# Banks as "Anchors":
# The Role of Banks in Funding Innovation

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## Abstract

Bank investments in the venture capital (VC) market play an important role, especially outside main entrepreneurial hubs. Banks act as anchors to the companies, serving as a positive signal of their quality and attracting further investors. Due to their abilities in monitoring and higher local expertise, banks are able to select profitable VC investments and exit them successfully. I exploit the implementation of the Volcker Rule as a shock where banks are no longer allowed to sponsor or invest in VC funds. I find that companies in regions dependent on bank VC financing suffer a drop in financing and innovation. A proxy for attention to start-ups serves as another confirmation mechanism of our story. I add to the debate on cross-selling services by financial intermediaries and on the certification role that banks play in markets other than lending.

## Motivation

- **VC investments** are key drivers of **innovation**: 50% of the total listings and 90% of R&D spending by public US companies received VC funding
- After the financial crisis, the Volcker Rule was a **regulatory over-reach** stopping banks from investing in the VC market
- Strong and unexpected **negative externalities** on innovation outside main entrepreneurial hubs (CA, MA, NY)

➔ Effect arises because these areas are **more dependant on bank investors** in the VC market

## Research Questions

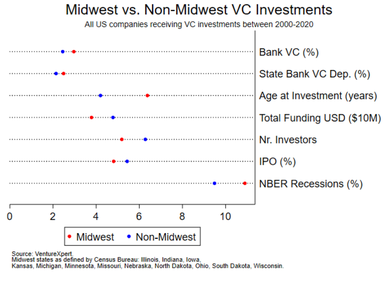
1. Relative to other investors, how **skilled are banks** at identifying successful start-ups?
2. Do banks play the **role of an "anchor"** by attracting additional investors after funding a specific start-up?
3. Are banks causally affecting **innovation through the VC market**?

## Data

- **VentureXpert**: 39,106 US start-ups raising funding between 1970-2020 with details on rounds, investors, company outcomes
- **USPTO**: Patent Assignment Dataset and Patent Examination Dataset on 15 million patent applications corresponding to 9 million assignments
- **Google Trends**: Attention data on all US-based start-ups in the sample raising funding after 2004
- **NBER Patents**: Name standardisation procedure used to match to VentureXpert data
- **KPSS (2017)**: Forward looking data on citations and nominal values of assigned patents

## Banks as VC investors

1. Banks are **highly skilled** VC investors:
   - At the investment level, bank VCs have the strongest predictive power on IPO activity, real outcomes, innovation
2. Banks VCs invest more in **areas outside** entrepreneurial **hubs**:
   - At the company level, Midwest states are relatively more dependent on bank VCs
   - These companies raise funding later, in smaller amounts and from fewer investors




## Banks as "anchors"

Following a bank VC investment in a funding round:

1. The size of the company's next round will increase by $2 million
2. The number of investors in the next round will increase by 0.5 investors

...more, relative to a similar company without a bank VC "anchor" round

| | Round Size | Nr Inv. | Round Size | Nr Inv. | Round Size | Nr Inv. | Round Size | Nr Inv. |
|---|---|---|---|---|---|---|---|---|
| ATT | 2,26** | 0,50*** | 2,14* | 0,48*** | 2,06** | 0,50*** | 1,43 | 0,43*** |
| t Value | 2,05838 | 5,435383 | 1,87967 | 5,157339 | 2,008499 | 5,901923 | 1,527359 | 5,479608 |
| Nr. Obs. | 41027 | 41027 | 41027 | 41027 | 41027 | 41027 | 41027 | 41027 |
| Matches | 1 | 1 | 3 | 3 | 5 | 5 | 10 | 10 |

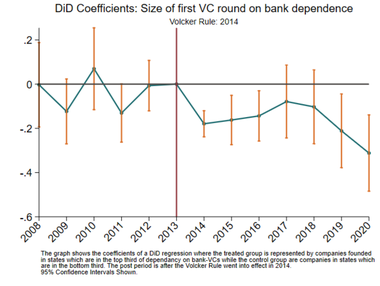
This table provides the estimate of the mean difference between the size of the round following an "Anchor" round and the size of a "non-Anchor" round. An "Anchor" round is a round where we have at least one bank VC investment in the syndicate. The dependant variable is Pre-Round Bank VC (0/1). Independent variables are Pre-Round Size, Pre-Round Number, State, Industry, Pre-Round Company Age.

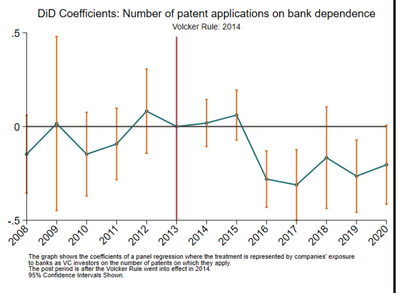
## Volcker Shock to bank VC funding

1. I conduct a DiD analysis between 2008-2020 where the post period starts with the 2014 Volcker Rule implementation
2. I use a state-level measure of bank dependence constructed from the growth of bank VC funds in the period before Volcker Rule

$$\textbf{Funding}_{it} = \beta_0 + \beta_1 BankDep_i \times Post_t + \beta_2 BankDep_i + + \beta_3 Post_t + \beta_4 GDPState_{i,t} + \Phi X_i + \rho Z_t + \varepsilon_{i,t}$$

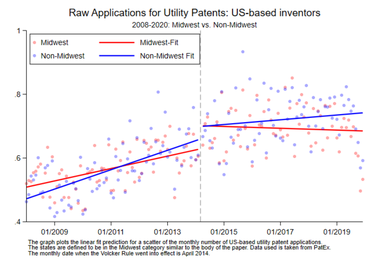
3. I look at the state, fund and company level effects of funding raised:
   - Number and total volume of fundraising drops at the state level
   - Size of individual funds decreased
   - Size of first rounds decreased at the company level
4. Number of patent applications drops following the regulation

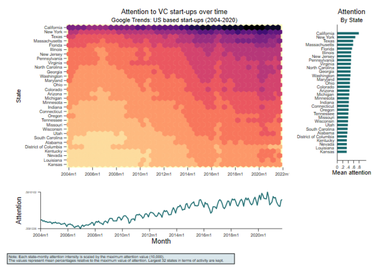



## Attention to start-ups

1. Raw **innovation** in the Midwest **dropped** after the Volcker Rule
2. Built a **new dataset** of Google Trends search volume of all US start-up companies from VentureXpert:
   - Use the attention to start-ups before their first VC round as an **instrument** to predict funding raised
   - Use this variation in funding to **predict** the likelihood of companies **applying for patents**




3. Predictive effect becomes insignificant after the Volcker Rule for bank VC dependent companies
   - **Relevance condition**: Instrument is highly predictive of raising VC funding
   - **Exclusion restriction**: Patent applications can be highly expensive and start-ups need VC funding for them

| VARIABLES | Next App. 6m OLS | Size First Round First Stage | Next App. 6m 2SLS | Next App. 6m Post: High Dep. | Next App. 6m Post: Low Dep. |
|---|---|---|---|---|---|
| Size First Round (IV) | | | 0.145** | 0.184 | 0.283*** |
| | | | (0.070) | (0.524) | (0.067) |
| Size First Round | 0.031*** | | | | |
| | (0.007) | | | | |
| Attention growth (-6m) | | 0.327*** | | | |
| | | (0.094) | | | |
| Constant | 0.118*** | 1.763*** | | | |
| | (0.013) | (0.009) | | | |
| Observations | 3,275 | 3,271 | 3,271 | 267 | 1,324 |
| R-squared | 0.051 | 0.210 | - | - | - |
| State & Industry & Age & Year FE | YES | YES | YES | YES | YES |

This table presents a 2SLS regression of the likelihood of applying for a patent within 6 months after the first VC round. Size of the first VC round is instrumented by the average growth of Google Trends attention between month -7 and month -1.

## Conclusion

1. Banks are **important investors** in the VC market
2. They are **highly skilled** in picking successful investments and **act as "anchors"** to start-ups
3. The Volcker Rule shock brings a **negative externality** on **innovation** through the bank VC channel
4. I use a company-level **attention variable** to underline the **negative effects** of the Volcker Rule on innovation

## References

Chen, J., & Ewens, M. (2021). Venture capitalists' access to finance and its impact on startups. *Available at SSRN 3824459*.

Hellmann, T., Lindsey, L., & Puri, M. (2008). Building relationships early: Banks in venture capital. *The Review of Financial Studies*, *21*(2), 513–541.

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