Banking without Deposits: Evidence from Shadow Bank Call Reports

By Jiang, Matvos, Piskorski, and Seru

Sasha Indarte
Wharton

WFA June 2021

Summary

- **Question:** how do deposit subsidies shape bank capital structure?
- **Approach:** compare banks and shadow banks using new data
  - Shadow banks lack deposit insurance
  - Est. structural model with banks and shadow banks, simulate ending deposit insurance
- **Main Findings:**
  - Banks have more (and less varied) leverage
  - Shadow bank leverage (and bank uninsured leverage) grow with size (and costs of funding falls)
  - $\Rightarrow$ supply of funds to banks has 1st order impact on equilibrium bank leverage
  - Model $\Rightarrow$ leverage falls without deposit insurance

Motivation

- What determines bank capital structure, what's special about banks vs. firms?
- How do we optimally set deposit insurance?
  - Trade-offs: reduce odds of bank failures vs. taxpayer cost (Davila and Goldstein, 2021)
  - How capital structure responds is important for impact on bank stability
- Future work: optimal *joint* determination of gov't guarantees and capital regulation
  - Same leverage constraints wouldn't bind as much on shadow banks
  - Paper suggests deposit insurance can have a major effect on impact of leverage limits
  - How does deposit insurance subsidy affect optimal leverage limit?

Implications for Regulation

Banks vs. Shadow Banks

Feature	Banks	Shadow Banks	Paper
Specialization	C&I, Commercial & Residential Mortgages	Residential mortgages	Focus on banks specialized in residential mortgage lending
Originate-to-Distribute	~60%, varies	~90%	Focus on high OTD banks
Funding Sources	Deposits	Wholesale	Allow debt demand to differ
Leverage Rules	Yes	No	Model differences
Government Guarantees	Deposit Insurance	No Deposit Insurance	Model differences

Banks vs. Shadow Banks

Feature	Banks	Shadow Banks	Paper
Specialization	C&I, Commercial & Residential Mortgages	Residential mortgages	Focus on banks specialized in residential mortgage lending
Originate-to-Distribute	~60%, varies	~90%	Focus on high OTD banks
Funding Sources	Deposits	Wholesale	Allow debt demand to differ
Leverage Rules	Yes	No	Model differences
Government Guarantees	**Deposit Insurance** **Lender of last resort (LOLR)**	**No Deposit Insurance** **No LOLR**	Model differences

Banks vs. Shadow Banks

Feature	Banks	Shadow Banks	Paper
Specialization	C&I, Commercial & Residential Mortgages	Residential mortgages	Focus on banks specialized in residential mortgage lending
Originate-to-Distribute	~60%, varies	~90%	Focus on high OTD banks
Funding Sources	Deposits	Wholesale	Allow debt demand to differ
Leverage Rules	Yes	No	Model differences
Government Guarantees	Deposit Insurance Lender of last resort (LOLR) Too big to fail (TBTF)	No Deposit Insurance No LOLR Sometimes too big to fail?	Model differences

Banks vs. Shadow Banks

Feature	Banks	Shadow Banks	Paper
Specialization	C&I, Commercial & Residential Mortgages	Residential mortgages	Focus on banks specialized in residential mortgage lending
Originate-to-Distribute	~60%, varies	~90%	Focus on high OTD banks
Funding Sources	Deposits	Wholesale	Allow debt demand to differ
Leverage Rules	Yes	No	Model differences
Government Guarantees	Deposit Insurance Lender of last resort (LOLR) Too big to fail (TBTF)	No Deposit Insurance No LOLR Sometimes too big to fail?	Model differences

Note: 1928 US and 1931 Germany lacked an effective LOLR too (Bordo, 1989; Blickle et al, 2020)

Explicit Guarantees: Deposit Insurance and LOLR

- Both are commitments to support banks in crises
- Deposit insurance directly benefits insured depositors
  - But uninsured benefit from lack of run

Explicit Guarantees: Deposit Insurance and LOLR

- Both are commitments to support banks in crises
- Deposit insurance directly benefits insured depositors
  - But uninsured benefit from lack of run
- LOLR benefits uninsured directly $\Rightarrow$ more uninsured & overall leverage

Explicit Guarantees: Deposit Insurance and LOLR

- Both are commitments to support banks in crises
- Deposit insurance directly benefits insured depositors
  - But uninsured benefit from lack of run
- LOLR benefits uninsured directly $\Rightarrow$ more uninsured & overall leverage
- Model pred. of expanding LOLR to shadow banks? Model as reduction in run cost?
  - In counterfactual removing deposit insurance and capital regulation, what run cost difference could rationalize remaining differences in bank and shadow bank leverage?
  - Enough degrees of freedom to separate run cost from "money-like" value of bank deposits?

Explicit Guarantees: Deposit Insurance and LOLR

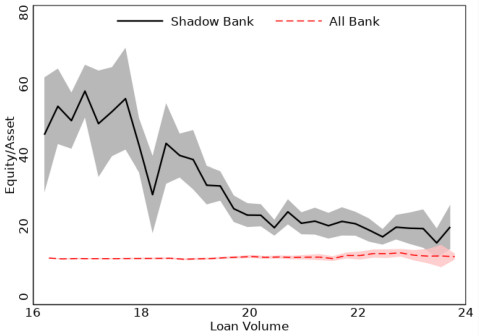
- Both are commitments to support banks in crises
- Deposit insurance directly benefits insured depositors
  - But uninsured benefit from lack of run
- LOLR benefits uninsured directly $\Rightarrow$ more uninsured & overall leverage
- Model pred. of expanding LOLR to shadow banks? Model as reduction in run cost?
  - In counterfactual removing deposit insurance and capital regulation, what run cost difference could rationalize remaining differences in bank and shadow bank leverage?
  - Enough degrees of freedom to separate run cost from "money-like" value of bank deposits?
  - Intuition for alt. approach: target differences in dispersion of uninsured deposits

Implicit Guarantees: Bailouts

- Depositors at too big to fail (TBTF) banks can expect to benefit from this guarantee
- Iyer et al. (2019) finds TBTF distorts household allocation of deposits
  - Households responded strongly to reduction in deposit insurance in Denmark
  - Systemically important banks retained more deposits and attracted new depositors

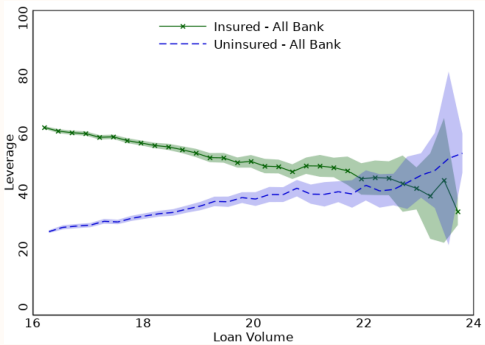
Implicit Guarantees: Bailouts

- Depositors at too big to fail (TBTF) banks can expect to benefit from this guarantee
- Iyer et al. (2019) finds TBTF distorts household allocation of deposits
  - Households responded strongly to reduction in deposit insurance in Denmark
  - Systemically important banks retained more deposits and attracted new depositors
- Suggests shadow bank leverage and banks uninsured deposits should rise with size
- Does TBTF enhance stability similarly to deposit insurance?



Implicit Guarantees: Bailouts

- Depositors at too big to fail (TBTF) banks can expect to benefit from this guarantee
- Iyer et al. (2019) finds TBTF distorts household allocation of deposits
  - Households responded strongly to reduction in deposit insurance in Denmark
  - Systemically important banks retained more deposits and attracted new depositors
- Suggests shadow bank leverage and banks uninsured deposits should rise with size
- Does TBTF enhance stability similarly to deposit insurance?



Model Assumptions

Why are Big Banks Big?

- **Model:** because they have a higher recovery rate in bad states (λ_i)
  - Note: can also interpret higher λ_i as higher screening ability
  - Higher ability lowers run cost $\Rightarrow$ more deposits, leverage, and lending

Why are Big Banks Big?

- **Model:** because they have a higher recovery rate in bad states (λ_i)
  - Note: can also interpret higher λ_i as higher screening ability
  - Higher ability lowers run cost $\Rightarrow$ more deposits, leverage, and lending
- TBTF $\Rightarrow$ size reduces run cost/risk (for a given capital structure)
  - Causality here runs in the opposite direction of the model

Why are Big Banks Big?

- **Model:** because they have a higher recovery rate in bad states (λ_i)
  - Note: can also interpret higher λ_i as higher screening ability
  - Higher ability lowers run cost $\Rightarrow$ more deposits, leverage, and lending
- TBTF $\Rightarrow$ size reduces run cost/risk (for a given capital structure)
  - Causality here runs in the opposite direction of the model
- Could the model incorporate TBTF? Allow it to differ for banks vs. shadow banks?
  - Should λ_i depend on size? Creates a chicken-and-egg problem for calibration...
  - Should something else pin down size? E.g., heterogeneity in marginal cost of lending?

Importance – Do Shadow Banks Screen Better?

- Right now, recovery rate/screening ability λ_i plays a key role pinning down size distribution by reducing run risk
  - Model calibration $\Rightarrow$ shadow banks have superior recovery rates on average

Importance – Do Shadow Banks Screen Better?

- Right now, recovery rate/screening ability λ_i plays a key role pinning down size distribution by reducing run risk
  - Model calibration $\Rightarrow$ shadow banks have superior recovery rates on average
- Do shadow banks have better performing mortgages is crises?
  - Areas receiving more mortgages from lenders with non-core deposits had a larger boom and boost in the housing crisis (Mian and Sufi, forthcoming RFS)
  - But, this could be due to OTD causing lax screening (focus on high-OTD banks may help) (Keys, Seru, and Vig, 2012; Keys, Mukherjee, Seru, and Vig 2010)
  - Suggestion: compare delinquency rates in mortgage data (CoreLogic, Fannie/Freddie, etc.) (focus on crisis, mortgage data needed to go back farther than call report data)

Importance – Do Shadow Banks Screen Better?

- Right now, recovery rate/screening ability λ_i plays a key role pinning down size distribution by reducing run risk
  - Model calibration $\Rightarrow$ shadow banks have superior recovery rates on average
- Do shadow banks have better performing mortgages is crises?
  - Areas receiving more mortgages from lenders with non-core deposits had a larger boom and boost in the housing crisis (Mian and Sufi, forthcoming RFS)
  - But, this could be due to OTD causing lax screening (focus on high-OTD banks may help) (Keys, Seru, and Vig, 2012; Keys, Mukherjee, Seru, and Vig 2010)
  - Suggestion: compare delinquency rates in mortgage data (CoreLogic, Fannie/Freddie, etc.) (focus on crisis, mortgage data needed to go back farther than call report data)
- Importance: does a lack of deposit insurance discipline shadow banks to screen better?

"Money-Like" Value of Deposits versus Value of Deposit Insurance

- **Model:** bank deposits' "money-like" services $\Rightarrow$ depositors accept lower return
- Important part of model – how this varies with bank's deposit insurance is key for impact of insurance on capital structure
  - Axing dep. insurance *and* "money-like" val. of bank dep. $\Rightarrow$ 26pp higher cap. (11% $\rightarrow$ 37%)
  - At least 3pp come from deposit insurance (depends if "money-like" value changes)

"Money-Like" Value of Deposits versus Value of Deposit Insurance

- **Model:** bank deposits' "money-like" services $\Rightarrow$ depositors accept lower return
- Important part of model – how this varies with bank's deposit insurance is key for impact of insurance on capital structure
  - Axing dep. insurance *and* "money-like" val. of bank dep. $\Rightarrow$ 26pp higher cap. (11% $\rightarrow$ 37%)
  - At least 3pp come from deposit insurance (depends if "money-like" value changes)
- Household's optimize by choosing bank and shadow bank deposits
  - Bank chooses mix of insured vs. uninsured
  - Why not allow households to choose also between insured/uninsured bank deposits?
  - Int. rate elasticity est. for each from Egan, Hortacsu and Matvos (2017) could help calibrate

"Money-Like" Value of Deposits versus Value of Deposit Insurance

- **Model:** bank deposits' "money-like" services $\Rightarrow$ depositors accept lower return
- Important part of model – how this varies with bank's deposit insurance is key for impact of insurance on capital structure
  - Axing dep. insurance *and* "money-like" val. of bank dep. $\Rightarrow$ 26pp higher cap. (11% $\rightarrow$ 37%)
  - At least 3pp come from deposit insurance (depends if "money-like" value changes)
- Household's optimize by choosing bank and shadow bank deposits
  - Bank chooses mix of insured vs. uninsured
  - Why not allow households to choose also between insured/uninsured bank deposits?
  - Int. rate elasticity est. for each from Egan, Hortacsu and Matvos (2017) could help calibrate
- **Aside:** could the "money-like" value of bank deposits come from inattention or search?

Conclusion

Conclusion

- Excellent and important paper!
- Exciting new data and deep dive into shadow banks
- New evidence on impact of gov't guarantees on bank capital structure
- Adds to growing literature on how nature of bank funding in shapes bank behavior (e.g., Drechsler, Savov, and Schnabl, 2017 & 2021)
- Important facts for informing banking regulation, sets stage for future work (theory & empirical!)

Thanks!