Financial Restructuring and Resolution of Banks
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The Research Question

- How do resolution rules (bail-in/out) impact on shareholders' incentive to restructure liabilities?

- More precisely, what is the effect of haircuts on the incentive to restructure liabilities and, ultimately, on the effectiveness of the resolution procedure?

The Key Idea

- Under asymmetric information on the quality of assets, a manager acting in the interest of shareholders may delay debt restructuring to signal low quality
- In a separating equilibrium, shareholders can extract more surplus by delaying debt restructuring
- On the other hand, delays are costly - bargaining may break down
- The optimal delay trades-off these two effects
- The level of the haircut imposed on debtholders affects the renegotiation payoffs and thus shapes the efficiency of the resolution process

The Optimal Haircut

- The government utility function depends negatively on the repayment to depositors and creditors but also on the losses sustained by uninsured creditors (ask Matteo Renzi for a confirmation!)
- A higher haircut can reduce the cost for the government and lead to more concessions by creditors, thereby boosting the incentive the delay restructuring
- The optimal haircut for the government can be higher than the one that minimizes the delay

(A Two-Period Version of) The Model

- At $t = 0$, a bank has assets that will pay X (net of insured deposits D) with probability p at the end of $t = 2$ and 0 otherwise
- On the liability side, besides deposits, the bank has uninsured debt R_0 and equity E
- By exerting monitoring m, at a personal cost c, the manager can increase the probability of success to $p + m$
- While $mX > c$, by assumption $m(X - R_0) < c$ so that monitoring m is not exerted unless debt is renegotiated to a lower R (debt overhang)

(A Two-Period Version of) The Model -2

- The probability of success can be either $\underline{p}$ or $\overline{p}$, with $\overline{p} > \underline{p}$
- Only the manager observes the realization of p
- The manager can make a take-it-or-leave-it-offer to debtholders either at $t = 1$ or at $t = 2$: debt is reduced to R_t and in exchange monitoring is exerted
- If the offer is delayed until $t = 2$, bargaining can break down at $t = 1$ with probability β (delaying restructuring is costly)
- In case assets yield 0, the government pays debtholders a fraction $1 - h$ of the face value of of their claims (after renegotiation): h is the haircut

Separating Equilibrium

- We look for a separating equilibrium where type $\overline{p}$ makes a renegotiation offer at $t = 1$ and type $\underline{p}$ waits until $t = 2$
- At $t = 2$, anticipating an offer from type $\underline{p}$, debtholders will be ready to renegotiate their claims to R_2 only if

$$R_2[(\underline{p} + m) + (1 - \underline{p} - m)(1 - h)] \geq R_0[\underline{p} + (1 - \underline{p})(1 - h)]$$

- The condition becomes

$$R_2 = \frac{1 - h(1 - \underline{p})}{1 - h(1 - \underline{p}) + hm} R_0$$

- Using the same logic, we have

$$R_1 = \frac{1 - h(1 - \overline{p})}{1 - h(1 - \overline{p}) + hm} R_0$$

Separating Equilibrium -2

- Note that $R_0 \geq R_1 \geq R_2$: delaying restructuring leads to a better deal for shareholders. Equalities hold only if $h = 0$ (no haircut). Both R_1 and R_2 are decreasing in h: a larger haircut reduces debtholders bargaining power. Also, $R_1 - R_2$ is increasing in h

- However, delaying restructuring is costly, as bargaining may break down. The IC constraint for type $\overline{p}$ is

$$(\overline{p}+m)(X-R_1)-c \geq \beta\overline{p}(X-R_0)+(1-\beta)[(\overline{p}+m)(X-R_2)-c$$

- The condition can be written as

$$\beta \geq \frac{(\overline{p}+m)(R_1-R_2)}{mX-c-[(\overline{p}+m)R_2-\overline{p}R_0]} = \overline{\beta}$$

Separating Equilibrium -3

- By pretending to be the low type, the high type can gain $(\overline{p}+m)(R_1-R_2)$ if bargaining does not break down (**signaling effect**). However, in the opposite case, he loses $mX-c-[(\overline{p}+m)R_2-\overline{p}R_0]$ (**surplus effect**)
- For type $\underline{p}$, we have

$$\beta \leq \frac{(\underline{p}+m)(R_1-R_2)}{mX-c-[(\underline{p}+m)R_2-\underline{p}R_0]} = \underline{\beta}$$

- When both conditions hold, $\overline{\beta} \leq \beta \leq \underline{\beta}$, a separating equilibrium exists
- Note that in the paper, β depends on the length of the delay and it is an endogenous variable! A nicer and richer framework compared to my super-simplified model
- In this simple setup, $\overline{\beta}$ is the optimal probability of breakdown that sustains a separating equilibrium

The Effect of the Haircut

- What is the effect of increasing the haircut h on $\overline{\beta} = \frac{(\overline{p}+m)(R_1-R_2)}{mX-c-[(\overline{p}+m)R_2-\overline{p}R_0]}$?
- At the numerator $R_1 - R_2$ is increasing in h: a larger haircut increases the value of delaying restructuring
- But also the denominator increases as R_2 is decreasing in h: shareholders' loss in case of bargaining breakdown increases with the haircut
- The effect of h on $\overline{\beta}$ is non-monotone

The Optimal Haircut

- The government objective function U^G depends both on the size of bailouts $(1-h)R$ and on the size of bail-in hR. η is the weight of bail-in (and 1 the weight of bailouts). Let α be the fraction of high types

- Then in a separating equilibrium
$U^G = -(1-h+\eta h)\left\{\alpha R_1 + (1-\alpha)[\overline{\beta} R_0 + (1-\overline{\beta})R_2]\right\}$

1. An increase in h reduces the funds used for bailouts, but increases the the impact of the bail-in: total effect is $\eta - 1$
2. An increase in h reduces R_1 and R_2
3. An increase in h has a non-monotone effect on $\overline{\beta}$

- If $\eta < 1$, the first two effects are positive and the optimal haircut is higher than the one that minimizes $\overline{\beta}$

A Dynamic Model?

- Although delays are the signaling variable, the model is otherwise static
- X, p, c and m do not change over time
- This is mainly for tractability, but not obvious why delays are used to signal asset quality

A Different Signal

- Consider the simplified version of the model and suppose the manager, before proposing a restructuring, takes an action that decreases X by Δ but gives shareholders or himself a payoff γ (say, a fraction of the assets is sold at a price below market value)

- Using the same notation as before, if $R_1 - R_2 + \frac{\gamma}{\bar{p}+m} < \Delta < R_1 - R_2 + \frac{\gamma}{\underline{p}+m}$, we can have a separating equilibrium where only type $\underline{p}$ selects the action

- What's special about delays as a signaling device?

MPS

- The main motivation for delays as a signaling device comes from the MPS events
- But many things occurred in that case. For instance, in 2014 the burden sharing directive was approved and the Italian government apparently did not fully realize its implications
- MPS accepted the so called "Tremonti bonds" in 2009 and the "Monti bonds" in 2012. How important was asymmetric information? Is MPS really a signaling story?

Assumptions

- The occurrence of a breakdown plays a crucial role in the model. Yet, the authors only briefly mention how it can be triggered (inability to roll-over debt)
- How should we interpret the private cost c?
- Why do banks have uninsured debt in first place?
- Uninsured creditors either accept or decline the renegotation offer. But what if they cannot coordinate their decision? Is free-riding a concern?
- In the second model (the one with government participation to the restructuring) why does the government make a cash transfer only to shareholders? How crucial is the specific structure assumed for the renegotiation process?

Some questions

- What are the implications for bank capital structure (the cost of capital will be a function of h)? Would Cocos help?
- In the MPS case, some investors have acquired uninsured debt after the crisis had emerged. They were likely betting on a bailout. Should they face the same h as initial investors?
- Does η vary with the electoral cycle? With the type of government?
- In theory, h is not set by national goverments. However, the political cost of a bail-in is sometimes borne by a government. Who should decide on h? Should h be a function of η? (Governments will anyhow find ways to mitigate the effect of haircuts not to pay a too high political price)

To Sum UP: A Very Neat Paper

- The paper makes an original contribution by showing the interaction between restructuring and the overall efficiency of the resolution process
- The idea that the haircut can impact on the speed (and efficiency) of the resolution process is very neat
- The model is very elegant (in its original version) and some results are surprising

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- The model is very elegant (in its original version) and some results are surprising
- **Well done!**