Financing and Resolving Banking Groups

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Bank Resolution

- The financial crisis demonstrated the cost of failure of large and complex banks
- Reforms (Dodd-Frank Act and EU Bank Recovery and Resolution Directive) aimed at reducing the probability and public costs of bank failures
- Improvement of resolution mechanisms: Banks prepare resolution plans ("living wills") that need to be accepted by/negotiated with the supervisor
- Banks are required to hold TLAC that includes financial claims that can be written down or diluted during resolution.

Resolution of Complex Banking Groups

Single-Point-of-Entry (SPOE):

- Resolution preserves banking group's corporate structure
- Mutualizes losses within a banking group
- Chosen by many of the large banks
- Arguably preferred by regulators
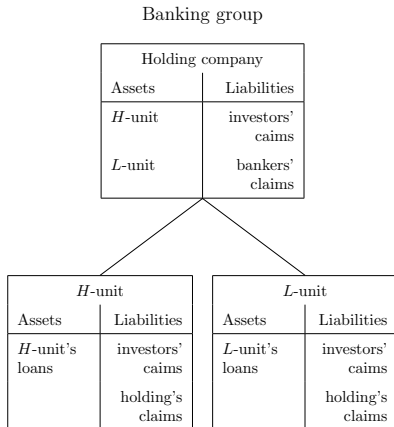
Multiple-Point-of-Entry (MPOE):

- Different parts of a group are resolved separately: changes corporate structure
- Banks have to specify entry points at which the regulator can take control.
- Maintains limited liability between parts of a banking group
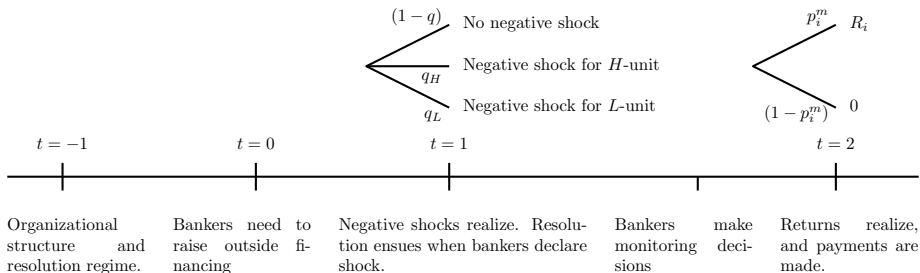- Chosen for instance by BBVA, HSBC, and Santander

Key Questions

- What is the trade-off implied in the choice of the resolution regime?
- How does the resolution regimes affect:
  - Ability to finance and operate banking groups' units
  - Continuation of banking units following negative shocks
- Policy and empirical implications:
  - For which banking groups do SPOE or MPOE make sense?
  - Is regulators' preference for SPOE "justified"?

Banks

- Banking group with two (potentially) asymmetric banking units H and L
- Run by wealth-less bankers
- Centralized decision making
- Subject to a resolution regime

Banking group

Holding company	
Assets	Liabilities
H-unit	investors' caims
L-unit	bankers' claims

H-unit	
Assets	Liabilities
H-unit's loans	investors' caims
	holding's claims

L-unit	
Assets	Liabilities
L-unit's loans	investors' caims
	holding's claims

Returns and Monitoring

$(1-q)$ No negative shock

q_H Negative shock for H-unit

q_L Negative shock for L-unit

p_i^m R_i

$(1-p_i^m)$ 0

| $t = -1$ | $t = 0$ | $t = 1$ | | $t = 2$ |

Organizational structure and resolution regime.

Bankers need to raise outside financing

Negative shocks realize. Resolution ensues when bankers declare shock.

Bankers make monitoring decisions

Returns realize, and payments are made.
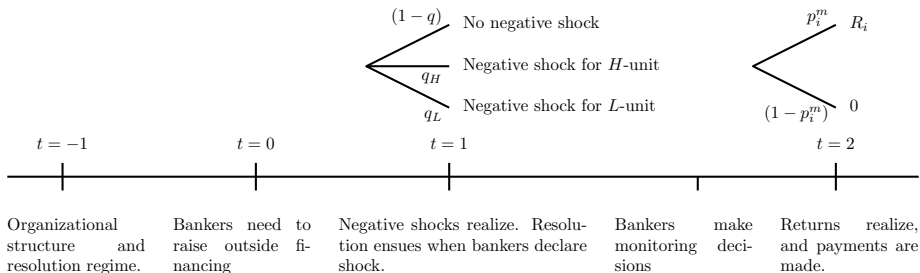
- Each unit requires one unit of initial investment.
- A negative shock might hit *one* of the banking units
  - requires one unit of reinvestment for possibility of success
  - ex ante probability q_i, where $q = q_H + q_L$.

Returns and Monitoring

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Returns realize, and payments are made.

- Monitoring with cost c increases success probability: $p_i^m = p_i + \Delta p_i$.
- For each unit $i \in \{H, L\}$ returns are binary with success payoff R_i.
- Initial investment and reinvestment create positive NPV with monitoring. Negative NPV without.

Financing and Information

Financing

- Bankers have no wealth and raise financing from competitive credit markets
- All parties are risk-neutral, protected by limited liability and with discount factor of one

Information

- Returns are observable but monitoring decisions are not.
- Shock is private information of the bankers
- The inability of markets to observe the shock prevents financing contracts contingent on the realization of the shock.
- Reduce ability to raise financing for reinvestment outside of resolution (extension in paper)

Resolution and Regulator

- Resolution ensues if bankers report that one of the units suffered a shock

Regulator

- Temporarily takes control of the bank
- Verifies the shock
    - resolution serves as state verification device
        - cf. bankruptcy in Giammarino (1989); Webb (1987).
    - facilitates refinancing.
- Restructures existing claims and raises new financing.
- Maximizes ex post efficiency:
    - Ensures monitoring & maximizes continuation.
    - Minimizes losses to existing investors

Assumption

In the absence of resolution, banks cannot raise sufficient financing to reinvest in units that suffer negative shocks.

Resolution Regimes

SPOE resolution

- Resolution always ensues at the holding company
- All units are resolved jointly and their losses are mutualized

MPOE resolution

- Can designate *one or both* units as *entry points* that are resolved separately when hit by a shock.
- Not transfers between units that are resolved separately.
- If shock hits a unit that is *not* an entry point, resolution ensues at the holding and units are resolved jointly.

Optimal Contracting Benchmark

Pledgeable income at $t = 1$**:** smaller than present value due to agency costs

$$P_G^1 \equiv P_H^1 + P_L^1 + P_S^1, \quad P_S^1 \text{ incentive synergies (cross pledging).}$$

Assumption: $P_H^1 \geq P_L^1$ w.l.o.g.

Pledgeable income at $t = 0$**:** depends on reinvestment decision $\rho \in \{0, L, H, 2\}$.

$$P_G^0(\rho) \equiv \begin{cases} P_G^1 - q & \text{if } \rho = 2, \\ P_G^1 - q_H - q_L(P_L^1 + P_S^1) & \text{if } \rho = H, \\ P_G^1 - q_L - q_H(P_H^1 + P_S^1) & \text{if } \rho = L, \\ P_G^1 - q_L(P_L^1 + P_S^1) - q_H(P_H^1 + P_S^1) & \text{if } \rho = 0. \end{cases}$$

Key Question: Which operation and reinvestment decisions can be financed.

Reinvestment

- P_G^0 increases if and only if a unit's contribution to the pledgeable income exceeds cost of reinvestment:

$$P_i^1 + P_S^1 > 1 \Leftrightarrow P_G^0(i) > P_G^0(0) \Leftrightarrow P_G^0(2) > P_G^0(j).$$

- H-unit: Reinvestment is always optimal
  - $P_H^1 + P_S^1 > 1$ if the bank can finance both units ($P_G^1 \geq 2 \wedge P_H^1 \geq P_L^1$)
  - Creates positive NPV

- L-unit: Reinvestment can prevent initial investment at $t = 0$
  - decreases the $t = 0$ pledgeable income when $P_L^1 + P_S^1 \leq 1$.
  - when the expected financing deficit $q_L(1 - P_L^1 - P_S^1)$ causes $P_G^0(2) < 2$, the bank cannot fiance both units

Banking Group: Optimal Contract

Constrained Optimal Contract (maximizes surplus):

1. Operate both units and reinvest in both units if pledgeable income is sufficient: $P_G^0(2) = P_H^1 + P_L^1 + P_S^1 - q > 2$.

2. Operate both units and no reinvestment in the L-unit following a shock (only if reinvestment of the L-unit is "too" costly): $P_G^0(2) < 2 \leq P_G^0(H)$

3. Operates only the H-unit if 1. and 2. are not feasible.

Assumption

We rule out option 3.

SPOE resolution

- Preserves corporate structure and mutualizes losses
- Regulator can and will transfer resources to reinvest in any unit.
  - Banking group can only operate both units if $P_G^1 > 2 \Rightarrow$ sufficient pledgeable income to finance reinvestment
- Its pledgeable income at $t = 0$ is equal to $P_G^0(2)$.
- Implements the constrained optimum if $P_G^0(2) \geq 2$.

MPOE resolution

- Entry point at i-unit:
    - i-unit resolved separately if it suffers a shock
    - No reinvestment if $P_i^1 < 1$.
- Never optimal to specify the H unit as an entry point.
    - Separation destroys incentive synergies P_S^1
- Entry point at the L-unit yields $t = 0$ pledgeable income $P_G^0(H)$ if $P_L^1 < 1$.
    - Regulator may have to restructure claims on the H unit such that monitoring is ensured.
- Implements the constrained optimum if $P_G^0(2) < 2 \leq P_G^0(H)$.

Resolution Efficiency

- One of the two regimes always implements the constrained optimal operation and reinvestment decisions
- Coexistence of both resolution regimes with bank specific application more efficient than either resolution regime alone.

MPOE Resolution

- Can lead to shut down that is inefficient ex post.
- Constrained optimal & necessary for group formation when financing capacity is low and units are heterogeneous (in scope, competencies and geographically)

SPOE Resolution

- Constrained optimal when financing capacity is high and units are symmetric
- Can otherwise prevent ex ante investment.

Implications

- MPOE banks can shut down weak units following shocks to limit investors' losses:
    - should only designate weaker units as entry points.
    - more likely to finance riskier investments.
    - less likely to curtail investment in weak units during crises.
- MPOE resolution requires commitment not to reinvest in the L-unit after a shock even if continuation is ex post efficient.
    - This commitment might be easier in a cross-border context.

Cross Border Banking

- Cross border banks more likely to choose MPOE
  - operate heterogeneous units
- MPOE banks are more likely to engage in cross border activities
  - can limit their exposure to risk foreign investments (cf. Faia and Weder di Mauro, 2016)
  - strategic choice to make MPOE credible when regulators face commitment problems.

Comparison Bolton and Oehmke (2019)

- SPOE dominates MPOE: Allows for diversification of risk and preserves operating synergies in resolution.
- Transfer of resources under SPOE may be impossible due to commitment problems of different national regulators.

Papers are complementary

- Focus on asymmetric units and constrained efficient continuation
- MPOE resolution can be more efficient than SPOE: Flexibility in (not) refinancing weaker units might be necessary to be able to operate them as a part of group in the first place.
  - MPOE may only be credible for cross-border banks.

Conclusions

- Choice of resolution regimes affects banking groups' financing and investment decisions.
- SPOE resolution
    - mutualizes losses $\Rightarrow$ allow for ex post efficient continuation of weak units after negative shocks.
    - can prevent financing of ex ante efficient investment opportunities.
- MPOE resolution
    - separately resolves banking units and can prevent ex post efficient reinvestment.
    - might be necessary to finance operation of weak units in the first place.
- Unmodelled effects:
    - regulatory biases towards inefficient continuation.
    - choice of a resolution regime may also affect the probability of entering resolution.

References I

Bolton, P., Oehmke, M., 2019. Bank resolution and the structure of global banks. Review of Financial Studies 32, 2384–2421.

Faia, E., Weder di Mauro, B., 2016. Cross-border resolution of global banks: Bail in under single point of entry versus multiple points of entry. CEPR Discussion Paper DP11171.

Giammarino, R.M., 1989. The resolution of financial distress. Review of Financial studies 2, 25–47.

Webb, D.C., 1987. The importance of incomplete information in explaining the existence of costly bankruptcy. Economica 54, 279–288.