Rules versus Disclosure:
Prudential Regulation and Market Discipline

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Motivation

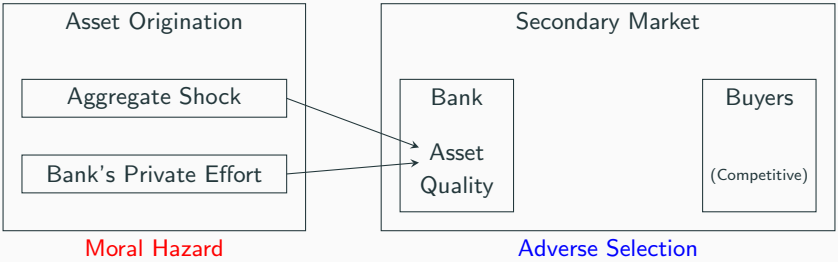
- Regulators seek to ensure that banks operate prudently (i.e., do not take "excessive" risk).

- Two well-documented concerns can make this difficult:
  - Moral hazard: banks may produce too many risky or low-quality assets.
  - Adverse selection: banks may retain too many bad assets.

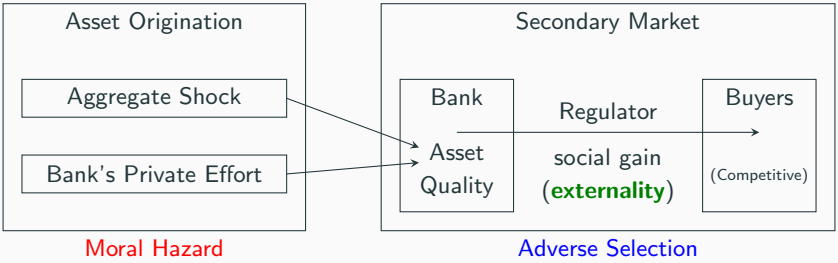
- Regulators try to address these issues using **combination** of policy tools.
  - Rules and supervision to promote prudent behavior.
  - Disclosure through stress testing to foster market liquidity.

- (Most) of the literature studies these tools separately. We study the optimal **joint design**.

Overview


Asset Origination
Aggregate Shock
Bank's Private Effort
Secondary Market
Bank
Asset Quality
Buyers
(Competitive)
Moral Hazard
Adverse Selection

Overview



Externality: social gain from moving assets off banks' balance sheets (e.g. too big to fail).
$\Rightarrow$ since this is not internalized by banks, regulator cares *more* about liquidity than banks.

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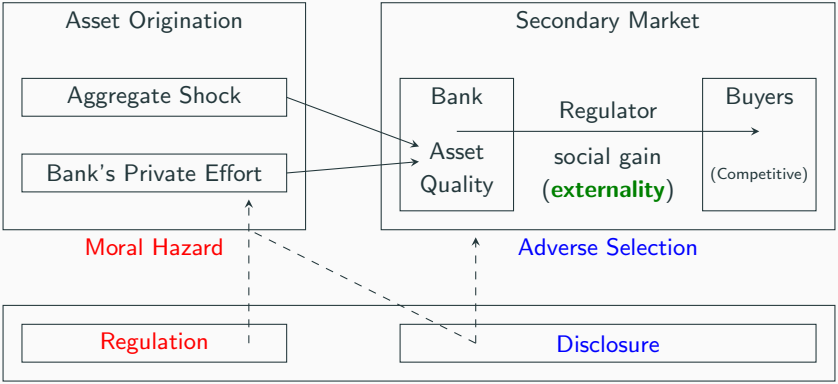

- Regulation: can fix moral hazard, but can't respond to shocks. If only tool, need "excessive effort."
- Disclosure: is state-contingent and can foster liquidity, but weakens incentives (time inconsistency).

Complementarity: optimal joint design fosters liquidity with relatively light regulation

Model

Setup: Quality choice in the first period

One (representative) bank, two periods.

- Bank first originates an asset of uncertain quality and may later sell it.

Asset quality depends on bank's privately exerted effort $e \in [0, \frac{1}{2})$.

- Cost $c(e)$: increasing, convex, $c(0) = c'(0) = 0$, and $c(\frac{1}{2}) = c'(\frac{1}{2}) = \infty$.

Asset quality is also affected by an **publicly observable** exogenous shock $\theta \sim U([1-\varepsilon, 1+\varepsilon])$.

- $\varepsilon \in (0, 1)$: Uncertainty of the environment.

The asset has quality $q \in \{L, H\}$, which is the **bank's private information.** Production technology:

$$\text{Prob}(q = H \mid e) = \theta e.$$

Setup: Trading under adverse selection in the second period

- Asset of quality $q \in \{L, H\}$ has value v_q for buyers and ρ_q for the bank.

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- **Assumption:** Private gains from trading high-quality assets only.

$$v_H > \rho_H > \rho_L > v_L.$$

- No trade if expected quality is too low. Naturally, expectations depend on public state θ.

- **Externality:** Additional social value $g > 0$ of *trading each asset*, with

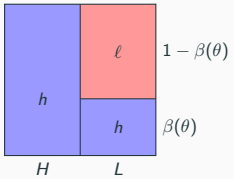
$$v_L + g > \rho_L.$$

- Potential rationales: too big to fail and/or bank expertise for troubled assets.
  - Could also model richer type space with stronger adverse selection "at the bottom."

Policy Instruments

1. **Fixed rules and regulations** to enforce minimum effort. **Key limitation**: not state-contingent.

2. **Disclosure**: regulator can reveal **state-contingent** information about asset quality.



Key limitation: while obfuscation can increase trade, it also creates ex-ante moral hazard.

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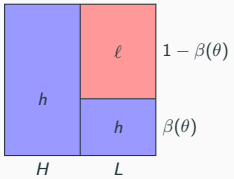

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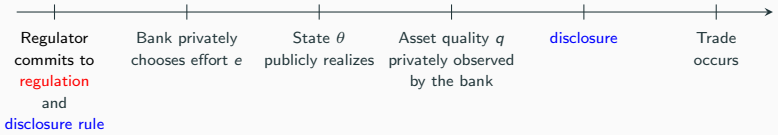


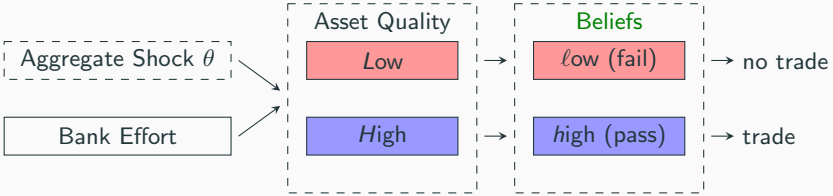
Step by step

1. Disclosure without regulation
2. Regulation without disclosure
3. Joint design

Disclosure without Regulation

Tradeoff: ex-post liquidity support versus ex-ante moral hazard

Full disclosure ensures bad assets do not trade. This has costs because of the externality.



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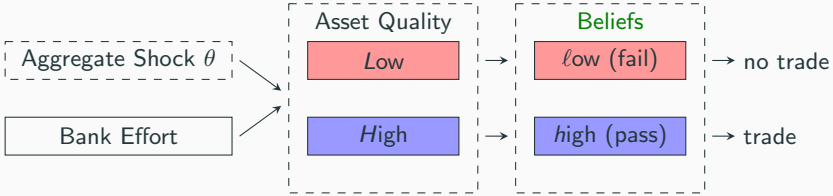
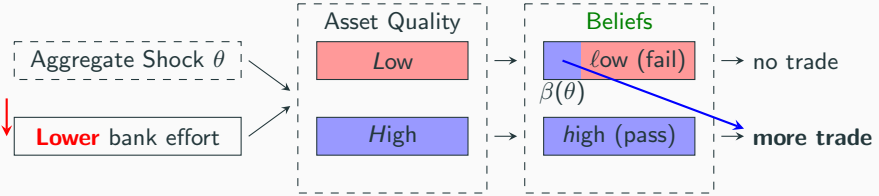


Partial obfuscation allows some bad assets to (efficiently) trade. Costly because it weakens effort.



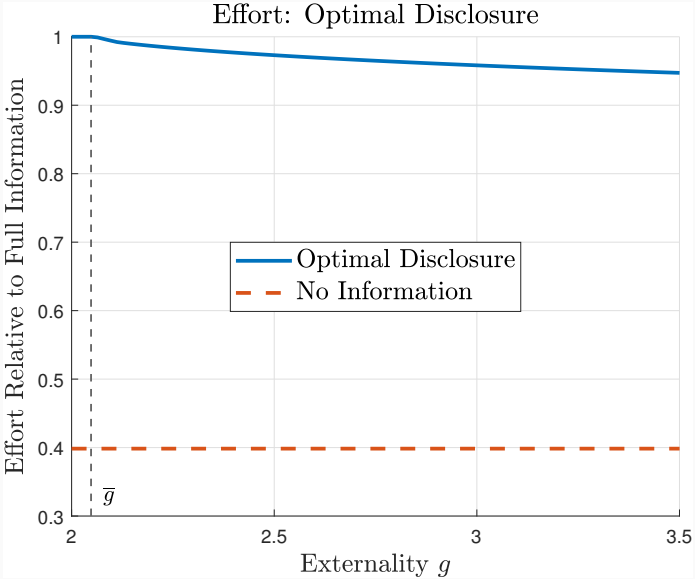
Resolving the tradeoff between liquidity and moral hazard

Key properties of the optimal disclosure rule absent regulation:

1. If externality g is low, full disclosure is optimal. (Care only about moral hazard.)
2. If externality g is high, it is optimal to partially obfuscate. (Care about liquidity.)

Say $g \approx$ systematic importance. Then SIFIs should be more opaque, and thus produce worse assets.

Graphical Illustration



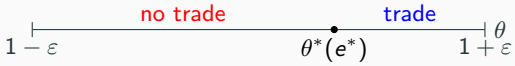
Regulation without Disclosure

Assume: regulator can induce minimum effort e^* through regulation.

Fixes moral hazard but is not state-contingent $\Rightarrow$ determines "cutoff state" for market breakdowns.

- $\theta^*(e^*)$: the cutoff state at which the conditional buyer value given e^* is ρ_H:

$$e^*\theta^*(e^*)v_H + (1 - e^*\theta^*(e^*))v_L = \rho_H.$$



Regulation without Disclosure: Optimal Policy

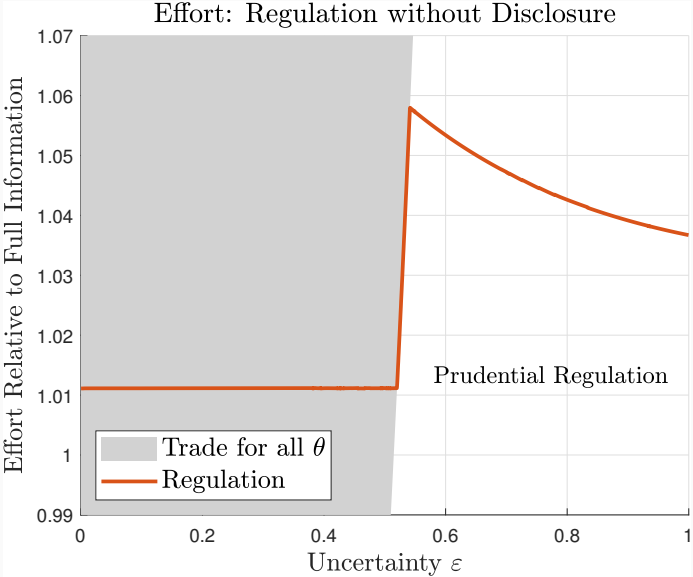
Since regulation is not state contingent, optimal regulation depends crucially on volatility.

1. **Small** ε: trade always occurs, regulation is the efficient effort level $(c')^{-1}(v_H - v_L)$.

2. **Intermediate** ε: excessive "prudential effort" to ensure trade always occurs.

3. **High** ε: less "prudential" effort because ensuring trade in every state is too costly.
   $\Rightarrow$ The regulator decides to "give up" on some bad states.

Throughout: optimal regulation is increasing in externality g.


Effort: Regulation without Disclosure
Effort Relative to Full Information
1.07
1.06
1.05
1.04
1.03
1.02
1.01
1
0.99
0
0.2
0.4
0.6
0.8
1
Uncertainty ε
Prudential Regulation
Trade for all θ
Regulation

Joint Design: Regulation + Disclosure

Joint design: Basic idea

Regulation addresses moral hazard, disclosure adapts to the state.

Can use disclosure to generate trade when prudential regulation is too costly.

Key properties

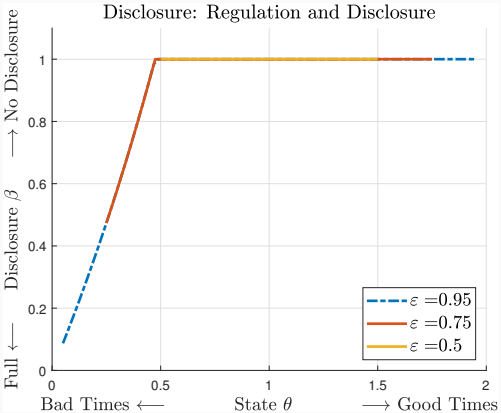
1. Regulation and disclosure are *substitutes* in incentive provision.
   - Stricter regulation $\Rightarrow$ less disclosure (more pooling).

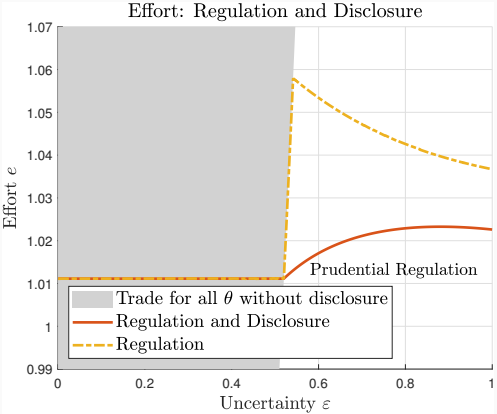
2. Disclosure always reduces regulation level vis-à-vis no-disclosure.
   - Confirms rationale for basic structure of Basel III.

3. Disclosure is state-contingent, and information is **never fully disclosed**.

4. Optimal regulation increasing in externality g ($\approx$ Basel III, Dodd-Frank).

Key properties





Conclusion

Study the optimal *joint* design of regulation and stress test disclosure.

Regulation entails "prudential effort" or leads to no trade in bad states.

- Without regulation, regulator is more opaque about the assets of larger banks.

Targeted disclosure supports trade in bad states, which allows for less prudential effort.

- Regulation deals with moral hazard entailed by information obfuscation.
- More regulation (and liquidity support) for high-g institutions.