

# The Decline of Branch Banking

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# Research Question

- Which branches do banks choose to open/close?
  - Branches located where *deposit-rate sensitivity is high* (franchise value – DF - is low)
- Customer adoption of technology drives transition away from branches
  - Financially sophisticated people are more interest sensitive
  - Adopt new technology, which lowers value of branch proximity

# Empirical Approach & Closure Results

- Build branch-based measure of DF
- Explain openings/closings after shutting down supply side
- DF has large magnitude:
  - 1-sigma decrease in DF explains 1/4 of decline in branches during the pandemic
- Local Lending: weak effects

# Results on Openings

- Banks also open branches where DF is low...
- DF driven by price sensitivity (deposit  $\beta$ )
- Low- $\beta$  markets are (endogenously) hard to enter

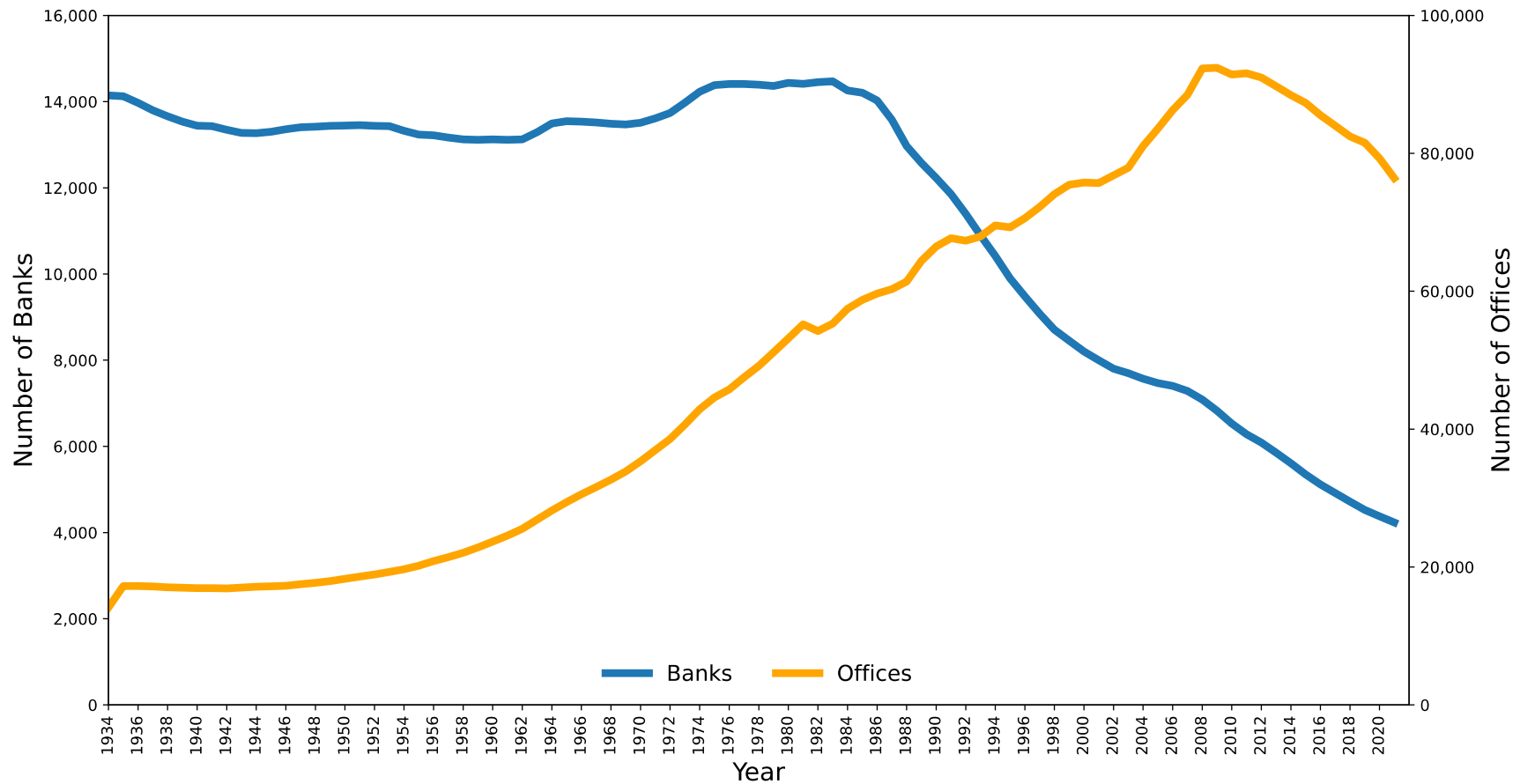
# Contribution

- Supply of technology reduces branches
  - Haendler (2024), Jiang (2023), Koont (2024)
- Low interest rates reduces DF and increases branches closures
  - Sarto and Wang (2024), James and Kumar (2025)
- Our focus: Customer demand side
- Only paper to look at **gross** closings and gross openings

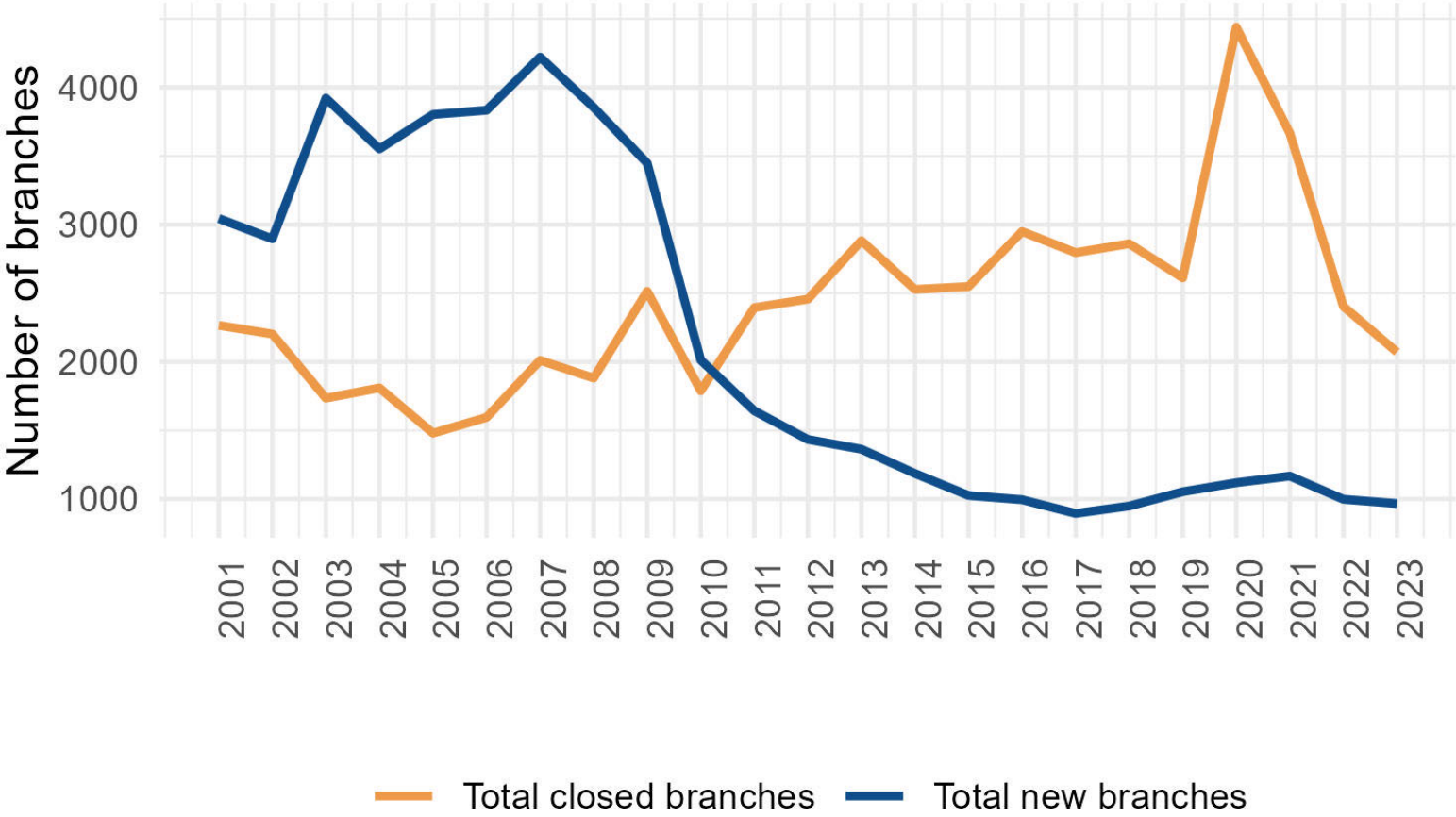
# Why is this topic so important?

- Massive and rapid de-branching
  - New phase in bank restructuring (Graph)
    - 1980-2008
    - Post GFC
  - Change accelerating, and (much) faster in EU than in the US
- Rapid increase in supply of fintech
  - But tech. adoption speed varies widely

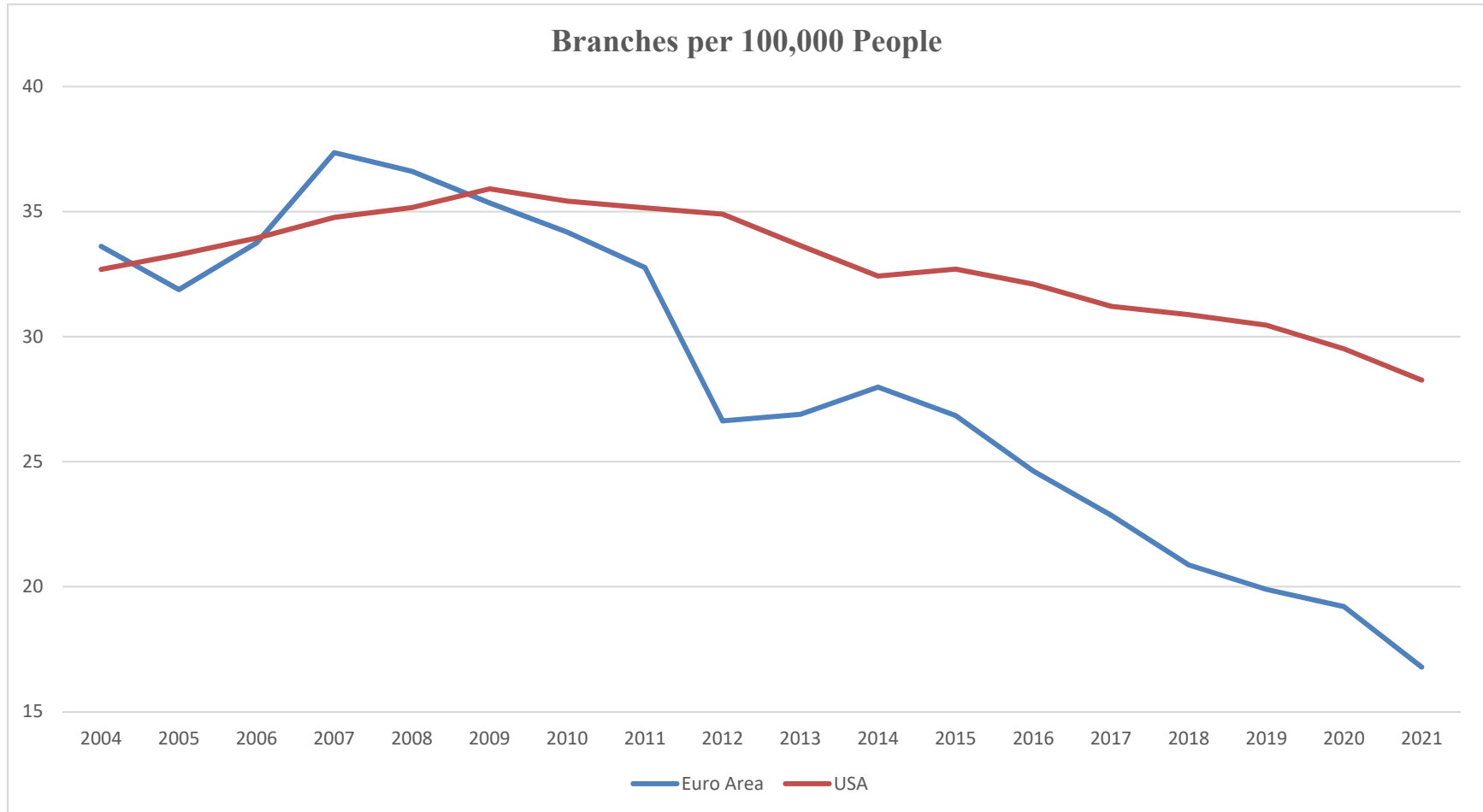
# Number of Banks and Branches



# Openings v. Closings



# Branch Density US v. Euro Area



# Why *were* branches so important?

- Branch location affected competition
- Branch presence affected cost of information collection
- Branch networks affected capital mobility
- Branch concentration affected monetary policy transmission

# Technology promises to reduce these frictions more (to zero?)

- Branchless Competition
  - More & Cheaper credit
  - Better terms for depositors
- Greater market contestability
- More capital mobility
- Change in information environment
  - Tech/data substitutes for Relationships?

# Empirical Strategy

- Step 1: Estimate drivers of bank-level DF
- Step 2: Impute branch-level DF, using coefficients in step 1
- Step 3: Estimate branch-closure & branch-opening models
  - Key drivers: DF and Local Lending
- Step 4: Add cell-phone usage metrics

# Step 1: Estimate Bank Deposit $\beta$

- Follow Drechsler et al. (2023):

$$DF_i = \left(1 - \beta_i - \frac{c_i}{r^p}\right) \times \left[1 - \frac{1}{(1 + r^p)^{10}}\right]$$

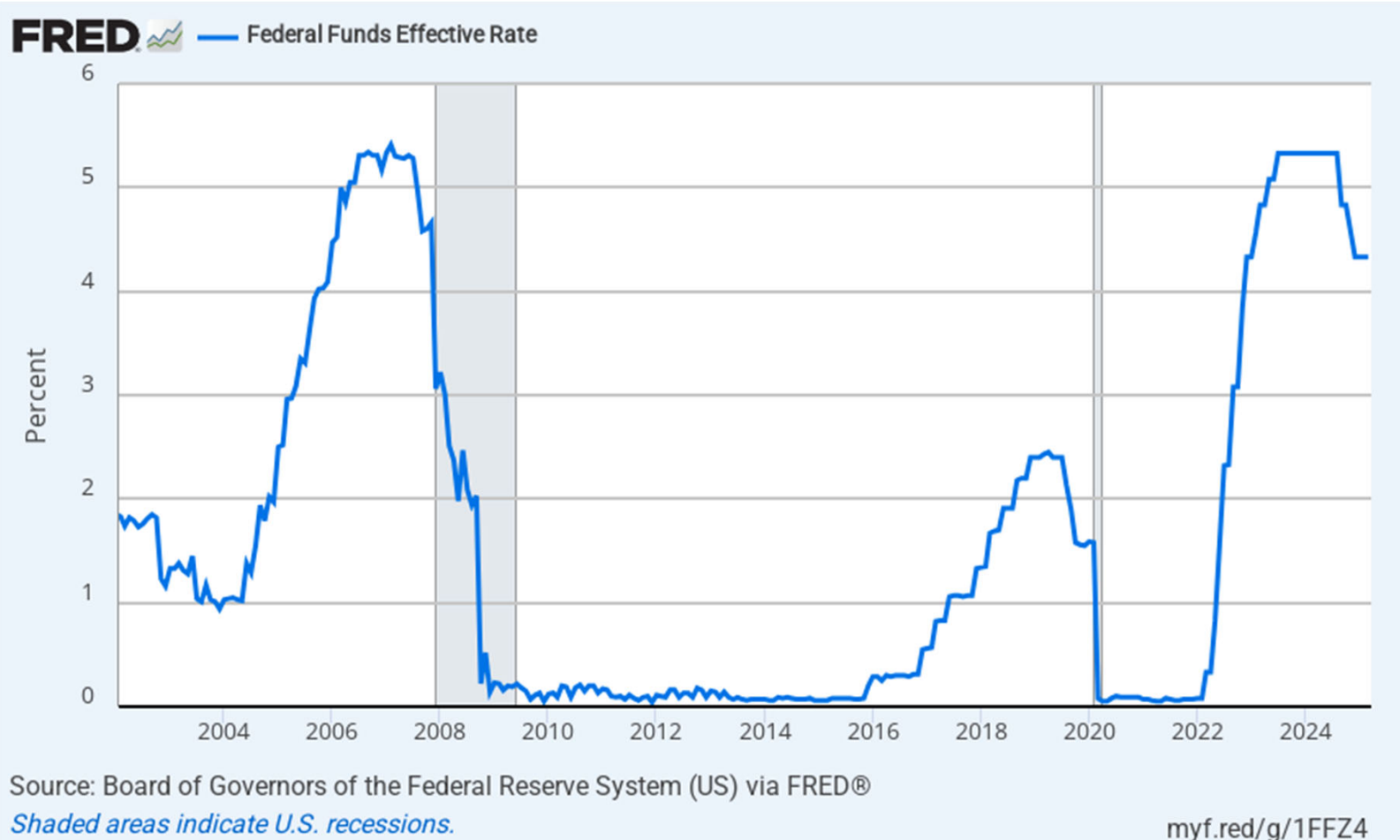
- where  $\beta_i = \Delta r_i^d / \Delta r^f$ ,  $r_d$  is the interest expense on deposits / deposits (*Call Report*)

# Step 1: Estimate Bank Deposit $\beta$ (Cont'd)

- Focus on three rate up-cycles (graph)
  - 2004-2006
  - 2016-2019
  - 2022-2024
- Estimate cross-bank regressions

$$\beta_{i,t} = \sum \gamma_t^k D_{i,t}^k + \eta_t HHI_{i,t} + \text{Other Controls} + \varepsilon_{i,t}$$

# Fed Funds Rate



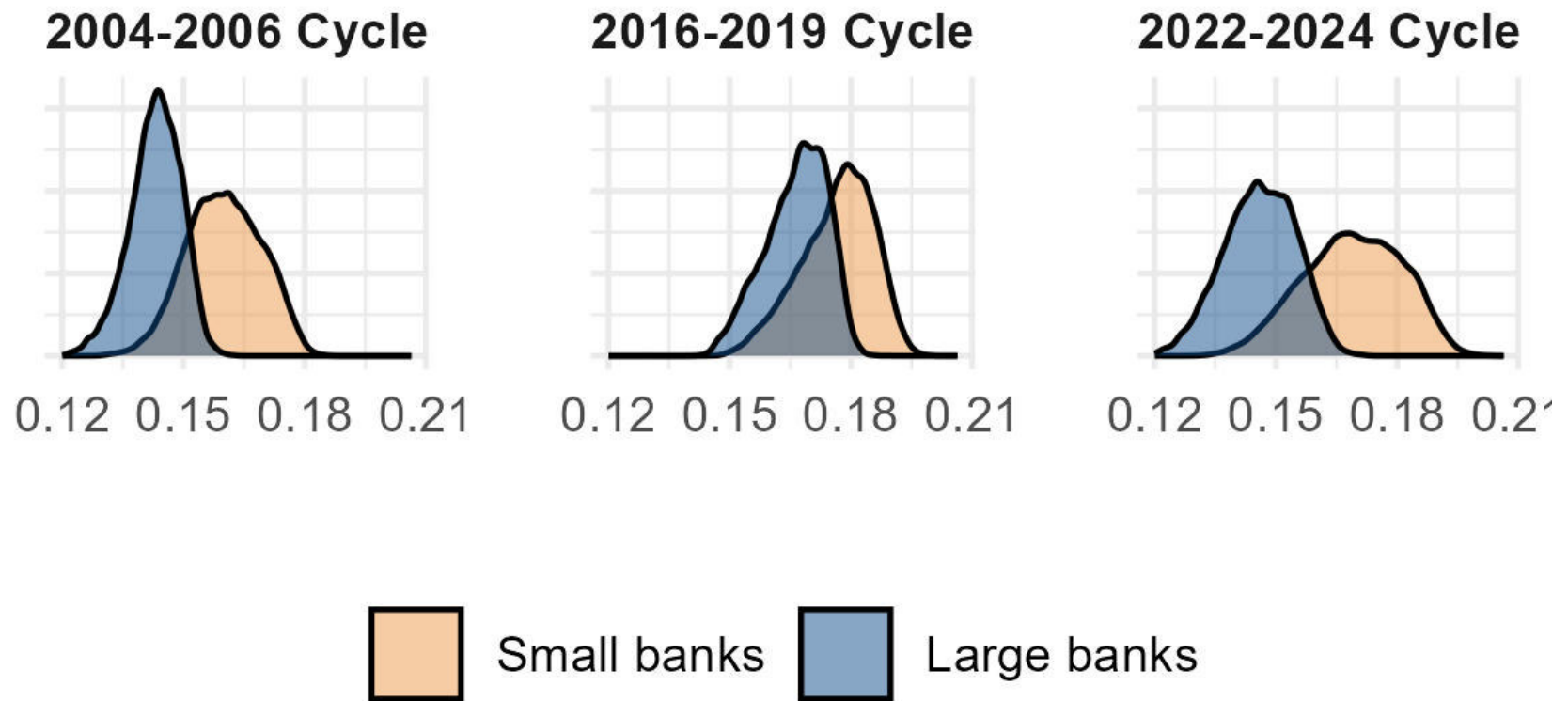
# Step 1: Estimating Bank Deposit- $\beta$

	Rate Cycle:		
	04-06	16-19	22-24
Age > Q3	<b>-0.013</b>	<b>-0.022</b>	<b>-0.033</b>
log(Income)	<b>-0.044</b>	<b>-0.028</b>	<b>-0.024</b>
Stock market participation	0.005	<b>0.087</b>	0.051
College educated	<b>0.165</b>	<b>0.144</b>	<b>0.147</b>
HHI	<b>-0.025</b>	<b>-0.025</b>	-0.021
log(Assets)	<b>0.012</b>	<b>0.004</b>	<b>0.015</b>
Pop. Density	<b>0.018</b>	<b>0.052</b>	<b>0.065</b>
T-Deps/Assets	<b>-0.121</b>	<b>-0.115</b>	<b>-0.109</b>
Observations	5,539	4,910	4,323
R <sup>2</sup>	0.11	0.10	0.18

## Step 2: Impute Branch-Level DF

- Build branch-based beta (DF) with:
  - Coefficients from Step 1
  - Demographics measured in each branch's zip code
- DF varies within bank, across the branch network
  - So, we can absorb bank-time FE

# Step 2: Branch-Based DF



## Step 3

- Estimate probability of branch openings & closings based on:
  - Branch-level DF
  - Log (Deposits)
    - This branch (closings) / existing branches (openings)
  - Local (lagged) growth in Deposits, CRA loans, and Mortgages
  - Other economic controls (HHI, Population density, local real growth)

## Step 3

- Candidates for closing
  - Branches in existence at  $t-1$
- Candidate zip-codes for opening
  - Zips in CBSAs where bank owned a branch at  $t-1$
  - Zips in CBSAs where bank opened a branch at  $t$
  - Drop all zips with no branches (ever)

# Step 3: Predicting Closings & Openings

	<i>Closures</i>				<i>Openings</i>			
	Large (>\$100 B.)		Small (<=\$100 B.)		Large (>\$100 B.)		Small (<=\$100 B.)	
DF per dollar	<b>-0.634</b>	<b>-0.983</b>	<b>-0.445</b>	<b>-0.450</b>	<b>-0.332</b>	<b>-0.297</b>	<b>-0.075</b>	<b>-0.103</b>
log(Deposits)	<b>-0.023</b>	<b>-0.023</b>	<b>-0.018</b>	<b>-0.018</b>	<b>0.001</b>	<b>0.001</b>	<b>0.0003</b>	<b>0.0003</b>
Deposit 3yr growth	0.002		-0.001		0.001		<b>-0.001</b>	
Mortgage 3yr growth	-0.008		-0.005		-0.004		0.001	
CRA 3yr growth	-0.001		-0.002		0.000		<b>-0.001</b>	
Other Controls	Y	Y	Y	Y	Y	Y	Y	Y
Bank*Year FE	Y	Y	Y	Y	Y	Y	Y	Y
State*Year FE	Y	N	Y	N	Y	N	Y	N
County*Year FE	N	Y	N	Y	N	Y	N	Y
Observations	690,261	690,261	904,728	904,728	1,465,309	1,465,449	12,388,095	12,389,198
R <sup>2</sup>	0.05	0.11	0.16	0.22	0.02	0.04	0.03	0.05

# Step 3: Closures & Openings Over Time

## Large Banks (>\$100 Billion)

	<i>Closures</i>				<i>Openings</i>			
	<u>01-07</u>	<u>08-11</u>	<u>12-19</u>	<u>20-23</u>	<u>01-07</u>	<u>08-11</u>	<u>12-19</u>	<u>20-23</u>
DF per dollar	<b>-0.586</b>	<b>-0.755</b>	<b>-0.892</b>	<b>-1.865</b>	<b>-0.814</b>	<b>-0.623</b>	<b>-0.187</b>	<b>-0.198</b>

## Small Banks (\$<100 Billion)

	<i>Closures</i>				<i>Openings</i>			
DF per dollar	<b>-0.532</b>	<b>-0.540</b>	<b>-0.436</b>	<b>-0.355</b>	<b>-0.277</b>	<b>-0.157</b>	<b>-0.108</b>	<b>-0.057</b>

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Other Controls	Y	Y	Y	Y	Y	Y	Y	Y
Bank*Year FE	Y	Y	Y	Y	Y	Y	Y	Y
County*Year FE	Y	Y	Y	Y	Y	Y	Y	Y

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## Step 4

- Introduce measures of branch usage (cell phone data) to capture other channels
  - Change in foot-traffic around the Pandemic
  - 2019 avg. Travel distance to branch
- Identification: Foot traffic and Log Distance of other branches in same zip-code
  - “Leave Out” strategy

# Step 4: Closures & Openings, with Branch Usage (2022-2023)

	<i>Closures</i>				<i>Openings</i>			
DF per dollar	<b>-0.815</b>	<b>-0.747</b>	<b>-0.628</b>	<b>-0.462</b>	<b>-0.037</b>	<b>-0.038</b>	<b>-0.028</b>	<b>-0.037</b>
Drop in Visitors			<b>0.010</b>	<b>0.008</b>			<b>0.001</b>	<b>0.001</b>
log(Distance km)			<b>0.007</b>	<b>0.011</b>			-0.001	-0.001
Other Controls	Y	Y	Y	Y	Y	Y	Y	Y
Bank*Year FE	Y	Y	Y	Y	Y	Y	Y	Y
State*Year FE	Y	-	Y	-	Y	-	Y	-
County*Year FE	-	Y	-	Y	-	Y	-	Y
Other Controls	Y	Y	Y	Y	Y	Y	Y	Y
Observations	131,464	131,464	131,259	131,259	916,258	916,258	914,266	914,266
R <sup>2</sup>	0.06	0.09	0.06	0.09	0.1178	0.1746	0.1233	0.1943

# Conclusion

- DF is key driver of closures & openings
- Areas with high financial sophistication have:
  - Low DF (high price sensitivity)
  - Sharp declines in usage (technology adoption)
  - High rates of branch closures
- Rate-Insensitive customers reduce endogenous entry

**Thank You!**