Do bank resolution reforms reduce the perception of Too-Big-To-Fail?

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Outline

Motivation: Problem

- Government responses to the last financial crises have provoked criticism due to the use of public funds to **bail out** banks;
- The literature shows that bailout expectations artificially reduce the funding cost of large banks' (i.e., too-big-to-fail) compared to other banks;
- This lower cost of finance distorts competition between large and small banks (Dam & Koetter, 2012), increases moral hazard (Berger & Roman, 2020), deteriorate public finances, and increase popular dissatisfaction (Mian, Sufi, & Trebbi, 2014).

Motivation: The solution?

- Regulators have been working to reduce the perception that large banks will always be saved;
- **Bank resolution reforms** aim at addressing those issues by placing risks on the private sector and reducing governments' ability to perform bailouts;

What we do in this paper

We examine whether **bank resolution reforms reduce banks' implicit subsidies and risk-taking.**

Preview of Findings

- Bank resolution reforms result in an increase of **4.6 pp** in the cost of capital for **non-large banks**;
- **No effect** for **large banks** and/or Global Systemic Important Banks (GSIBs);
- Non-large banks reduce their risk-taking relative to large banks (consistent with the moral hazard theory).

Empirical Strategy: measuring implicit subsidies

- We follow Gandhi et al. (RFS, 2020) and measure banks' implicit subsidies as the banks' stocks **abnormal returns** (*alphas*).
- For each bank i at year t, using weekly *unlevered return* data, we applied a 6-Factor Model using local currency factors.
- We follow Doshi et al. (JF, 2020) and use unlevered return, because leverage induces heteroskedasticity in the returns data and bank leverage changes over time.
- We annualized the risk-adjusted abnormal return to use it as our main dependent variable: the *UnleveredAlpha*;

Empirical Strategy: Baseline Model

Eq. (1) tests if the resolution reforms impact banks' implicit subsidy.

$$\mathit{UnleveredAlpha}_{i,j,t,c} = \omega_0 + \omega_1 \mathit{Resolution}_j * \mathit{Post}_t + \delta_{i,c} + \delta_{t,c} + \epsilon_{i,j,t,c}, \quad (1)$$

- *UnleveredAlpha* is the risk-adjusted return of bank i in jurisdiction j in year t in cohort c;
- *Resolution* is a dummy variable that takes the value of 1 if a given country j has fully adopted a bank resolution mechanism;
- *Post* is a dummy that takes the value of 1 in the years after country j fully adopted resolution rules according to the FSB;
- To identify whether bank resolutions affect banks of different sizes heterogeneously, we estimate Eq. (1) for subgroups of large and non-large banks;
- Treatment is staggered: we use the stacked approach (Gormley-Matsa, 2011) and Callaway-Sant'Anna's (2021) estimators.

Data and Variables Definition

Data

- Financial data are from DataStream, IMF, and WorldBank. The empirical risk factors are from Global Factors Database. Regulatory data are from Financial Stability Board (FSB);
- "Large banks" are the 5 largest banks in the country by total asset value each year. The remaining banks are classified as "non-Large banks". (we challenge our results to many alternative definitions - results hold)
- The data cover 19 countries from 2002 to 2021. Our final sample comprises 1,544 banks and 13,971 bank-year observations.

Data and Variables Definition

FSB's Resolution by Country

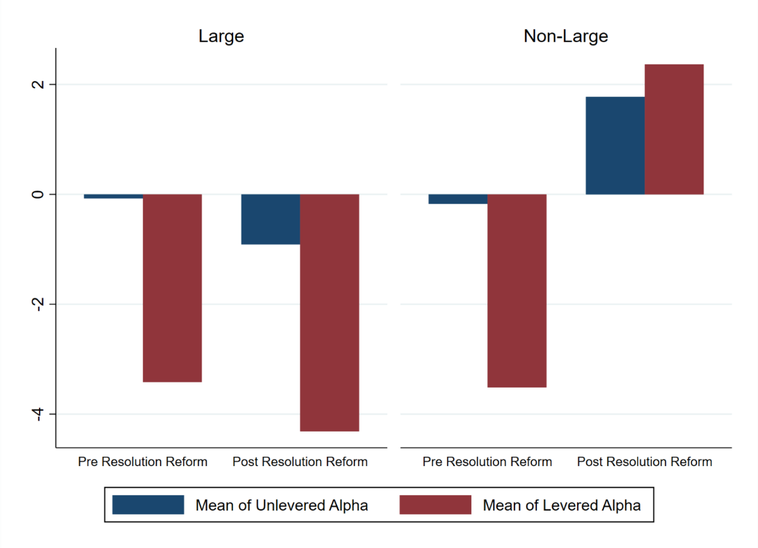
Table 1.1 Bail-in Resolution by Country

This Table shows in Panel A, for each FSB jurisdiction in our sample, the year of effective implementation of bank resolution reforms. Panel B shows the Never Treated countries.

Panel A: Treated Countries	
FSB jurisdictions	Year of effective implementation
Canada	2017
France	2016
Germany	2016
Italy	2016
Netherlands	2016
Spain	2016
UK	2013
USA	2010
Panel B: Never Treated Countries	
Australia, Brazil, China, India, Indonesia, Japan, Korea, Mexico, Singapore, South Africa, and Turkiye.	

Alphas in treated countries: before and after reforms

Average of Bank-Level Abnormal Returns Pre- and Post-Resolution Reforms



Baseline Results: Diff-in-Diff

- The full implementation of bank resolution reforms increases the average abnormal unlevered return by approximately 4.0 points (pp) on average.
- For non-large banks, the adoption of bank resolution regulations increases alphas by 4.6 pp;
- For large banks, we do not observe any significant effect of bank resolutions on their alphas;

The Effect of Bail-in Resolution on Equity Costs Advantages: Difference-in- Difference

The Effect of Bail-in Resolution on Equity Costs Advantages: Difference-in- Difference

Panel A. Stacked Approach Difference-in-Difference

Sample	All	non-large	large
	(1)	(2)	(3)
	Dependent Variable is the *Unlevered Alpha*		
Resolution × *Post*	3.969**	4.608**	-0.908
	(1.559)	(1.847)	(0.991)
Bank-Cohort	Yes	Yes	Yes
Year-Cohort	Yes	Yes	Yes
N. obs	23,079	19,627	3,358
Adj. R^2	0.169	0.175	0.135

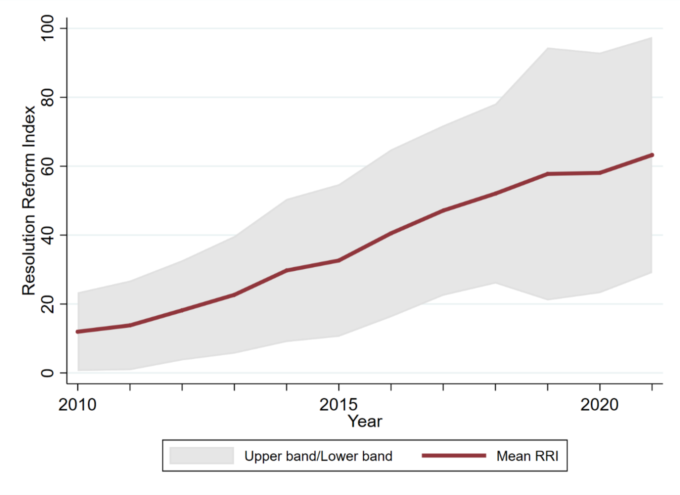
Panel B. Callaway & Sant'Anna's Difference-in-Difference

Sample	All	non-large	large
	(1)	(2)	(3)
	Dependent Variable is the *Unlevered Alpha*		
Resolution × *Post*	4.820***	4.792***	-0.392
	(1.231)	(1.444)	(1.114)
Bank FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N. obs	10,675	9,376	1,108

Baseline Results: Granular Measure

- Resolution Reforms are implemented gradually. A Pre/Post dummy does not capture gradual effects;
- We use a granular measure capturing the degree of implementation of such reforms (the Resolution Reform Index - RRI from FSB);
- Results: the adoption of regulations towards a bank resolution regime substantially decreases the implicit subsidies of non-large banks, whereas the effect for large banks, if existent, is much smaller.

Granular measure - The Resolution Reform Index



Granular measure - Resolution Reform Index

Sample	non-large	large	non-large	large
	(1)	(2)	(3)	(4)
$RRI_{t\text{-}1}$	0.170*	0.063	0.150**	0.065*
	(0.083)	(0.040)	(0.056)	(0.035)
Controls	No	No	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N. of obs	4,902	656	4,902	656
Adj. R^2	0.167	0.178	0.187	0.222

Addressing Endogeneity: IV strategy

- Bank resolution reforms are adopted voluntarily by countries. Therefore, potentially endogenous.
- We used Beck et al.(2020)'s cumulative number of past banking crises (CNBC) since 1800 as an instrument for implementing bank resolutions.
- Logic of instrument: if the country has had prolonged banking crises in the past, the political cost of policies that do not aim to prevent new crises is larger.
- Results confirm that the implementation of bank resolution reforms decreases the perception of implicit guarantee for non-large banks. Nevertheless, these regulations have little impact on the implicit subsidies of large banks.

Granular measure - RRI instrumented

Sample	All	All	All	non-large	large
Estimator	2SLS – First Stage	Reduced Form	2SLS – Second Stage	2SLS – Second Stage	2SLS – Second Stage
	RRI_{t-1}	*Unlevered Alpha*	*Unlevered Alpha*	*Unlevered Alpha*	*Unlevered Alpha*
	(1)	(2)	(3)	(4)	(5)
$CNBC_{t-1}$	5.144***	0.385**			
	(0.553)	(0.149)			
$\widehat{RRI_{t-1}}$			0.077**	0.099**	-0.016
			(0.028)	(0.042)	(0.030)
Bank FE	No	No	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes
F-Stat 1st Stage	.	.	85.141	172.333	30.156
N. of obs	5,584	5,584	5,584	4,902	656
Adj. R^2	0.903	0.074	0.035	0.042	0.058

Effects on Bank Risk

The Effect of Bail-in Resolution on Bank Risk: Difference-in-Difference

Panel A. Stacked Approach Difference-in-Difference			
Sample	All	non-large	large
	(1)	(2)	(3)
	Dependent Variable is the *Distance-to-Default*		
Resolution × *Post*	11.818***	13.686***	1.899
	(1.952)	(1.737)	(1.412)
Bank-Cohort	Yes	Yes	Yes
Year-Cohort	Yes	Yes	Yes
N. of obs	21,433	18,242	3,116
Adj. R^2	0.600	0.582	0.740
Panel B. Callaway & Sant'Anna's Difference-in-Difference			
Sample	All	non-large	large
	(1)	(2)	(3)
	Dependent Variable is the *Distance-to-Default*		
Resolution × *Post*	13.403***	14.851***	2.808*
	(1.049)	(1.156)	(1.591)
Bank FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N. of obs	10,085	8,868	1,041

Conclusion

- Our findings suggest that bank resolution reforms fail to convince investors that large banks will not be bailed out in the event of a crisis;
- Perception: Risk of large banks is still borne by taxpayers, but risk of non-large banks will fall upon shareholders and debtholders.
- The consequences of not pricing equity adequately can generate excessive risk-taking by large banks, exacerbating competitive distortions of too-big-to-fail.