Watch what they do, not what they say: Estimating regulatory costs from revealed preferences

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Summary

- We show that distortion in the size distribution of banks around regulatory thresholds can be used to identify costs of bank regulation.
- We build a structural model in which banks can strategically bunch their assets below regulatory thresholds to avoid regulations.
- Using U.S. bank data, we estimate the regulatory costs imposed by the Dodd–Frank Act.
- We find that our estimated costs are significantly lower than those self-reported by banks.

1. Motivation

- Lack of academic research quantifying regulatory costs, necessary to perform cost-benefit analysis (CBA). CBA is mandated by law and crucial for regulators' rule-making.
- Current methods to quantify regulatory costs rely on self-reported estimates from financial institutions, which presents problems of distorted incentives and data availability.
- Our approach: watch what they do, not what they say!

2. The Dodd–Frank Act

- A centerpiece of the post-crisis financial reform with tiered regulatory approach.
- Banks whose assets exceed the \$10 billion threshold must conduct annual stress tests, comply with the Durbin Amendment, report to the Consumer Financial Protection Bureau (CFBP), create risk committees with independent directors.
- Banks whose assets exceed the \$50 billion threshold have additional risk-based capital and liquidity requirements, more stringent stress tests, and annual resolution plans.

3. Bank size distribution distorted at regulatory thresholds

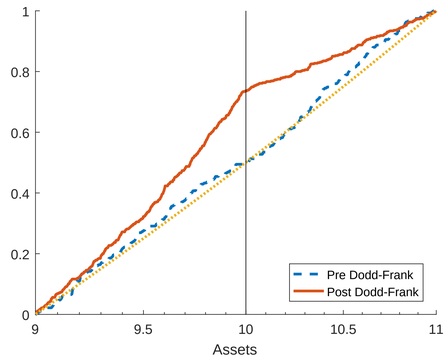


Figure: Size distribution around regulatory threshold

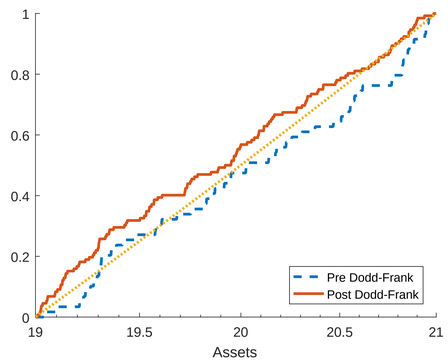


Figure: Size distribution around non-regulatory threshold

4. Model of bank size choice

- Banks maximize profit:

$$\max_q \pi(q|z) = \max_q (R - r(q|z)) \exp(q) \cdot \prod_{i=1}^{I} (1 - \tau_i \mathbb{1}_{q \geq \underline{q}_i}).$$

where R is lending rate, r is deposit rate, z is productivity, τ_i is regulatory cost, q is log assets, $\underline{q}_i$ is the i's regulatory threshold

- Funding supply $r(q|z) = \frac{1}{\theta}(q - z)$: a more productive bank raises more funding for given r

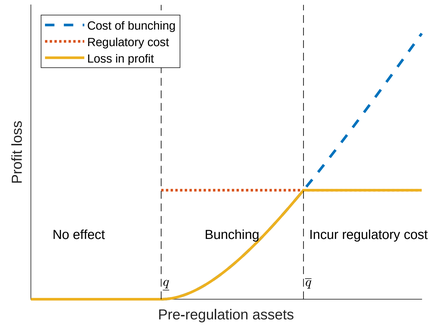
5. Model solutions and estimation

- Optimal size without regulation

$$q_0(z) \equiv z + \theta R - 1.$$

- Optimal size with regulation

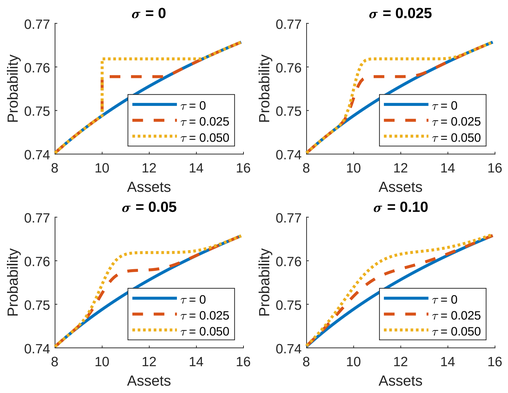
$$q^*(z) = \begin{cases} \underline{q}_i & z \in [\underline{z}_i, \overline{z}_i] \\ q_0(z) & z \notin \cup [\underline{z}_i, \overline{z}_i] \end{cases}$$



- Profit indifference condition of the marginal bank provides sufficient statistic formula for regulatory cost τ_i:

$$\tau_i = 1 - \left[\left(\overline{q}_i - \underline{q}_i + 1\right)\right] \exp\left(\underline{q}_i - \overline{q}_i\right)$$

- Assets are observed with a structural error $u \sim N(0, \sigma^2)$, such that $a = q + u$. We estimate τ via MLE over bank assets a.



6. Results: direct costs for banks

	Panel A: \$10 billion threshold	Est.	S.E.
β	Exponent of the power law distribution	1.112	[0.001]
σ	Measurement error volatility (in %)	4.258	[0.386]
$\exp(\overline{q})$	Assets of marginal bank (\$ Billion)	10.973	[0.086]
τ	Cost of regulation (% of profit)	0.405	[0.066]
	Panel B: \$50 billion threshold	**Est.**	**S.E.**
β	Exponent of the power law distribution	1.083	[0.002]
σ	Measurement error volatility (in %)	2.290	[0.498]
$\exp(\overline{q})$	Assets of marginal bank (\$ Billion)	52.393	[0.517]
τ	Cost of regulation (% of profit)	0.106	[0.046]

- \$10B threshold: 0.41% of annual profits
- \$50B threshold: 0.11% of annual profits
- For a \$50B bank, total cost of 0.52% of annual profits represents \$4.16 million per year, equivalent to the annual expense of hiring additional 52 compliance officers

7. Additional restuls: indirect costs for firms that borrow from banks

- Embed banks' optimal choice in a general equilibrium model, where bank-dependent firms can be affected by banks' size choices and entry/exit.
- Using calibration and moment matching, we estimate the following indirect effects of Dodd–Frank regulations:
- Total mass of banks decreases by 0.18%.
- Lending rate increases by 0.046%.
- Total output of bank-dependent firms decreases by 0.02%.

Contact Information

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