

# Figures similar to Granja and Paixo Uniform Pricing Paper

March 11, 2025

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## Run Reg on the Full Sample

- The 3 Fixed Effects Proxies (similar to GP wp)
- Comparison of all fixed effects proxies

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- The 3 Fixed Effects Proxies (similar to GP wp)
- Comparison of all fixed effects proxies

# Overview: About Sample

- ▶ Used the newest RateWatch data, filling in missing values from 2020 to 2021. Covered time range
  - ▶ from Jan 2015, to Sep 2023, for 12MCD10K, INTCK2.5K, SAV2.5K;
  - ▶ from Jan 2015 to Jun 2022, for SAV25K
- ▶ According to GP wp, they *“exclude single-branch banks because the aim of our work is to study the pricing policies of banks across their multiple branches.”*
  - ▶ In multi-branches sample results, we did the same, excluding those ‘inst\_nm’ has only 1 unique ‘accountnumber’, around 7139 observations.
  - ▶ Full sample has 939605 observations, selected sample has 932466 observations.

# Overview: About Figures

Showing adjusted  $R^2$  of interest rates regressed on fixed effects.

- ▶ The adjusted  $R^2$  are from a monthly series of OLS regressions of interest rates on bank fixed effects, banking market fixed effects, and zip code fixed effects, within each product.
- ▶ To be more specific, for each month, run an OLS regression of the product rate (observations from branches) on each set of fixed effects, and plot the respective  $R^2$  across months.
- ▶ Skip months with fewer than 10 observations.

# Overview: About Figures

- ▶ As for the proxies for fixed effects,
  - ▶ Bank fixed effects: 'primarycompany' and 'inst\_nm';
  - ▶ Zip code fixed effects: the first 3 or 5 or 9 digits of 'zip';
  - ▶ Banking market fixed effects: 'msa' and 'cbsa'.
- ▶ Regarding the coverage scale, empirical evidence suggests that 'cbsa' (close to 'msa') covers a larger area than any digit level of the zip code.

# Overview: About Results (Full Sample)

	r2_inst	r2_primarycompany	r2_zip9	r2_zip5	r2_zip3	r2_msa	r2_cbsa	r2_county
12MCD10K	0.9117	0.8145	0.7908	0.6633	0.3864	0.1757	0.2889	0.3751
INTCK2.5K	0.8221	0.7539	0.8810	0.6846	0.5435	0.2223	0.2583	0.4501
SAV2.5K	0.9358	0.9331	0.7635	0.6861	0.4030	0.1305	0.2992	0.4527
SAV25K	0.9633	0.9622	0.8422	0.7822	0.4308	0.2674	0.3406	0.4120
<b>AVG</b>	0.9083	0.8659	0.8194	0.7041	0.4409	0.1990	0.2968	0.4225

# Overview: About Results (Multi-branches Sample)

	r2_inst	r2_primarycompany	r2_zip9	r2_zip5	r2_zip3	r2_msa	r2_cbsa	r2_county
12MCD10K	0.8716	0.7334	0.8765	0.6817	0.4555	0.2040	0.2510	0.3596
INTCK2.5K	0.8226	0.7608	0.8812	0.6840	0.5431	0.2221	0.2586	0.4484
SAV2.5K	0.8372	0.8303	0.8889	0.7397	0.5884	0.1468	0.1657	0.4260
SAV25K	0.8911	0.8854	0.9768	0.8064	0.5741	0.3039	0.3077	0.4538
<b>AVG</b>	0.8556	0.8025	0.9059	0.7280	0.5403	0.2192	0.2457	0.4219

# Overview: About Results

1. Generally, the results show that bank fixed effects account for the most variance, followed by zip code fixed effects, while banking market fixed effects contribute the least.
2. For bank fixed effects, 'inst\_nm' accounts for more variance than 'primarycompany', indicating that **pricing is more unified within a specific secondary institution of a bank.**
3. For zip code fixed effects, as the area scale increases from 9 digits to 3 digits, the variance explained decreases.
4. A similar pattern is observed when comparing banking market and zip code effects, since CBSA or MSA includes multiple zip codes.



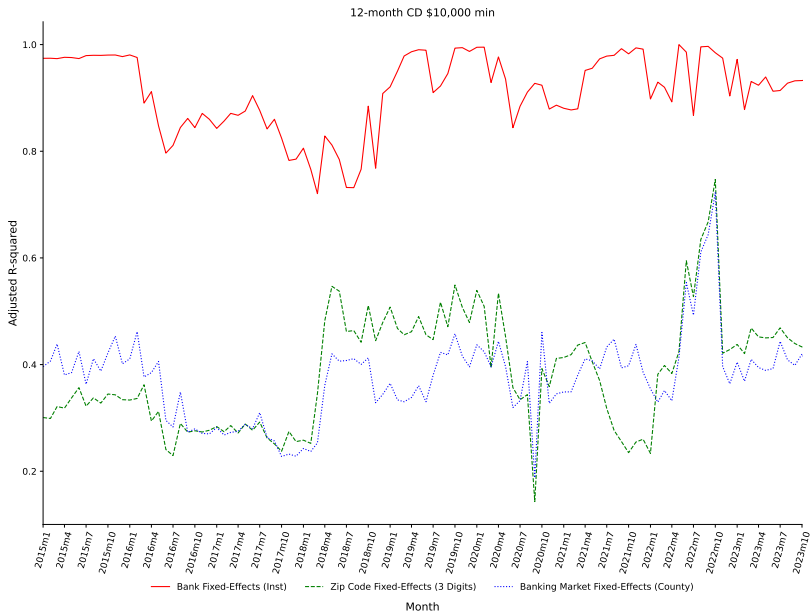
# Overview: About Questions

1. According to GP wp, zip code fixed effects account for, on average, less than 30% of the total variance in interest rates within the banking sector.  
Our results strongly suggest that they might have used the 3 digits zip code.
2. When selecting the sample, the conclusion appears to be a bit less robust, and more random.  
The SAV25K is the least robust, while the INTCK2.5K displays some unusual periods (Dec 2018 to Aug 2019).
3. There is no clear explanation of the proxy GP used for the "banking market."  
If the proxy is MSA, CBSA, or county, it covers a larger geographic area than a zip code. Shouldn't zip codes then explain more variance than the banking market? In GP wp, they account for less.

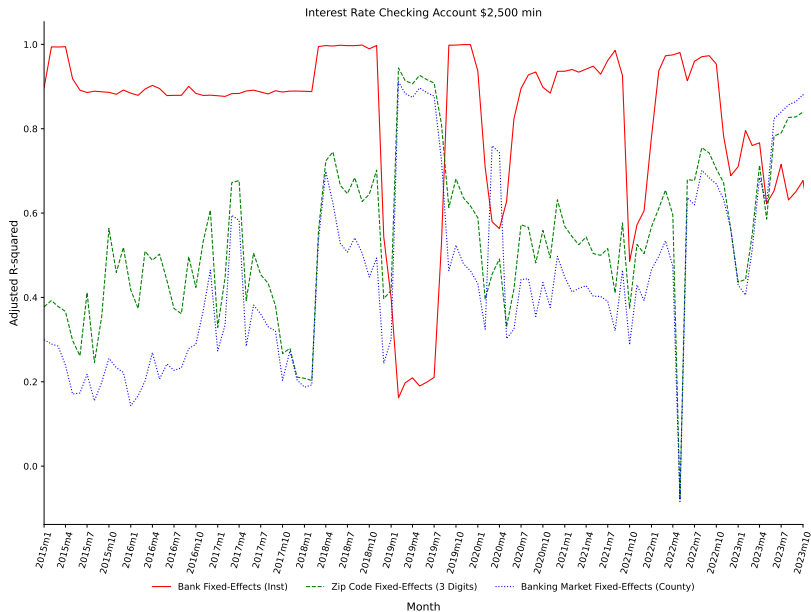
Full sample, figures similar to GP wp,

1. Showing adjusted  $R^2$  of rate regress on the following fixed effects,  
Bank (inst\_nm), Zip Code (3 digits), Banking Market (MSA)
2. Regression on the full sample, **including** 'inst\_nm's that have only single 'accountnumber'

# 12MCD0K, full sample



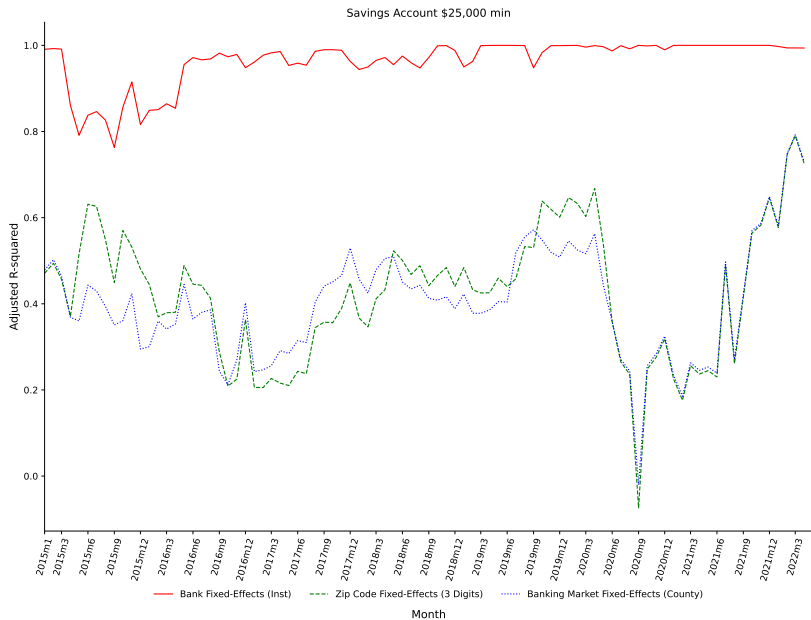
# INTCK2.5K, full sample



# SAV2.5K, full sample



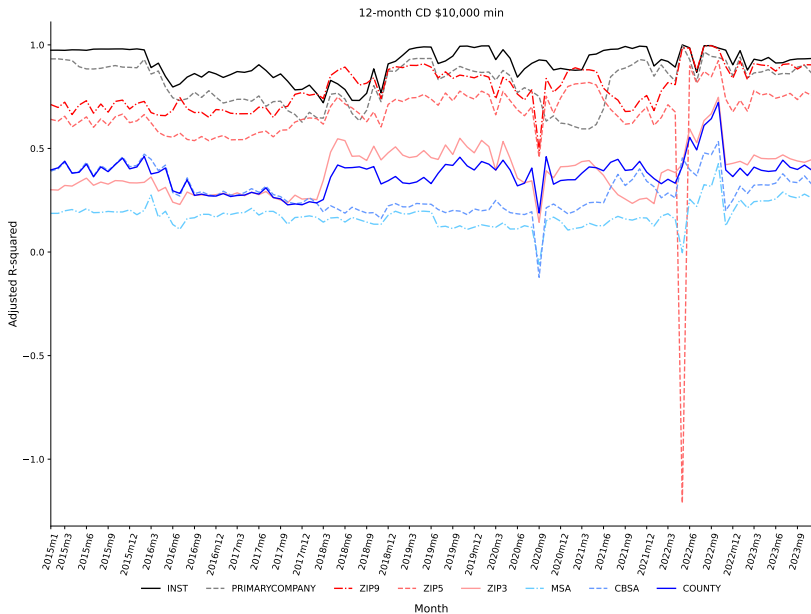
# SAV25K, full sample



Full sample, figures comparing all possible proxies,

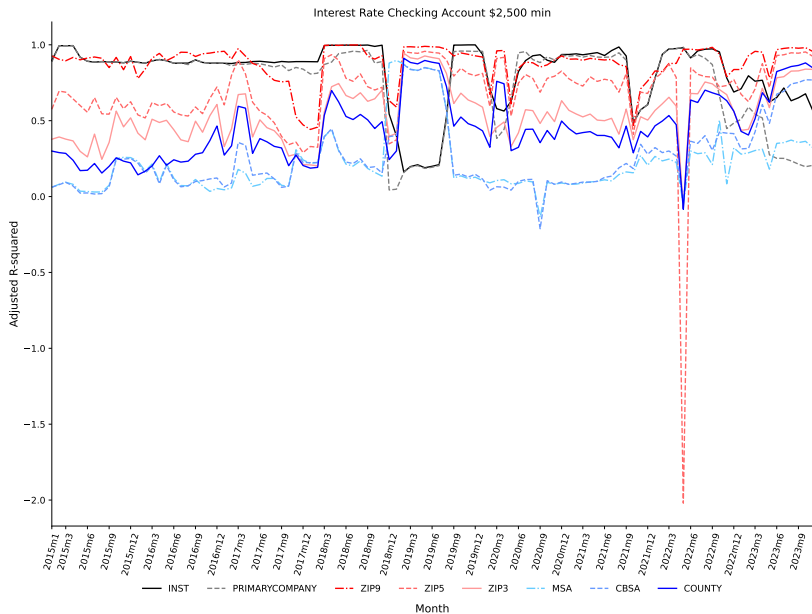
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  - ▶ Bank fixed effects: 'primarycompany' and 'inst\_nm'
  - ▶ Banking market fixed effects: 'msa' and 'cbsa'
  - ▶ Zip code fixed effects: the first 3 or 5 or 9 digits of 'zip'
2. Regression on the full sample, **including** 'inst\_nm's that have only single 'accountnumber'

# 12MCD0K, full sample

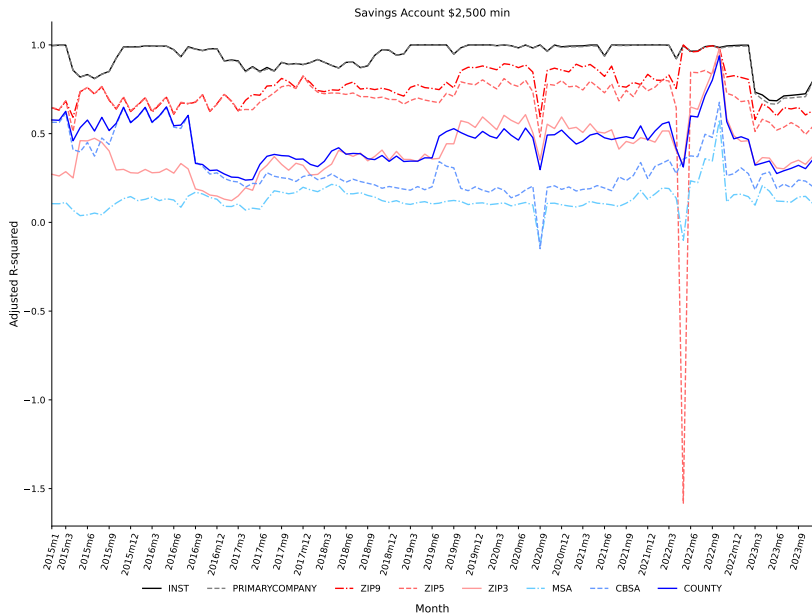




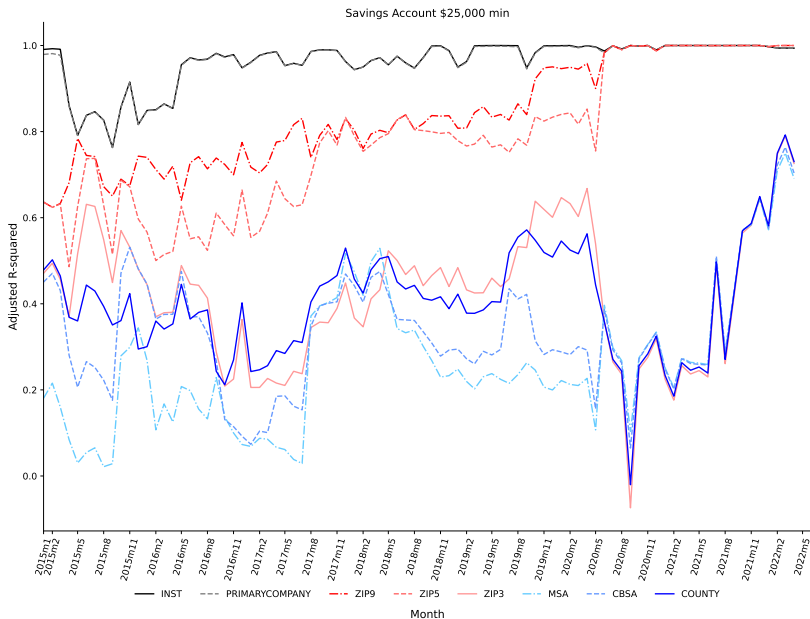
# INTCK2.5K, full sample



# SAV2.5K, full sample



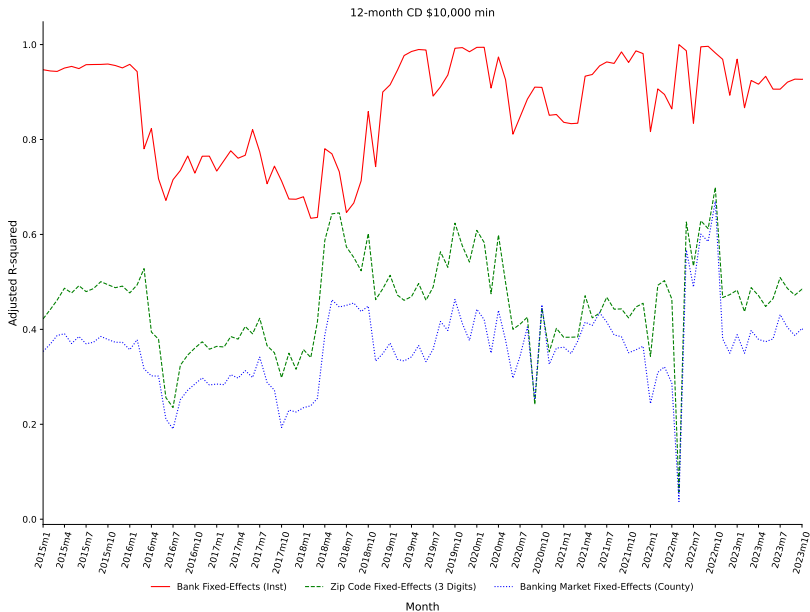
# SAV25K, full sample



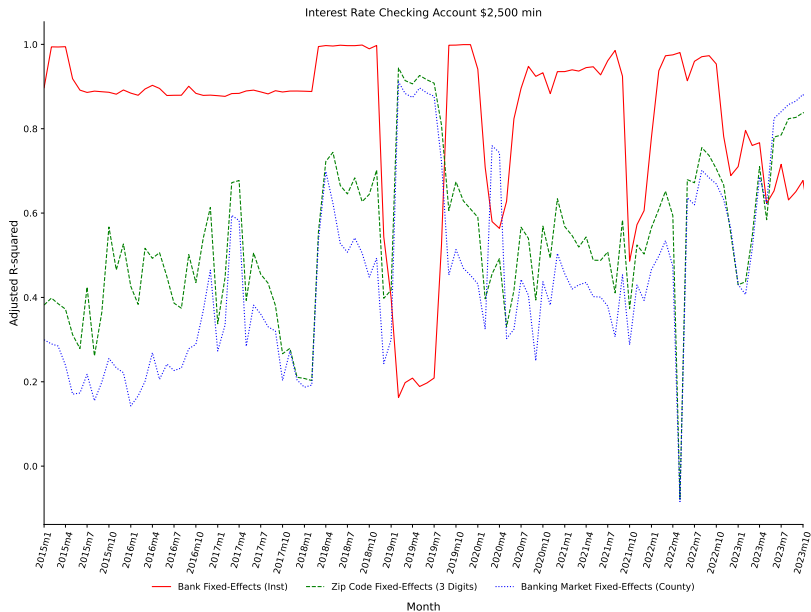
Multi-branches sample, figures similar to GP wp,

1. Showing adjusted  $R^2$  of rate regress on the following fixed effects,  
Bank (inst\_nm), Zip Code (3 digits), Banking Market (MSA)
2. Regression on the full sample, **excluding** 'inst\_nm's that have only single 'accountnumber'

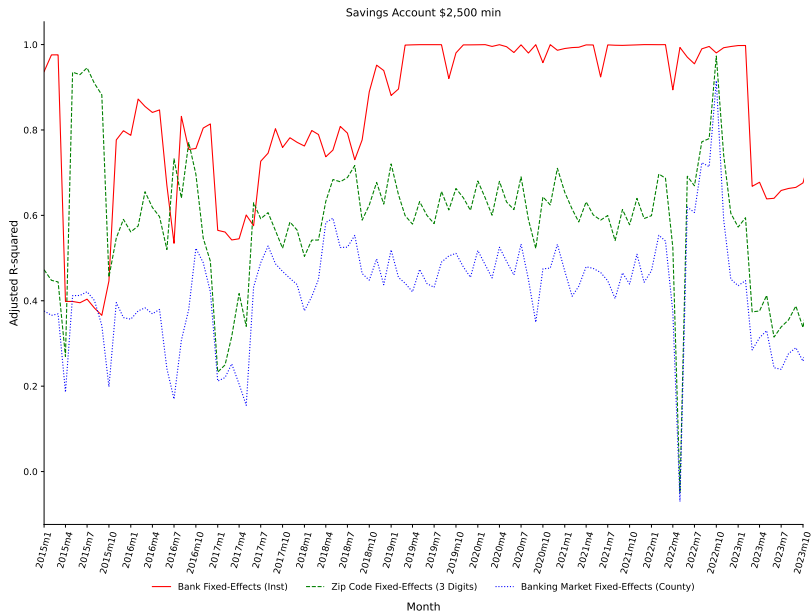
# 12MCD0K, multi-branches sample



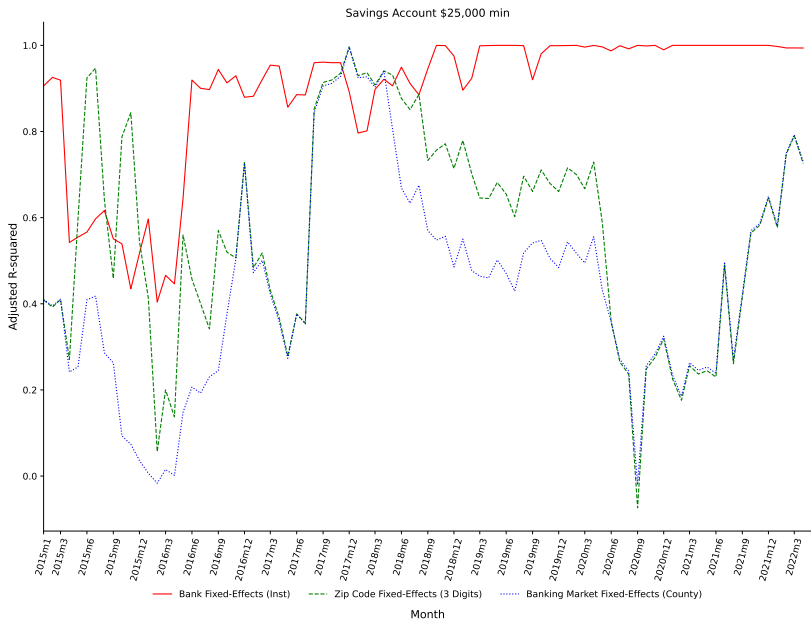
# INTCK2.5K, multi-branches sample



# SAV2.5K, multi-branches sample



# SAV25K, multi-branches sample

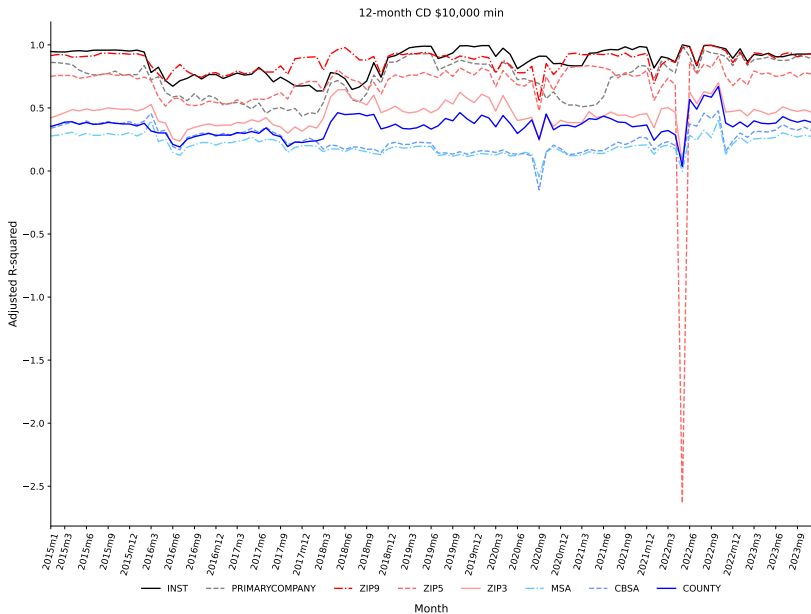




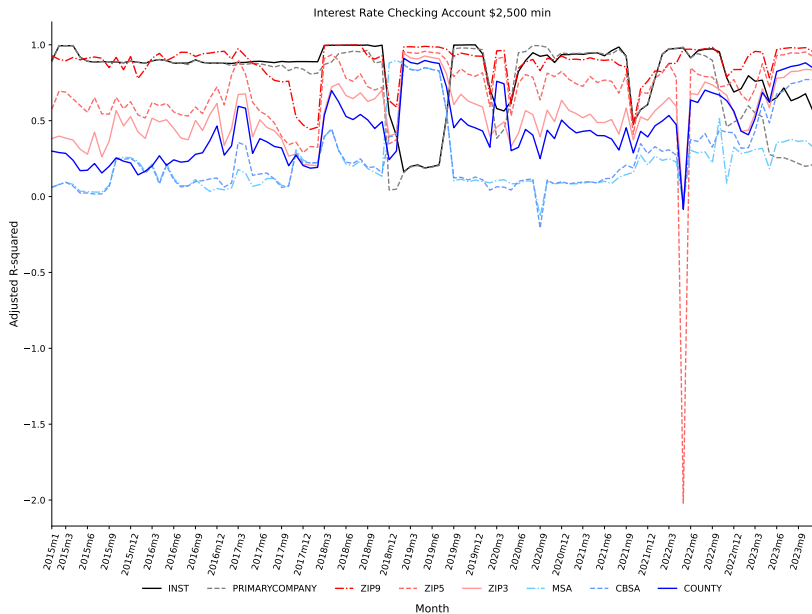
Multi-branches sample, figures comparing all possible proxies,

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  - ▶ Banking market fixed effects: 'msa' and 'cbsa'
  - ▶ Zip code fixed effects: the first 3 or 5 or 9 digits of 'zip'
2. Regression on the full sample, **excluding** 'inst\_nm's that have only single 'accountnumber'

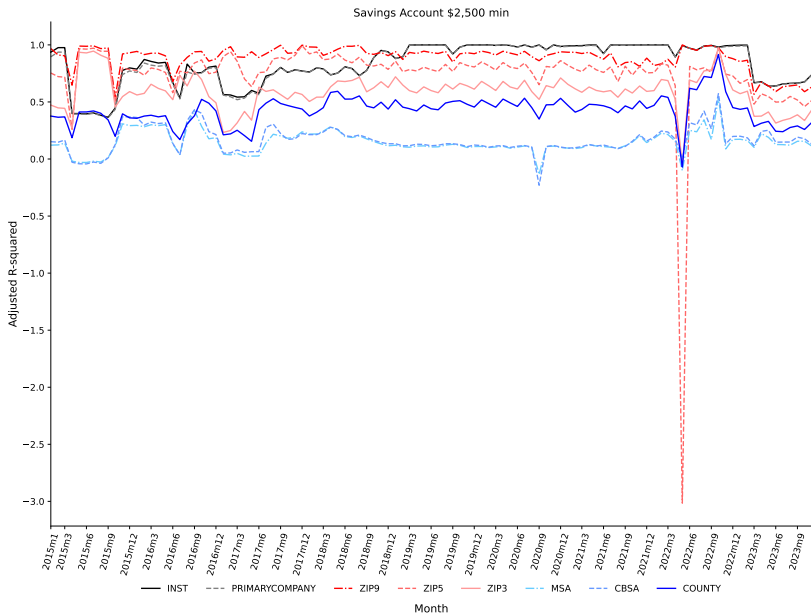
# 12MCD0K, multi-branches sample



# INTCK2.5K, multi-branches sample



# SAV2.5K, multi-branches sample



# SAV25K, multi-branches sample

