

Banking Consolidation and the Changing Nature of Innovation in the United States

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May 2026

Introduction

When a handful of large banks dominate a local economy, does that help or hinder innovation? The intuitive assumption that less competition leads to less dynamism turns out to be incomplete. A new working paper by Oudom Hean, Jaxon Nankivel, and Sean Schiefelbein (2026) examines the relationship between banking market consolidation and patenting activity across U.S. states from 1994 to 2020. The findings reveal a more nuanced story: the effect of consolidation on innovation depends on how concentrated the market already is, where in the country you look, and most importantly, what kind of innovation you are talking about.

Banking consolidation has reshaped the financial landscape over the past three decades. Since 1994, the number of banking institutions has fallen by nearly half, driven by regulatory changes, technological advances, and the pursuit of economies of scale. As fewer, larger banks control a growing share of the market, a critical question emerges: does this structural shift help or hurt the nation's capacity for innovation?

To study this question, the authors analyze three decades of state-level data on banking concentration alongside patent grant data from the U.S. Patent and Trademark Office to measure innovation. Banking concentration is measured in two ways: the Herfindahl-Hirschman Index (HHI), which captures the overall distribution of market share across all banks in a state, and the four-firm concentration ratio (CR4), which measures the combined deposit share held by the four largest banks. Together, these measures capture both broad market structure and the dominance of the largest institutions. The results reveal two key findings: one concerning the volume of innovation, and the other concerning the nature of innovation.

The Diminishing and Negative Effects of Consolidation

The paper documents a nonlinear shaped relationship between banking consolidation and innovation, where low to moderate levels of concentration are associated with more patenting. Large, well-capitalized banks may be better positioned to absorb the risk of lending to innovative ventures, extending credit that smaller, fragmented lenders cannot. Post-crisis regulatory burdens may also constrain smaller banks' willingness and capacity to lend to early-stage borrowers.

However, this positive relationship reverses when banking markets become highly concentrated. When just a few institutions dominate a market, the smaller and mid-sized institutions most willing to finance risky, innovative ventures have largely disappeared, leaving a market dominated by large banks. The largest lenders tend to be more selective, gravitating towards established firms. The result is a net drag on patenting.

Policymakers and regulators often focus on whether a merger crosses a specific concentration threshold, but this research suggests the more important question is where a market already sits on the curve. The effect of additional consolidation differs greatly between a moderately concentrated market and an already dominated one.

The relationship also varies by region, attributable to multiple factors. The Northeast and South display stronger and more statistically significant effects, reflecting the prominence of traditional bank financing in those innovation ecosystems. In contrast, in the Midwest, the industrial composition of many states is historically oriented around manufacturing and agriculture rather than technology, making innovation activity less sensitive to banking market structure. In the West, and particularly states like California, more developed venture capital ecosystems may reduce firms' dependence on traditional bank financing altogether.

The Quality of Innovation

The most novel contribution of this research is its distinction between different types of innovation. Not all patents are created equal. Some are disruptive, rendering prior technologies less relevant and opening entirely new technological frontiers. Others are incremental, building on existing innovations. Using the CD5 index (see Park et al., 2023), which classifies patents based on their citation patterns, the paper separates patents into these categories and examines how banking consolidation affects each.

The results reveal a much more nuanced perspective on how financing access shapes innovation. The paper finds that higher banking concentration is associated with fewer disruptive patents and more incremental ones. As banking markets consolidate, the nature of innovation shifts away from radical breakthroughs and toward safer, marginal improvements.

While most prior research has asked whether banking consolidation affects the volume of innovation, Hean et al. (2026) examine how it shapes the composition of innovation: the balance between disruptive and incremental activity. The implication is significant: a banking system that appears to support innovation in aggregate may be quietly shifting it toward lower-risk, lower-impact activity.

This pattern reflects how consolidated banks approach risk. As institutions grow larger and face greater regulatory scrutiny, their lending criteria tend to become more standardized and conservative. Large banks evaluate borrowers against established metrics: collateral, credit history, and stable cash flows, which systematically favor incumbent firms over early-stage innovators. This is not necessarily a deliberate choice against innovation, but rather an institutional tendency toward predictability and risk aversion. A startup pursuing a disruptive idea may have significant potential but little in the way of tangible assets or earnings history, making it a poor fit for the kind of structured lending that large, consolidated banks prefer. The result is a credit environment broadly accessible to firms doing incremental work, but increasingly closed to the riskier, more speculative ventures where disruptive breakthroughs tend to originate. In the absence of traditional financing, disruptive firms increasingly turn to venture capital and private equity. However, these channels are geographically concentrated and not uniformly accessible, making the decline in bank lending to innovative startups a more acute problem in regions where alternative financing ecosystems are less developed.

Policy Implications

These findings carry important implications for policymakers concerned with both financial stability and long-run economic growth.

- **Merger review should consider innovation effects, not just credit access.** Current antitrust frameworks for bank mergers focus primarily on whether consolidation reduces lending competition. This research suggests regulators should also ask whether a proposed merger will shift the composition of credit away from disruptive, startup-oriented

innovation and toward safer, incumbent borrowers. A market that remains competitive in terms of loan pricing may still be one in which the most innovative startups struggle to access financing. Regulatory review that incorporates measures of innovation activity alongside traditional concentration metrics would provide a more complete picture of a merger's broader economic consequences.

- **Policies supporting disruptive innovation may need to work around, not through large banks.** If consolidated banking markets systematically underfinance disruptive innovation, complementary policies become essential. These might include fostering regional venture capital markets, supporting targeted lending programs for early-stage firms, and encouraging nonbank financial intermediaries better suited to financing high-risk, high-impact innovation. This is especially relevant in regions where alternative financing ecosystems are underdeveloped, and firms have few options beyond traditional bank lending.
- **Regulatory requirements should be proportional to institution size.** Smaller community banks face regulatory and compliance burdens that are disproportionate to their resources, making it increasingly difficult for them to operate and extend credit to the kinds of borrowers that large banks overlook. Uniform capital and reporting requirements designed with large institutions in mind can place disproportionate strain on smaller lenders, accelerating the very consolidation that this research suggests is harmful to disruptive innovation at higher levels. Policymakers should consider tiered regulatory frameworks that scale requirements with institution size, reducing the compliance burden on smaller lenders without compromising broader financial stability. Preserving a diverse banking sector, one that includes smaller institutions willing to take on the lending risk that large banks avoid, may be one of the most effective ways to sustain the conditions under which disruptive innovation thrives.

Banking consolidation is typically debated in terms of consumer costs and financial stability. However, the evidence presented in this paper suggests that the ongoing consolidation of U.S. banking markets carries consequences that extend to the less visible side effect of slowing innovation. As credit flows increasingly toward established firms and incremental projects, the pipeline of disruptive, high-impact innovation may be quietly narrowing.

References

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