Deposit Rate Advantages at the Largest Banks

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  - *This difference, if applied to only uninsured deposits, would have accounted for 30% of the largest banks' income before taxes, pre-crisis.*
  - *If the largest banks had received a similar discount on all of their uninsured funds, it would have accounted for 70% of their pre-tax income.*

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- Estimate the social value or cost of the TBTF *de facto* policy.

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4. Exploit a policy change to the deposit insurance limit

Existing Literature - TBTF

- Existing approaches include:
  - Event study: e.g., O'Hara and Shaw (1990).
  - Mergers: e.g., Penas and Ünal (2004).
  - Average Cost of Funds: e.g., Baker and McArthur (2009).
  - Credit Rating Analysis: e.g., Ueda and di Mauro (2012).
  - Merton Method: e.g., Hovakimian, Kane, and Laeven (2012).
  - Bond Spreads: e.g., Warburton, Anginer, and Acharya (2013).
  - CDS/Equity: e.g., Schweikhard and Tsesmelidakis (2012).
- We add by:
  - Eliminating factors generally not controlled for such as: geographic footprint, alternative funding capabilities, local competitive environment
  - Examine deposits, *by far the most important source of funds* (75% of industry assets).

Model

- Let R_{it} be bank i's \$100K MMDA rate at time t.
  - R is the risky interest rate that also incorporates non-risk factors (e.g. benefits of branch network)
- Let r_{it} be bank i's \$25K MMDA rate at time t.
  - r is the riskless interest rate that also incorporates non-risk factors (e.g. benefits of branch network)
- Then $p_{it} = R_{it} - r_{it}$ reflects just the risk and liquidity premia.
  - Difference the risky and riskless interest rates, removing non-risk factors.
  - Assume that \$25K and \$100K depositors get similar benefit from branch availability and other non-risk factors.

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Model – Cross-Sectional Analysis

Consider the following model:

$$p_{it} = \alpha_t + \beta_t X_{it} + \gamma_t Large_{it} + \varepsilon_{it}$$

- Allows for a time varying relationship between the risk premium and being large (γ_t), as well as other bank characteristics (β_t)
- Allows for a changing set of large banks
- This method does not fully exploit the data, which may be problematic for statistical significance given so few large bank observations.

Model - Panel Regression

Alternatively, consider the following model:

$$p_{it} = \alpha_t + \beta X_{it} + \zeta_i + \varepsilon_{it}$$

- The bank fixed effect is decomposed ($\widehat{\zeta_i + \varepsilon_{it}} = \lambda Large_i + \eta_i$).
- Thus, we may isolate the part of the unexplained risk premium gap which is explainable by being Large.
- Exploits all data, but at the expense of:
  - fixing the set of large banks (do not want to identify λ using within variation), and
  - fixing the size of the parameter value on being large.

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Data

- RateWatch data for each quarter (Q1 2006-Q3 2008) merged with Call Report data. Use proxies for each of the CAMELS components.
  - The standard maximum deposit insurance amount (SMDIA) increased at the beginning of Q4 2008. Look at differences in estimated premium in the pre- and post-SMDIA increase samples.
- Set the baseline *large* threshold as $200 bn avg assets (no banks between $200 bn and $500 bn in data). In addition, we test alternate thresholds.
- We eliminate banks that *always* post identical rates for insured and uninsured products. (This is weakened in robustness checks.)
- Take the last branch observation of the quarter's end
- Domestic banks only

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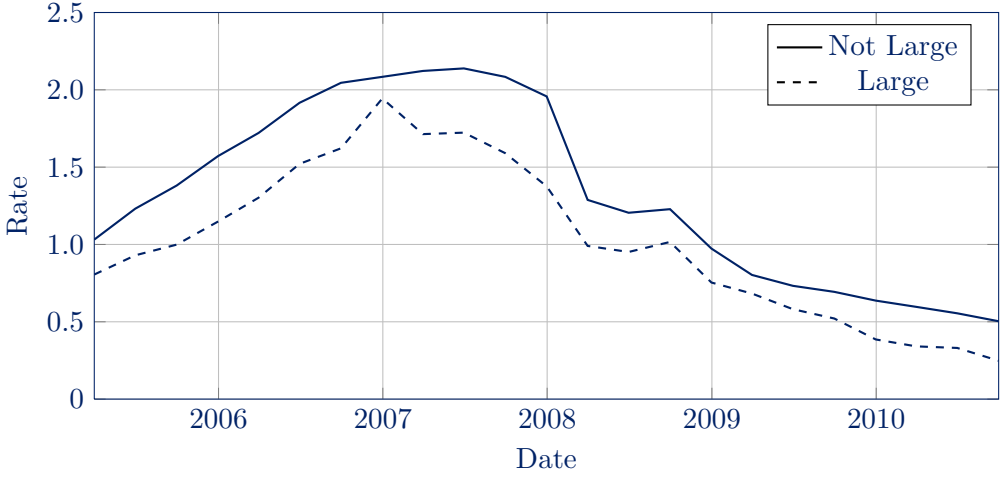
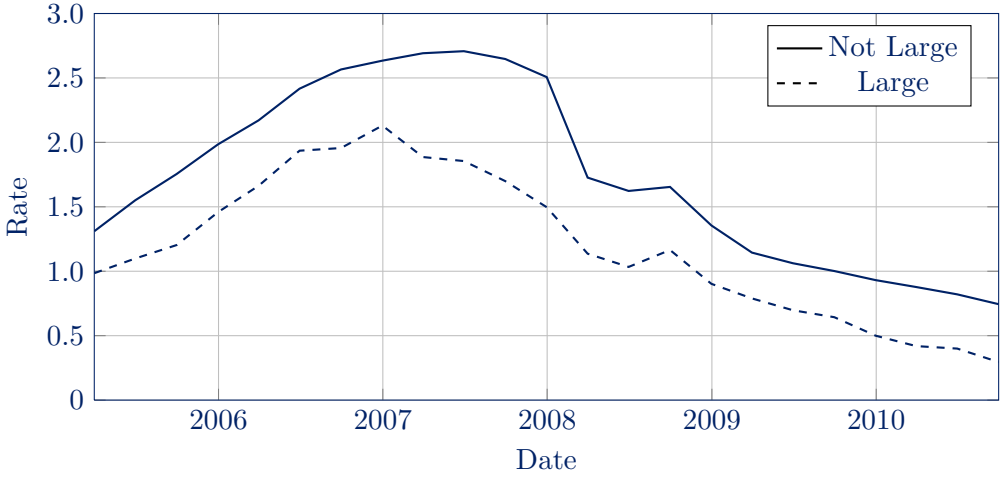
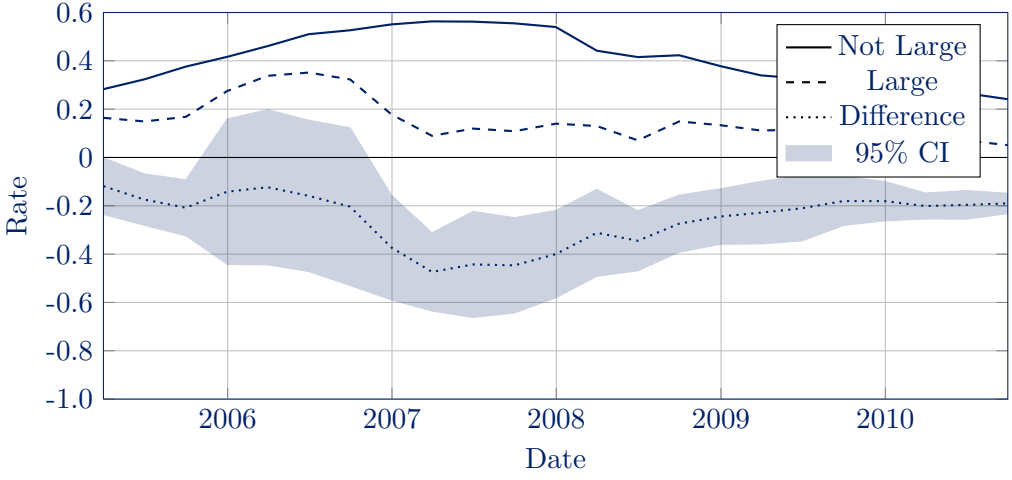
Mean MM$25K Rates



Mean MM$100K Rates



Cross-Sectional Risk Premiums (No Risk Controls)

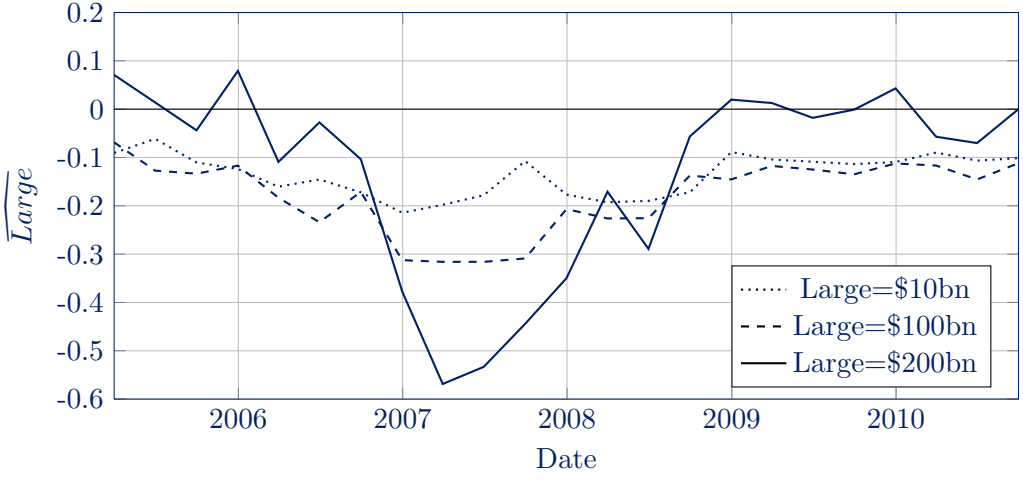


Controlling for Risk

- Capital Ratio
- Asset Growth
- Income
- Insured Deposits
- Liquid Assets
- Loan Loss Reserves
- Non-Performing Loans
- Trading Assets

More

Cross-Sectional "Large" Parameter Estimates



Panel Results

Var	Base	Post-EESA	MSA	MSA-Post	$100B	$10B	$10B-Post
Large	-36.4***	-3.5	-18.7**	0.6	-29.2***	-24.0***	-14.6***
	(10.6)	(3.4)	(7.4)	(2.2)	(5.8)	(4.4)	(1.8)
Risk	YES	YES	YES	YES	YES	YES	YES
Time	YES	YES	YES	YES	YES	YES	YES
MSA	NO	NO	YES	YES	NO	NO	NO

Table 1 : Panel Results and Robustness Checks

* significant at 10%, ** significant at 5%, and *** significant at 1%

Panel Results

Variable	$25K-$10K	'06 Cohort	'06-Post	>$1B	Risk+	NY	Size
Large	8.3	-34.3***	-16.8***	-10.8	-20.1*	-68.3***	
	(20.1)	(10.3)	(5.7)	(10.5)	(11.3)	(14.3)	
Size							-6.8
							(5.8)
Risk	YES	YES	YES	YES	YES	YES	YES
Risk+	NO	NO	NO	NO	NO	YES	NO
Time	YES	YES	YES	YES	YES	YES	YES
MSA	NO	NO	NO	YES	NO	NO	NO

Table 2 : Panel Results and Robustness Checks

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Discussion - Depositor Differences

This is a critical assumption.

- Depositors may not be so different...
  - These are marginal depositors, to a large extent. The $25K and $100K are the closest standard buckets straddling the deposit insurance limit.
  - There is evidence that many household characteristics of these depositors are not so different (Kennickell and Kwast, 1997).
- Double-difference implies violations must occur across deposit size and bank size *simultaneously*.
- Temporal differences in deposit pricing advantages are difficult to justify with changes in depositor preferences.

Discussion - Other Limitations in Interpretation

Other Limitations

- Restricting to on banks >$1 billion
  - Result is sensitive to timing (e.g. significant result 2007-EESA)
  - 2007-EESA *Large* coefficient is 34^{***} bps
- Using $10 billion threshold
  - There must be other (non-TBTF) unobserved benefits at even "non-community" banks.
  - Still, there is clearly different temporal behavior versus a $200 billion threshold.

Conclusions

1. We show that the largest banks pay less for identical deposit products.
2. Absent controls, the largest banks pay a risk premium 20-50 bps less than other banks.
3. There exist significant non-balance sheet risk benefits that accrue *only* to the largest banks.
4. There exist significant non-TBTF benefits that accrue *only* to the largest banks.
5. Alternate methods controlling for risk put the premium in the 15-40 bps range (depending on the specification).

Extras - Data

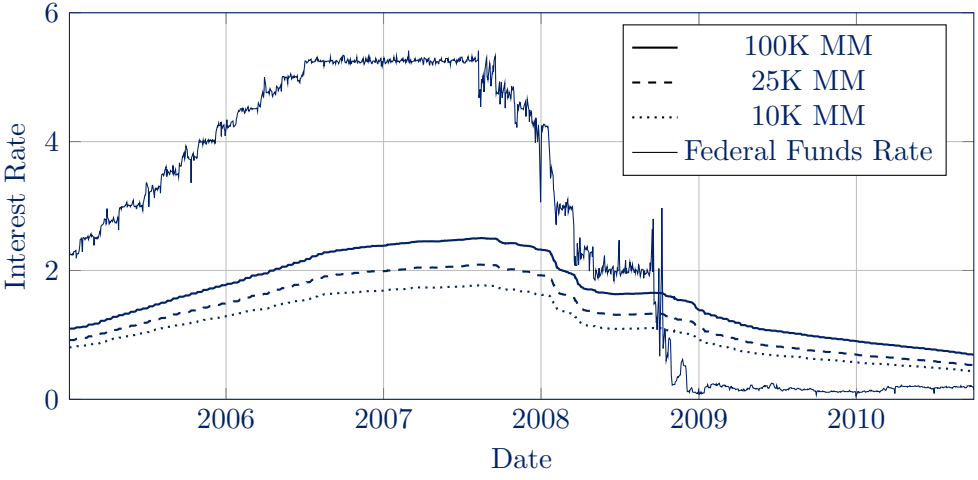

Figure 1 : Mean MMDA Rates.

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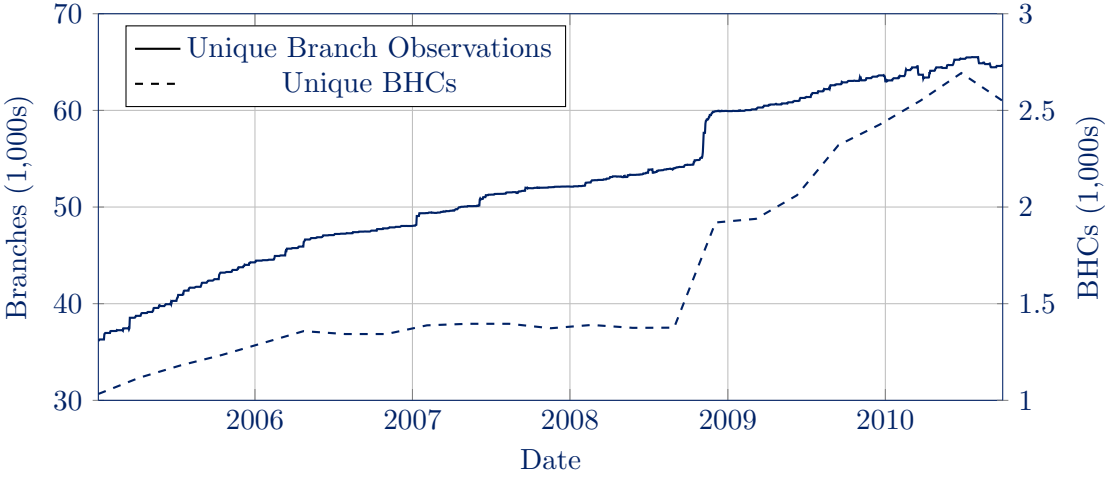
Unique Branch Observations
Unique BHCs
Branches (1,000s)
BHCs (1,000s)
Date
70
60
50
40
30
3
2.5
2
1.5
1
2006
2007
2008
2009
2010

Extras - Size Discussion

What are the potential benefits to being a large bank?

- Service and Convenience?
  - Bank-specific differences in non-risk measures have already been removed.
- Diversification?
  - This will show up in a lower fraction of non-performing loans or decreased asset volatility, which has already been taken into account.
- Economies of Scale?
  - There must be economies of scale in risk (not just in production). Further, these reductions in risk must not be in the form of reduced non-performing loans or increased income (or any of the other control variables).

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Extras - CAMELS Ratings

- **C**apital
- **A**sset Quality
- **M**anagement
- **E**arnings
- **L**iquidity
- **S**ensitivity (market and interest rate)

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Dynamic Panel Bias?

- For a small fixed T, estimates will be biased.
- For larger T, if $T/N \to 0$, then the estimator is valid.
- If, instead, $T/N \to c > 0$, then the asymptotic bias is of order $1/N$.
- In this case, $N > 1,200$ and $T \approx 10$. From Monte Carlo experiments, our expected bias should be smaller than $+3\%$ (see Judson and Owen, 1999).
- In other words, our estimate may be biased, but that bias is relatively small.

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Extras - Risky versus Riskless

Riskless:

- Insured deposits are explicitly backed by the full faith and credit of the United States.
- Since 1933, no insured depositor has faced losses.

Risky:

- From 2007 until the end of 2011, uninsured depositors saw losses at 32 banks.
- Nominal recovery rates at these banks averaged 33% as of the end of 2011.
- Uninsured depositors would have seen a total of around $1.7 billion in total losses (this is a loose estimate).
- At IndyMac, a $31 billion bank and the fourth largest bank failure in history, uninsured depositors were expected to see only a 50% recovery of uninsured deposits.

Extras - Alternative Measure A

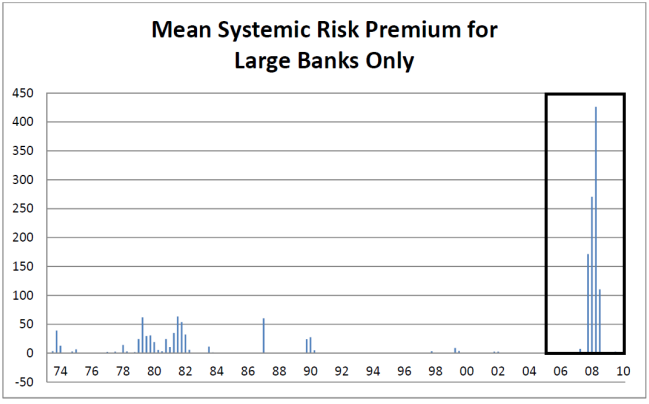

Figure 3 : From: Hovakimian, Armen, Edward J. Kane, and Luc Laeven. *Variation in systemic risk at US banks during 1974-2010*. No. w18043. National Bureau of Economic Research, 2012. (Black box added)

Extras - Alternative Measure B

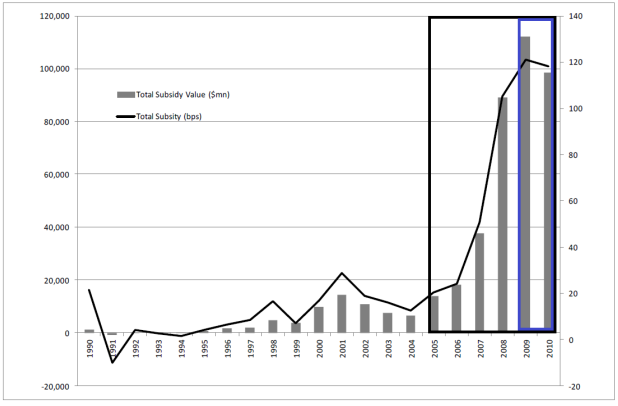

Figure 4 : From: Warburton, A. Joseph, Anginer, Deniz and Acharya, Viral V., The End of Market Discipline? Investor Expectations of Implicit State Guarantees (January 1, 2013). Available at SSRN: http://ssrn.com/abstract=1961656 (Black and purple boxes added)