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**.
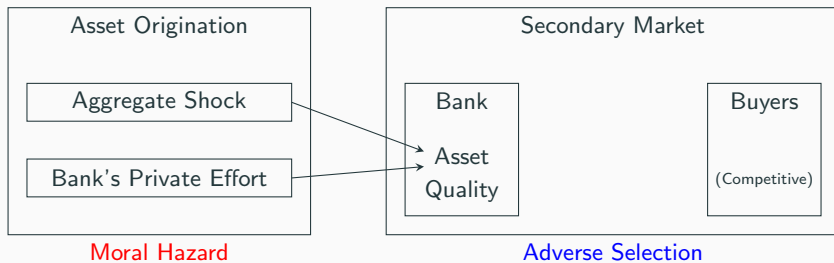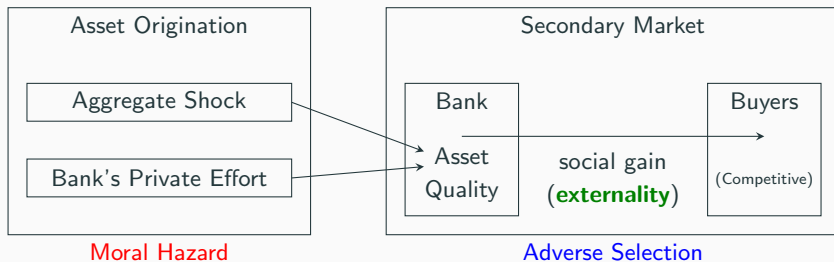
Externality: social gain from moving assets off banks' balance sheets (e.g. too big to fail).
⇒ since this is not internalized by banks, regulator cares *more* about liquidity than banks.
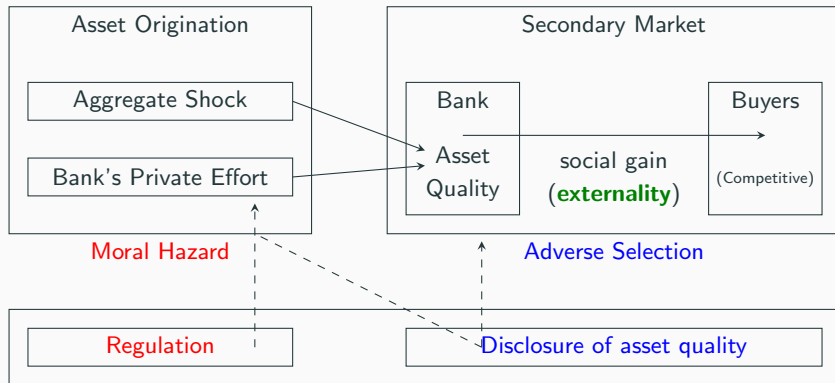
- Regulation: can fix moral hazard, but can't respond to shocks. If only tool, need "excessive effort."
- Disclosure: is state-contingent and can foster liquidity, but weakens incentives (time inconsistency).

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 <u>may</u> 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 a **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.
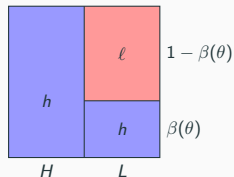
- **Externality:** Additional social value $g > 0$ of *trading each asset*, with

$$v_L + g > \rho_L.$$

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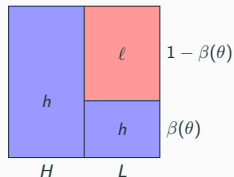
1. **Fixed rules and regulations** to enforce minimum effort. **Key limitation**: not state-contingent.

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

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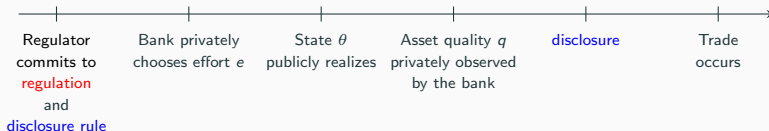

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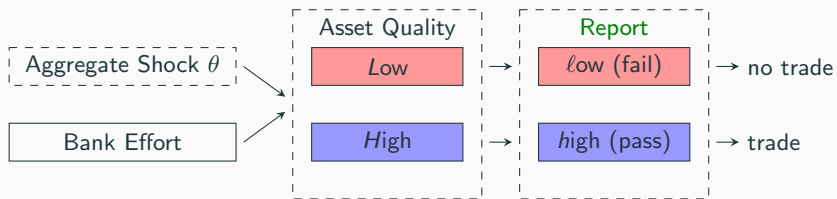
1. Disclosure without regulation

2. Regulation without disclosure

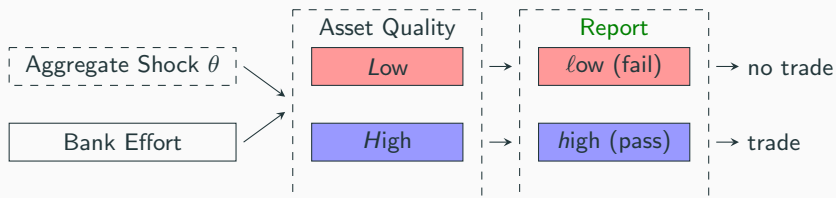3. Joint design

Disclosure without Regulation

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

Full disclosure ensures bad assets do not trade. Raises quality, but has costs due to the externality.

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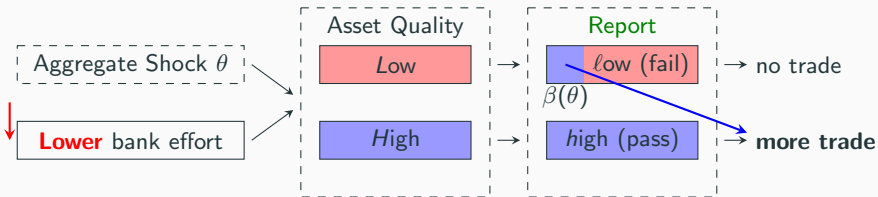
Aggregate Shock θ → Asset Quality: *Low*, *High*

Bank Effort →

Report: ℓow (fail) → no trade; $h$igh (pass) → trade

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

Aggregate Shock θ → Asset Quality: *Low*, *High*

Lower bank effort →

Report: ℓow (fail) → no trade; $\beta(\theta)$; $h$igh (pass) → **more trade**

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.

Effort: Optimal Disclosure
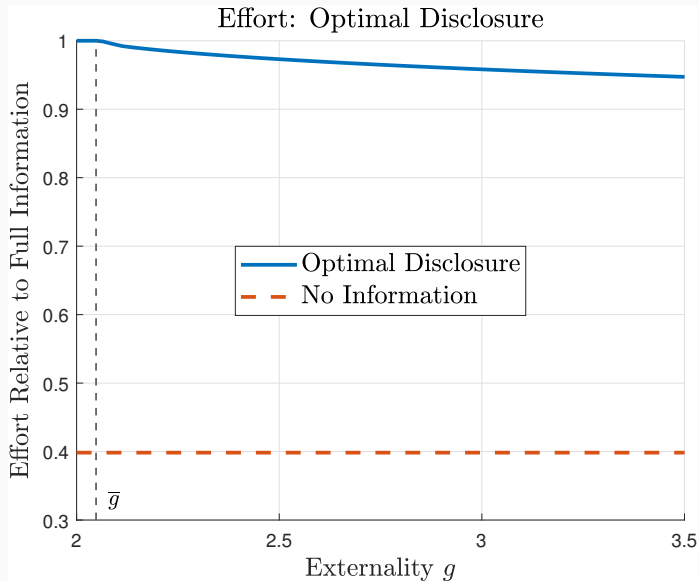
Regulation without Disclosure

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.

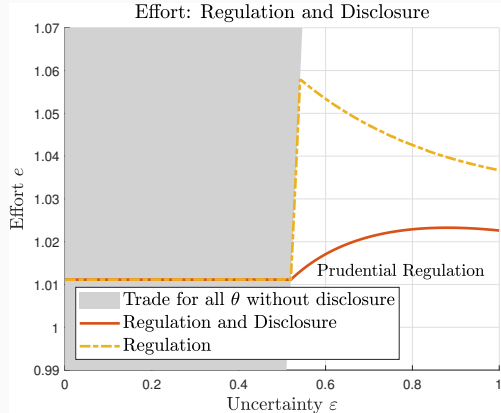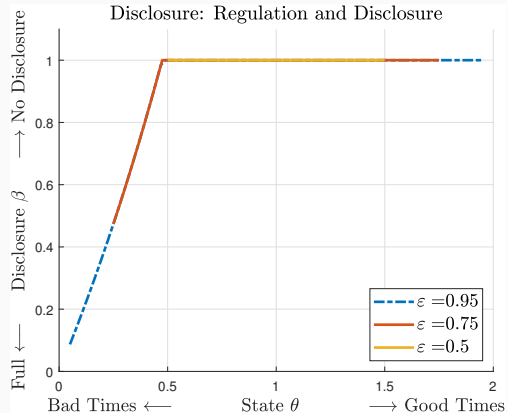Effort: Regulation without Disclosure
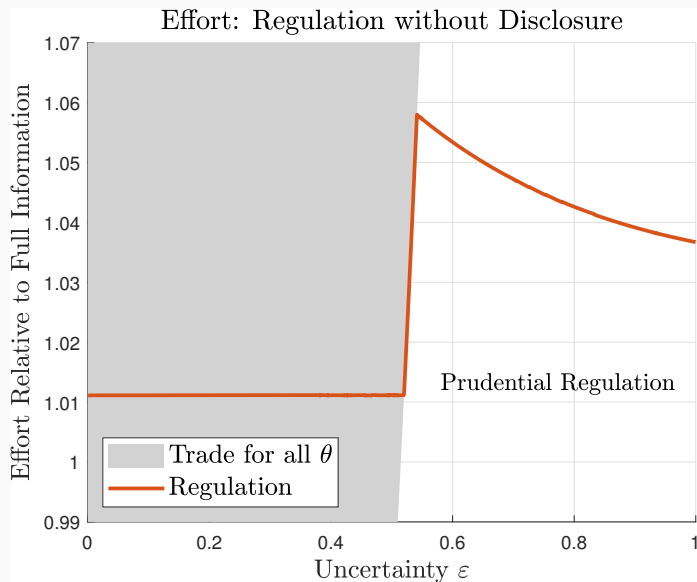
Joint Design: Regulation + Disclosure

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).

Disclosure: Regulation and Disclosure

Effort: Regulation and Disclosure

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.