

# The Dark Side of Bank Wholesale Funding

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# Bank Funding

- **Retail deposits**
  - Small, Insured, Passive → Stable long-term funding
  - Limited supply → Unused investment opportunities
- **Short-term wholesale funding**
  - **Large arm's length deposits**
  - **Source:** other fin institutions, non-fin corps, state/local authorities, foreign entities, money market mutual funds...
  - **Instruments:** Large denomination CD, Repo, Interbank deposits, Fed Funds, Commercial paper...
  - **Terms of Contract:** Need to be rolled over frequently
  - **“Bright Side”**
    - Fully exploit investment opportunities
    - Market discipline (Calomiris & Kahn 1991)
    - Low liquidity risks (Goodfriend & King, 1998)

# Wholesale funds in past bank failures

## 1. Northern Rock

- U.S. mortgage crisis
- Wholesale financiers refused to refinance
- *Then* retail deposit run started

## 2. IndyMac

- Run by large brokered deposits after Sen. Schumer's letters were publicized

## 3. Washington Mutual

- Accordingly to OTS, massive withdrawal of \$16.5bn by large depositors in 2 weeks prior to collapse

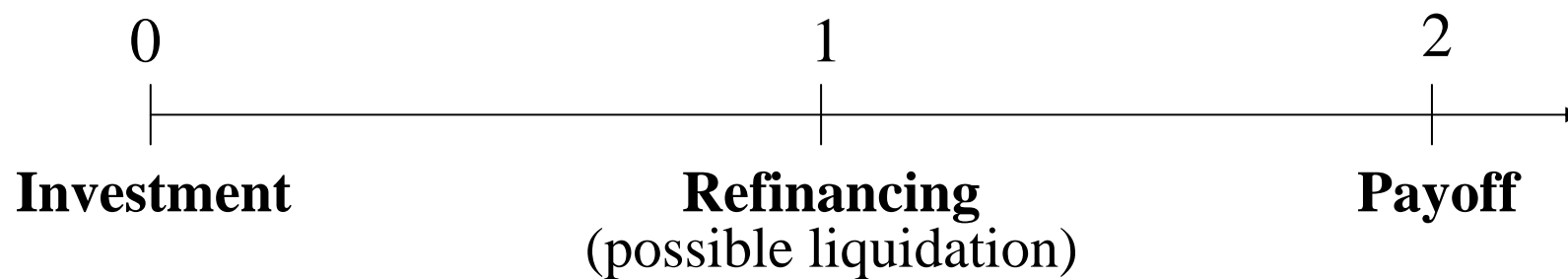
# Wholesale funds in past bank failures

- **Run and escape unscathed**
  - **Effective seniority**  
(withdraw *ahead* of passive depositors)
  - Historically, large uninsured deposits exit while small insured deposits stay prior to failures (Marino and Bennett, 1999; Billett, Garkfinkel and O’Neal, 1998)
  - Government liquidity support also helps exits
  - Dry up liquidity pool and retail deposit run starts
- **Act on public, noisy information**
  - Cheap but **noisy**
  - Both “correct” and “incorrect” liquidations

# Our model

- **Model “bright” and “dark” sides of wholesale funding**
  - Calomiris-Kahn (1991) benchmark
  - Introduce a noisy public signal
    - Secondary market prices, credit ratings, housing market indicators...
  - Obtain opposite results under some conditions: effective seniority leads to less monitoring and more liquidation
  - Banks with arm’s length assets are more vulnerable than traditional banks with relationship loans
- **Decisions analyzed in the model**
  - **Wholesale financiers:**  
When to Monitor? When to Liquidate?
  - **Banks:** Why use risky wholesale funds?
  - **Regulators:** Balancing monitoring and risks?

# Setup



- A bank with a long-term investment project

0: Investment 1

1: Liquidation value  $L$                       small:  $L < 1$  and  $L < pW$

*Seniority*  $s \in [0;1]$ : wholesale receive  $sL$

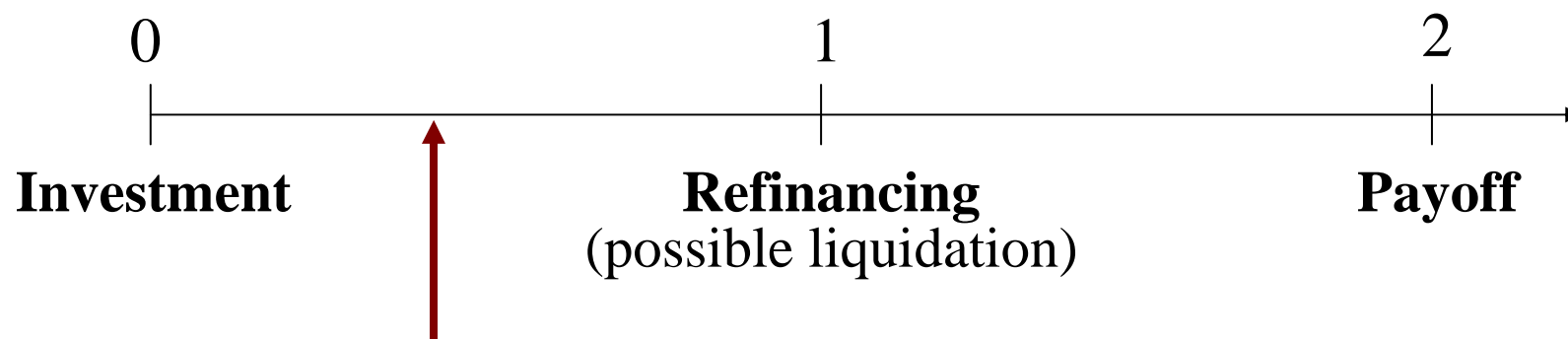
2: Payoff  $X$  w.p.  $p$  or  $0$  w.p.  $1 - p$                        $pX > 1$

- Funding

- Deposits:  $D < 1$                       (long-term: stay until  $t=2$ )

- Wholesale:  $W = 1 - D$                       (short-term: roll over at  $t=1$ )

# Setup



## Information of wholesale financiers

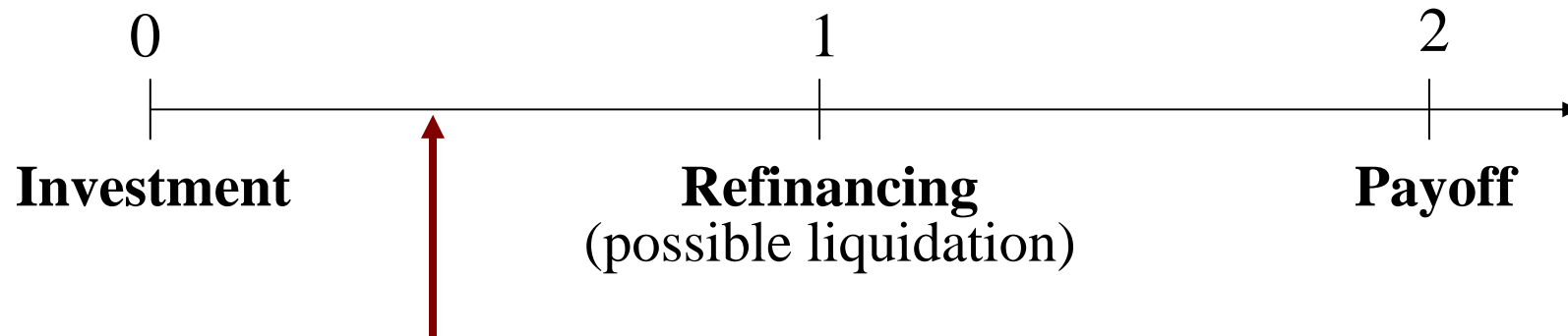
### 1. Monitoring

- Invest  $C(m)$ , correct signal w.p.  $m$ , no signal otherwise
- “good”: roll over, “bad”: liquidate, no signal: roll over

### ➤ Calomiris-Kahn (1991) benchmark

1. Objective: maximize  $m$
2. Solution: set  $s = 1$

# Setup: introducing a noisy signal



## Information of wholesale financiers

### 1. Monitoring

- Invest  $C(m)$ , correct signal w.p.  $m$ , no signal otherwise
- “good”: roll over, “bad”: liquidate, no signal: roll over

### 2. Costless noisy signal

- When monitoring produced no signal
- Provides *some* information

# Costless, Noisy Signal

- Public signal
  - market prices of securitized loans, credit ratings, performance of other similar banks...
- Precision  $\theta \in [0;1]$ 
  - Relevance depends on asset types
    - Real Estate Loans: relevant information from MBS prices
    - Small Business Loans: no similarly informative signal
  - Can turn out to be correct or incorrect, e.g.
    - Northern Rock didn't have subprime exposures
    - Senator Schumer's letter contained "incomplete or erroneous information" according to OCC

## When to liquidate based on a negative signal?

- **Without a noisy signal: Never want to liquidate randomly**

$$p \cdot WR > sL$$

- **Liquidate based on a negative noisy signal IF**

$$(p - \theta p) \cdot WR < sL$$

- **Can be socially sub-optimal: Signal too imprecise**

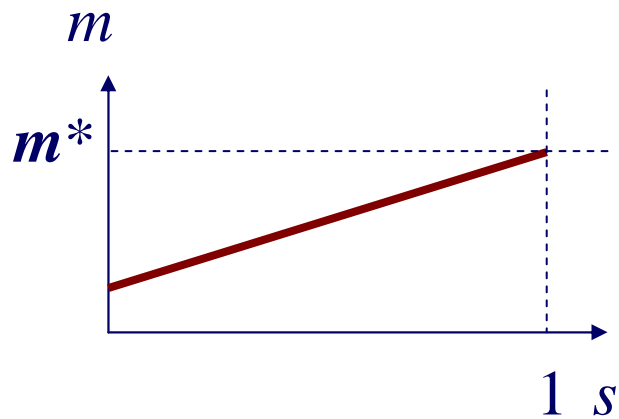
$$(p - \theta p) \cdot X > L$$

- **Incentive to monitor decreases in Seniority (s)**

# Effects of Seniority on Monitoring Efforts

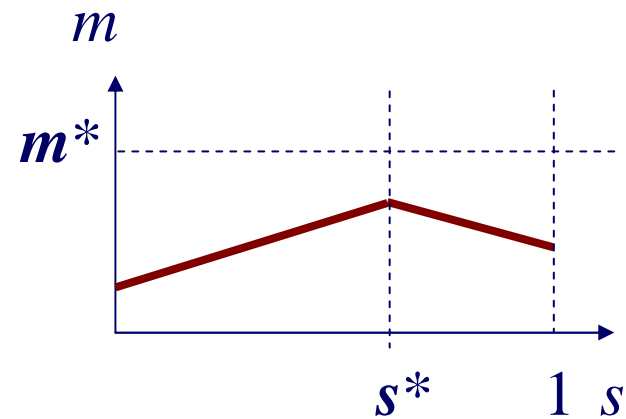
## CK: No noisy public signal

- $m^*$  at  $s = 1$



## With noisy public signal

- $s^* < 1$



No noisy liquidations

Liquidations on a noisy negative signal

# Risk of ‘Noisy’ Liquidations: Cross-Sectional Predictions

- Wholesale funds less likely to monitor when
  - Precision of the public signal  $\theta$  (+)
  - Liquidation value  $L$  (+)
- Cross-Sectional predictions
  - Most vulnerable: Originate-and-Distribute banks holding mainly arm's length assets (**high  $\theta$  and high  $L$** )
  - Least vulnerable: traditional banks holding mainly small business loans (**low  $\theta$  and low  $L$** )

# Incentives of Banks

- Short-term wholesale funds are risky (noisy liquidations)
- **Why do banks use short-term wholesale funds and let them become effectively senior?**
  - **Senior short-term wholesale funds provide interest rate savings**  
 **$= (1-p)(s-s^*)L(D+W)$**
  - Limited liability → Liquidity risks are not fully internalized by banks

# Policy Solution

- **Risk-sensitive deposit insurance premium**  
 $T = (1-p) \max\{(s-s^*); 0\}L (D+W)$
- **Higher deposit insurance premium for**
  - **Use of shorter maturity wholesale funds**
  - **Banks with arm's length assets, because:**
    - **More relevant public signals (higher  $\theta$ )**
    - **More liquid (higher L)**
    - **Optimal Seniority ( $s^*$ ) is lower**
  - **Lower premium for traditional banks**
- **Premium charged based on all short-term liabilities (D+W), not just retail deposits (D)**

# Summary

- Benefits vs. risks of wholesale funding
- ‘Bright side’: traditional relationship banks
- ‘Dark side’: ‘modern’ banks  
(arm’s length & tradable assets)
  - Limited monitoring
  - Runs triggered by noisy public information
  - Banks over-use wholesale funding
- Consistent with recent events