

# The Performance of Regulators in **Adapting** to the Current Environment

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October 11, 2012

1. My take on the crisis

2. Challenges for policy makers

- Policies to deal with fire sale risk?
- How can we get internalize externalities?
- Which tools besides capital regulation?

# Component 1 of the crisis: Runs

- The crisis featured 6 non-traditional runs that mostly caught us by surprise:
  - ABCP
  - Repo (specifically regarding Bear Stearns)
  - OTC customers
  - Prime Brokerage customers
  - MMMFs
  - TARGET 2

# Fire Sale

- A fire sale is ““essentially a forced sale of an asset at a dislocated price. A sale is forced in the sense that the seller cannot wait to raise cash, usually because he owes that cash to someone else. The price is dislocated because the highest potential bidders are typically involved in a similar activity as the seller, and are therefore themselves in a similar financial position. Rather than bidding for the asset, they might be selling similar assets themselves.”
  - Requires stream of cash flows and a stable discount rate does not price assets

Shleifer, Andrei and Robert Vishny, 2011, “ Fire Sales in Finance and Macroeconomics”, *Journal of Economic Perspectives*, 25(1) Winter 2011, pp. 29-48.

# Component 2 of the crisis: Deleveraging

- Deleveraging is critical because
  - Explains the amplification of the initial subprime shock
  - Explains the pervasive fire sales in fall 2008
  - **maybe** explains slow recovery?

# Why is macroprudential policy needed?

- Answer: To prevent deleveraging and fire-sales
- But that means need **a model** for how to think about fire sales and credit crunches.....

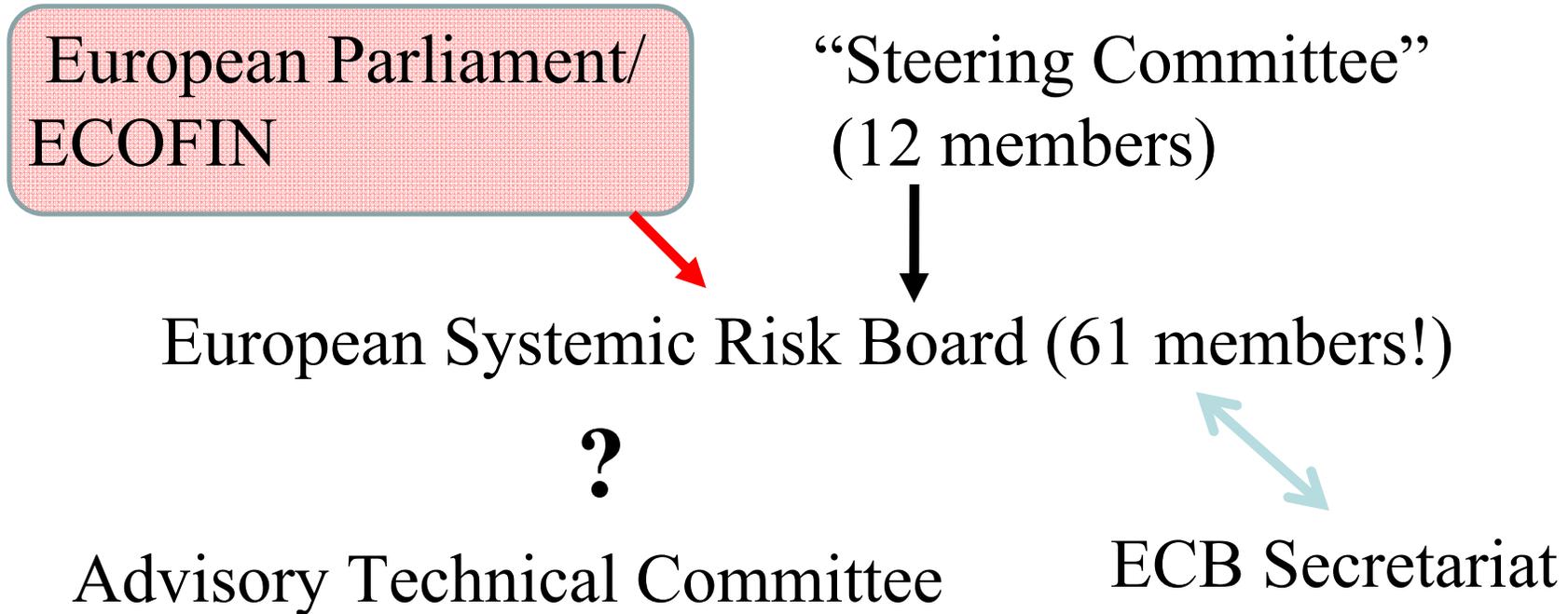
# Implications of the “fire sale” mitigation view

- Need more than just capital as a tool (and this matters for calculating contributions to systemic risk too)
- Liquidity regulation raises a bunch of difficult questions, including
  - i) what counts as liquid – what happens if there is a shortage?
  - ii) what is the social value of liquidity provision?
  - iii) how do we think about non-banks and their provision of liquidity (perfect example is the money market funds, another is prime brokerage)

# Internalizing Externalities

- Let's make runs less likely by using coco's
- Let's make coco's more attractive through compensation hold backs
- Let's do better stress tests that rely on living wills and consider **the liability side** of the balance sheet
  - i) absence of a back stop makes stress testing really risk
  - ii) better scenarios
- Let's have better accountability on the corporate side and the regulatory side. Neither ESRB or FSOC meet this test.

# European “plan” for systemic regulation?!?



Plus

No Binding Powers and No Tools  
“Explain or Comply”

# US “plan” for systemic regulation?!?

Financial Stability Oversight Council (10 members)



Federal Reserve ?

Office of Financial Research

Primary Financial Regulator

Plus

2/3 Vote to Assert Authority over Specific Institutions

Doubtful tools regarding shadow banking system

**Financial Regulation in General Equilibrium**  
(NBER WP 17909)

and

**An Integrated Framework for Multiple  
Financial Regulations**

(International Journal of Central Banking, forthcoming)

**Charles A. E. Goodhart, Anil K Kashyap,  
Dimitrios P. Tsomocos & Alexandros P. Vardoulakis**

# Model Characteristics

## General equilibrium

- Incomplete Asset Markets
- Two goods
- Heterogeneous agents

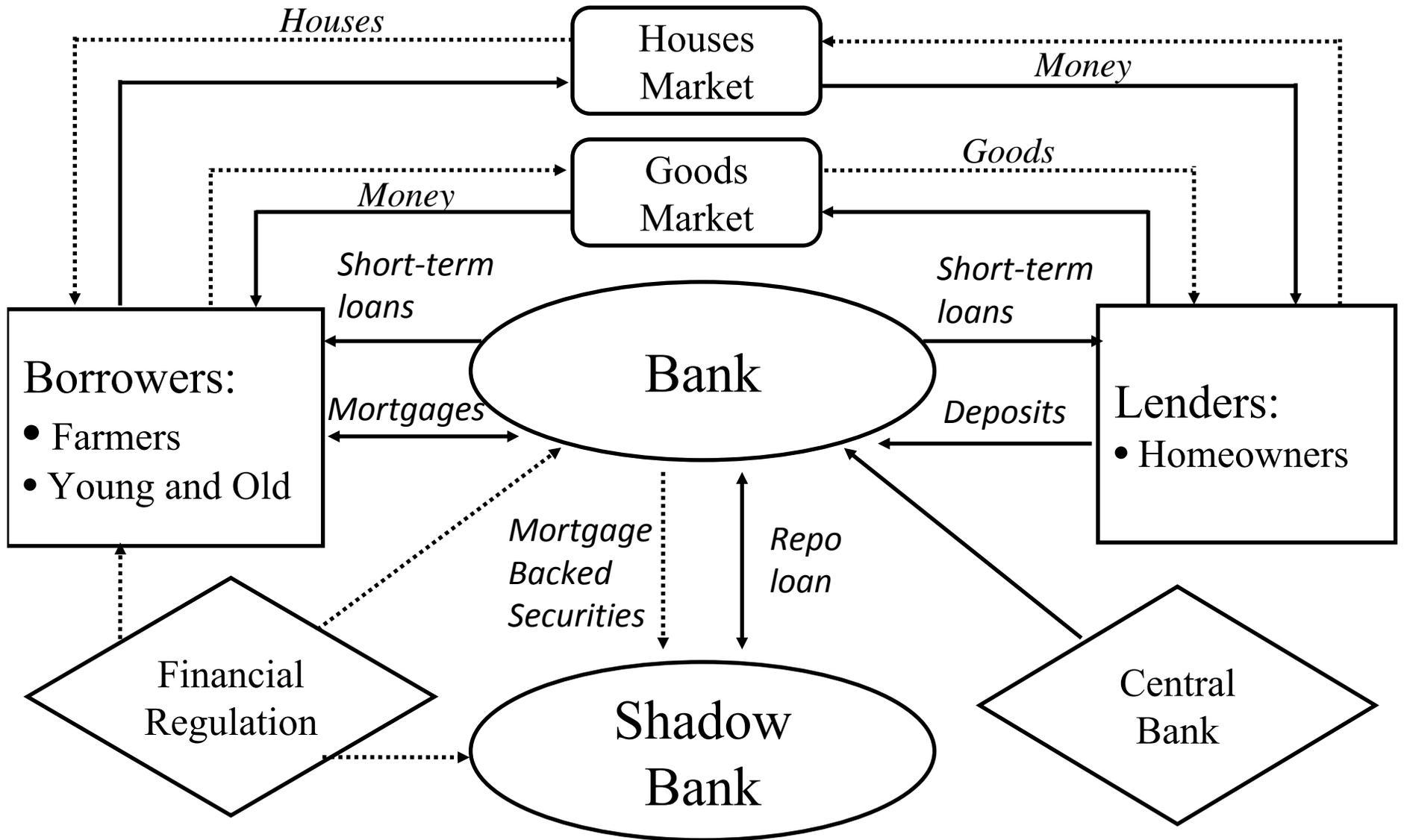
*-Pareto Inefficient  
Competitive Equil.  
-Rationale for policy  
intervention*

## Externalities from the financial system:

- Default, credit crunches and fire sales

## Contracts and transactions in nominal currency

- Price for liquidity



# Model characteristics

- ❖ Uncertainty:
  - Relative quantity of potatoes vs. houses
  - Monetary endowments and banks' capital
  - Central bank policy
- ❖ Households try to smooth consumption across goods within the period and total consumption over time
- ❖ Intermediaries improve smoothing but at the cost of amplifying shocks
- ❖ Regulations damp amplification of shocks but restrict smoothing

## Non-financial benchmark

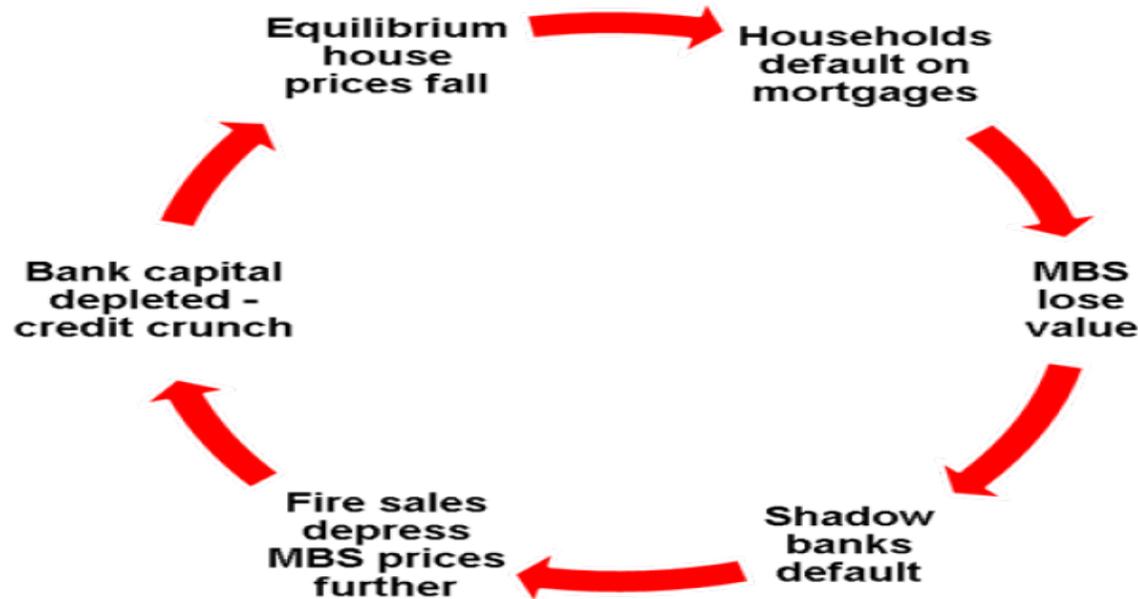
- ❖ Imagine no financial intermediation, just a CB with providing short-term liquidity/credit
- ❖ Home-owner can self-insure using both cash and holding houses, so he can smooth consumption across goods and across periods.
- ❖ Farmer can equate marginal utility of houses and potatoes in period 1. But cannot smooth between period 1 and 2.

## Actions at $t=2$

- ❖ (Uncertainty revealed: Bad news → house price crash, Good news → a house price boom)
- ❖ Focus on the bad news case which includes default
- ❖ Financial flows:
  - N defaults on repos, leaving B with losses
  - B partially defaults on long-term deposits, its capital is reduced and this leads to a reduction in lending
  - B might also sell MBS to pay the depositors, but this will further depress house prices
  - Relative price of potatoes must rise
  - F rents a house, P moves to a smaller one

## Model properties and questions

- ❖ Knock effects from house price collapse and subsequent repo default
  - Fire sale of MBS by banks
  - Deposit defaults
  - Potential margin spiral



## Aside – Margin Spiral

$$V_{2b}^{MORT} \equiv \frac{P_{2b,h} C_{1,h}^P}{MORT^B (1 + r^{MORT})} \quad \text{and arbitrage pins down MBS prices}$$

$$P_{2b,MBS} = \frac{V_{2b}^{MORT} (1 + r^{MORT})}{1 + r_{2b}^{CB}}$$

∴ MBS and house prices must be connected

$$P_{2b,MBS} = \frac{P_{2b,h} C_{1,h}^P}{MORT^B} \frac{1}{1 + r_{2b}^{CB}} \Leftrightarrow P_{2b,h} = P_{2b,MBS} \frac{MORT^B}{C_{1,h}^P} (1 + r_{2b}^{CB})$$

Plus **cash-in-the-market pricing**:  $P_{2b,MBS} MBS_{2b}^N \leq E_{2b}^N$

So more fire sales mean lower house prices!

# Potential Policy Responses

## **Examined in the paper**

- Capital requirement & countercyclical capital buffers
- Liquidity regulation (LCR)
- Loan-to-value ratios
- Haircut requirements
- Dynamic provisioning

## **Future agenda**

- Central Bank policies: conventional & unconventional
- Taxes on: bank size, activity, deposits
- DTI, sectoral capital buffers, time-varying regulation

## **Off the table**

- Net Stable Funding Ratio related to bank runs

# 1. (Countercyclical) Capital

## Policy Motivation

Could lessen the spillover of the repo default

Leans against greater risk by raising the cost of credit

## Findings

- 1.Reduces mortgage issuance, raises securitization and raises the mortgage rate
- 2.Households consume less housing services and banks face less risk-Lower default on deposits
- 3.Capital is inflated in booms making it difficult to use pre-emptively (procyclical risk-weights)

## 2. Stricter Haircuts

### Policy Motivation

Policy complements cyclical capital requirements

Leans against build up of risks in funding contracts, futures, and derivatives

### Findings

- 1.Reduces repo borrowing, raises costs of mortgages, total bank mortgages are higher
- 2.Reduces size of repo default, raises mortgage repayment rate, and house prices

## 3. LTV Ratios

### Policy Motivation

LTV caps reduce borrower and lender exposure to asset price declines

LTV caps reduce borrower defaults and lean against price appreciation

### Findings

- 1.Reduces mortgage lending (and MBS which raises mortgage rates)
- 2.Reduces fire sales and shadow bank instability
- 3.Problematic as pre-emptive tool due to inflated housing values in the boom

## 4. Liquidity Coverage Ratio

### **Policy Motivation**

Protects the bank against wholesale funding shocks

Will reduce incentives of banks to sell MBSs – head off the fire sale?

### **Findings**

1. Good pre-emptive tool: Bank reduces mortgages and MBS, raises the mortgage rate, does more short term lending
2. Less severe mortgage default, higher deposit repayment
3. High LCR generates fire sale incentives and margin spiral in crisis->Suggests that LCR should be time varying

## 5. Dynamic Provisioning

### **Policy Motivation**

Target overall real estate related credit

State-contingent/sectoral tool to control housing price appreciation

### **Findings**

1. Raises the cost of the mortgage loans in the boom
2. Reduces the value of housing in the boom, so raises the value of the endowments of potatoes
3. Could be use to mitigate the unintended consequences of other policies which target the bust

# Regulatory Channels

Table 1: Impact of Alternative Regulations on Key Endogenous Variables  
(Change relative to baseline equilibrium)

	LTV	MR	CR <sub>1</sub>	CR <sub>2b</sub>	LCR <sub>1</sub>	DP
Securitization	-	-	+	+	+	+
Relative price of potatoes to housing-good state	-	$\approx 0$	$\approx 0$	+	+	+
Profits of the Bank period 1	+	+	+	-	-	-
Profits of Bank good state	+	+	-	-	-	-

# Welfare effects

Table 2: Impact of Alternative Regulations on Household Utilities and Financial Institutions' Welfare (Change relative to baseline equilibrium)

	LTV	MR	CR <sub>1</sub>	LCR <sub>1</sub>	CR <sub>2b</sub>	DP
P's Utility	-	≈0	+	+	+	+
F's Utility	-	≈0	≈0	+	+	+
R's Utility	≈0	≈0	≈0	-	≈0	-
B's Payoff	+	+	+	-	-	-
N's Payoff	+	+	≈0	≈0	-	-

# Combination Regulatory Packages

Table 3: Impact of Combining Regulations on Household Utilities and Financial Institutions' Welfare

(Change relative to baseline equilibrium)

	$CR_1, CR_{2b}, MR$	$CR_1, LCR_1, MR$	$CR_1, CR_{2b}, LTV$
P's Utility	+	+	$\approx 0$
F's Utility	+	-	-
R's Utility	$\approx 0$	$\approx 0$	$\approx 0$
B's Payoff	+	+	+
N's Payoff	+	+	+

## Implications from our model

- ❖ Need a full GE model to sort out these effects
- ❖ Concentrate on the channels through which regulation operates and not on the agents on which rules bind
- ❖ Stabilizing both bank and non-banks improves welfare
- ❖ Liquidity rules, applied equally to all states of the world, are very pro-cyclical
- ❖ Be careful about combining tools, it is easy to design welfare-reducing policies

# Conclusions

- We need to move past just thinking about capital regulation
- Adding new tools and calibrating regulation will not be easy
- But if we do not, macroprudential policy will be a disappointment