LOCATIONAL RENTS AND DEPOSIT FRANCHISE VALUE: UNCOVERING THE ROLE OF DISTANCE IN DEPOSIT PRICING

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ABSTRACT

Using **novel foot traffic data** from millions of **cell phone devices** across the U.S., I study the extent to which the distance between a bank and its customers affects the pricing (interest rates) of its deposit products. Instrumenting the distance of the customers with regional broadband access status, I find **substantial evidence for spatial price discrimination** in the deposit market. The **distance of the customers** from a branch **negatively affects** the price of its deposit products; this price-distance relationship is **stronger in a highly concentrated market**, consistent with the exercise of market power. Cross-sectional analysis reveals that this negative effect of the distance is present for time deposits, but not for transactional deposits. This effect is **more pronounced for small banks** and intensifies with the maturity period of the deposit products. Furthermore, paying lower rates for deposits sourced from distant customers translates into **higher bank profitability**. These results provide evidence of the presence of locational rents in the deposit markets that contribute to a bank's deposit franchise value.

MOTIVATION OF THIS STUDY

- There is a **widespread trend of consolidation** in the **banking industry** for last couple of decades. The number of bank branches is **negatively related** with the **physical distance** from banks' customers.

- The **impact of geographic proximity** to the customer **on lending** has been **examined extensively** in the literature. For example- *Herpfer et al. [2022], Nguyen [2019], Beck et al. [2018]* & *Degryse and Ongena [2005]* etc.

- Though **most of the bank value** comes **from the liability or deposit side** rather than credit side (*Egan et al. [2021]*), so far there is **no empirical work** that try to disentangle the effect of the distance in the deposit market.

- It is well known that **Retail deposits** are important for banks as they provide **a low cost, stable source of funds** and generate fee income for the banks.

- Retail deposits constitute **more than 70%** of bank liabilities (*Drechsler et al. [2017]*) and a **large portion of a bank's cost of capital** is its retail deposit interest rate (*Granja et al. [2022]*).

- Therefore, it is important to see **how the distance** impact the **retail deposit price** as the cost of capital is one of the key factors in determining **bank's profitability**.

- So, **by using novel foot traffic data** from millions of mobile devices across US, I explore the following important question in this paper: How does the **distance** of customers **affect the price of deposit products**?

RESEARCH QUESTIONS

- What is the **impact of the distance** on **deposit price**?

- Does the effect differ between **transactional deposit** and **savings deposit**?

- How does the distance **affect the deposit volume**?

- Does the **branch network** help banks to increase **profitability** through changing the **distance**?

KEY FINDINGS

- The distance of the customers from a branch **negatively affects** the price of the deposit products

    Distance of the Customers ↑ ⇒ Deposit Price ↓

- This negative effect is **stronger** in highly **concentrated market**, consistent with the **exercise of the market power**.

- The effect of the distance of the customers on deposit pricing is **present for savings deposits** (both insured and uninsured savings deposit products), **but not for transactional deposits**.

- Overall, though the **deposit volume decreases** with the distance, banks **increase their profitability** by reducing cost through offering lower deposit price to the distant customers.

DISTANCE MEASURE

- To get the distance of a branch customers, I use the **bank branch customers' footprint data** across U.S., sourced from around **forty-five million smartphone devices**.

- The firm observes **human mobility patterns** by partnering with **smartphone apps** that get **opt-in consent** from users to record their location.

- Around **70% of FDIC's SOD branches** are observed in this dataset.

- In the **following figure**, I show the **customers' footprints of a specific branch** (Chase Bank Branch in New Orleans) in a random week (3rd Week of September 2019). We can see, from **which census block groups**, customers came to that branch during that week.
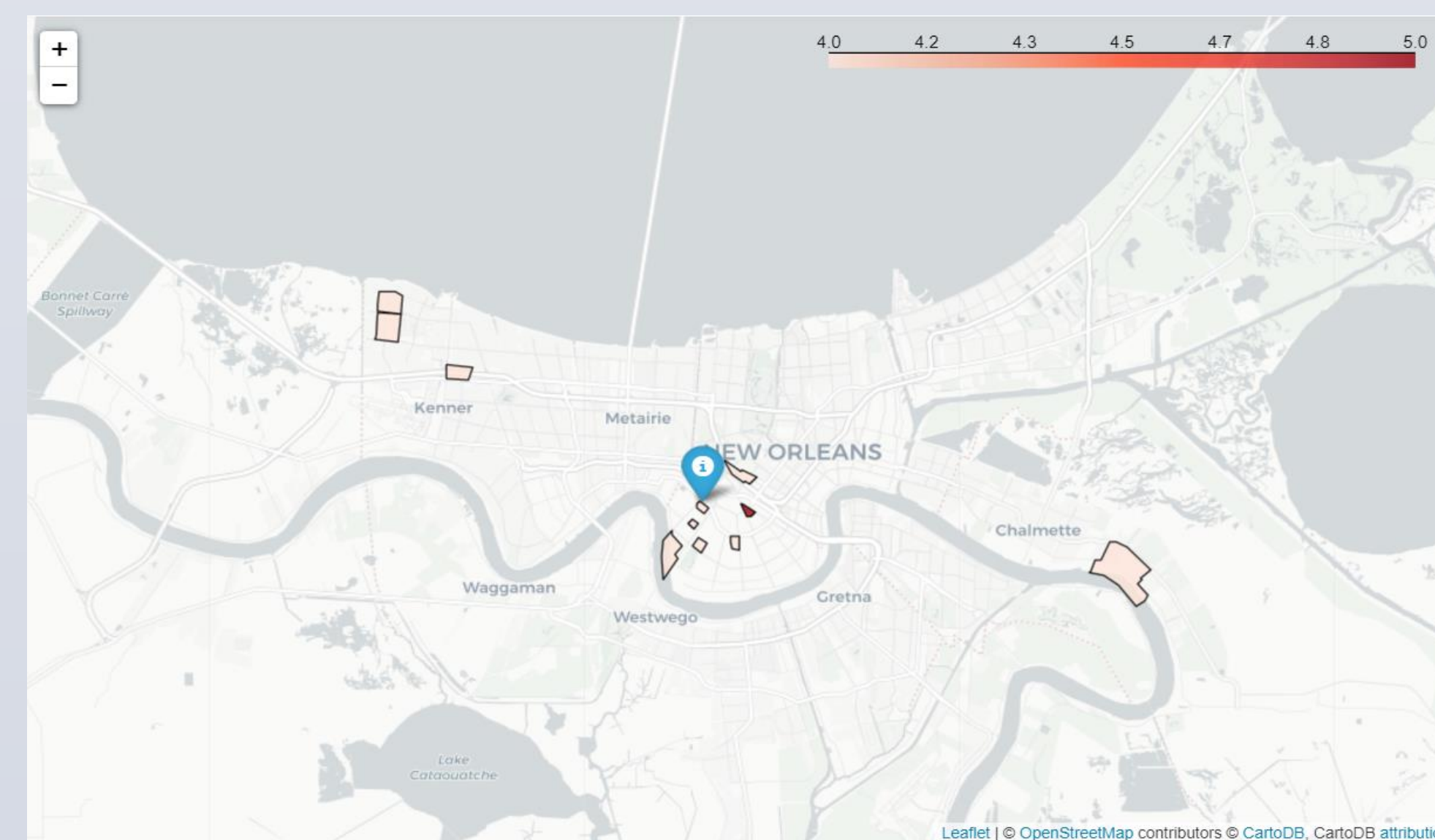
- I get the **average distance** of the **customers of a bank branch** from the foot traffic data.

- The summary statistics of the distance variable provide some **rare unique perspectives** about the banking in the U.S. It reveals that on an average a customer is **10.183 KM away** from his/her corresponding banking branch.

- Another interesting point is that **the distance of the customers is higher** for **large banks** and **rural branches** relative to small banks and urban branches, respectively.

RESULTS OF THE BASELINE REGREESION

- This table reports the **regression results** on the **price of deposit products**.

- The table contains **four specifications** of the same model. In specification **(1), county fixed effect** is used instead of the region-specific control variables and in specification **(2)-(4), alternative measures of local market competition** and other regional control variables are used replacing county fixed effect.

Variables	(1) Rate (All Products)	(2) Rate (All Products)	(3) Rate (All Products)	(4) Rate (All Products)
$Log(1 + Distance\_Customer)$	-0.330***	-0.320***	-0.323***	-0.317***
	(0.051)	(0.051)	(0.051)	(0.051)
$No. of Competitors$		3.015***		
		(0.938)		
$Log(1 + Distance\_Competitor)$			-3.360***	
			(0.401)	
HHI_County				-9.426***
				(1.226)
Observations	1,662,176	1,662,176	1,657,259	1,662,176
Adjusted R-squared	0.700	0.701	0.701	0.701
Bank FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
Product FE	Yes	Yes	Yes	Yes
Branch FE	Yes	Yes	Yes	Yes
County FE	Yes	No	No	No
SE	Robust	Robust	Robust	Robust

- The table shows that the price of deposit product in a branch is **negatively related** with the average distance of the customers.

- The effect is **not affected my market competition** as different alternative measures of competition are included in the models.

- Economically speaking, **an increase of one standard deviation in the distance** of the customers of a branch (around 16 KM increase in the distance from a branch), the prices for that branch's deposit products reduce by **0.54 basis points**.

RESULTS FOR DISTANCE AND HHI

- This table reports the **regression results** for regions of different HHI level.

Variables	Rate (All Products) (1) All Region	(2) Low HHI	(3) High HHI
$Log(1 + Distance\_Customer)$	-0.027	-0.096	-0.370***
	(0.095)	(0.110)	(0.090)
$Log(1 + Distance\_Customer)*HHI\_County$	-1.249***		
	(0.334)		
Observations	1,662,176	430,118	403,494
Adjusted R-squared	0.701	0.694	0.708
Bank FE	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes
Product FE	Yes	Yes	Yes
Branch FE	Yes	Yes	Yes
SE	Robust	Robust	Robust

- The results indicates that banks exercise market power through offering lower price to distant customers only when market competition is low. I also run the regressions **for the commuting zones** instead of the counties and the **impact of the market power** remains same.

ROBUSTNESS TESTS

- I conduct a set of robustness tests. For example:
    > Running the regression for **Non-covid years**
    > Using **Commuting Zones** instead of County
    > Only **considering Rate-setter branches** instead of all branches

- The results of the regressions remain similar.

CONCLUSIONS

- Exploiting cell-phone tracking data for the customers of the bank branches, I find substantial **evidence for spatial price discrimination** in the deposit market.

- A **one standard deviation increase in the distance** of the customers of a branch reduces **the prices** of deposit products by **0.54 basis points** and decreases the **deposit volume** by around **0.057 million**.

- Apart from that, **large branch network** also helps banks to **charge monopoly rent** through **offering lower price to the distant depositors**. Finally, my findings shed light on how banks **price discriminate** in the deposit market **to increase their profitability**.

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