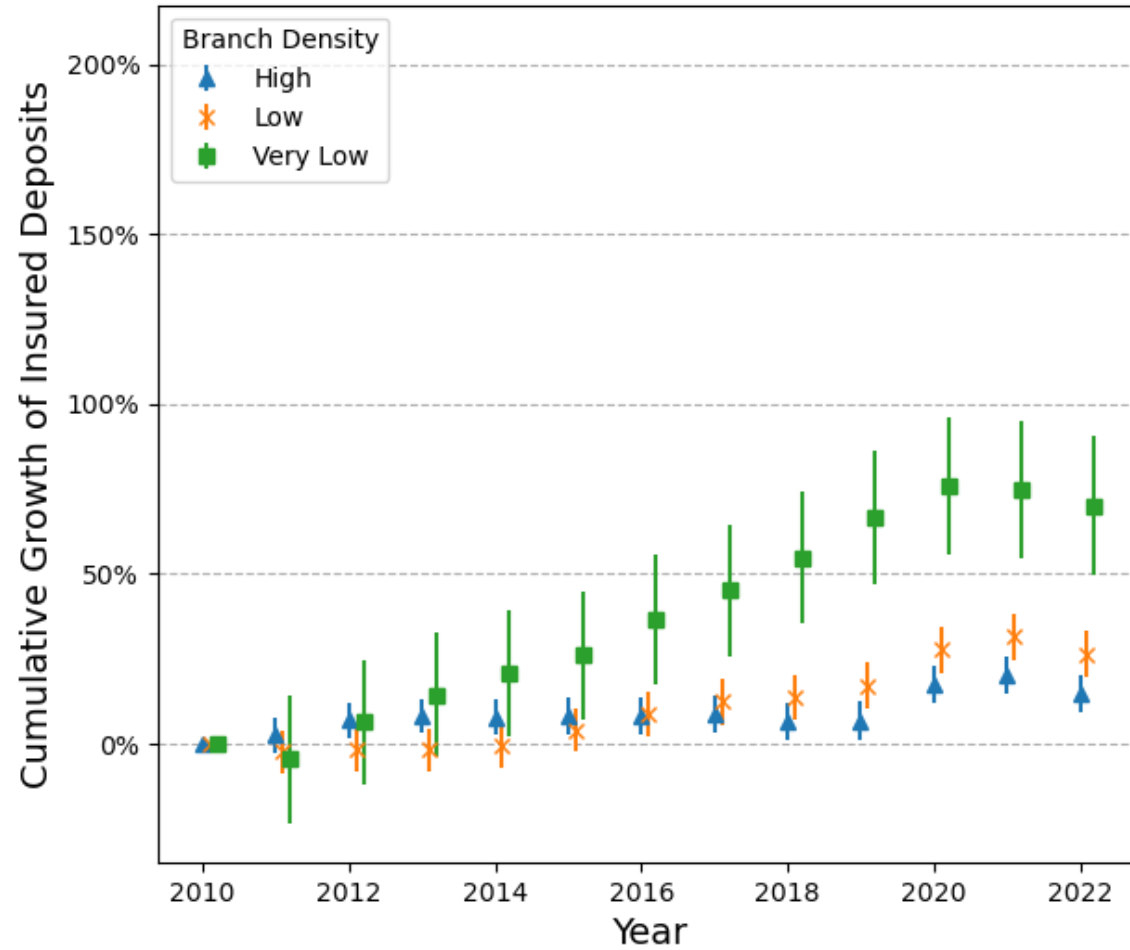
We study the role that branch density played in 2023 banking crisis

- Banks with lower branch density had lower stock returns and higher outflows of uninsured deposits

Banking with few branches was facilitated by digital technologies and attracted tech-savvy depositors who are highly mobile in times of panic

- Branch density correlated with banks' IT investment and abnormal online traffic to bank website during the panic
- Depositors of low-density banks more likely to be urban, young, highly educated, and high income

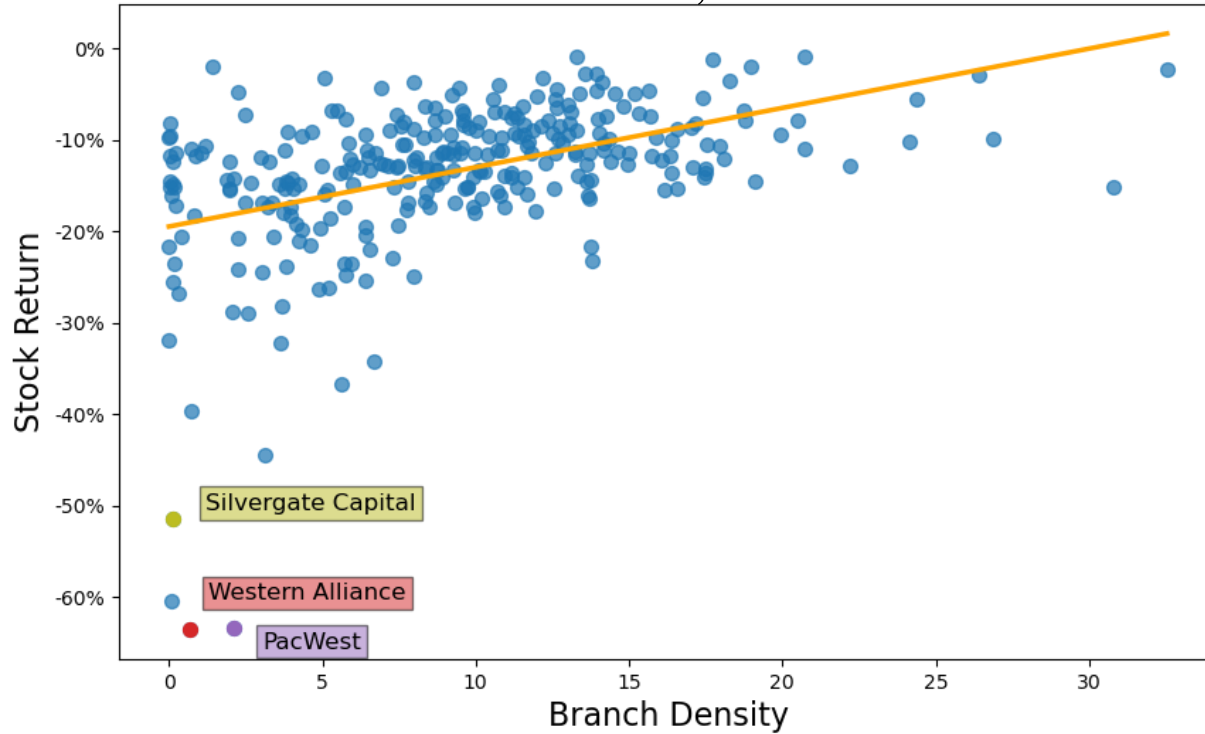
Deposit Growth 2010-22 by Branch Density



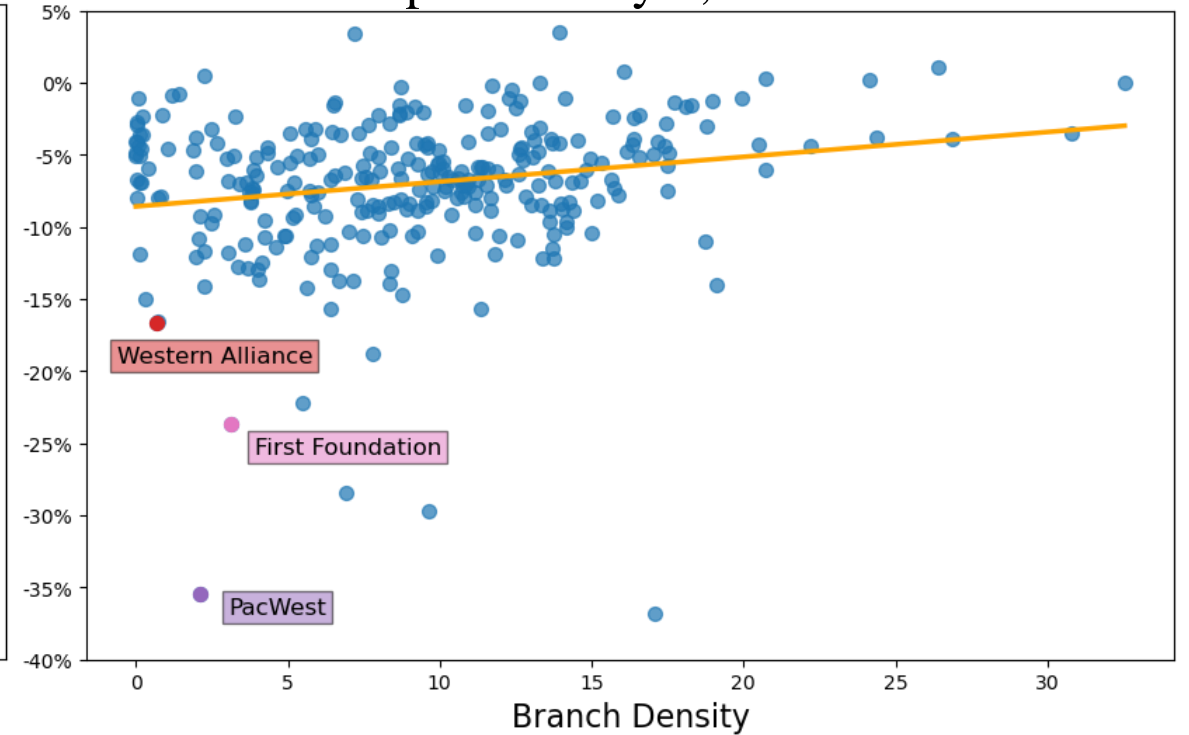
Branch Density and Stock Prices



SVB Collapse Mar 8 – 13, 2023



First Republic Collapse Apr 28 - May 2, 2023



Branch Density and Stock Prices



	Return (SVB Collapse)	Return (First Republic Collapse)
Branch Density	0.69*** (0.12)	0.24*** (0.06)
Dep/Assets	-0.26*** (0.06)	-0.08** (0.04)
Insured Dep/Total Dep	0.09** (0.04)	0.03 (0.02)
MTM Losses	-0.17 (0.15)	-0.29*** (0.09)
Dep Growth 2019-2022	-0.05*** (0.02)	-0.00 (0.01)
N	212	212
R2	0.331	0.169
Size FE and Linear Control	X	X

Branch Density and Deposit Flows



	% Change between Q4 2022 – Q1 2023			Total Dep (if outflow = 1)
	Uninsured Dep	Insured Dep	Total Dep	
Branch Density	0.75*** (0.23)	-1.24*** (0.38)	0.02 (0.12)	0.20** (0.10)
Insured Dep /Total Dep	0.09 (0.06)	0.07 (0.11)	0.10*** (0.03)	-0.02 (0.02)
Dep/Assets	-0.07 (0.11)	0.10 (0.11)	-0.04 (0.08)	0.01 (0.03)
MTM Losses	-0.26 (0.20)	0.07 (0.21)	-0.04 (0.12)	0.01 (0.06)
Dep Growth 2019-2022	0.01 (0.05)	0.05** (0.02)	0.03 (0.02)	0.01 (0.01)
N	209	209	209	105
R-sq	0.078	0.167	0.078	0.106
Size FE and Linear Term	X	X	X	X

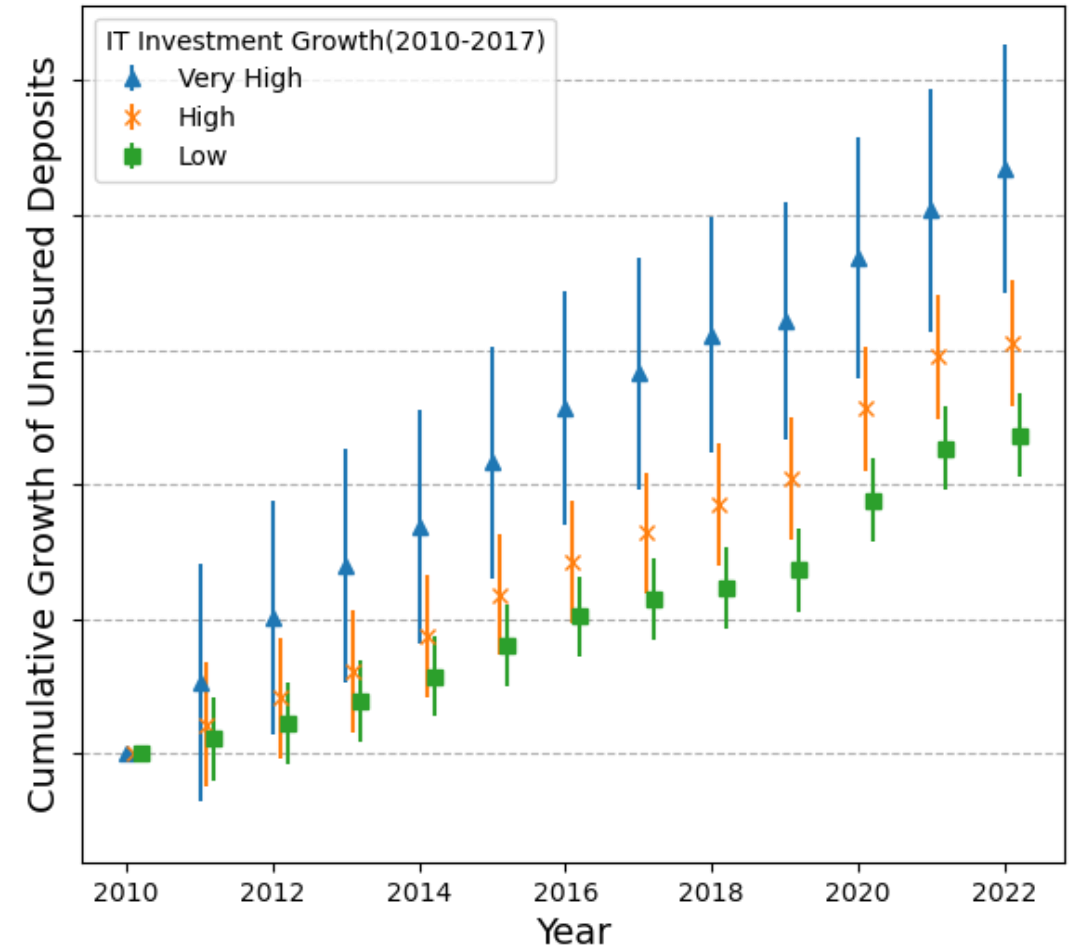
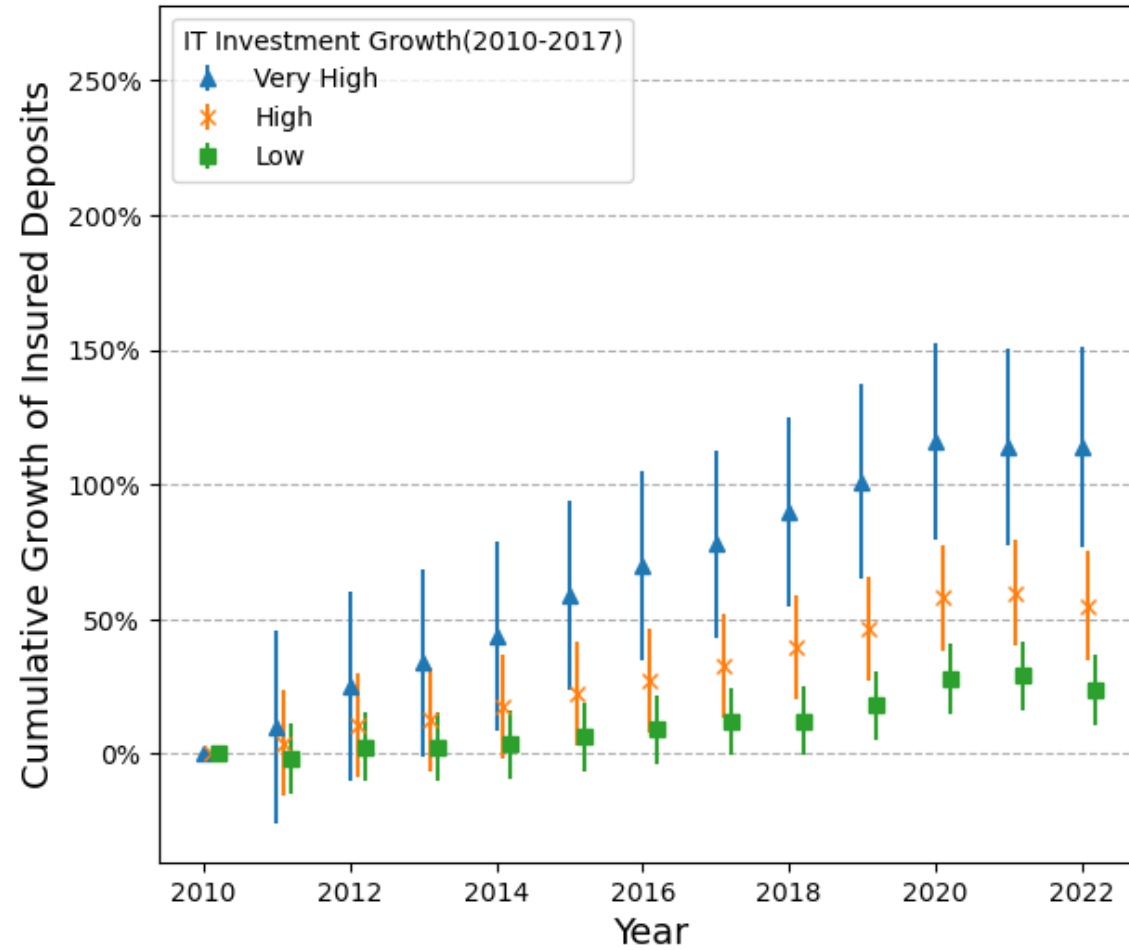
The Role of Digital Banking



	(1)
	Branch Density
% Δ IT Budget 2017-2010	-1.776*** (0.442)
Branch Density	
<i>N</i>	157
R ²	0.498
All Controls	Yes
F-Stat	
IV	

IT data from SWZD Aberdeen (spending on IT infrastructure at the bank branch level)

The Role of Digital Banking



The Role of Digital Banking



	(1)	(2)	(3)	(4)	(5)
	Branch Density	Stock Return around SVB Collapse		Stock Return around First Republic Collapse	
% ΔIT Budget 2017-2010	-1.776*** (0.442)	-0.0205*** (0.00670)		-0.00917*** (0.00298)	
Branch Density			1.157*** (0.409)		0.516** (0.202)
<i>N</i>	157	157	157	157	157
R2	0.498	0.406	0.259	0.204	0.112
All Controls	Yes	Yes	Yes	Yes	Yes
F-Stat			18.6		18.6
IV			IT Budget		IT Budget

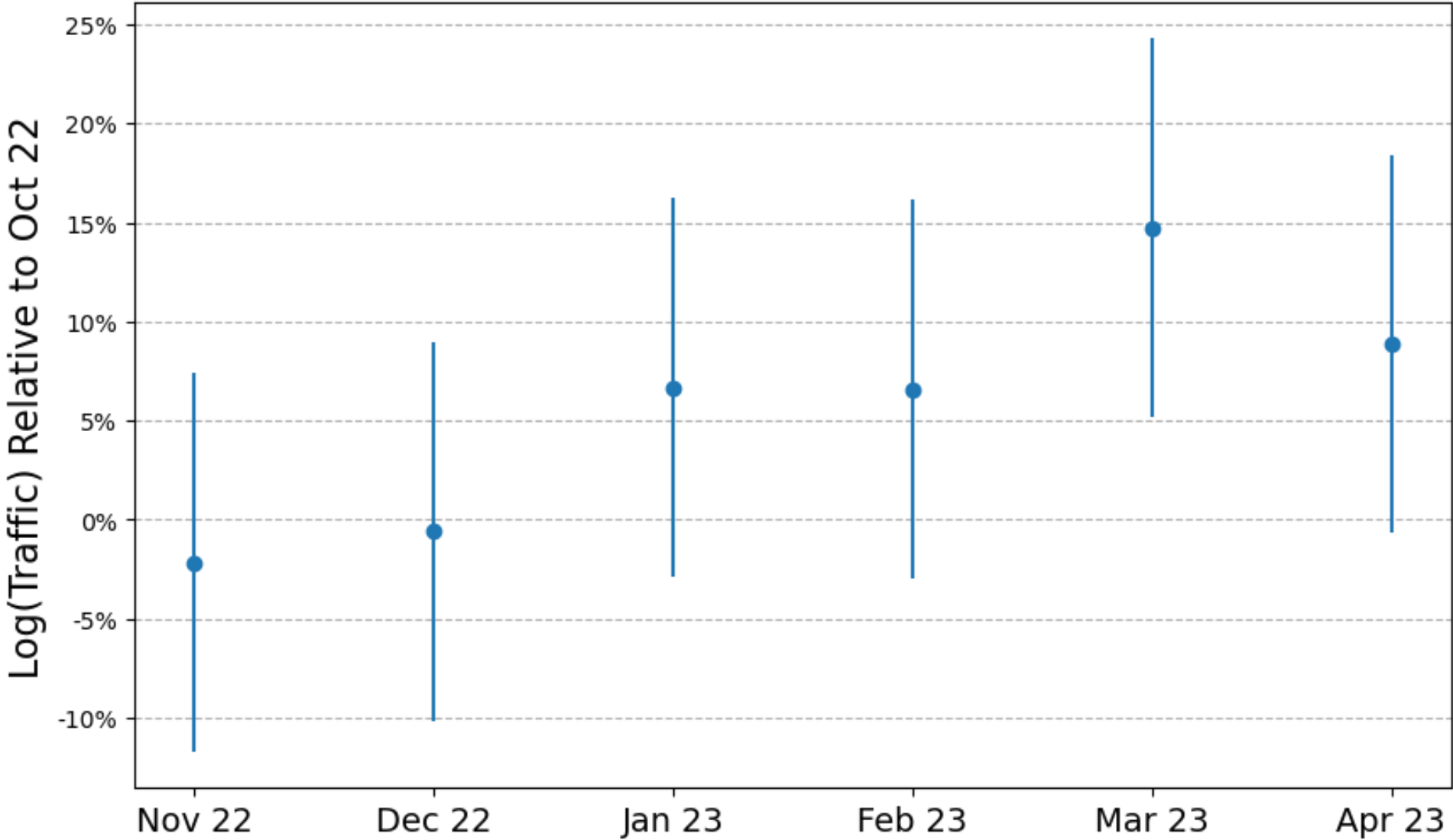
IT data from SWZD Aberdeen (spending on IT infrastructure at the bank branch level)

Branch Density and Clientele Characteristics



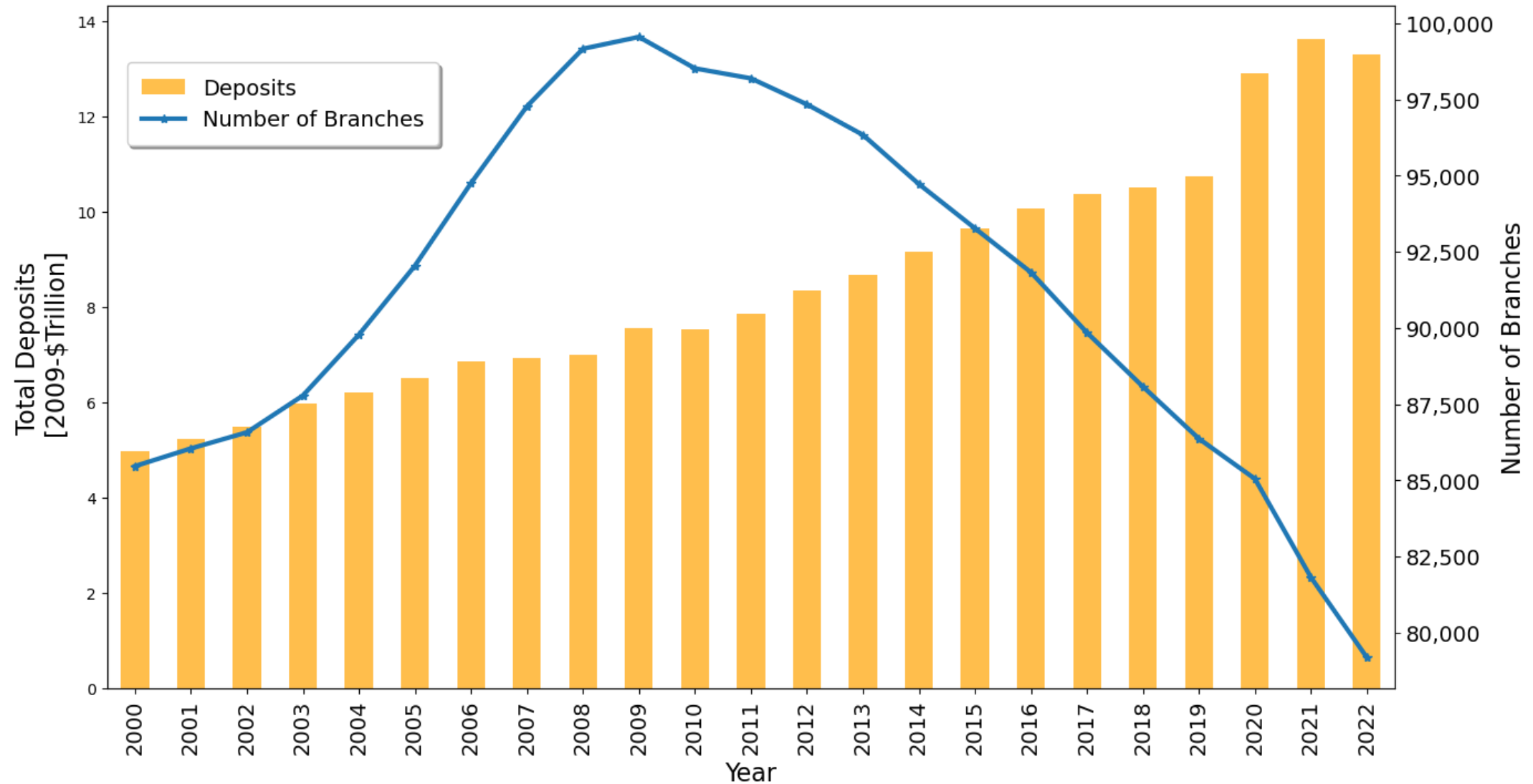
	Urban	Log(Income)	% 60+	% High Edu
Branch Density	-2.551*** (0.540)	-0.017*** (0.003)	0.164*** (0.048)	-0.785*** (0.122)
Insured Dep /Total Dep	-0.242** (0.120)	-0.001 (0.001)	0.009 (0.016)	-0.039 (0.028)
Dep/Asset	-0.094 (0.145)	-0.002* (0.001)	0.020 (0.015)	-0.119*** (0.044)
MTM Losses	0.344 (0.346)	0.007** (0.003)	0.057 (0.047)	0.183 (0.115)
Dep Growth 2019-2022	-0.048* (0.028)	-0.000 (0.000)	0.003 (0.004)	-0.008 (0.010)
Observations	212	212	212	212
R-squared	0.433	0.208	0.198	0.386

Online Traffic to All Banks' Websites



Data on website traffic to banks' webpages from Semrush.

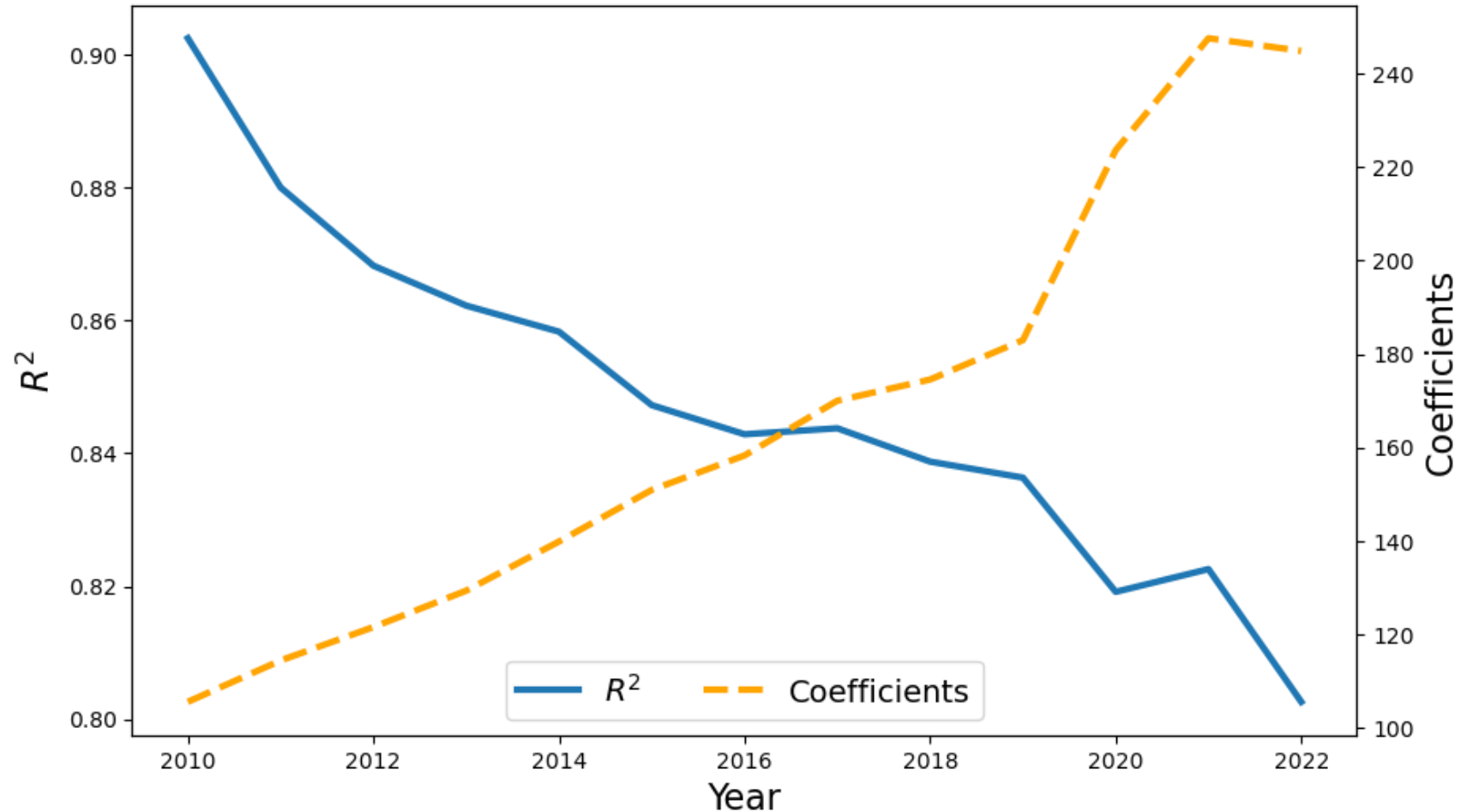
Deposits and Bank Branches over Time



Number of Branches Less Correlated with Deposits



$$\text{Deposits}_i = \alpha + \beta \times \text{Number of Branches}_i + \varepsilon_i$$



Conclusions

- Branch density significantly declined over the last decade. Banks that invested in digital banking significantly expanded and attracted tech-savvy customers
- During 2023 crisis banks with low density experienced significantly lower stock returns and larger outflows of uninsured deposits.
- Disconnecting banking from physical branches located near its customers contributes to banking system instability

Branch Density by Bank



	Bank Name	Total Assets(\$B)	Total Deposits(\$B)	# Branches	Branch/\$1B Dep
Very Low Density (Top 10 by the Number of Branches)					
1	First Republic Bank*	197.91	165.65	87	0.53
2	BNY Mellon Corporation	452.62	240.48	49	0.20
3	Signature Bank*	115.97	104.14	38	0.36
4	WesternAlliance Bancorp.	66.06	54.03	36	0.67
5	SVB Financial Group	214.40	174.96	17	0.10
Low Density (Top 10 by the Number of Branches)					
1	JPMorgan Chase & Co.	3841.31	2128.46	4819	2.26
2	Wells Fargo & Company	1881.14	1464.84	4768	3.25
3	Bank Of America Corporation	3111.61	1988.03	3906	1.96
4	PNC Financial	541.01	446.68	2615	5.85
5	U.S. Bancorp	591.38	455.31	2251	4.94
High Density (Top 10 by the Number of Branches)					
1	Regions Financial Corporation	160.95	139.56	1294	9.27
2	First Community Bancshares	3.94	3.52	345	97.98
3	F.N.B. Corporation	41.75	33.77	341	10.10
4	First Interstate Bancsystem	32.06	26.86	311	11.58
5	Prosperity Bancshares, Inc.	37.42	29.95	298	9.95