Monetary Analysis: Redux

- Preliminary Thoughts -

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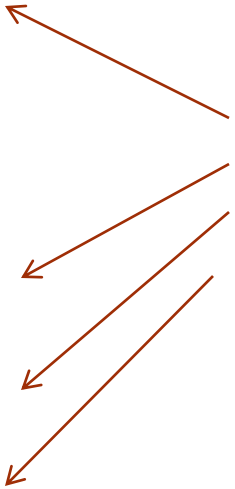
Types of inflation/deflation pressures

- Deflationary pressure
  - Debt deflation spiral
- Inflationary pressures
  - Demand driven inflation
  - Cost push driven inflation
  - "fear driven" inflation



Different mechanisms at work

Deflation is more than negative inflation

Types of inflation/deflation pressures

- Deflationary pressure
  - Debt deflation spiral – "I Theory of Money" *Force 1*

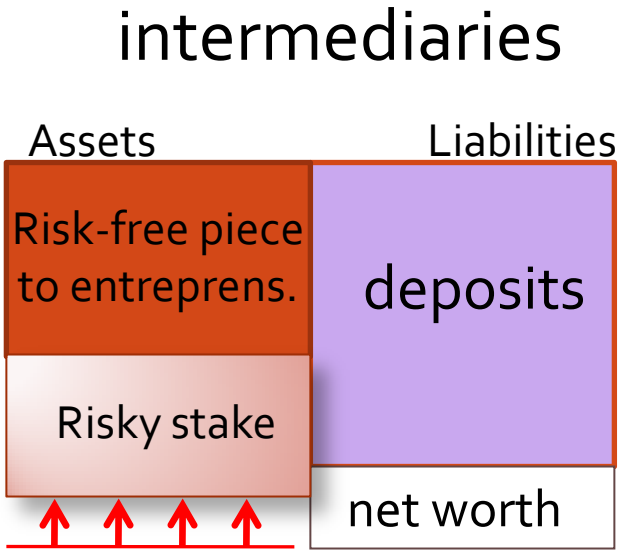
- Inflationary pressures
  - Demand driven inflation
  - Cost push driven inflation
  - "Fear driven" inflation *Force 2*

Types of inflation/deflation pressures

- Deflationary pressure
  - Debt deflation spiral – "I Theory of Money" *Force 1*
    - negative shock impairs balance sheets of systemic sector
    - Inside money creation and money multiplier collapses
- Inflationary pressures
  - Demand driven inflation
  - Cost push driven inflation
  - "Fear driven" inflation *Force 2*
    - Central bank is "cornered"
      - Sovereign suffers from debt overhang: fiscal theory of the price level
      - Banking sectors suffers from debt overhand
    - People anticipate that central bank cannot counteract inflation pressures
    - Shift into real assets ("asset inflation") - inflation might snap

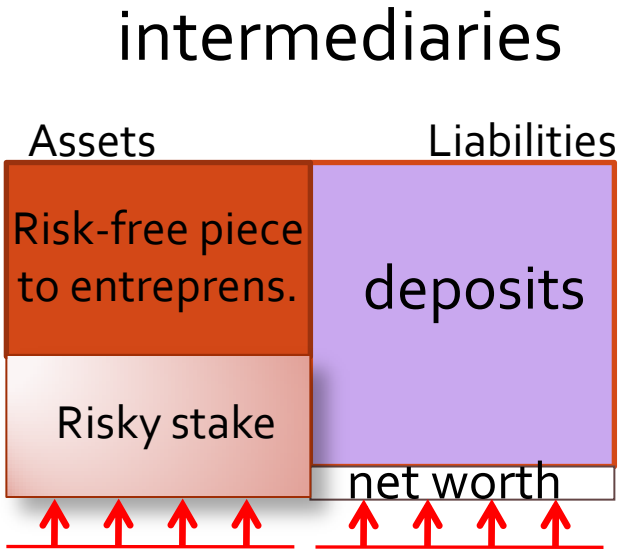
Force 1: Deflationary pressure

Based on The I Theory of Money (with Yuliy Sannikov)



Negative macro shock

Force 1: Deflationary pressure

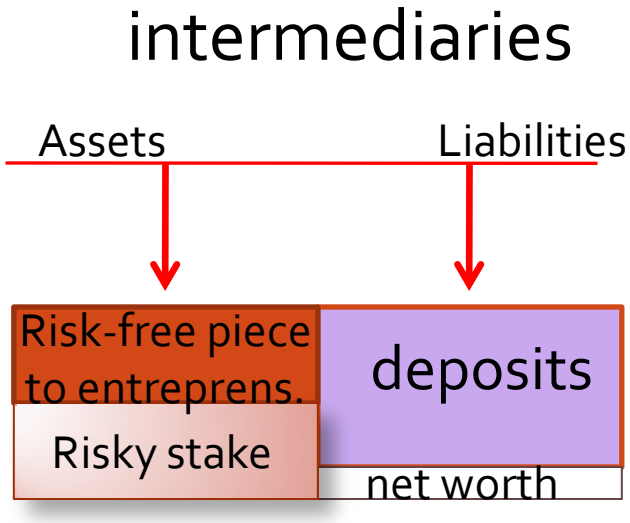


Negative macro shock

Force 1: Deflationary pressure

Liquidity Spirals

- **Capital:**
  - *fire sales* depress prices



Deflation Spiral

- **Money:**
  - Credit + M3 decrease
  - Multiplier collapses
  - Deflation
- Intermediaries are hit on both sides of the balance sheet

Force 1: Deflationary pressure

Liquidity Spirals

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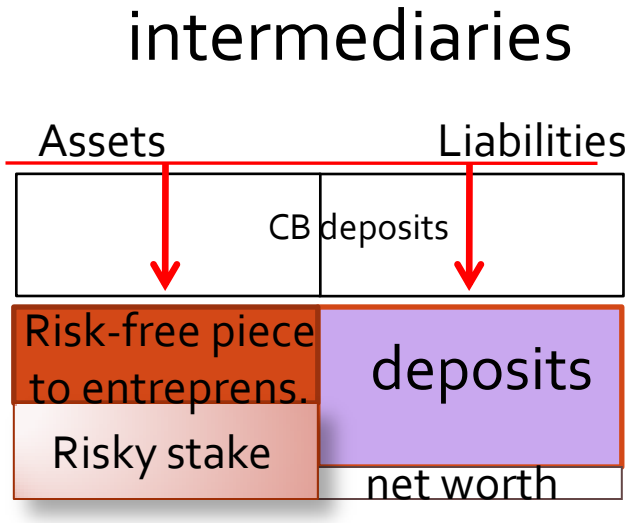
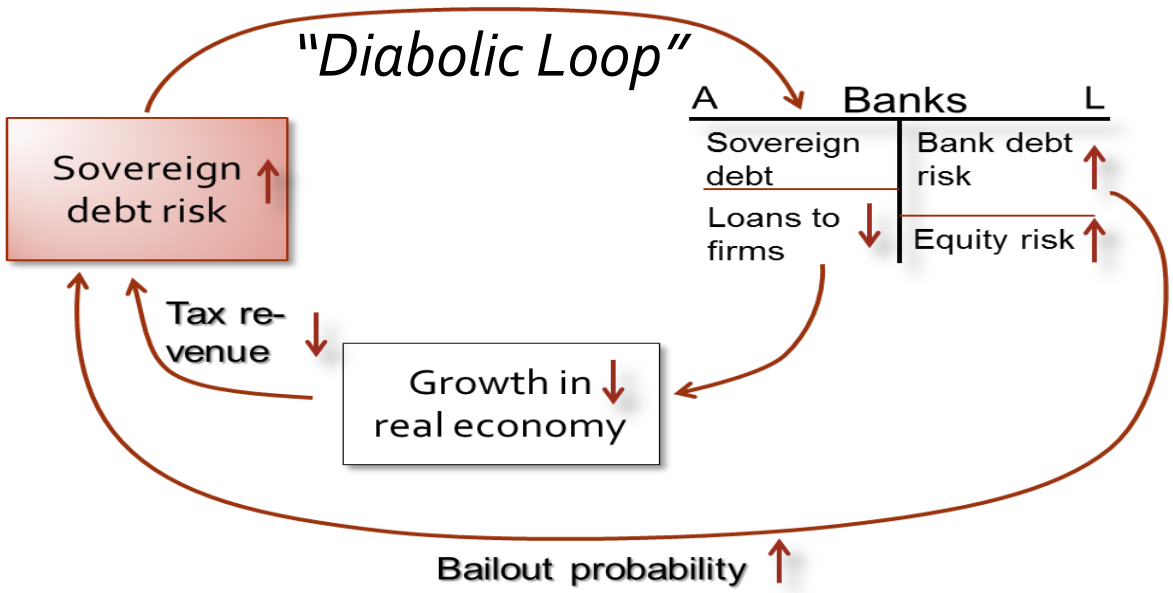


Deflation Spiral

- **Money:**
  - Credit + M3 decrease
  - Multiplier collapses
  - Deflation
- Intermediaries are hit on both sides of the balance sheet
- *Key Lesson:* Deflationary pressure depends on health of systemic sector

Force 2: Inflation expectation pressure

- Central bank is "cornered"
  - Sovereign debt
    - Fiscal theory of the price level
      - Japan as counter-example
  - Financial sector debt



  - CB can't react since it would put sovereign or systemic bank in trouble when multiplier increases again.
- Inflation expectations rise/snap

Force 2: Inflation expectation pressure

- CB can't react since it would put sovereign or systemic bank in trouble when multiplier increases again.

- Inflation expectations rise/snap
  - Investment in real assets → asset price inflation (gold, real estate)
    - Term premia on nominal assets rise
  - Economize on use of money → velocity goes up
    - Demand for money goes down, LM curve shifts to the right

Multiple equilibria?

Forces 1 + 2 together

Deflationary mechanism $\neq -$ inflationary mechanism

- Force 1: inside money supply declines
  - (outside money is not a perfect substitute to inside money)
- Force 2: velocity of money increases
  - + distortions in asset prices
  - + misallocations
  - Real changes Y_t
- Disagreement about size of both forces

Interest rate – wealth distribution

- Only interest rate matters if
  - Money in the utility function + separable
  + complete markets.
  - Otherwise money supply can have impact

- Wealth distribution is key if
  - financial frictions (e.g. incomplete markets)
  - Money as store of value (broadly defined)

  - Monetary policy shifts wealth distribution
    - Affecting term spread, risk premia etc.

Monetary Transmission Mechanisms

- New Keynesian
  - Keynesian interest rate channel
    - No financial frictions: consumer Euler Equation + price stickiness
    - With financial frictions:
    - $i \searrow \Rightarrow bank\ costs \searrow \Rightarrow lending \Rightarrow invest./consumption \nearrow$
      - Empirical evidence for each link is mixed
- "The I Theory" (with Yuliy Sannikov)
  - "wealth redistribution channel" (asset price)
    - "stealth recapitalization" of fragile systemic sector
    - Reduce debt overhang problem
      $i \searrow \Rightarrow p^{bond} \nearrow \Rightarrow bank\ equity \nearrow \Rightarrow lending \Rightarrow invest./consumption \nearrow$
    - Frictions are reduced, but moral hazard problem
  - "tail risk channel"

Different ways to recap systemic sector

- Lower interest rate i
  - Flow: (slow) lending margins increase (if competition is limited)
  - Stock: capital gains ↗ ⇒ equity ↗…
- CB assumes tail risk
  - Broaden collateral set
  - Explicit guarantees
- Asset purchase programs (SMP)
  - Stock: capital gains
  - CB assumes risk
- Direct forced equity injection

Conven-tional MP

Non-con-ventional

More targeted

More transparent

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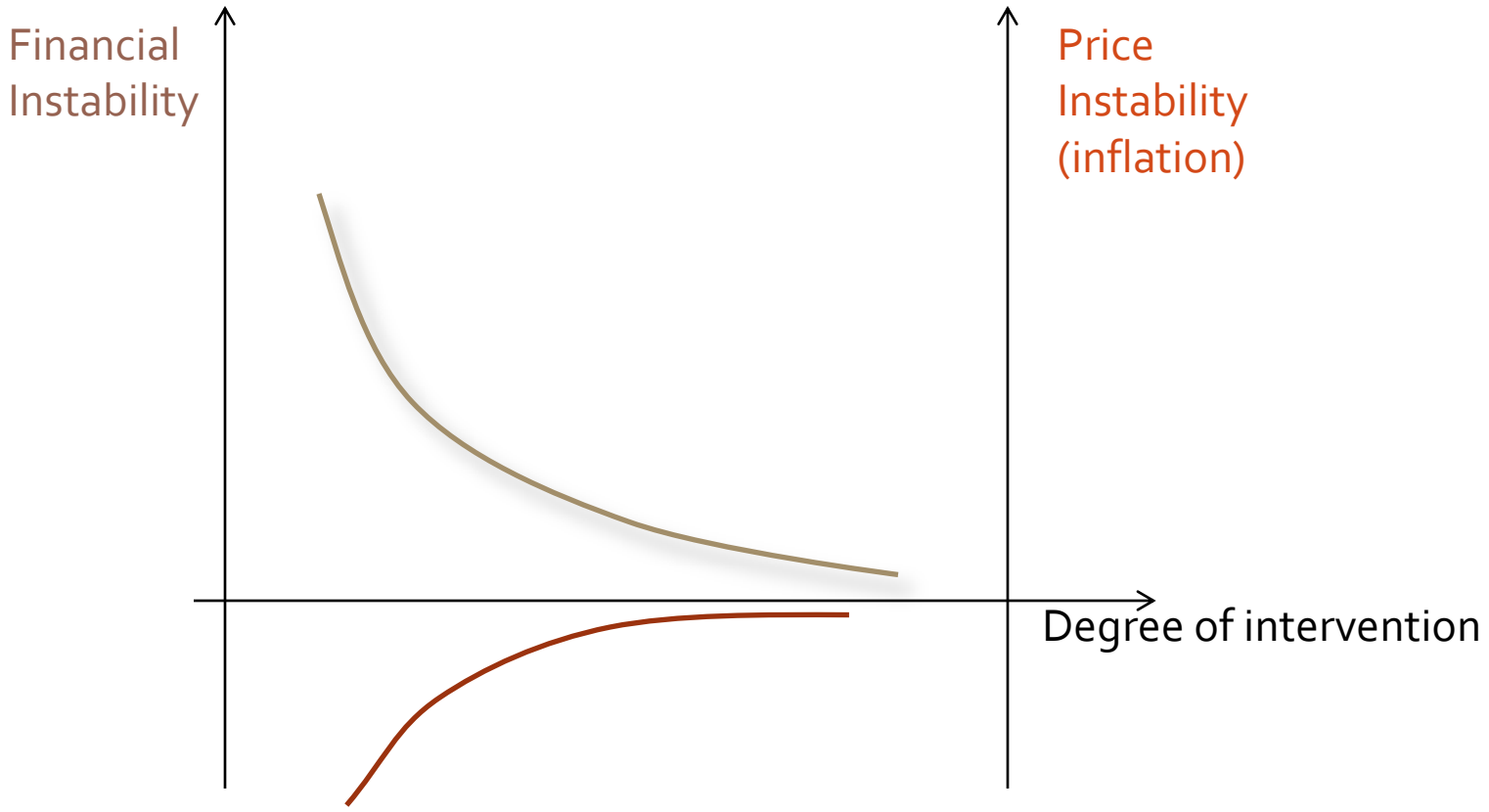
Ex-ante Moral Hazard

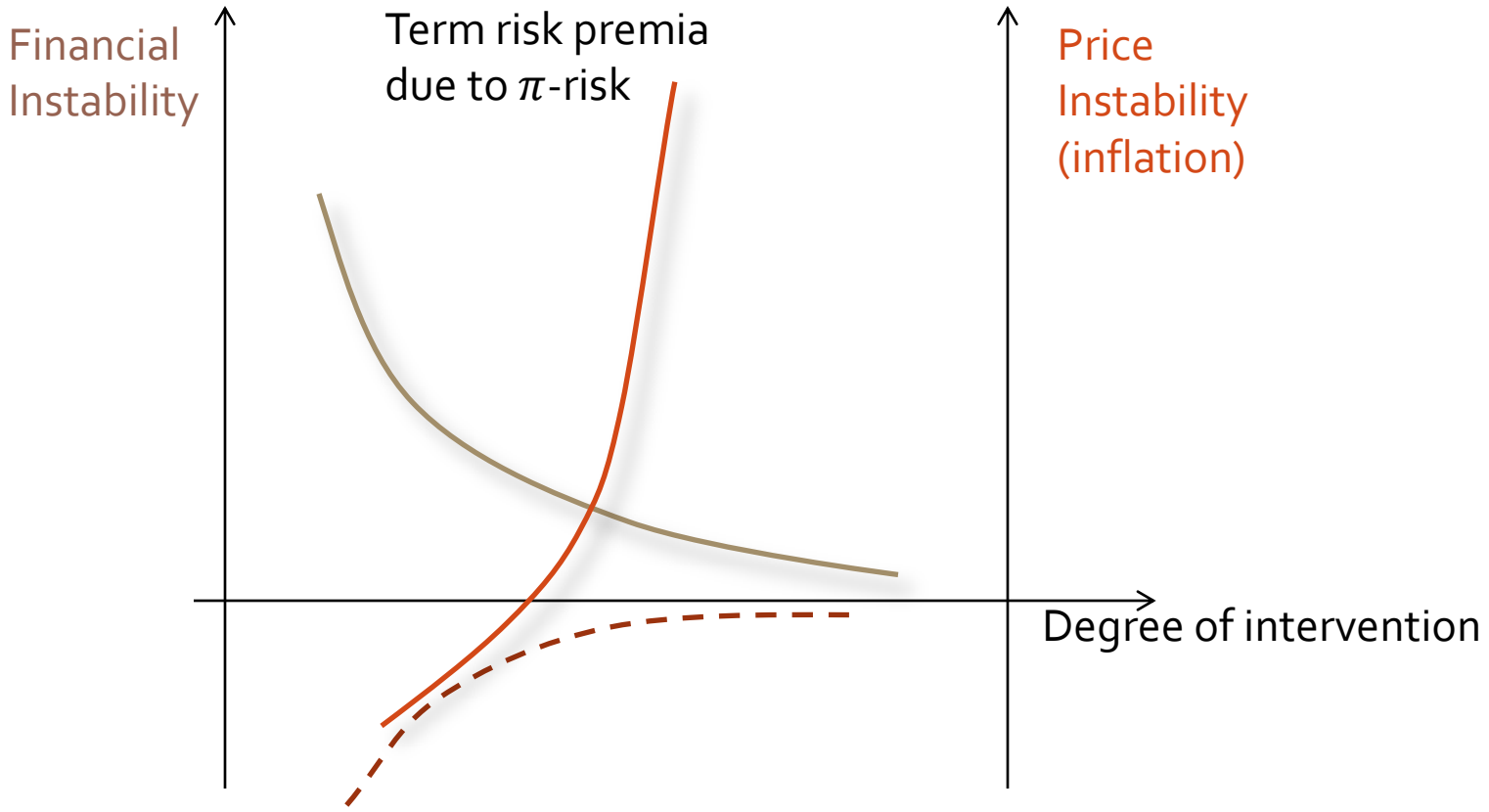
- Banks anticipate "stealth recapitalization" through monetary policy (conventional and non-conventional)
- Banks take on too much risks

- Way out:
  - let weak banks default ("first victim strategy")
  - Bolster the strong but not the weak, and never Zombie banks

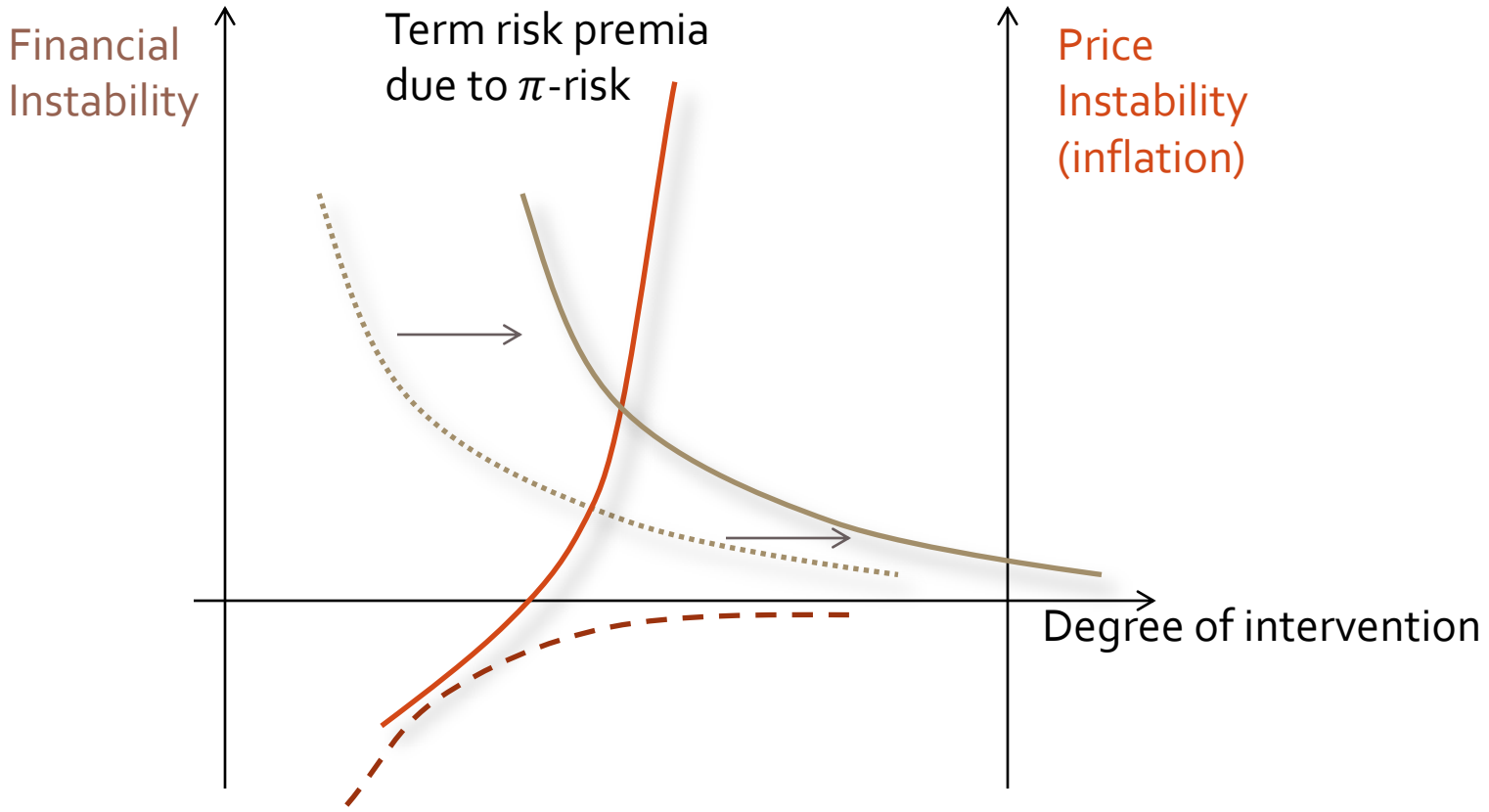
Only deflationary force only



Adding inflation expectation force



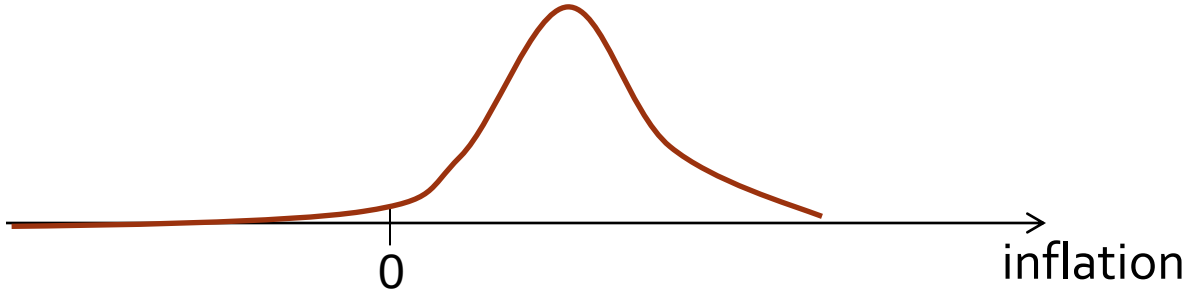
If banks are less well capitalized



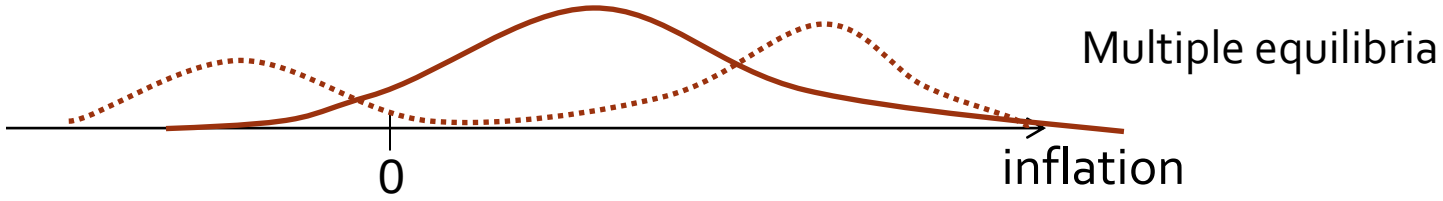
Limited/no room to maneuver

Dispersion in inflation expectation

- Well capitalized banks



- Not well capitalized banks



Ex-ante: Preventive monetary policy

- Avoid ending up in such situation

- Strict bank regulation
  - Counter-cyclicality is key
    - Fixed capital requirement are conterproductive
- Watch credit growth
  - Credit aggregates relative to bank capital is key variable
  - Maturity of credit matters
  - Monetary aggregates
    - Be aware: many alternative money like instruments
  - Focus on liquidity measures – Liquidity mismatch index!

Liquidity Mismatch Index (LMI)

A	L
Market liquidity	**Funding liquidity**
▫ Treasuries/cash: λ = 1	▫ Overnight debt: λ = 1
▫ Overnight repo: λ = .99	▫ Long-term debt: λ = .50
▫ Agency MBS: λ = .95	▫ Equity: λ = .10
▫ Private-label MBS: λ = .90	

Liquidity Mismatch Index = liquidity of assets minus liquidity promised through liabilities

Liquidity Pockets

- Sectorial LMI
  - Guess: Banking sector is net short liquidity
    - But, to whom, how much, etc.
  - Guess: Corporate, household sectors are long liquidity
- 2000 to 2008 build up
  - Guess: Aggregate liquidity rises (good), but LMI for financial sector is more negative (bad)
- Identify systemically important institutions
  - LMI<0 identifies "financial intermediary"
  - Lowest LMIs are the systemically important ones

Conclusion

- Weak macro-prudential regulation forces central banks to recapitalize banks to avoid deflationary forces (with fire-sales + default)
  - Keynesian Interest rate channel
  - Wealth redistribution channel (stock vs. flow)
- Deflation fight opens flank of CB to credible fight inflation in the future
  - Possible jump in inflation expectations
- Quantitative aggregates and liquidity mismatch index help to identify
  - Dangers of liquidity spiral and deflation spiral

	New Keynesian	I-Theory
Key friction	Price stickiness & ZLB	Financial friction
Driver	Demand driven as firms are obliged to meet demand at sticky price	Misallocation of funds increases incentive problems and restrains firms/banks from exploiting their potential
Monetary policy • First order effects	Affect HH's intertemporal trade-off Nominal interest rate impact real interest rate due to price stickiness	Ex-post: redistributional effects between financial and non-financial sector Ex-ante: insurance effect leading to moral hazard in risk taking (bubbles) - Greenspan put -
• Second order effects	Redistributional between firms which could (not) adjust price	
Time consistency	Wage stickiness Price stickiness + monopolistic competition	Moral hazard

	Monetarism	I-Theory
Focus	Price stability	Price and Financial stability
Theory	Quantity theory of money P*Y = v*M Transaction role of money Exogenous M	Distribution of wealth (liquidity, balance sheet) Store of value endogenous money multiplier
Monetary aggregates	Mo M1-2(Friedman,Schwartz) Inside and outside money are *perfect substitutes* Intermediation (Brunner, Meltzer)	Outside money is only *imperfect substitute* for inside money (intermediation) Bank underwriting (*credit lines*) is substitute to bank deposits (difficult to measure M1-3 in a meaningful way)
Monetary policy	Constant growth of M2 (Friedman)	Recapitalize banks through monetary policy Switch off deflationary pressure