Referee report: The Decline of Branch Banking

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Summary

This paper studies the determinants of branch openings and closures from 2001 to 2023. It argues that, rather than local lending opportunities, variation in the *deposit franchise* value explains where branches are opened or closed. Branch growth before 2010 was driven by deregulation; the post-2010 decline reflects the impact of digitization on deposit franchise values.

Following a note by Drechsler, Savov, and Schnabl, the authors define the deposit franchise (DF) at the bank level as:

$$D_i \times \left(1 - \beta_i - \frac{c_i}{r_p}\right) \times \left(1 - \frac{1}{(1+r_p)^{10}}\right),$$

where D_i is deposits, β_i the deposit beta, c_i costs, and r_p the policy rate. They focus on the per-dollar version DF/D_i and measure β_i as $\beta_i = \frac{\Delta r_i^d}{\Delta r^f}$.

Using demographic data (e.g., income, age, college share, and dividend income filings) at the zip-code level, they regress bank-level β_i on footprint-weighted ZIP characteristics across three tightening cycles (2004–06, 2016–19, 2022–23). Higher β_i correlates with larger banks and more educated, stock-participating areas. These coefficients are used to impute branch-level DF values. Small banks tend to have higher DF per deposit dollar due to lower β_i.

Tables 6 and 7 present the main regressions predicting branch closures and openings at the branch-year level from 2001 to 2023. Using the branch-level deposit franchise value—constructed from local demographics—the authors find that higher franchise value predicts both fewer closures and fewer openings, particularly for larger banks. The specifications include bank-by-year and county-by-year fixed effects. Older and larger branches are less likely to close. Branches in areas with stronger establishment growth are also less likely to close and more likely to open. Tables 8 and 9 repeat these analyses using local demographic characteristics directly, rather than the constructed franchise value. Openings and closures are more common in "sophisticated" zip codes and somewhat less likely in higher-income areas. Tables 12 and 13 add branch usage controls to the branch level deposit franchise variable, which restricts the regression to the period 2019 to 2021. Adding branch usage change controls reduces the coefficient on the deposit franchise variable, but does not drive it out. Larger declines in usage (comparing 2021 to 2019) predict branch closures but also branch openings for small banks.

Overall, the paper argues that changes in deposit franchise value—driven by household characteristics—shape branch dynamics, particularly the post-GFC retrenchment from areas with more sophisticated depositors.

Contribution: This paper contributes to a broad literature examining the forces behind changes in financial intermediation, with regulation and technology emerging as the two primary drivers of these changes. For instance, the question of whether regulation or technology explains shifts in financial structure is central to the rise of shadow banking (e.g., Buchak et al., 2017). A similar debate underpins work on the decline in bank branching and the rise in market concentration (e.g., Aguirregabiria et al., 2016; Sengupta and Rice, 2019; Corbae and D'Erasmo, 2020; Fee and Tiersten-Nyman, 2022; Barca and Hou, 2024; as well as work by the authors), with both deregulation and digitization cited as key factors. Recent work (e.g., Koont, 2023; Jiang et al., 2024) has emphasized the changes in banking technologies.

The paper under review draws on this literature (and the authors' prior work) to argue that the pre-GFC expansion of branches (and concurrent decline in the number of banks) was primarily driven by deregulation. In contrast, the post-GFC decline in branching is attributed to a technology-driven erosion of deposit franchise value. The paper offers a novel variant of the technological mechanism operating through household preferences: financially sophisticated households—who generally give a bank a lower deposit franchise value—are more likely to abandon traditional bank technology (the branch) when presented with alternatives, a point supported by pandemic-era branch usage data. A similar idea appears in D'Avernas et al. (2023) and Jiang et al (2024). The paper's emphasis on local demographics and household preferences is very nice and highlights an underexplored dimension of bank behavior. However, the manuscript and the argument presented remain rough in places and would benefit from substantial streamlining.

Main Comments

- **Potential disconnect between aggregate and cross-section:**
  - I am trying to digest the message of the paper. The goal is to understand an aggregate decline in branches and to propose a somewhat novel mechanism: the decline in deposit franchise value. The evidence for the mechanism is found in the cross-section of banks, which suggests that branches in lower-deposit franchise value areas are more likely to be closed and less likely to be opened. But the paper also shows that it is the large banks that face more sophisticated (ergo lower value) depositors, which also drives their lower (per-deposit dollar) deposit franchise value. This suggests that larger banks drive the aggregate decline in branches. Consistent with this idea, the paper shows that large banks have a stronger response to opening and closing branches in response to low deposit franchise values.

    Can we make the leap from cross-sectional patterns to aggregate trends? We know from Corbae and D'Erasmo (2020) that banking sector concentration has increased. Consistent with this, Figure 1, Panel A of the paper shows a decline in the number of banks beginning in the 1980s, and a decline in branches starting around 2010. Although Figure 2 (p. 37) suggests that large banks closed branches at a much higher rate during the pandemic (over 7% in 2020 vs. less than 4% for small banks), the branch share of the top 27 banks—roughly corresponding to the paper's definition of large banks—has remained stable (Figure 1). In fact, during the pandemic, when the authors argue sophisticated ZIP codes were hit hardest, this share even increased slightly.

    This suggests that the aggregate decline in branches since 2010 has been driven by both large and small banks. However, for small banks, closures may be driven more by full-bank exits, which are not captured by within-bank regressions such as those in Tables 6 and beyond. I would like a clearer link between the cross-sectional findings and the broader time-series pattern of branch decline.

  - The paper under review departs from Drechsler, Savov, and Schnabl's original definition of deposit franchise value in their note, measured as the product of deposits $\times$ the spread annuity, instead using a per-dollar-of-deposit measure. This shift may introduce a disconnect between the constructed franchise value and the margin that is most relevant for explaining branch-level decisions. Since the decision to open or close a branch is likely influenced by the total value a branch generates—not just its per-dollar margin—it's unclear whether this per-dollar measure fully captures the relevant variation in the cross-section. Larger banks may pay higher rates to more elastic depositors, but they can still generate greater total value simply because value scales with deposit volume. So there is a tension with the view that financially sophisticated (who are also very likely wealthier) are somehow less desirable depositors from a bank's perspective. Yet,

the paper's empirical specification effectively strips out the quantity component when constructing branch-level deposit franchise values, even though the regressions show that deposit volume at the branch or ZIP-code level significantly predicts both openings and closures.

  - Central bankers have noted (e.g., Fee and Tiersten-Nyman) that post-2010 consolidation has led institutions to "more diligently assess their footprints and close overlapping or redundant branches." This view is not inconsistent with the paper's argument that local demographics shape branch decisions; however, it is slightly different in that the reduction in post-2010 branches may be a response to having opened too many branches before the GFC. Rather than changes in post-2010 household preferences, banks may have realized that the total branch value may not justify keeping all branches open.

- **Contribution needs clarification and reconciliation with inconsistent (?) findings in other work**

  - The paper implies that financially sophisticated households are less valuable to banks because they are more rate-sensitive, lowering the deposit franchise value. This interpretation appears to contrast with D'Avernas et al. (2023), who show that large banks face *lower* deposit rate elasticities and tend to operate in markets with *less* rate-sensitive customers. Both papers agree that large banks disproportionately serve wealthier households, but they differ on what that means for bank value. In D'Avernas et al., wealthier households are less rate-sensitive because they allocate a smaller share of wealth to deposits and care more about the services the bank provides. Unlike for relatively poorer households, bank deposits do not store the wealth of wealthier people. They further find that large banks locate branches in areas with higher income, younger populations, and higher house prices. By contrast, the paper under review claims that these same characteristics reduce the value of the deposit franchise and lead to more branch closures. While the methodologies differ, the contradiction in interpretation deserves clarification, especially as it may help bridge the gap between the paper's cross-sectional results and aggregate trends.

  - Jiang et al. (2024) also explore the role of household demographics in shaping banks' use of physical versus digital channels. They find that younger, wealthier, and more educated households prefer digital platforms, while older, lower-income, and less-educated households rely more on branches. Yet, their Table 2 shows that 3G mobile rollouts accelerated branch closures most in counties with younger and *less*-educated populations. The result for "younger" is broadly consistent with the current paper. Still, the effect for "less educated" seems inconsistent, as the paper under review finds that banks close branches in more highly educated areas.

  - More broadly, the paper's main contribution—linking household preferences and technological change to branch openings and closures—overlaps with insights in D'Avernas et al. (2023) and Jiang et al. (2024). While both are cited, the paper would benefit from a more precise discussion of how its conclusions align with or diverge from those studies. Clarifying this would strengthen the paper's contribution and help reconcile its cross-sectional findings with broader sectoral dynamics.

- **Presentation**

  - Similar to the main message, the paper's presentation lacks clarity in places. It begins by emphasizing the role of financial sophistication but then shifts focus to deposit franchise value. The implied argument is that financial sophistication drives the per-dollar value of the deposit franchise—but if that's the case, why not use financial sophistication directly as the key explanatory variable, as done in Tables 8 and 9? If the franchise value is intended as the more fundamental primitive, then the focus is justified; however, the paper doesn't clearly commit to this

framing. Moreover, since both specifications rely on the same underlying demographic variables, it's not surprising that they yield similar predictive power for openings and closures. In that sense, the constructed franchise value appears to add interpretive value rather than identifying new variation, again, a reasonable approach, but one that could be streamlined.

- The introduction of branch usage data further complicates the narrative. These measures are potentially informative but are constrained by limited data availability, restricting their empirical role. Yet, in Section 1 (p. 10), they are introduced as a central part of the mechanism. The paper would benefit from aligning the emphasis in the introduction more closely with the empirical weight given to each component.

Suggestions and minor points in no particular order

1. The paper's dismissal of local business opportunities—such as loan demand—feels somewhat too strong. Tables 6 and 7 show that stronger local establishment growth (measured using County Business Patterns data) is consistently associated with fewer branch closures and more branch openings, especially for large banks. These patterns suggest that local economic conditions continue to play a role in branch decisions. While the focus of the paper is on deposit franchise value, the economic magnitude of establishment growth effects appears meaningful and should at the very least be discussed. It would be helpful to compare these effects directly to those of the franchise value to clarify their relative importance.

2. The paper presents the deposit franchise value as "playing a central role" and as a "dominant driver" of branch opening and closure decisions. It would be good to show the effect of the deposit franchise alone. While the results indicate that the variable is consistently statistically significant, its explanatory power appears to be limited. When reported, the within R^2 values are pretty low (often below 5%) even with county-year and bank-year fixed effects and a full set of controls. For large banks, it is even lower. This suggests that the effect is either small or that there is significant noise in the dependent variable. This raises questions about the practical importance of the franchise value in explaining branch dynamics and suggests that the paper might benefit from a more measured characterization of its role. Perhaps having a better measurement of branch openings and closures will help reduce the noise in the dependent variable (see next point).

3. As far as I could follow from Section 2.1., a branch opening and closure is determined based on whether the branch shows up in the summary of deposits (SOD) data, using presumably the branch id uninumbr. However, this can be sometimes problematic as sometimes a bank ownership chance prompts a new uninumbr, or a head-office with a missing uninumbr becomes a regular branch with some uninumbr. Locations can also change over a branch's life. I do not necessarily expect different results, but an alternative would be use the FDIC "Find events and changes" list of branch openings and closings `https://banks.data.fdic.gov/bankfind-suite/oscr`. Using this data, Fee and Tiersten-Nyman, 2022 seem to find substantial different numbers for opened and closed branches.

4. Measurement of the deposit franchise value: Given the authors' assumption of $c_i = 0$ for all banks, and banks' cost of capital r_p set to 2.5%, same deposit "maturity" of 10-years for all banks and all time-periods, the only assumed across-bank variation in the bank-level deposit franchise value is in the change banks' interest expenses on deposits. But different banks have different risk-levels, leading to different r_p, as well as different c_i, and different deposit-run-off probablitities (e.g., the deposit run-off probability changed dramatically for some banks during the last tightening cycle). The simpler measure used in the paper still predicts closures and openings, but maybe calling it the deposit franchise value under these circumstances is a slight stretch.

5. Further on measurement. The authors define $\beta_i \equiv \Delta r_i^D / \Delta r^F$, whereas the literature defines $\beta_i = Cov(\Delta r_{i,t}^D, \Delta r_t^F) / Var(\Delta r_t^F)$ (or instead of $\Delta r_{i,t}^D$ the focus is on the deposit spread $\Delta(r_t^F - r_{i,t}^D)$. Clearly, if $R_i^D = \beta_i R_t^F$ with β_i time invariant, the regression approach and just taking the ratio approach would collapse to the same, but differ if not. For example, β_i is itself might be a function of r_t^F (e.g., Driscoll and Judson, 2013), or deposit rates might follow a model where $r_i^D = r_t^F - \psi_i$ (banks mark down deposits at some constant rate). In this case, the deposit rate sensitivity to changes in r_t^F would be 1, despite banks paying less than "market rate" on deposits. The evidence seems closer to the first model, but still, some discussion and clarification of why this measure does not follow the literature would be warranted. Relatedly, banks charge service fees on their deposits, particularly on smaller account values, which should be included in the calculation of r_i^d.

6. The characteristics explaining branch-level deposit franchise are likely correlated with each other. Wealthier households tend to be more educated and have higher income, but conditional on being more "financially sophisticated" more income predicts higher franchise value (which would be more consistent with D'Avernas) and fewer closures (Tables 8 and 9). This seems worth discussing when grappling with what really drives closures and openings.

7. The regression of the last tightening cycle seems to use only data up to 2023. If correct and not a typo in the description on page 15, this should be corrected in the figures, text, and tables. More generally, it is unclear from the text why the estimation is only conducted for these three tightening cycles, but then the main regression results, Tables 6 and 7 are for the entire sample, even though key demographic variables are not even available before 2005 (see 2.3).

8. A related issue is that the Table 2 coefficients—used to impute franchise values—are estimated across the full bank cross-section. In an unweighted regression, small banks dominate, potentially skewing the estimates. As a result, a small and a large bank with branches in the same ZIP code would be assigned the same branch-level franchise value, despite likely serving different types of depositors.

9. Table and Figure notes are not self-explanatory. How are variables constructed? For example, for the branch level DFs used in Tables 6 and 7, which coefficients are used? What about Tables 10 and 11? Table 2 presents coefficients from different time horizons. Some tables report within R^2 (Table 7) others (Table 6) do not. What are the controls in Tables 12 and 13?

References

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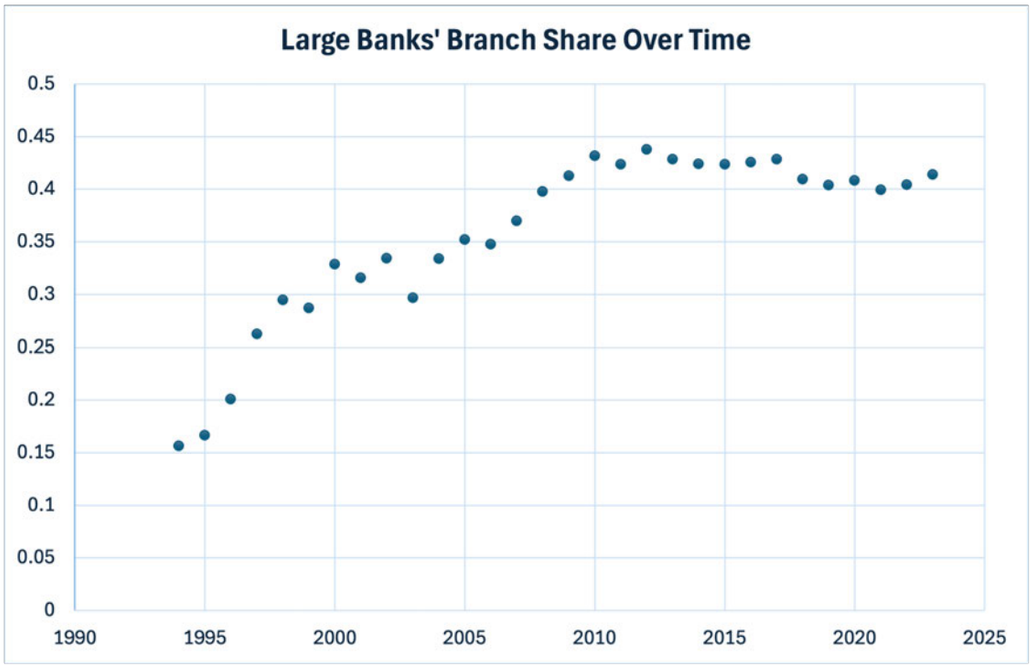
Figure 1: Branch Share of Top 27 Banks



Notes: The figure presents the share of total branches owned by the top 27 banks. The data are from the FDIC's Summary of Deposits.

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