FINANCIAL FACTORS IN REGIONAL POVERTY AND INEQUALITY

An analysis using county-level US banking data

Ignazio Angeloni – Research fellow, M-R CBG, Harvard Kennedy School

Chantawit Tantasith – PhD candidate in Economics, University of Oxford

Johannes Kasinger – PhD candidate in Economics, Goethe University Frankfurt

MANY THANKS to **Eric Breitenstein** and his colleagues at the **Federal Deposit Insurance Corporation** for support with their data

Our starting point

Austin-Glaeser-Summers: “Jobs for the Heartland: Place-Based Policies in 21th Century America”; Brookings Papers 2018

They make three main points:

1. They show evidence of growing spatial divergence in the US
2. They suggest there is a case for space-based policies (the case is based on spatial externalities)
3. They advance some suggestions of what such policies can be: employment subsidies, job counselling, education

Here and in the rest of this literature: financial factors are not considered

Different research strands

1. Finance and growth (Levine, 2005, Handbook of Economic Growth)
2. Finance and inequality (Demirgüç-Kunt and Levine, NBER WP 2009)
3. Banks, lending relationships and monetary transmission (Pedersen and Rajan, JF 1994; Kashyap and Stein, AER 2000)

Some implications

1. Financial development increases growth and reduces poverty and inequality
2. Smaller banks tend to establish lending relations which protect firms from adverse shocks, hence promoting sustainable economic growth
3. Banks with stronger balance sheets are able to perform this function better

Major political agendas

In the US:

1. Regulatory relief for community banks

In Europe:

1. "Small banking box" (Germany)
2. Lighter regulation for cooperative banking sector (Italy)

We focus on four questions

General question:

1. Is there a link between banking conditions (structure, performance) and economic conditions (poverty, inequality, etc.) at local level?

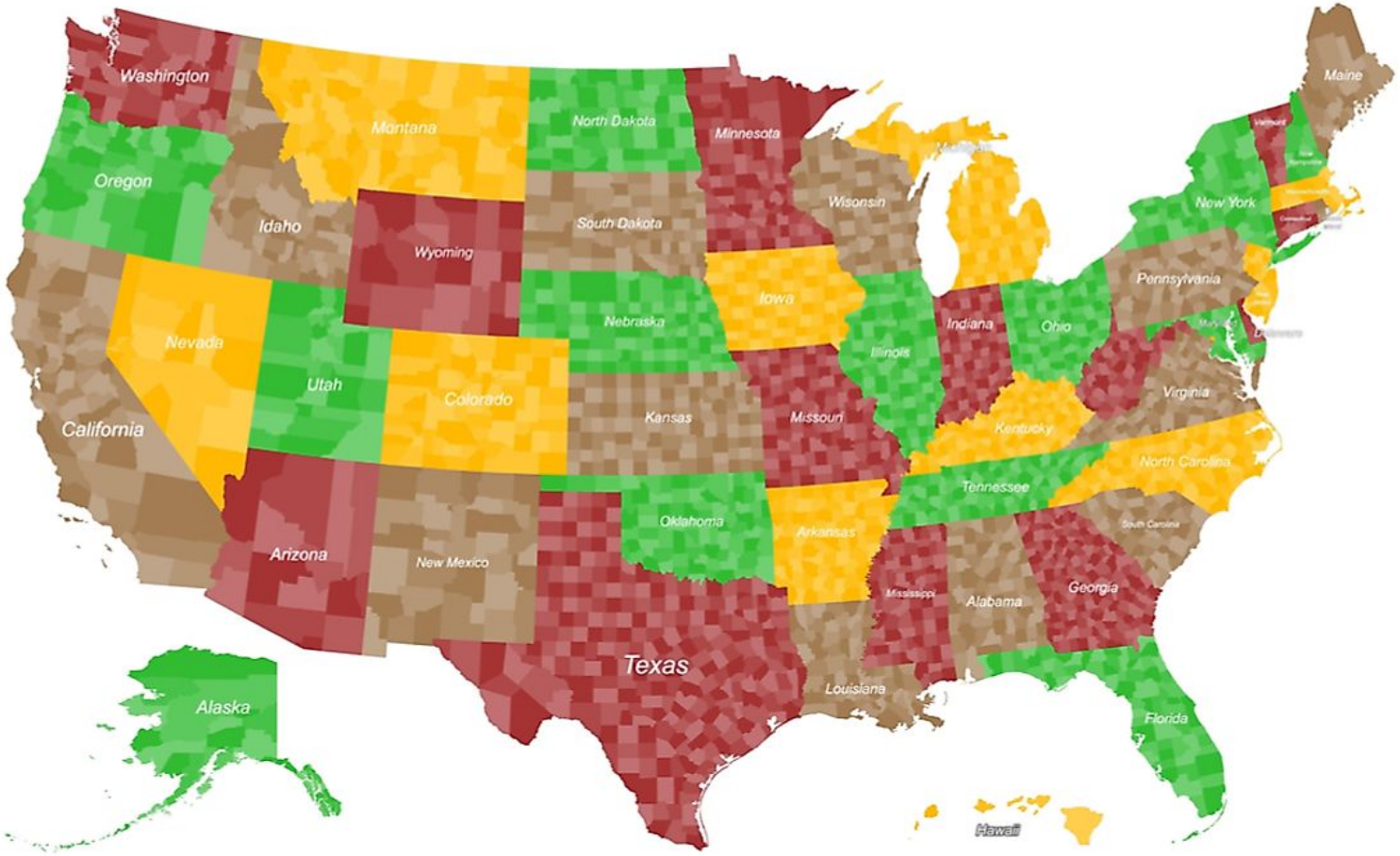
Specifically:

2. Is there a causal link? (banks driving economic conditions)

3. Does bank performance (profitability, asset quality) affect local economic conditions?

4. Does the banking population structure (➔ community banks) matter?

50 states, 3142 counties



Wide economic and labor market disparities within states
(E. Moretti, *The New Geography of Jobs, 2013)*

Geographical breakdown is critical

1. State-level analysis (50 states) is not sufficient
2. County-level analysis (3142 counties) seems adequate
3. However, banking data at county level do not exist

FDIC data

1. Balance sheets indicators: detailed quarterly data for all US banks
2. Deposits: annual data on deposit location at each bank branch

Our strategy

Use deposit location to estimate bank balance sheet indicators at county level.

Caveats

Critical assumption: deposit location is a good proxy of bank asset allocation (we follow Avery-Samolyk, JFSR 2004)

This assumption is probably valid for most small-medium banks, less as bank size grows (see Jagtiani-Maingi, FRB Philadelphia 2018)

Anyway, there is no better way to do it, given existing banking statistics

Constructing the data

Suppose two banks (1, 2) operating in two counties (A, B). Green are known variables, red unknown ones.

Two different FDIC data sources:

1) Summary of Deposits (annual) gives deposits of each bank in each county ($D_{1,A}$, $D_{1,B}$, $D_{2,A}$, $D_{2,B}$);
2) Call Report Data (quarterly) gives asset totals for each bank (A_1, A_2).

STEP 1: Assume each bank splits assets in the two counties in the same proportion as deposits:

$$\frac{A_{1,A}}{D_{1,A}} = \frac{A_{1,B}}{D_{1,B}} \; ; \qquad \frac{A_{2,A}}{D_{2,A}} = \frac{A_{2,B}}{D_{2,B}} \; ; \qquad A_{1,A} + A_{1,B} = A_1 \; ; \qquad A_{2,A} + A_{2,B} = A_2$$

Solve for $A_{1,A}$, $A_{1,B}$, $A_{2,A}$, $A_{2,B}$.

STEP 2: Use asset estimates to calculate banking indicators as county averages weighted by market shares.

This is done for 3000+ counties and 5000+ banks.

We need two steps because deposit/asset ratios differ widely across banks, hence market shares cannot be calculated directly from deposits.

Our work so far

1. We have calculated some 25 bank indicators for 6 years (dated at year-end): 2000, 2005, 2010, 2018, 2019, 2020.
2. In this seminar we show descriptive charts for 2019 (the last pre-Covid year) + some preliminary static panel estimates
3. *Future work:*
    a. *Extend the time dimension (2000-today)*
    b. *Dynamic panels with full set of controls*
    c. *Exogeneity analysis*
    d. *Covid effects*

Summary statistics: 2019

Variable	mean	sd	min	p25	p50	p75	max
No. of banks in operation	8.2	8.3	1.0	3.0	6.0	10.0	104.0
No. of counties a bank operates	58.0	124.8	1.0	2.0	6.0	41.0	870.0
Share of the largest bank's asset (%)	44.2	20.7	11.5	28.7	39.5	54.1	100.0
Share of community banks' assets (%)	55.8	34.8	0.0	23.5	58.5	89.9	100.0
Share of top 5 US banks by assets (%) (*)	11.3	17.9	0.0	0.0	0.0	17.6	100.0
Common Equity Tier 1 Ratio (%)	10.7	1.6	3.8	9.7	10.4	11.3	25.7
Efficiency Ratio (%) (**)	61.9	6.5	21.2	57.9	61.4	65.4	116.6
Bank Pretax ROA (%)	1.5	0.5	-3.9	1.3	1.5	1.7	24.0
Nonperforming assets as a percent of total assets (%)	0.7	0.6	0.0	0.5	0.6	0.8	10.4
Net Interest Margin (%)	3.7	0.6	1.1	3.4	3.7	3.9	18.8
Noninterest income as a percent of total assets (%)	1.0	0.8	-0.1	0.7	1.0	1.3	29.0
Share of agricultural loans to total loans (%)	5.7	9.1	0.0	0.3	1.5	7.0	75.4
Share of C&I loans (under $1 mil) to total loans (%)	6.1	3.0	0.2	4.0	5.5	7.3	29.5
Share of real estate loans to total loans (%)	64.2	11.3	3.7	56.8	64.7	72.3	91.9
Total bank asset/population (Current $, Thou.)	31.0	125.5	1.1	16.6	22.7	32.7	6664.0
Bank assets/GDP (%)	63.8	124.9	0.8	41.5	56.2	73.8	6463.4
GDP per capita (Current $, Thou.)	52.1	71.8	6.9	32.0	43.0	57.0	2201.6
Unemployment rate (%)	4.0	1.4	1.4	3.0	3.7	4.6	18.3
Nonworking ratio (%) (***)	18.5	14.1	-105.6	10.5	18.7	26.9	73.9
Share of population in poverty (%)	14.4	5.7	2.7	10.4	13.4	17.4	47.7
Share of population under 18 in poverty (%)	19.9	8.4	2.4	13.7	18.7	24.9	63.4
Personal income per capita (Current $, Thou.)	45.9	13.2	19.5	37.9	43.4	50.6	229.8
Household median income (real $, Thou.)	55.6	14.2	24.7	46.3	53.4	61.8	151.8

Note:

(*) JP Morgan, Bank of America, Wells Fargo, Citigroup, US Bancorp.

(**) Efficiency ratio is noninterest expense less amortization of intangible assets as a percent of net interest income plus noninterest income.

(***) Nonworking ratio = (1-no. of employed persons/no. of working age population) x 100. Working age here is defined as 20-64 years. A negative value in some counties is due to the fact that there are employed persons outside the working age.

Bank intensity I: n. of banks per county

Figure 1 Number of banks (2019)

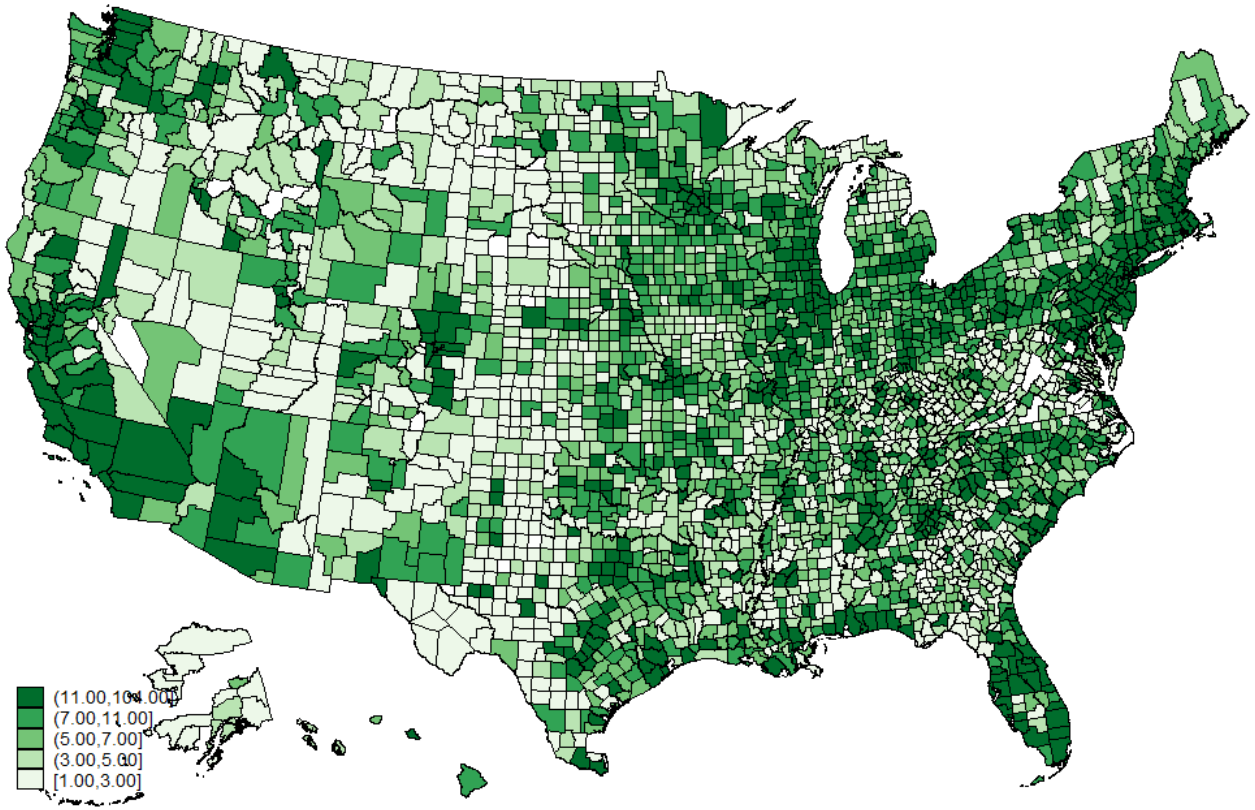
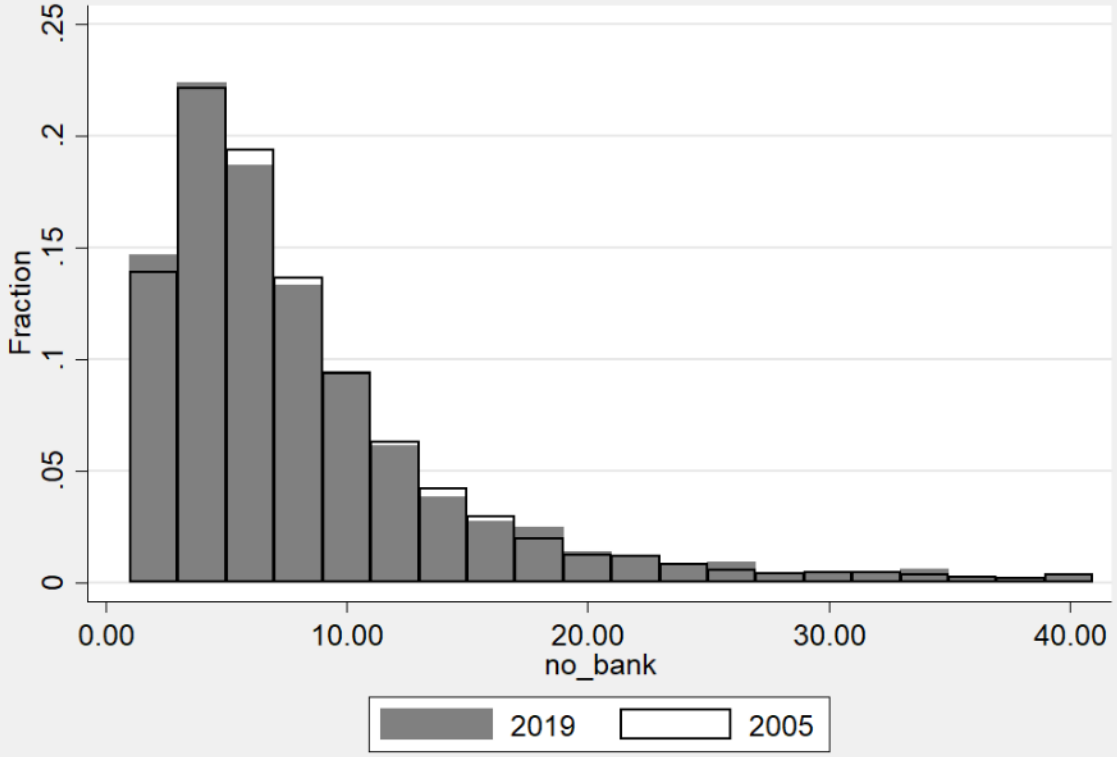


Figure 2 Number of banks (2005 vs. 2019)



Bank intensity II: bank assets/GDP

Figure 28 Bank assets/GDP ratio (2019)

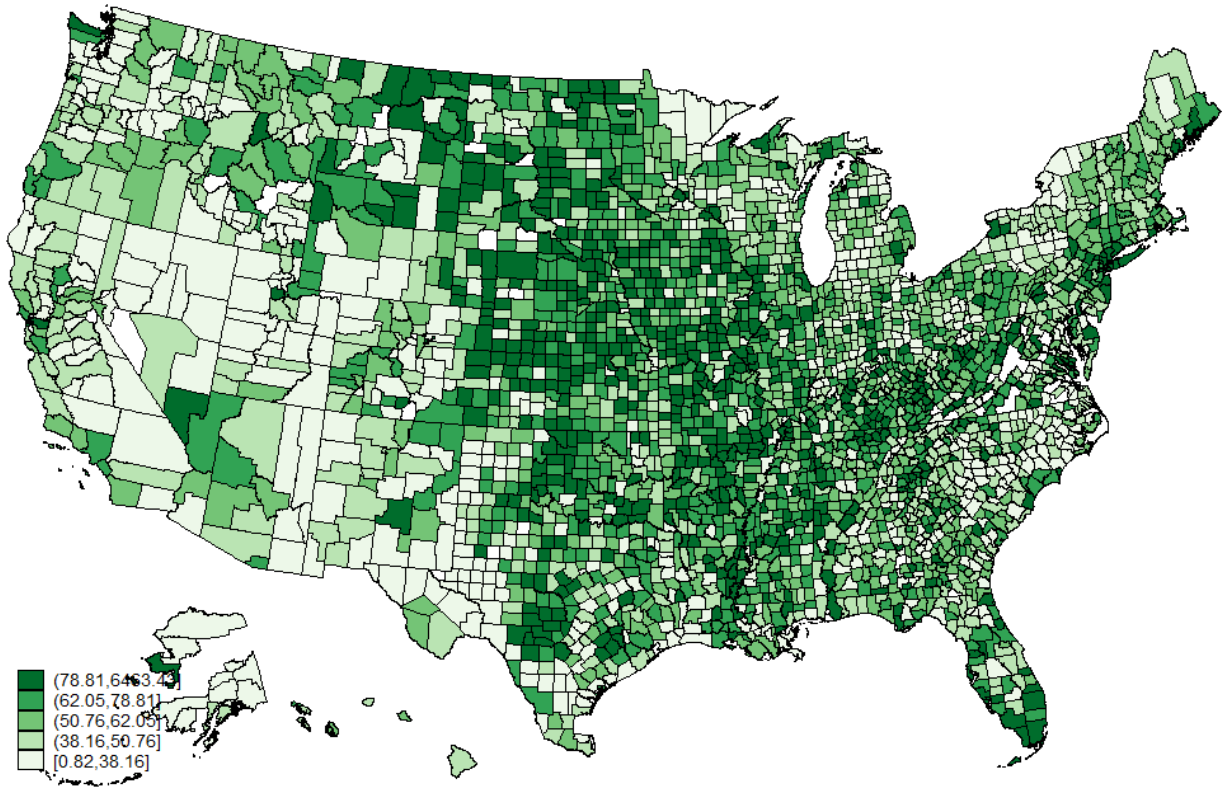
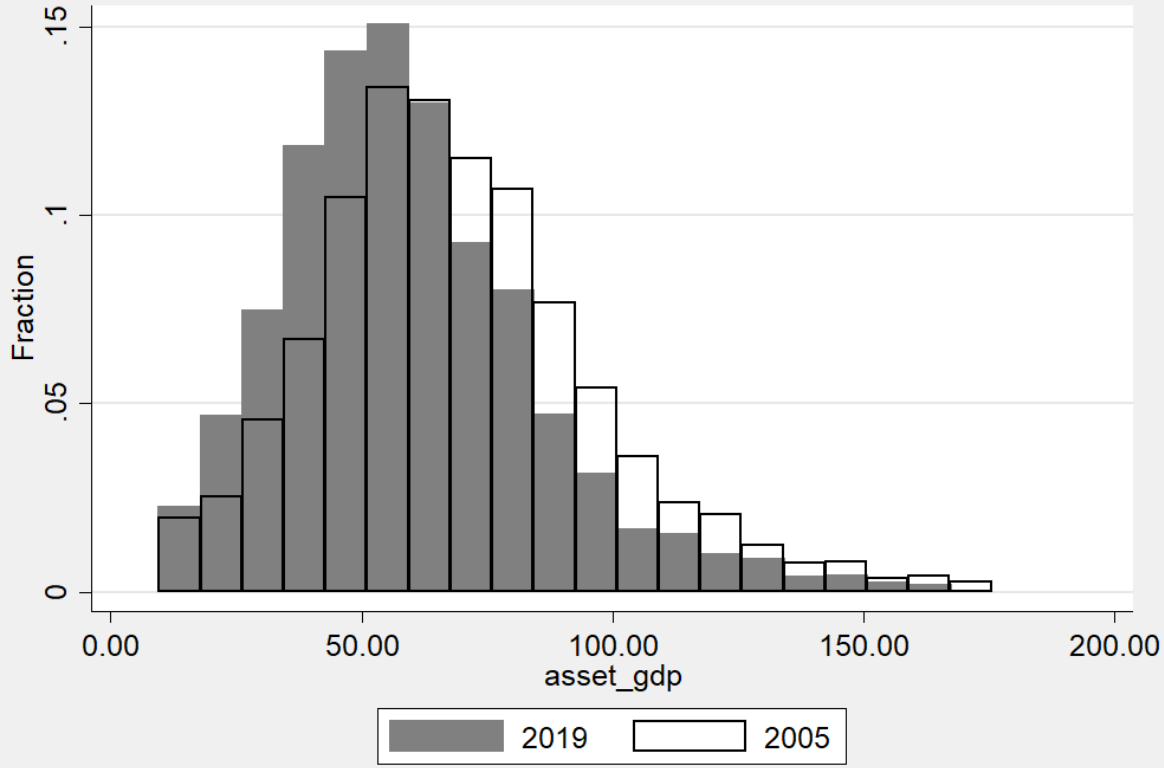


Figure 29 Bank assets/GDP ratio (2005 vs. 2019)



Community Bank assets/all bank assets

Figure 6 Share of CB assets (2019)

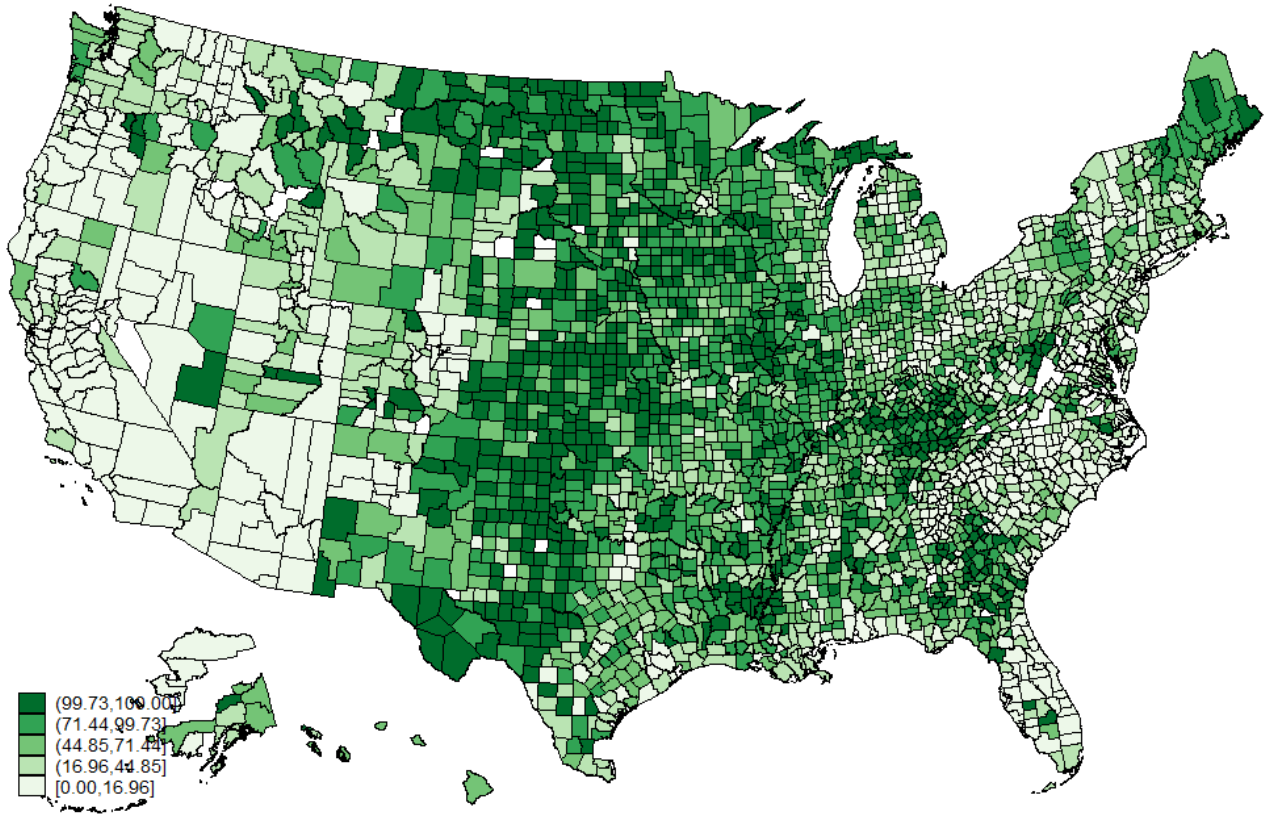
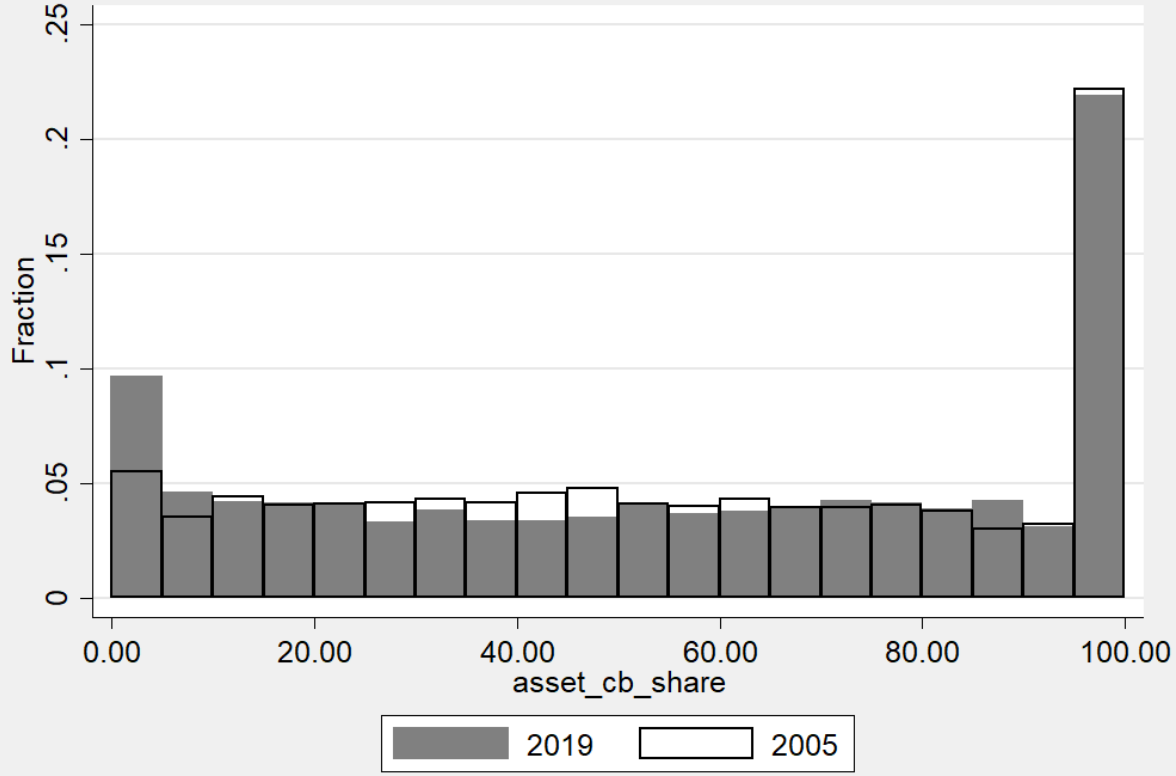
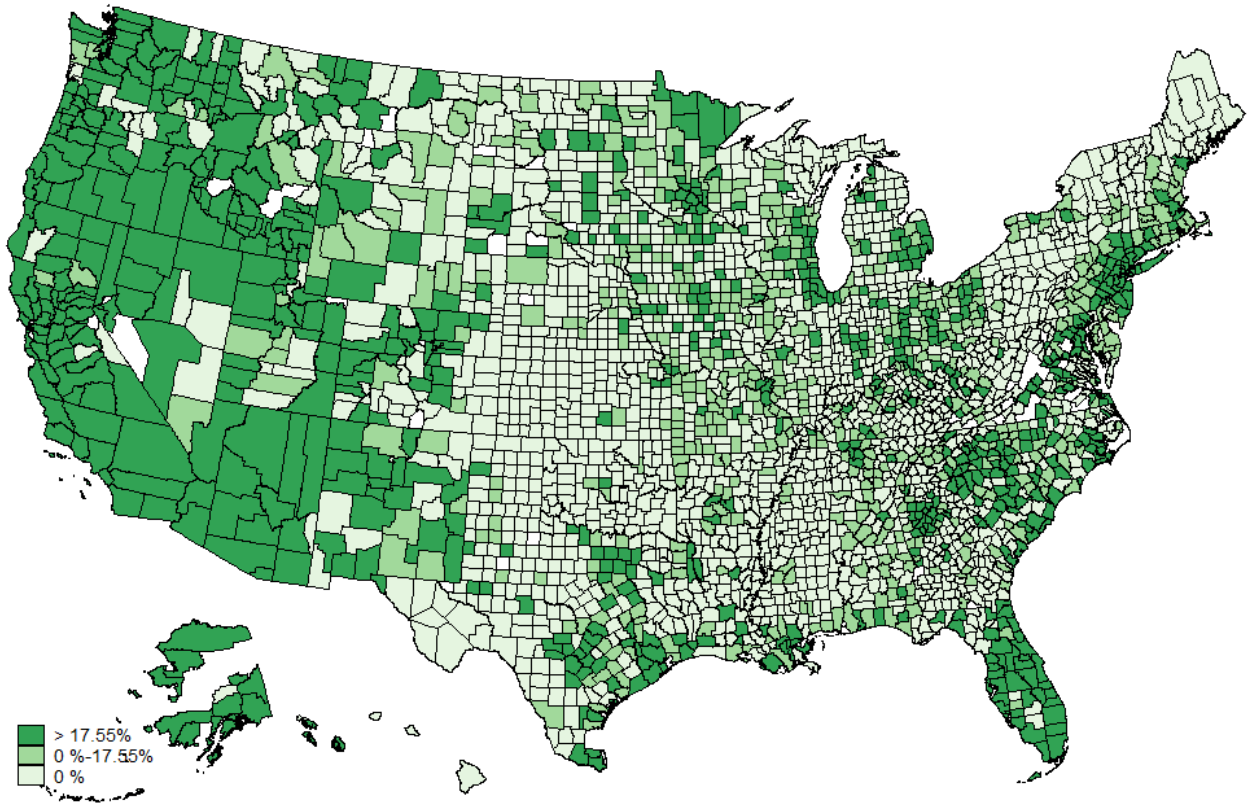


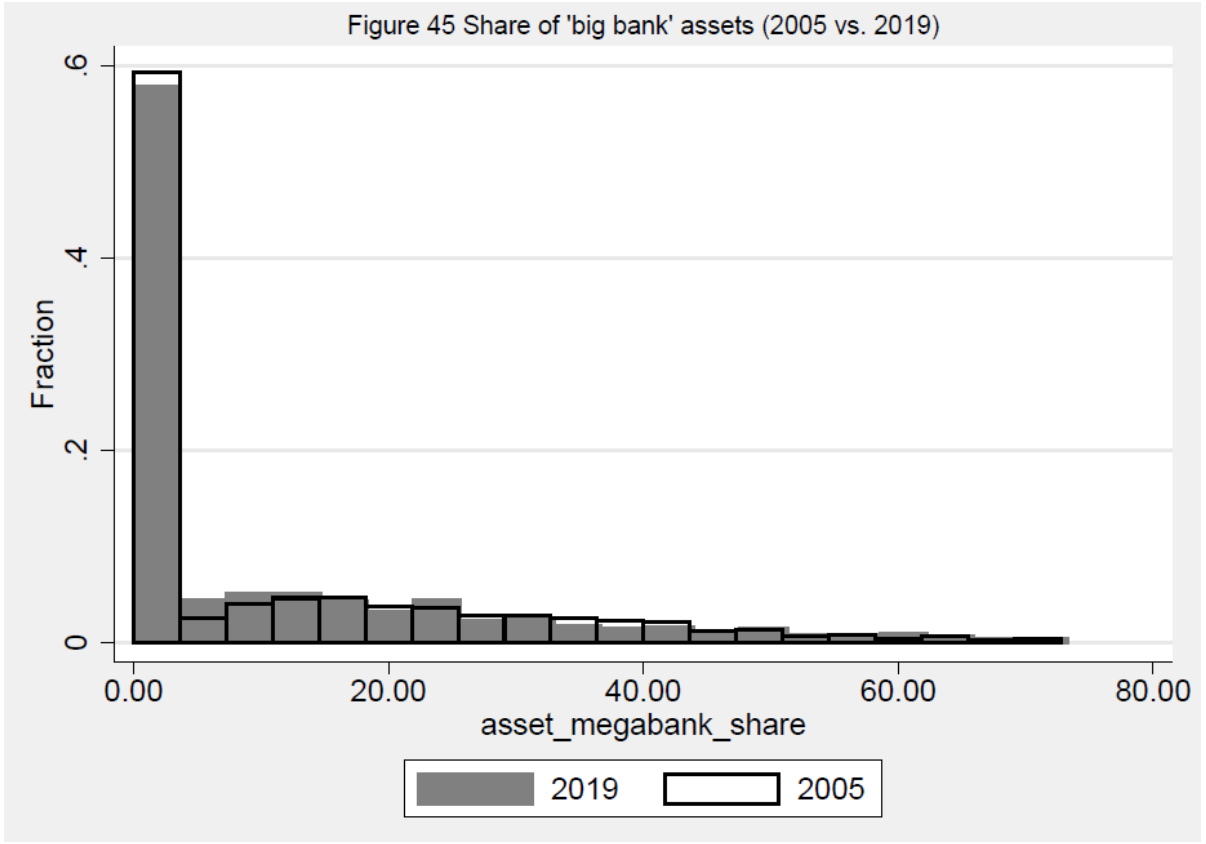
Figure 7 Share of CB assets (2005 vs. 2019)



“Big 5” assets/all bank assets

Figure 44' Share of 'big bank' assets' (2019)





Leverage ratio

Figure 8 Leverage ratio (2019)

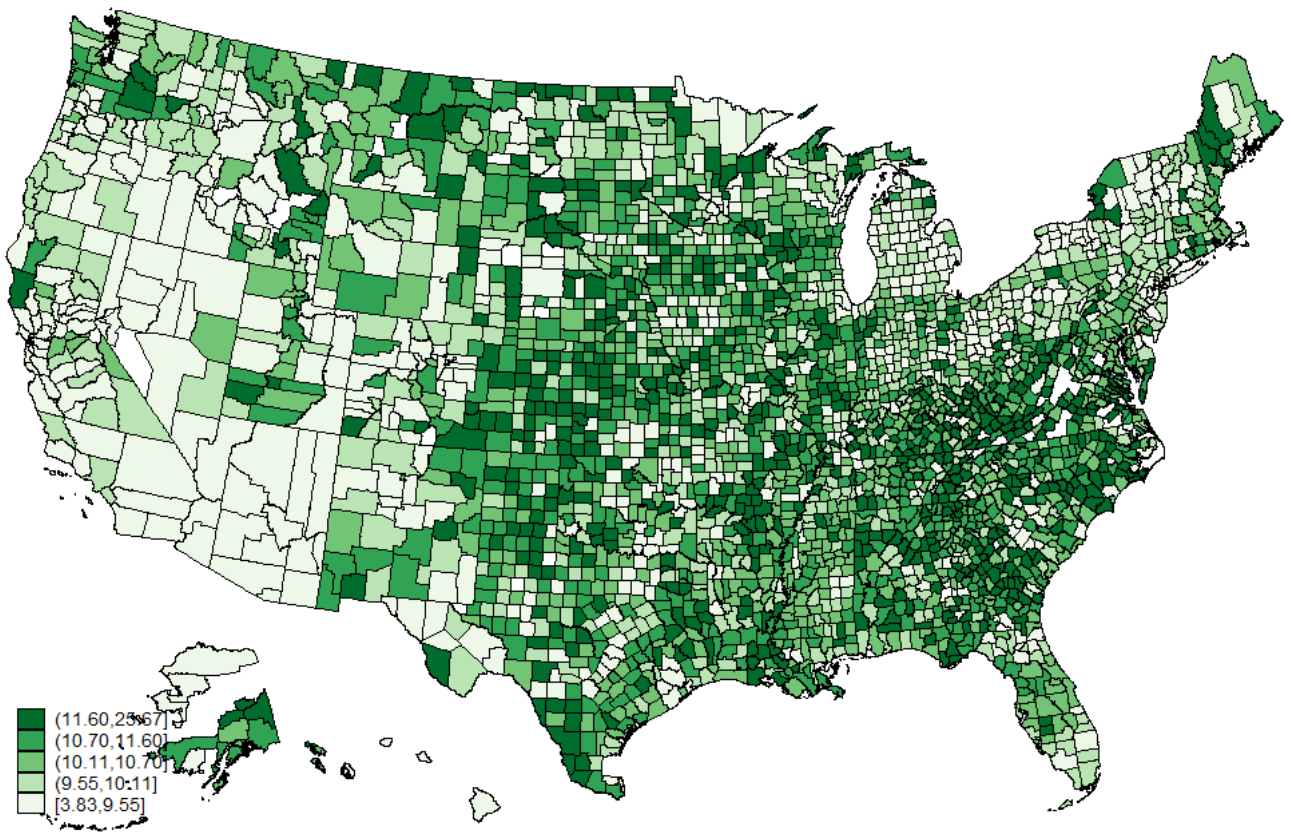
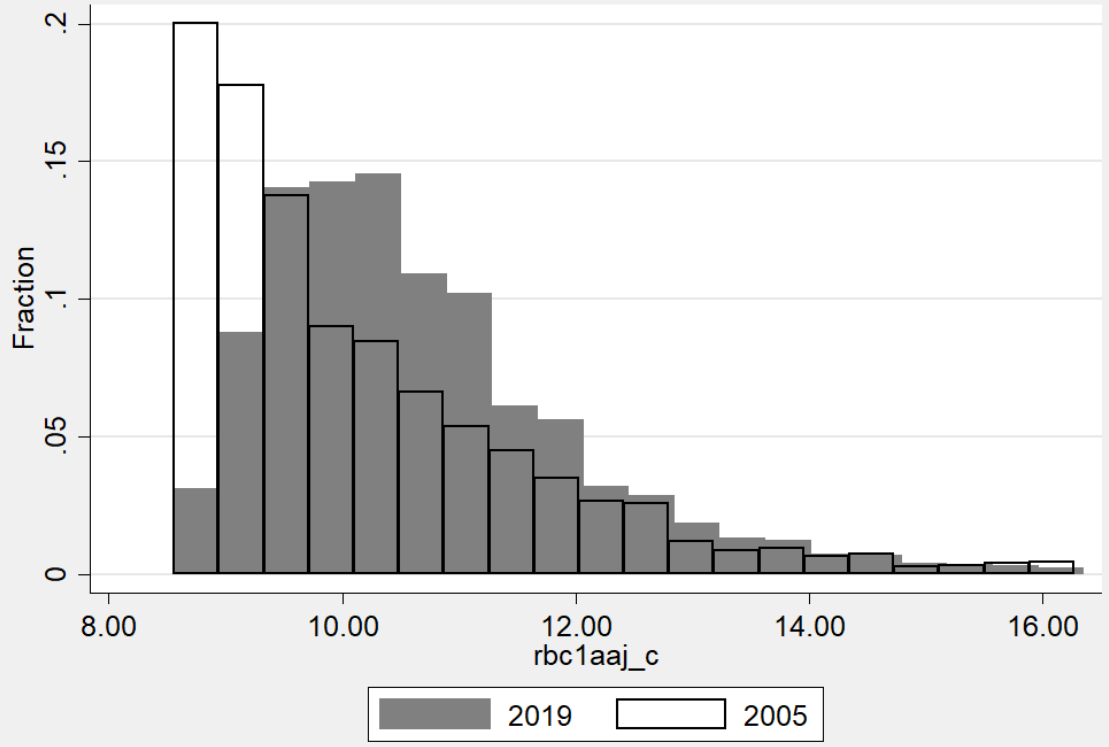


Figure 9 Leverage ratio (2005 vs. 2019)



Return on Assets

Figure 12 ROA pre-tax (2019)

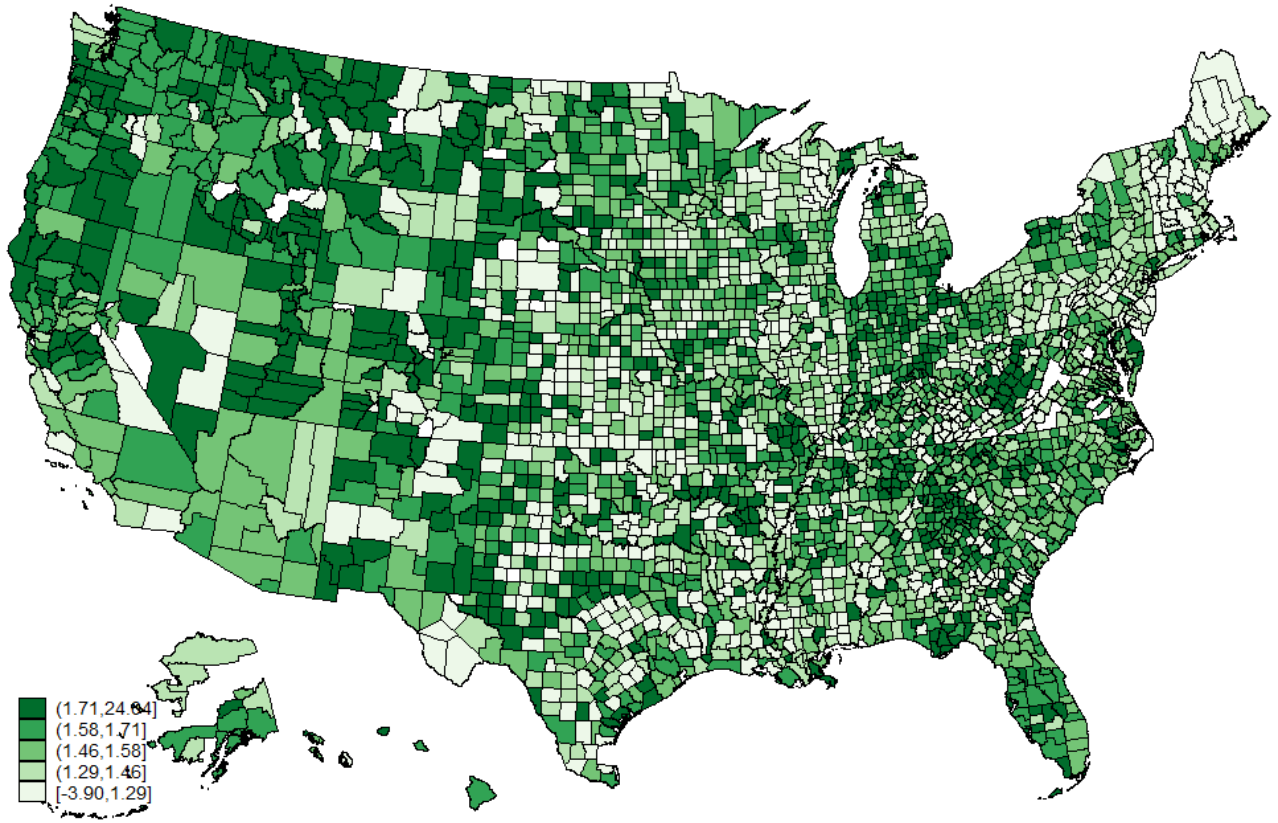
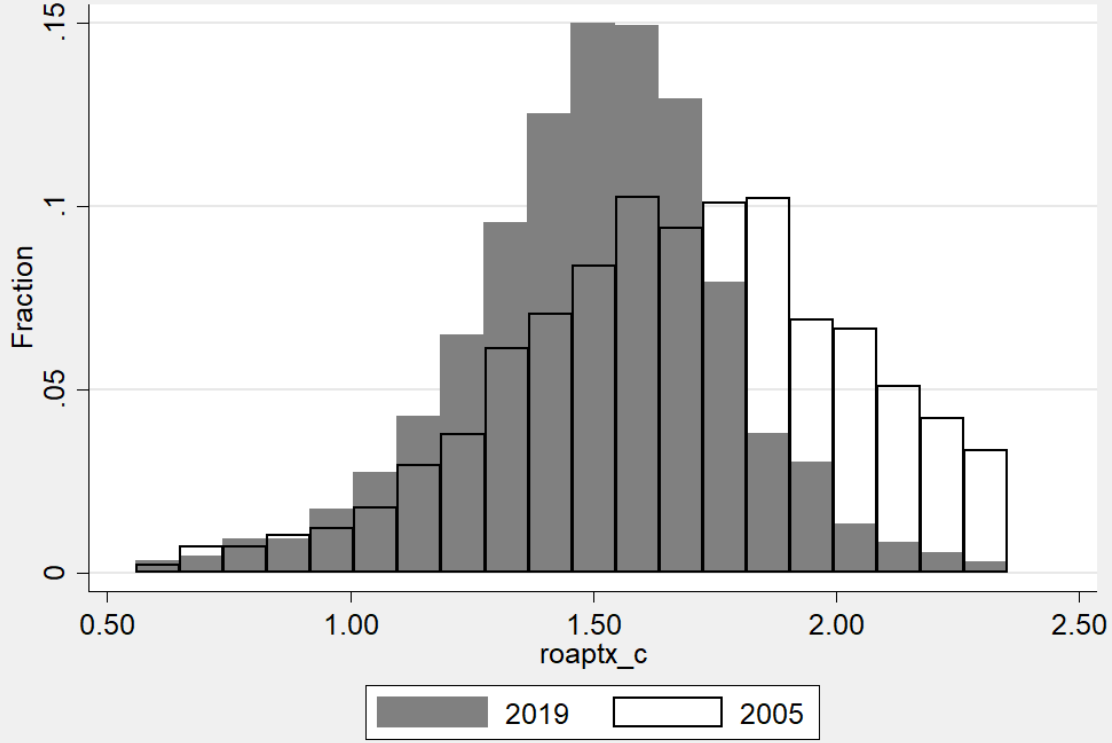


Figure 13 ROA pre-tax (2005 vs. 2019)



Net interest margin/assets

Figure 18 Net interest margin as ratio of assets (2019)

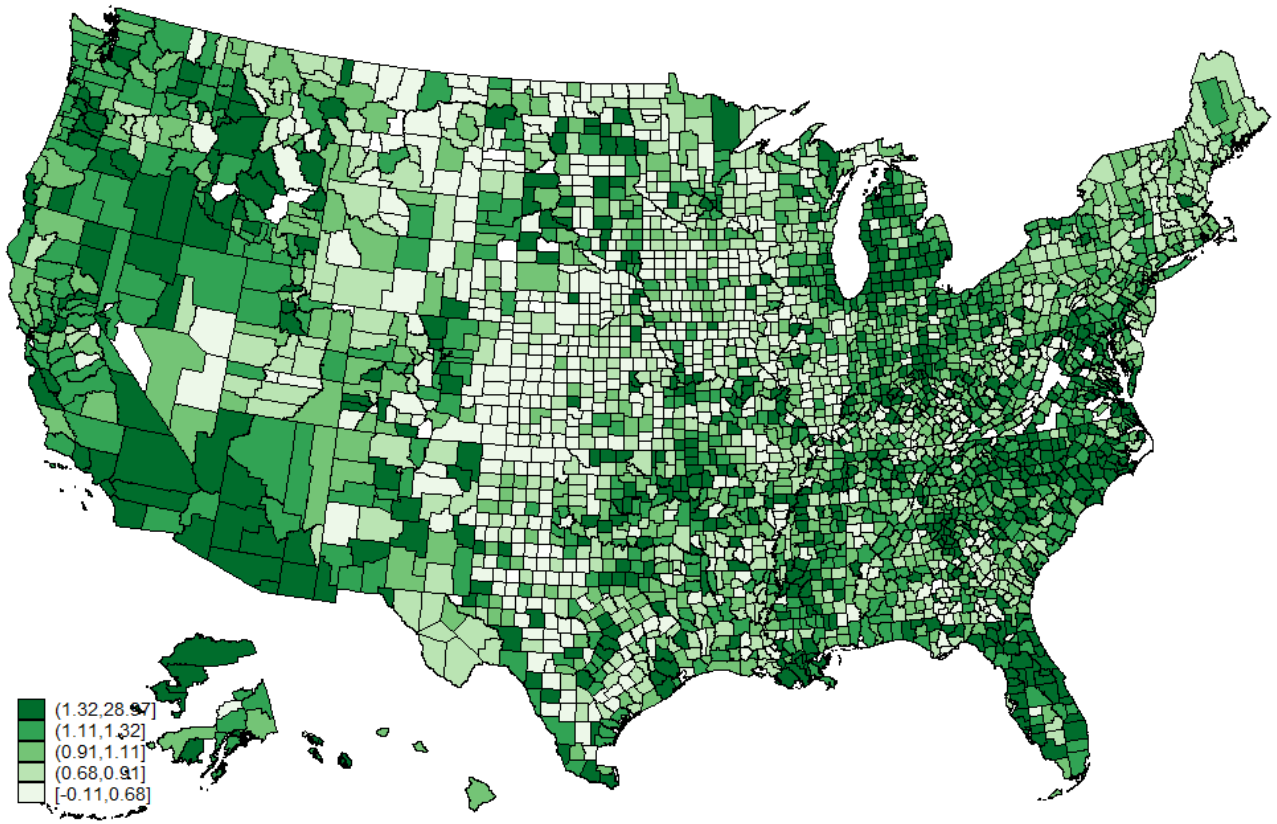
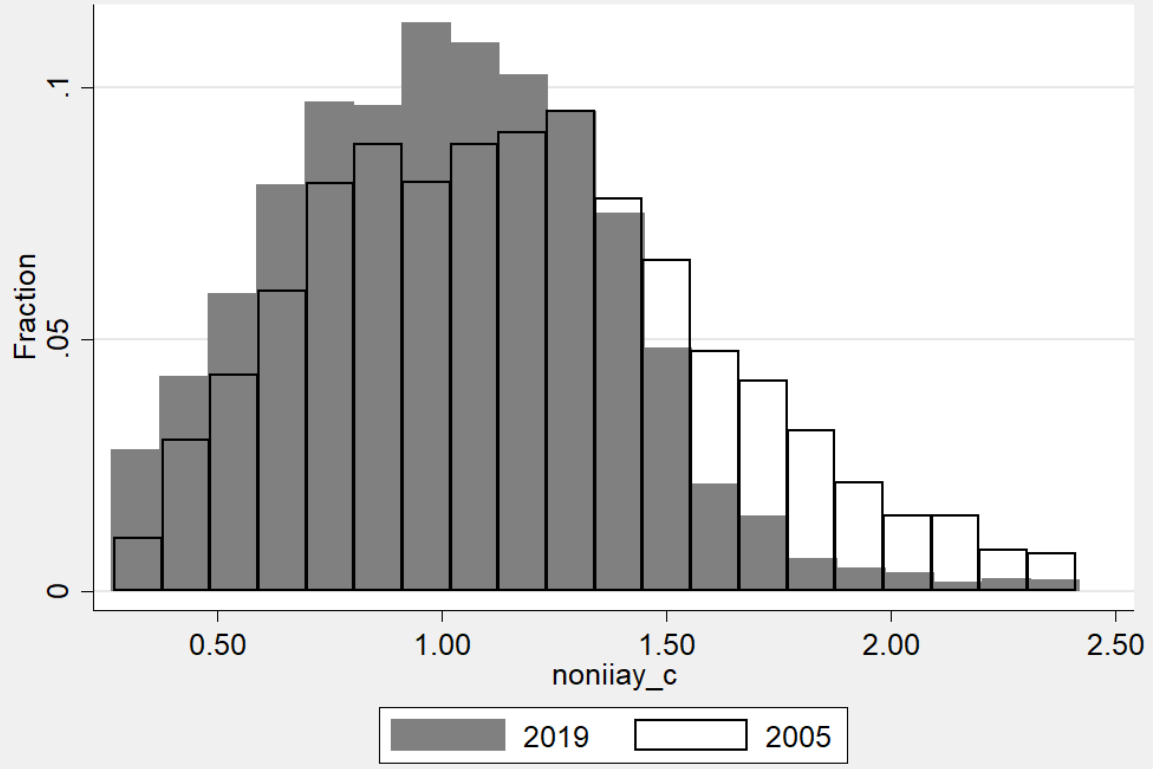
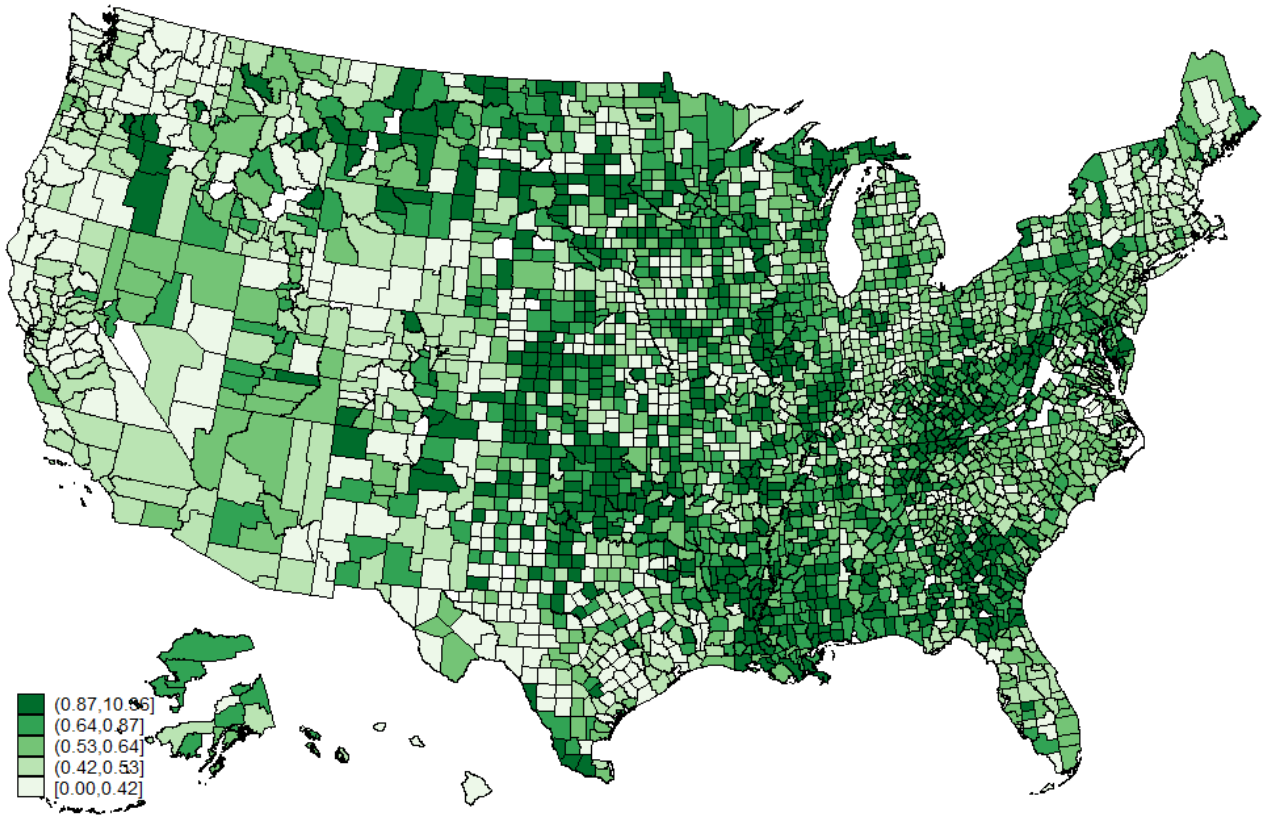


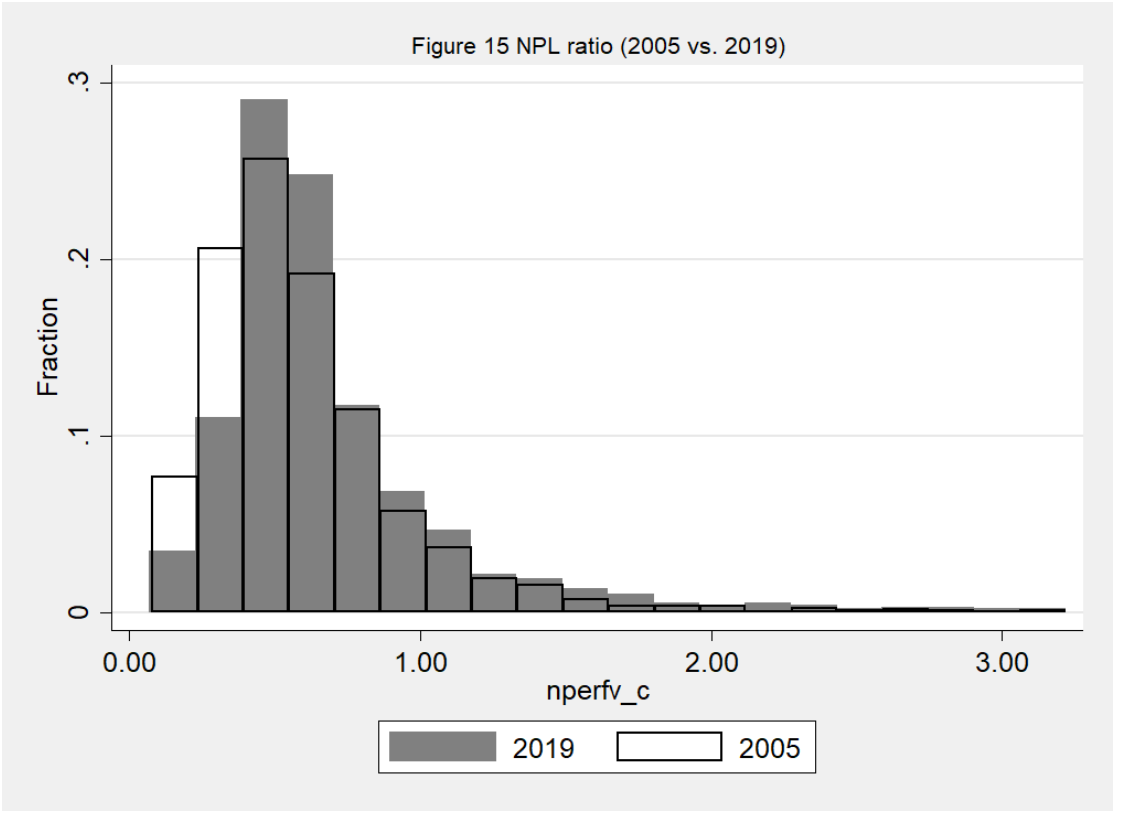
Figure 19 Net interest margin as ratio of assets (2005 vs. 2019)



Non-Performing Loan ratio

Figure 14 NPL ratio (2019)





Unemployment rate

Figure 32 Unemployment rate (2019)

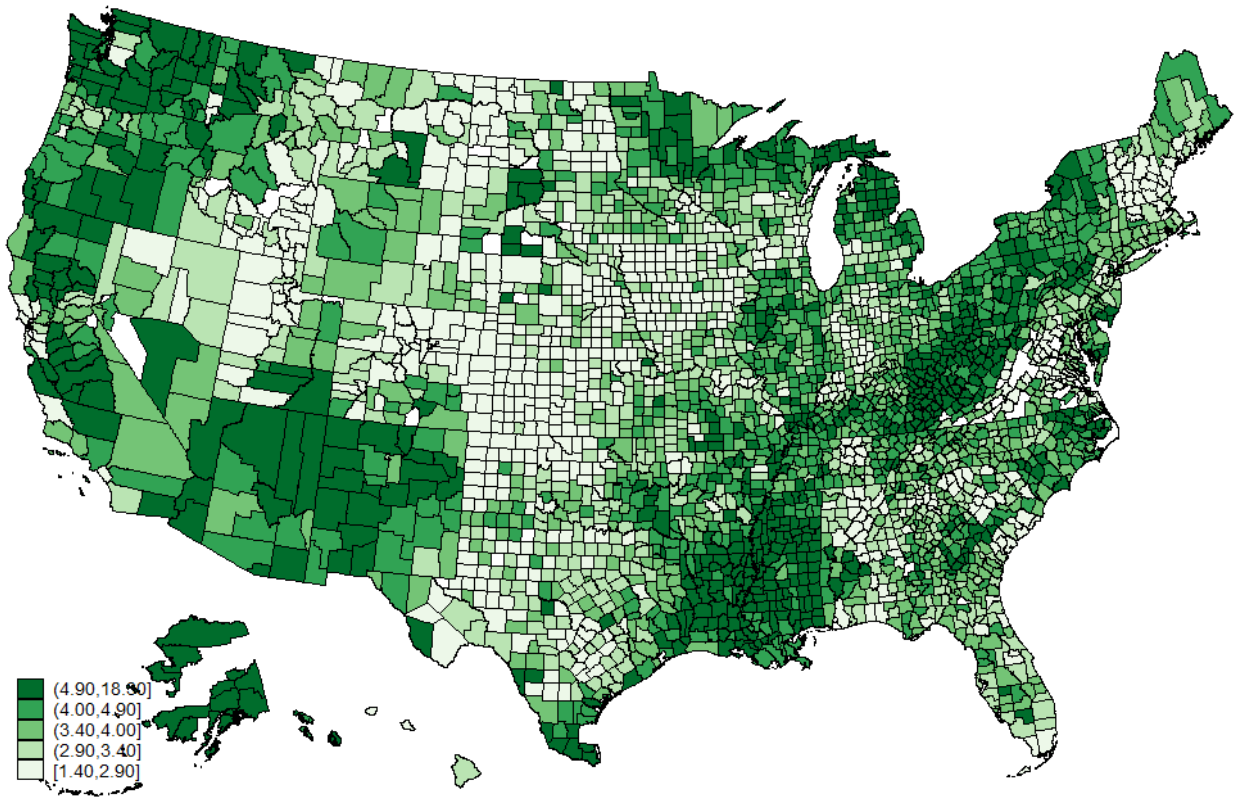
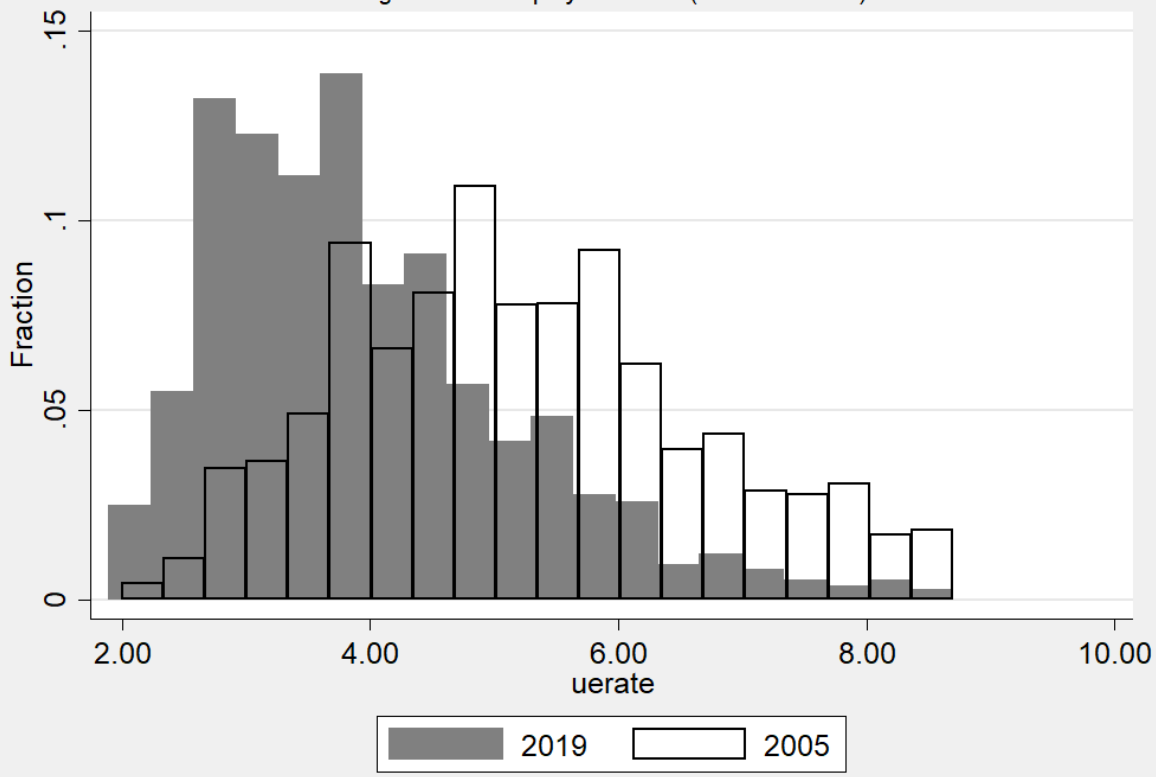


Figure 33 Unemployment rate (2005 vs. 2019)



Poverty rate

Figure 36 Poverty rate (all population) (2019)

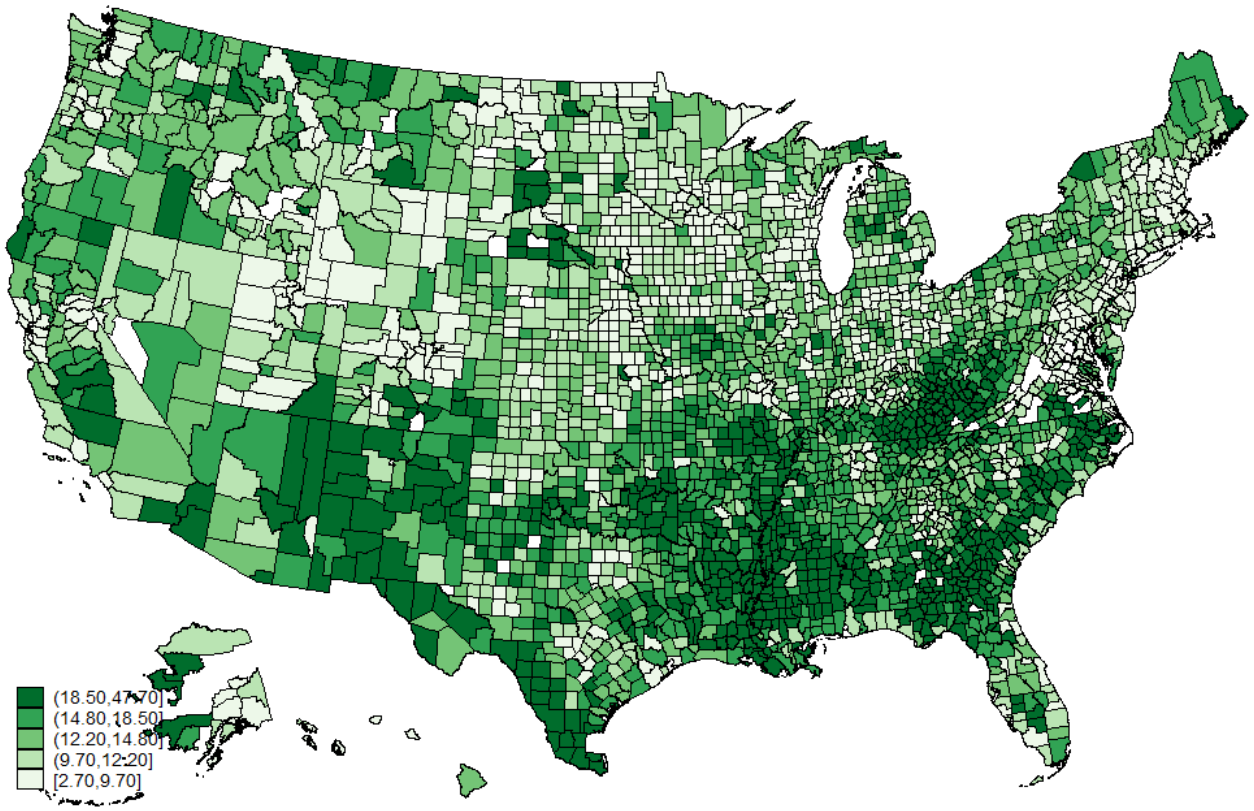
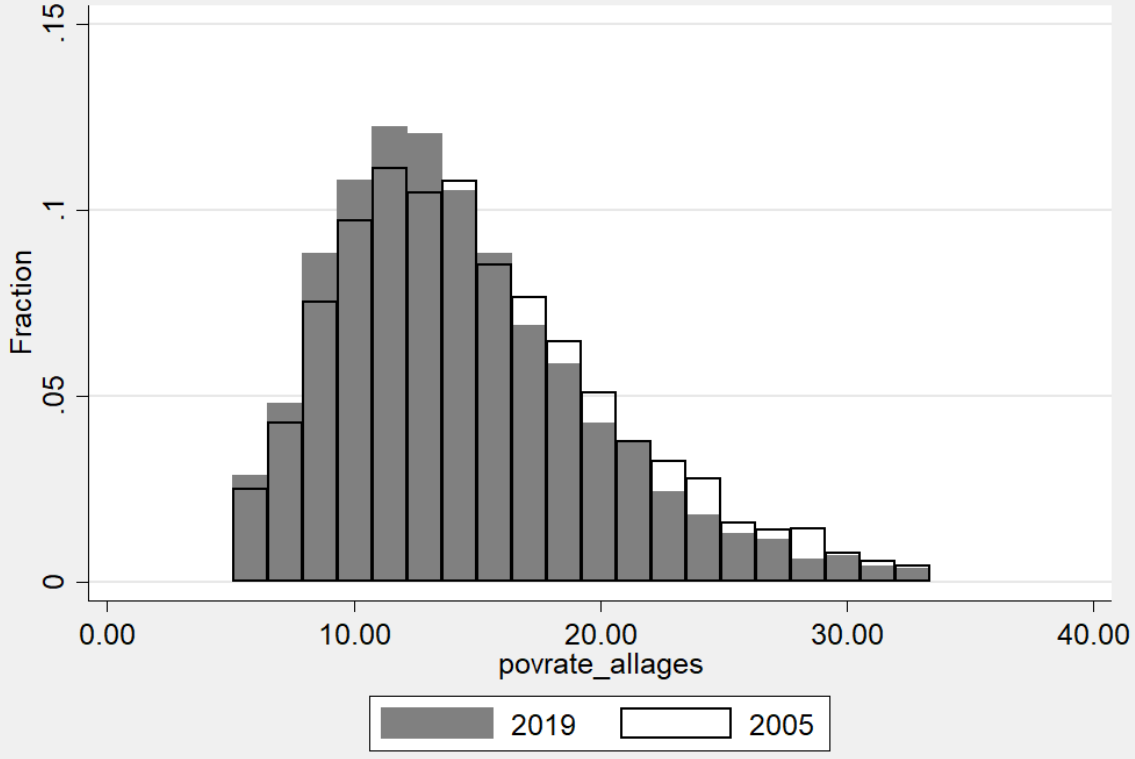


Figure 37 Poverty rate (all population) (2005 vs. 2019)



Not-working ratio (1-Employed/Working Age Pop.)

Figure 46 Non-working ratio (non-working WAP/WAP) (2019)

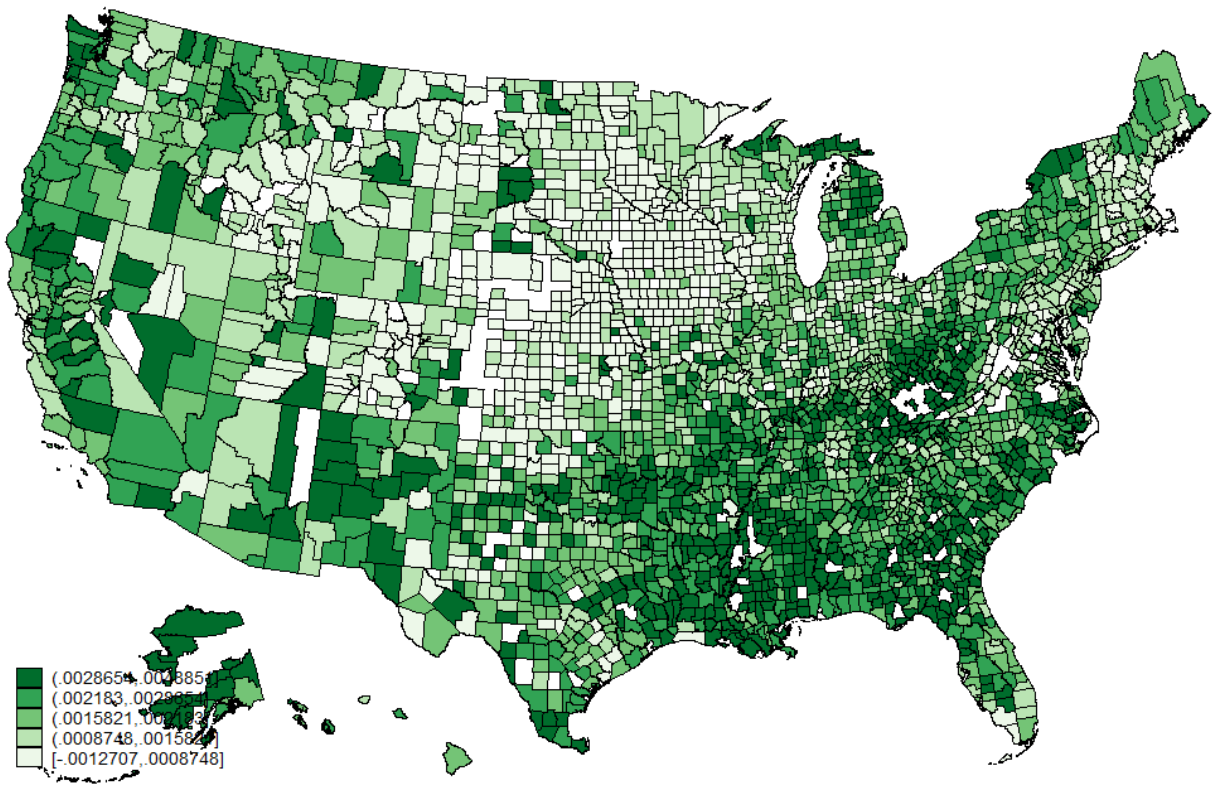
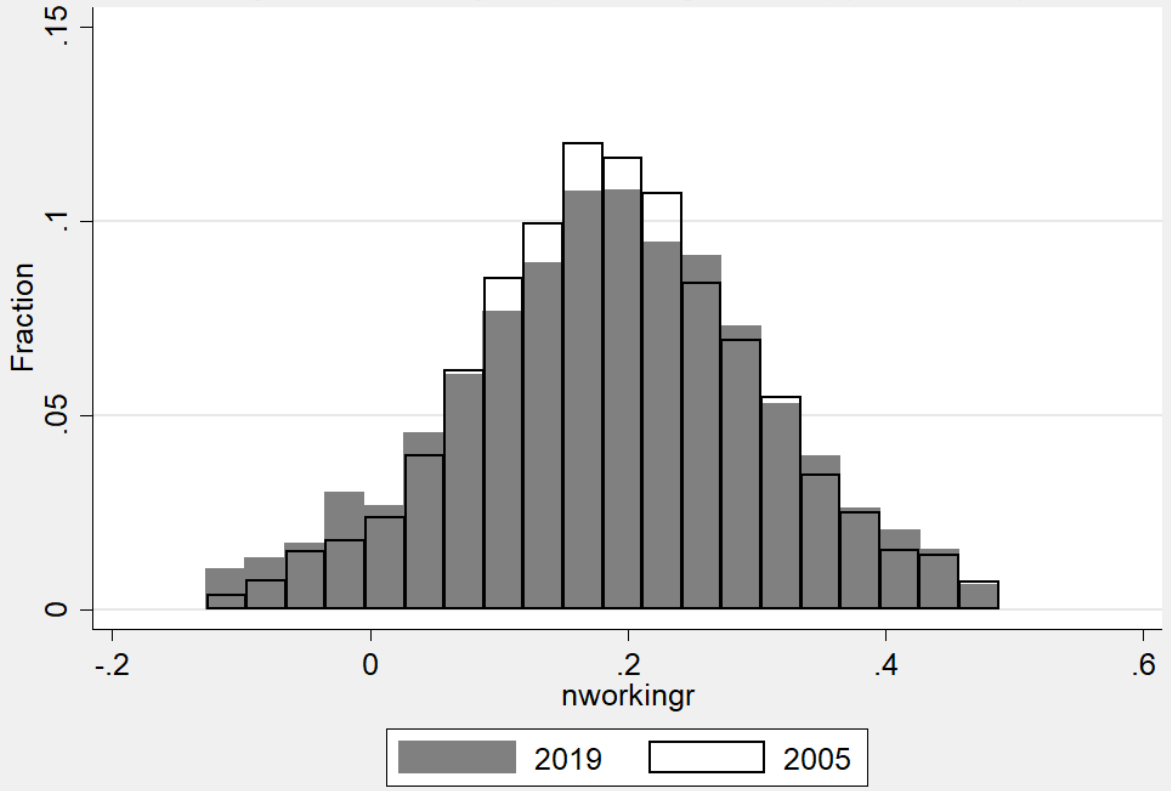


Figure 47 Non-working ratio (non-working WAP/WAP) (2005 vs. 2019)



Panel estimates

Fixed-effect estimation

RHS variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Unemployment rate (%)				Poverty rate (%)				Nonworking ratio (%)			
Share of community banks' assets (%)	0.002**			0.002*	0.001			-0.000	0.001			-0.000
	(0.001)			(0.001)	(0.001)			(0.001)	(0.007)			(0.007)
Bank Pretax ROA (%)		-0.461***		-0.184***		-0.265***		-0.104*		-0.399**		-0.103
		(0.075)		(0.048)		(0.046)		(0.046)		(0.126)		(0.131)
Nonperforming assets as a percent of total assets (%)			0.394***	0.340***			0.179***	0.148***			0.395***	0.365***
			(0.024)	(0.028)			(0.020)	(0.024)			(0.064)	(0.072)
2005 dummy	1.112***	1.173***	1.154***	1.174***					1.695***	1.748***	1.737***	1.748***
	(0.023)	(0.023)	(0.023)	(0.023)					(0.090)	(0.091)	(0.091)	(0.091)
2010 dummy	5.003***	4.593***	4.081***	4.045***	1.451***	1.181***	1.012***	0.982***	5.719***	5.365***	4.795***	4.773***
	(0.045)	(0.080)	(0.067)	(0.066)	(0.042)	(0.060)	(0.062)	(0.062)	(0.149)	(0.183)	(0.203)	(0.205)
2018 dummy	-0.256***	-0.297***	-0.275***	-0.285***	-0.177***	-0.235***	-0.205***	-0.222***	1.009***	0.976***	0.992***	0.985***
	(0.018)	(0.021)	(0.019)	(0.019)	(0.041)	(0.042)	(0.041)	(0.042)	(0.172)	(0.173)	(0.173)	(0.173)
2019 dummy	-0.376***	-0.427***	-0.384***	-0.398***	-0.866***	-0.928***	-0.888***	-0.909***	0.035	-0.005	0.031	0.021
	(0.019)	(0.022)	(0.020)	(0.020)	(0.042)	(0.043)	(0.042)	(0.043)	(0.182)	(0.184)	(0.183)	(0.183)
constant	4.231***	5.113***	4.092***	4.327***	15.256***	15.768***	15.199***	15.404***	18.468***	19.140***	18.218***	18.409***
	(0.052)	(0.124)	(0.024)	(0.106)	(0.088)	(0.083)	(0.029)	(0.131)	(0.438)	(0.226)	(0.114)	(0.439)
N	15315	15315	15315	15315	12221	12221	12221	12221	15315	15315	15315	15315

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Standard errors are robust to heterogeneity and serial correlation and clustered at the county level

Interpreting the coefficients *(*)*

One standard deviation increase of NPL ratio (from 0.7% to 1.3%) is associated with an increase of the unemployment rate of 0.2 *(sample mean = 4.0*), or about 500,000 people*.*

One standard deviation decrease of RoA (from 1.5% to 2%) is associated with an increase of the unemployment rate of 0.1 *(sample mean = 4.0), or* about 250,000 people.

One standard deviation increase of NPL ratio (from 0.7% to 1.3%) is associated with an increase of the poverty rate of 0.1 *(sample mean = 14.4), or* about 280,000 people.

One standard deviation increase of NPL ratio (from 0.7% to 1.3%) is associated with an increase of the non-working rate of 0.2 *(sample mean = 18.5), or* about 420,000 people.

(*) We consider coefficients significant at 0.1% from columns 4, 8 and 12 in table of the preceding slide.

Tentative conclusions

1. Lots of interesting data … lots of work still to do …
2. There is a clear association at local level between banking conditions and economic conditions. Stronger banks are clearly associated with better economic conditions
3. Causality could go both ways. We cannot infer causality yet. Exogeneity issues and instrumental var. is next step
4. We find no relationship between local economic conditions and the intensity of CB presence