



# FINANCIAL CRISIS: MECHANISMS, PREVENTATION, MANAGEMENT

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# Overview

## 1. Underlying mechanism

- Fire-sale externality + Liquidity spirals (due to maturity mismatch)
- Hoarding externality
- Runs
- Network externality (interconnectedness)

## 2. Crisis prevention

- Macro-prudential regulation
- Countercyclical regulation
- Encourage long-term funding
- Transparency - clearing house
- Compensation schemes
- ...

## 3. Crisis management

- Bad bank, guarantee, receivership,...

# 1.1 Fire-sale externality

- **Leverage** (alone) *capital/leverage ratio*

➔ Danger of risk shifting by leveraged institutions

- Difficult to raise (new) funds

- **Maturity mismatch** (+ Leverage) *liquidity*

➔ New funds are needed

- **Two ways out**

- Raise new funds

**FUNDING LIQUIDITY** *(rollover risk)*

- Sell off assets  
(at fire sale prices)

**MARKET LIQUIDITY**

➔ *Fire-sales depress price also for others*

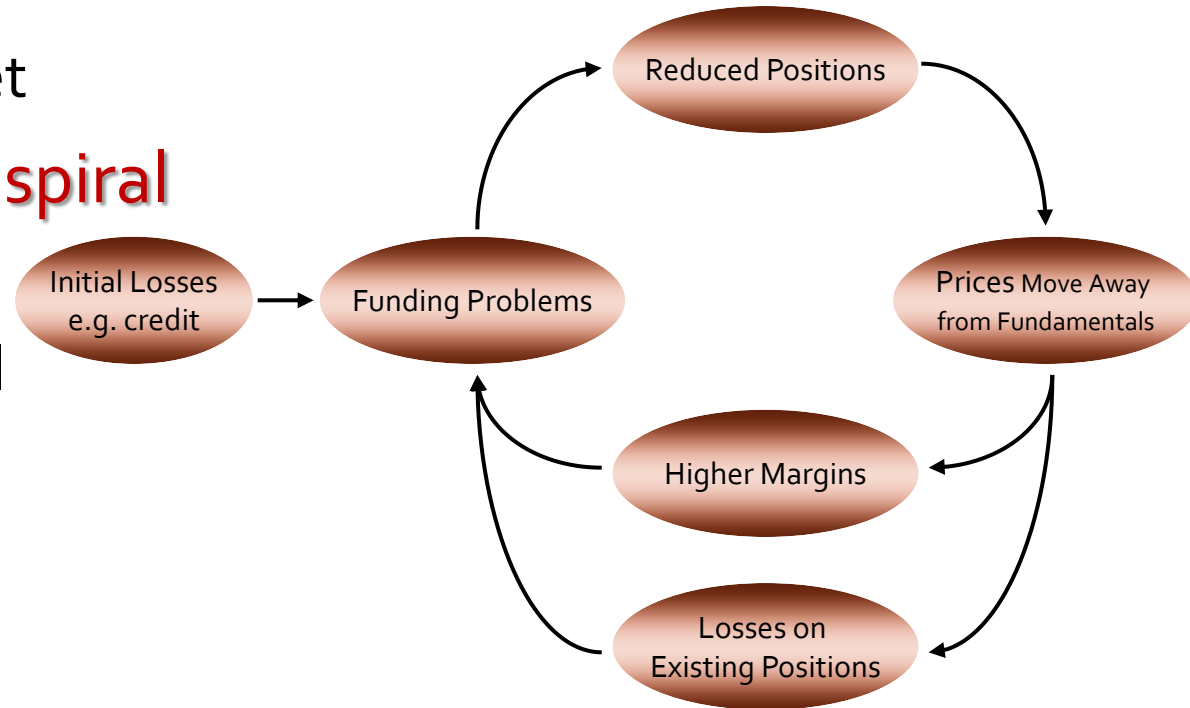
# 1.1 Liquidity spirals

- **Loss spiral**

- ➔ same leverage
  - mark-to-market

- **Margin/haircut spiral**

- ➔ delever!
  - mark-to-model



➔ + “mark-to-funding” incentivize long-term funding  
(reduce maturity mismatch)

# 1.1 Procyclicality – Margin/haircut spiral

- Margins/haircut increase in times of crisis → delever  
margin =  $f(\text{VaR})$

- Three Reasons

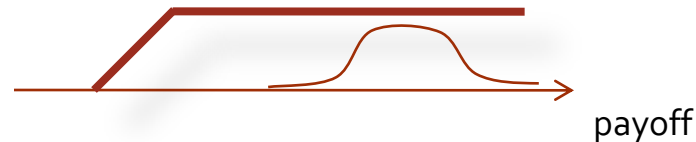
1. Backward-looking estimation of VaR

- Use forward looking measures
- Use long enough data series

2. Time-varying volatility

3. Adverse selection

- Debt becomes more information sensitive (not so much out of the money anymore)



- Credit bubbles

- whose bursting undermines financial system

→ **Countercyclical regulation**

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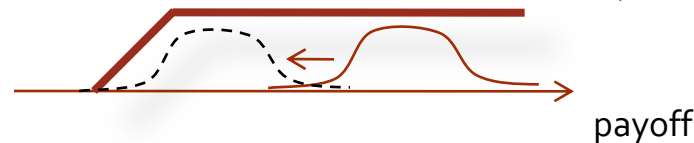
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# 2.1 Macro-prudential regulation

- Rational for regulation: **externality**
  - **Fire-sale externality**
    - A's fire-sales depress prices for other institutions as well
  - **Hoarding - Interconnectedness**
    - (prob. of) default affects other institutions
  - **Runs**
- Response to current regulation
  - “hang on to others and take positions that drag others down when you are in trouble” (maximize bailout probability)
  - become big
  - become interconnected

→ **Charges  $\propto$  contribution to systemic risk, e.g.**

**CoVaR**

## 2.1 Classification of institutions

group	examples	macro-prudential	micro-prudential
"individually systemic"	International banks (national champions)	x	x
"systemic as part of a herd"	Leveraged hedge funds	x	o
non-systemic large	Pension funds	o	x
"tinies"	unlevered	o	o

## 2.2 Countercyclical regulation

- Lean against “credit bubbles”
  - Bubbles that impair financial (leveraged) sector
  - (NASDAQ vs. Housing bubble)
  - Combination of “bubbles + maturity mismatch” are toxic
- Margin/haircut spiral causes procyclicality
  - Steep yield curve in booms induces investors to finance themselves more short-term (“rollover risk” with negative fire-sale externalities)
- Look out for excesses in funding liquidity
  - Credit growth
  - Credit spreads
  - Haircuts/margins (LTV ratios)
- Laddered response (act early!) & prompt corrective action

## 2.3 Encourage long-term funding

- Liquidity charge
  - Capital charge
    - Strictly binding
    - Might stifle competition
  - Pigouvian tax + government insurance
    - Generates revenue
    - In times of crisis it is cheap to issue government debt
  - Private insurance scheme (Kashap, Rajan & Stein, 2008)
- Mark-to-funding accounting rule + mark-to-market
  - Dual role of accounting
    - Transparency
    - Constrain business decision (for capital requirements)

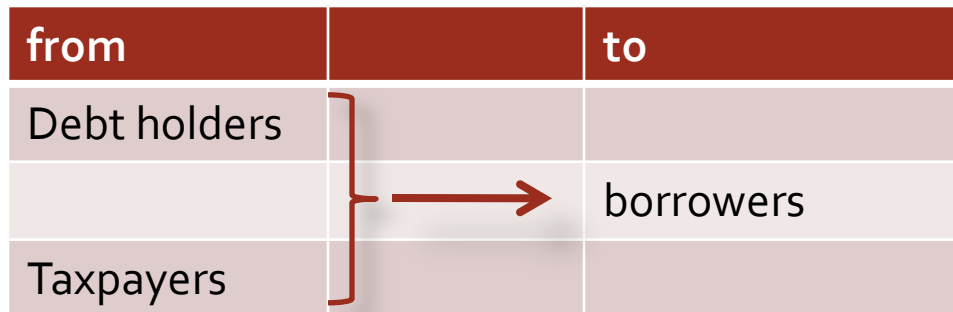
*two balance sheets*  
creditor protection  
economy-wide concern

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2. Crisis Prevention
  - ...
  - Transparency - clearing house
  - Compensation schemes
  - ...
3. Crisis Management
  - Bad bank, guarantee, receivership,...

# 3. Crisis management - systemic

- What are toxic assets?
  - Assets that are not written down yet – easy to make them non-toxic
- Objective: stimulate (efficient) lending
  1. Recapitalize banks
    - recombine funds & expertise
    - invite new private capital
  2. Reduce information asymmetries
- Different implications:
  - Wealth transfer



- Different ways

# 3. Recapitalization at expense of **debt holders**

- How to do? → ideally uniform across all debt holders
  1. **Debt equity swap-provision**
    - Triggered by aggregate conditions (change in law required)
  2. **Prompt corrective action**
    - Forced merger of bank with new government entity
  3. Tender offer by government to **buy debt at current market price** (feasible?)
- Caution:
  1. can't wipe out short-term funding (since this would induce a *run on money market funds*)
  2. At least \$500bn long-term debt in large banks
  3. Long-run consequence: rely even more on short-term funding

# 3. Recapitalization at expense of **tax payers**

- **Equity injection**

- From internal JPMorgan Chase conference call:

 no new lending!

“What we do think it will help us do is perhaps be a little bit more active on the acquisition side .... I think we have an opportunity to use that \$25 billion in that way”, *NYTimes* Oct 25, 2008

- **Purchase of toxic assets** (at artificially high price)

- No upside for tax-payers, less bang for the buck
- Easy-exit as asset mature

- **Guarantee** – provide floor for assets

- Only interbank market? (subsidize short-term debt)
- Asset-specific guarantees to restart trading (price discovery)
  - Non-recourse loans at the current market price (30 cents to the \$)
    - (current debt holders potentially participates)
  - Time-limited (e.g. 3 years)
  - Easy-exit
- “Bad bank light”

- ...

# 3. Recapitalization at expense of **tax payers**

- ...
- **Prop up house prices** with mortgage subsidies
- Nationalization (**receivership**)
  - Can restart lending
  - But subject to political distortions - pet projects

# 3. Reduce asymmetric information

- Split banks into bad and good bank(s) after nationalization
  - Debt in good bank is less informationally sensitive
    - Uninformed are willing to lend to good bank again
    - Inject new private capital
      - matching scheme?
  - Privatize good bank soon
- Price discovery for toxic assets
  - Government purchase via reverse auctions
  - Stimulate private trade with time-limited “floor guarantee”

# Conclusion

- Macro-prudential regulation
  - Focus on externalities
  - Measure for systemic risk is needed, e.g. CoVaR
  - Maturity mismatch (+ Leverage) – encourage long-term funding
- Countercyclical regulation
  - Lean against “credit bubbles”  
– interaction with monetary policy
  - Forward-looking measures, spreads, ...
- Incentives: compensation, ...
- Transparency: Clearing houses, ...
- Crisis Management
  - Objective: Reignite (efficient) lending
  - Choice: wealth transfer from debt holders or tax payers
  - Set up “transfer system” in advance based on aggregate state of economy
  - Reduce asymmetric information