Monetary Analysis: Price and Financial Stability

Markus K. Brunnermeier and Yuliy Sannikov
Princeton University

ECB Forum on Central Banking
Sintra, May 26th, 2014

The 3 main points

1. Monetary analysis
   - more than a cross-check in two pillar strategy in world with financial frictions and instability

2. Price and Financial stability are intertwined
   - Can't be separated – even fiscal policy is connected (FTPL)

3. "Sectoral" impairment of monetary transmission mechanism
   - SME are disadvantaged compared to sovereigns and large corporations
   - Prudentially designed ABS
     - Chance to standardize and set-up a stable European intermediation market

Overview

- Textbook monetary model vs. empirical finance view

- Why quantities in monetary analysis?

- Which quantities? in tranquil and turbulent times
  - Credit vs. money
  - Liquidity mismatch
    - Aggregate
    - Topography across sectors

- Sectoral impaired transmission mechanism

- ABS market for SME loans

Theoretical underpinning
"The I Theory of Money"

Textbook monetary model (New Keynesian)

- Key friction: price/wage rigidity
  financial markets (almost) perfect (stable)

- Advancement: dynamic modeling
  emphasis on expectations of "the" short-term interest
  (and its dynamic evolution e.g. Taylor rule)

- Term spread: Expectations hypothesis
  - expected future short rate
- Credit spread: expected default rates

Cash flow news is the main driver

Finance view

- Key friction: financial frictions, segmentations

$$\Delta \text{price} = f(\Delta E[\text{future cash flows}], \Delta \text{risk premia})$$

small large

- Term spread: expectations hypothesis fails
- Credit spread: default risk
  risk premium predicts future econ-activity
- VIX (VSTOXX)

Risk premium news
the main driver

- "I theory" risk is endogenous &
  risk premium is time varying
  - MoPo recaps impaired sectors and affects risk and risk premium
  - Surprise Fed interest rate cut lowers 10 year (real) TIPS yield
    Hanson-Stein (2014)

Finance view

- Key friction: financial frictions, segmentations

$$\Delta\text{price} = f(\Delta E[\text{future cash flows}], \Delta\text{risk premia})$$

small large

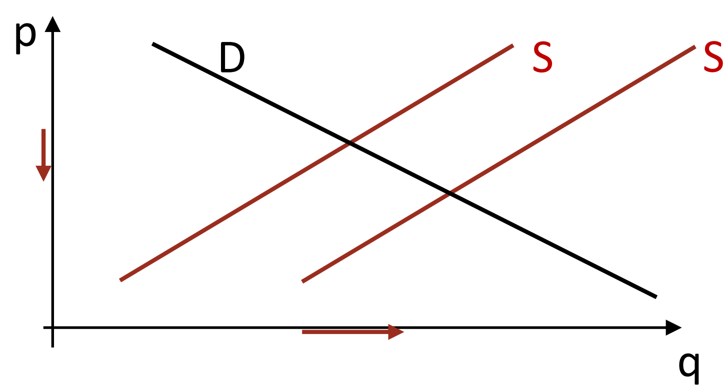
- Term spread: expectations hypothesis fails
- Credit spread: default risk
  risk premium predicts future econ-activity
- VIX (VSTOXX)

Risk premium news the main driver

- "I theory" risk is endogenous &
  risk premium is time varying
  - MoPo recaps impaired sectors and affects risk and risk premium
    - Surprise Fed interest rate cut lowers 10 year (real) TIPS yield Hanson-Stein (2014) - difficult to square with price stickiness alone

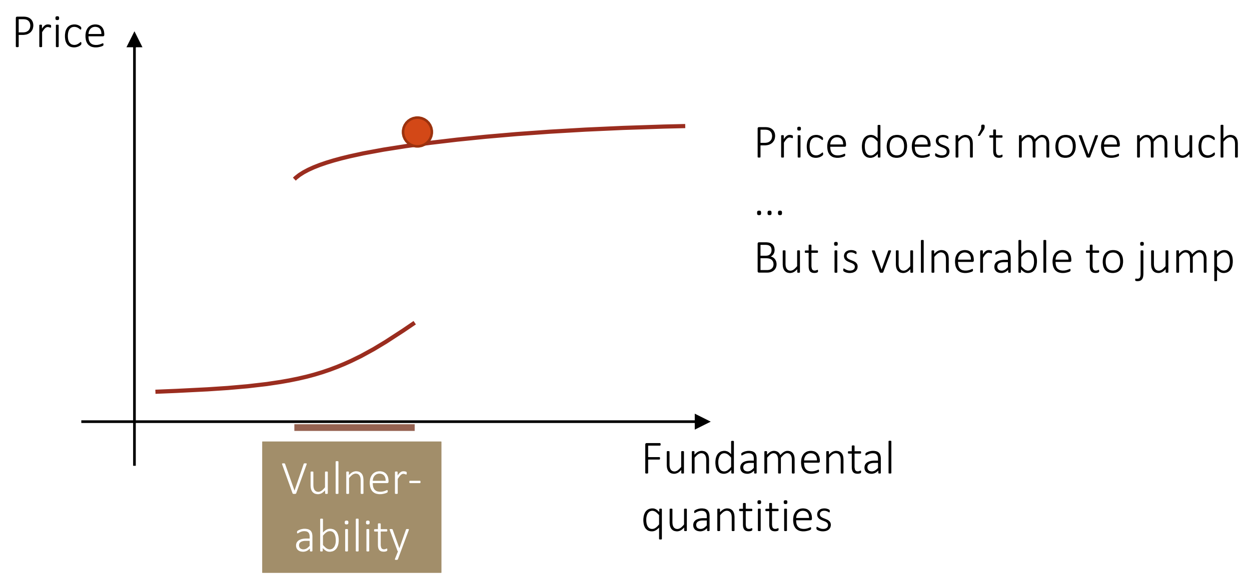
Why quantities?

- Arguments against,
  prices, rates, risk premia are enough
  - Only prices should affect individual decision makers' actions!
  - Why not model with "exogenous risk premium wedge"?
    - Wedges can predict future economic activity
  - (Shadow) prices measure scarcity/abundance of quantities



Why quantities? – in tranquil times

- Indicator of vulnerability (to erratic shifts)
  - Not only mean prediction, but whole distribution
- Trigger vs. Amplification
  - Triggers: varies subprime, internet,
  - Amplification: common liquidity mismatch
- Prices follow trend, but quantities show build-up of risk
  - quantities
- Multiplicity



Impaired transmission mechanism

- "push on a string" or "trapped, constrained to push"

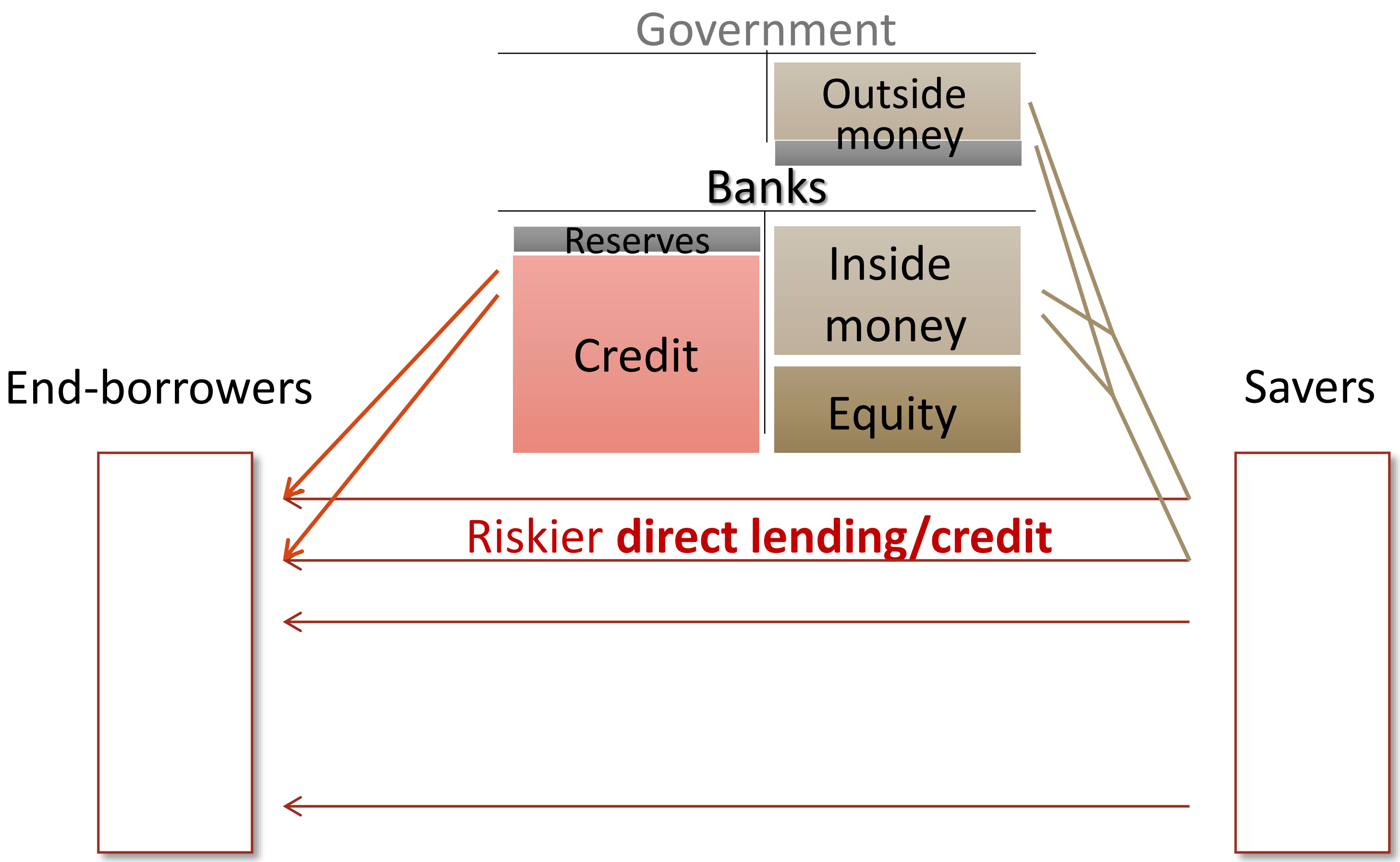
1. ZLB $\Rightarrow$ unconventional MoPo
2. Threat of runs (e.g. jump in multiple equilibria)
   - Interest rate cut might be seen as weak signal
   - CB's action might be viewed as coordination device
3. Threat to financial instability
   - "Financial dominance"
4. Monetary Transmission Mechanism works differently across sectors/regions
   - "Sectorally impaired" ← *later more*

What quantities? Credit versus Money

- Old dispute

What quantities? Credit versus Money

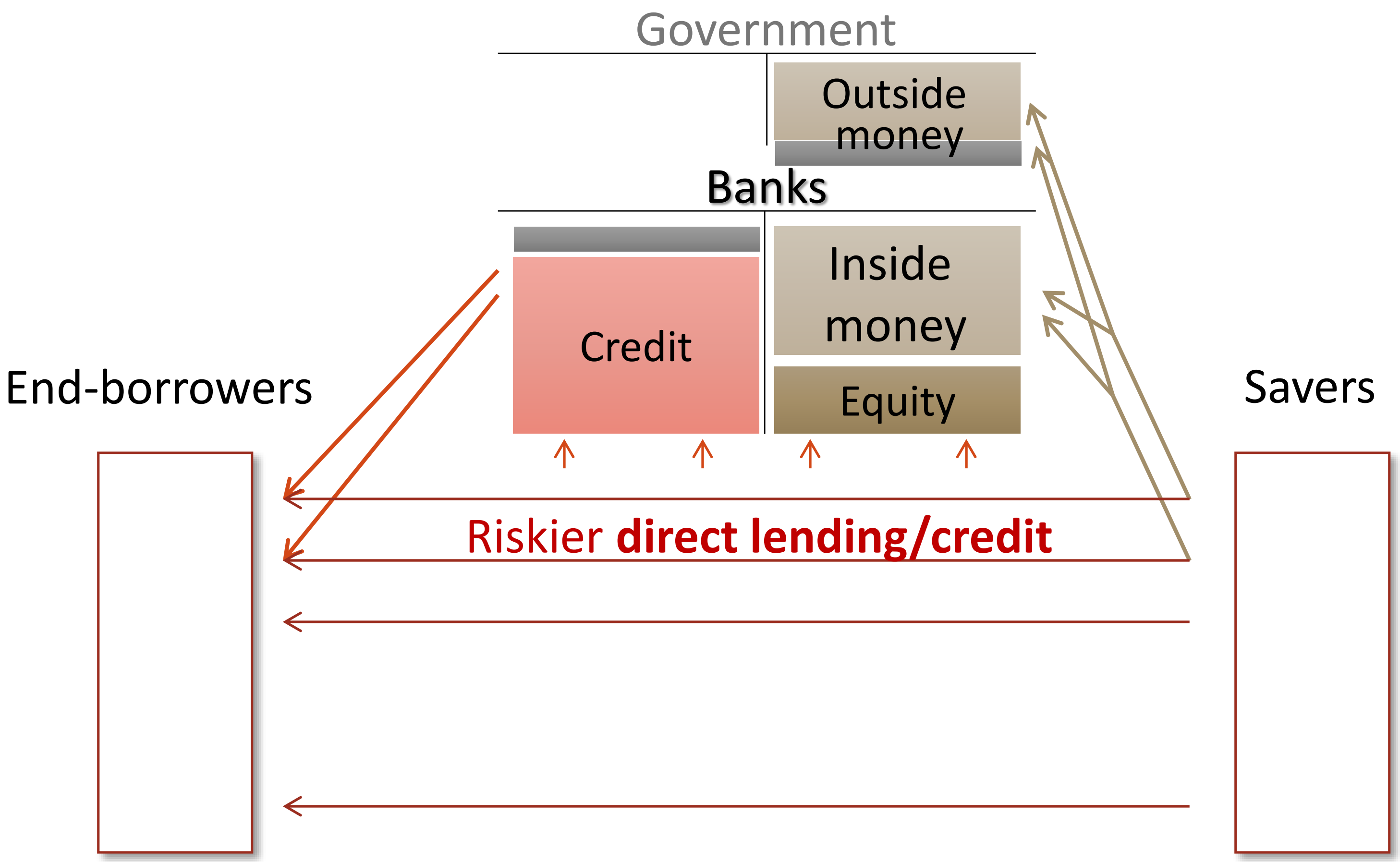
- Old dispute



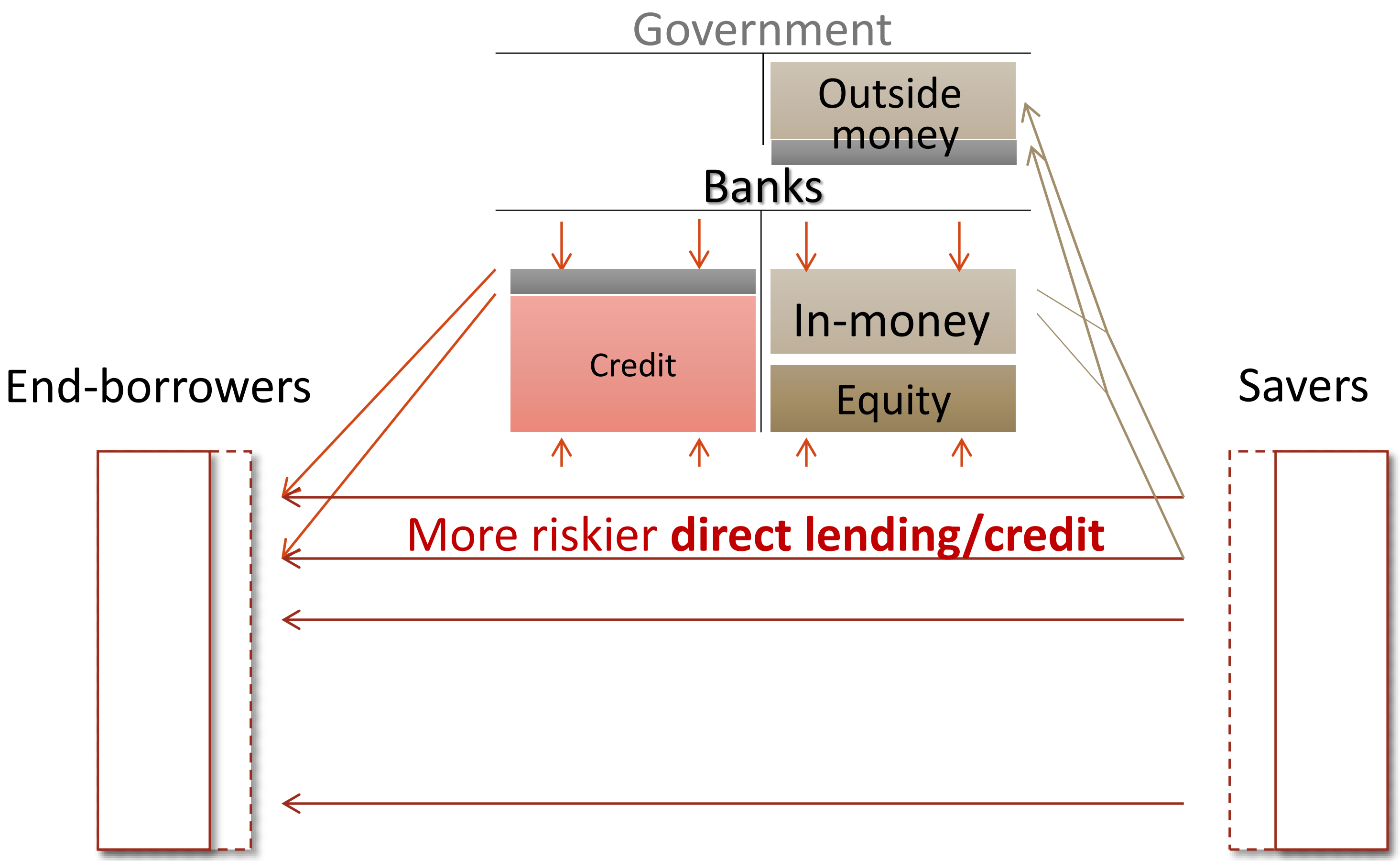
Brunnermeier & Sannikov 2014

1. Shock impairs assets – 1st of 4 steps

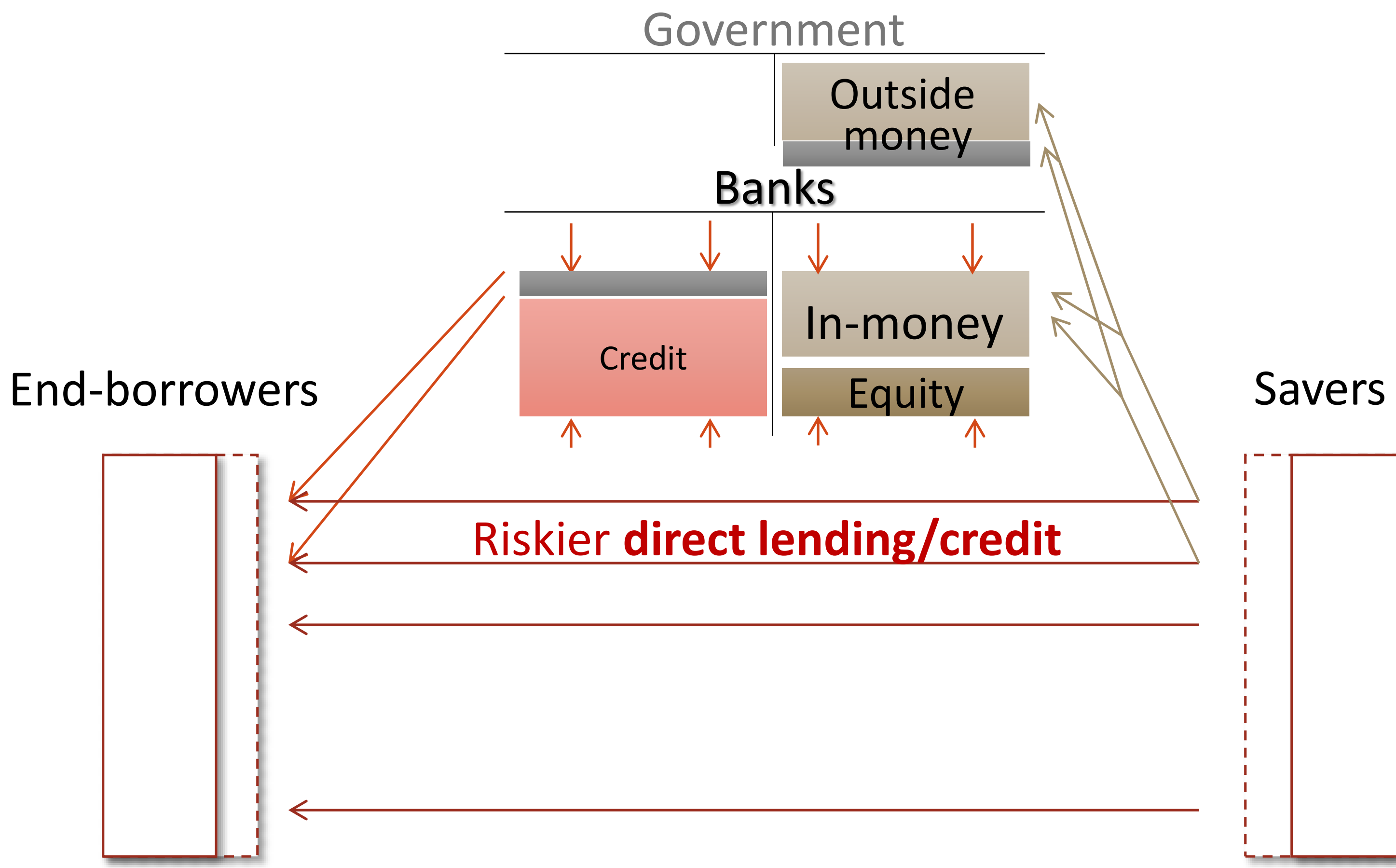
- Absent MoPo



2. Shrink balance sheet: sell off assets

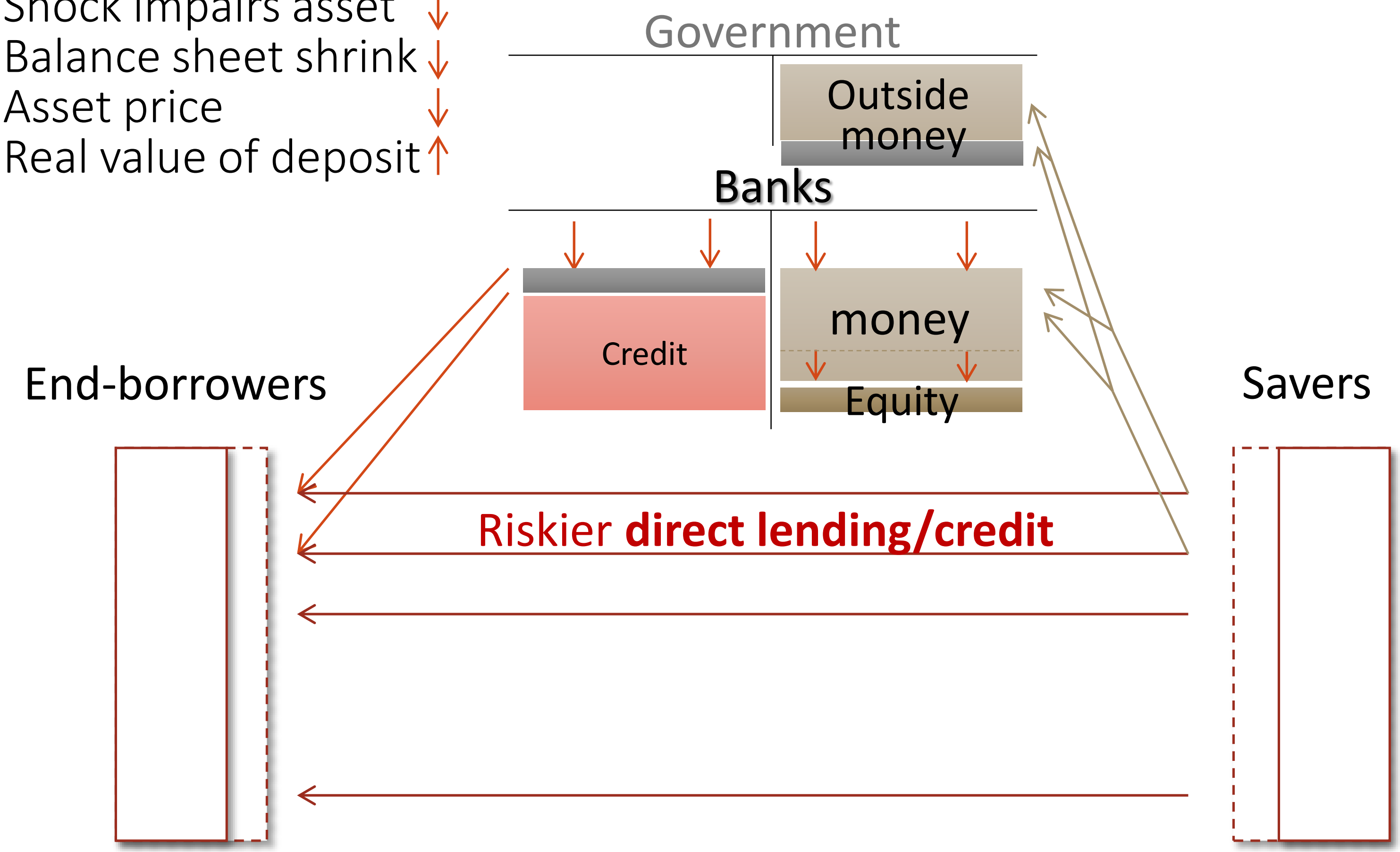


3. Liquidity spiral: price of assets drop



4. Deflation spiral: value of liability expand

1. Shock impairs asset ↓
2. Balance sheet shrink ↓
3. Asset price ↓
4. Real value of deposit ↑



Small shock has large effect and redistributes wealth

What quantities? Money vs. Credit

- Money view — Friedman-Schwartz
  - Restore money supply
    - Replace missing inside money with outside money
  - Aim: Switch off deflationary spiral
    - … but banks might not extent credit (hold excess reserves)

- Credit view — Tobin
  - Restore credit flow
  - Aim: Switch off deflationary spiral & liquidity spiral

What quantities? – Vulnerability indicator

- What captures better endogenous risk?
  - Response indicator ⇒ amplification
- Monetary analysis = sectoral analysis (entire topography)

What quantities? – Vulnerability indicator

- What captures better endogenous risk?
  - Response indicator ⇒ amplification

A	L
Technological liquidity • Duration of project/reversibility **Market liquidity** • Specificity/redeployability • Can only sell assets at fire-sale prices	**Funding liquidity** ▪ Can't **roll over** short term debt ▪ Margin-funding is recalled

Ease with which one can raise money by selling the asset

Ease with which one can raise money by borrowing using the asset as collateral

Liquidity ~~Maturity~~ mismatch

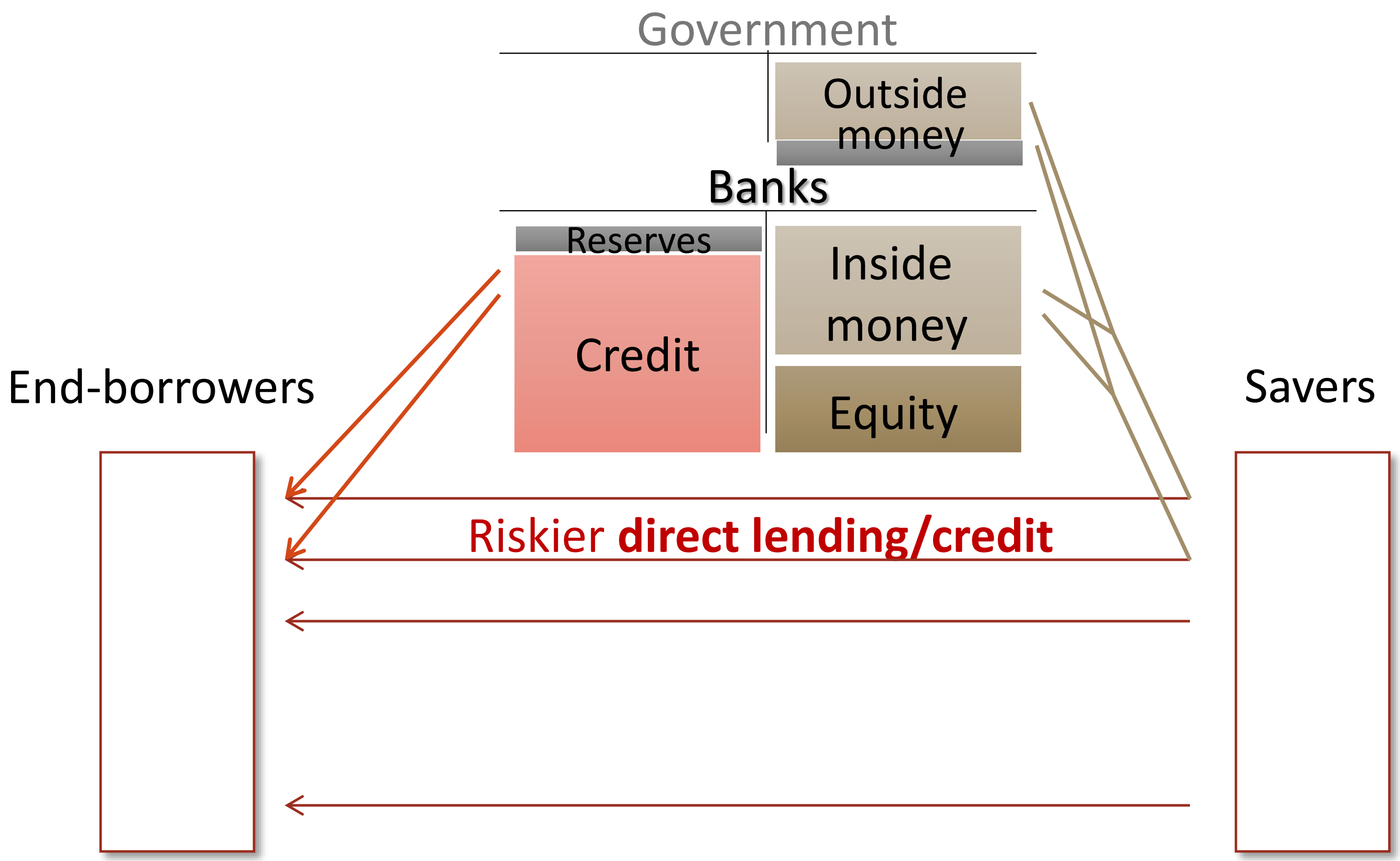
Quantities in tranquil times

- Risk build-up phase "Volatility Paradox"
  - Liquidity mismatch increases during tranquil times

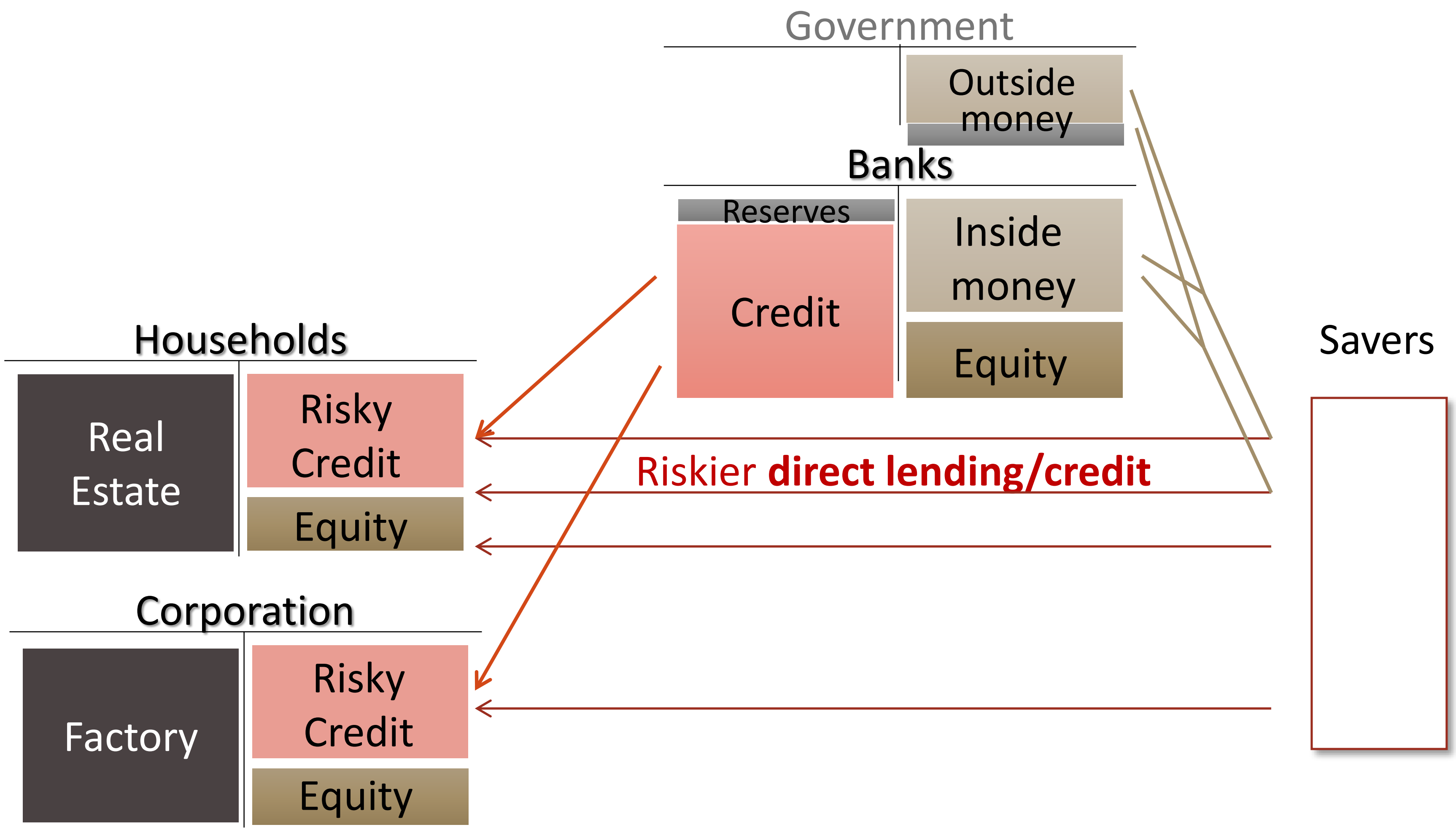
A	L
Duration of projects ↑	**Debt maturity** ↓
▪ Long-term irreversible projects	
▪ Austrian element (Hayekian triangle)	
Specialization (specificity) ↑	
▪ Low market liquidity ⇒ larger fire-sale discount	

- Intermediation chain often hide overall liquidity mismatch
- Distribution matters: "Topography of Liquidity Mismatch"

Sectoral analysis

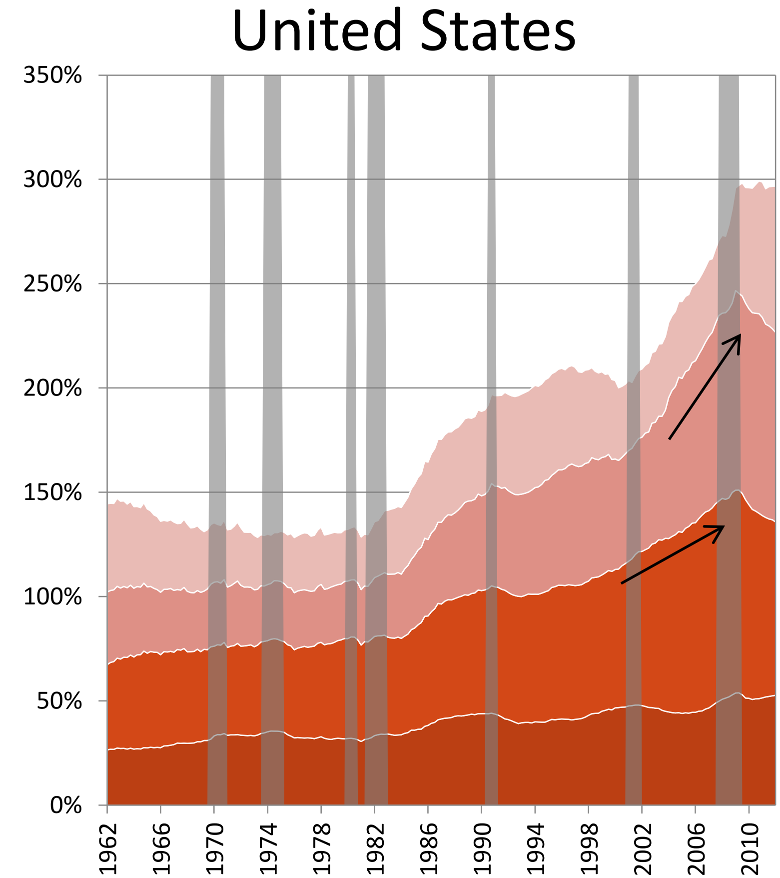


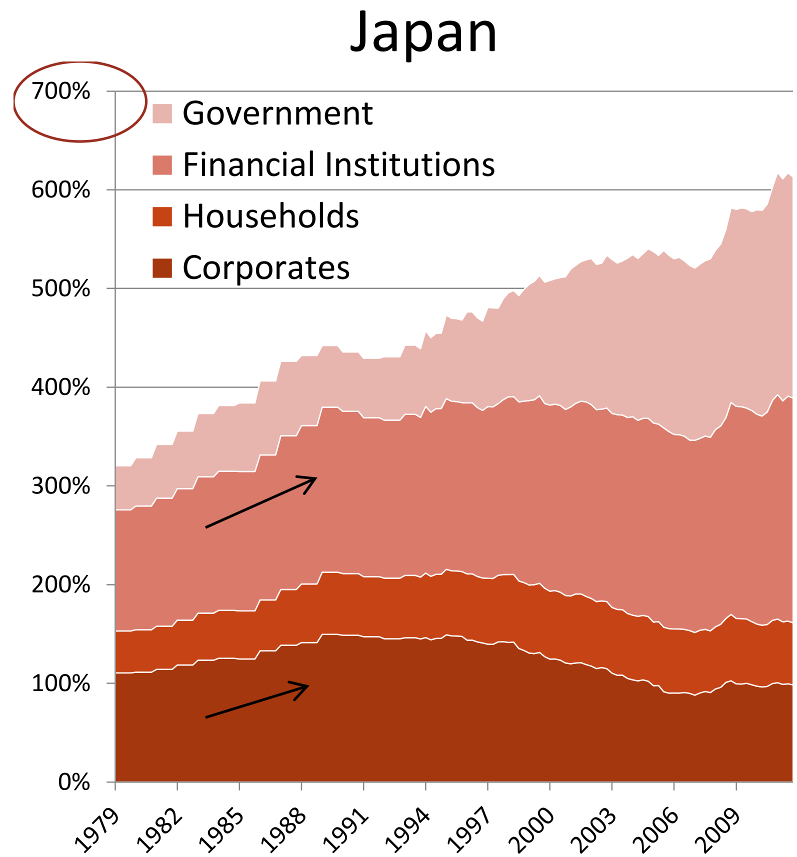
Sectoral analysis



Brunnermeier & Sannikov 2014

Sectoral analysis: Run-ups of debt





- Different sectors
  - Japan 1980s non-financial business + financial sector
  - US 2000s household + financial sector

Brunnermeier & Sannikov 2014

Quantities in turbulent times

- I Theory: “Bottleneck approach” sectorally impaired
- Identify bottleneck
  - Sectors: Banking vs. insurance, SMEs, corporate sector, household,…
- “Stealth” recapitalization of impaired sector
  - Interest policy and OMO affect asset prices
    - i-cut: increases value of long-term assets relative to short-term money
      - Steepens yield curve
    - QE increases value of particular asset
      - Flattens yield curve
  - Ex-post: Redistributes wealth/risk
  - Reduces endogenous risk (premium)– additional element to FTPL

Recap strategies – two opposing alternatives

1. Recap through temporary monopoly rents
   - + forbearance (to hide losses on legacy assets, "zombie problem")
   - Idea: Ex-post: recap ex-ante: insurance
   - Competition is less fierce when balance sheets are impaired
     - Profit margins ↑
     - Volume ↓ ⇒ spillovers to others in GE ("spillbacks")

       depends how crucial sector is, intern. competition

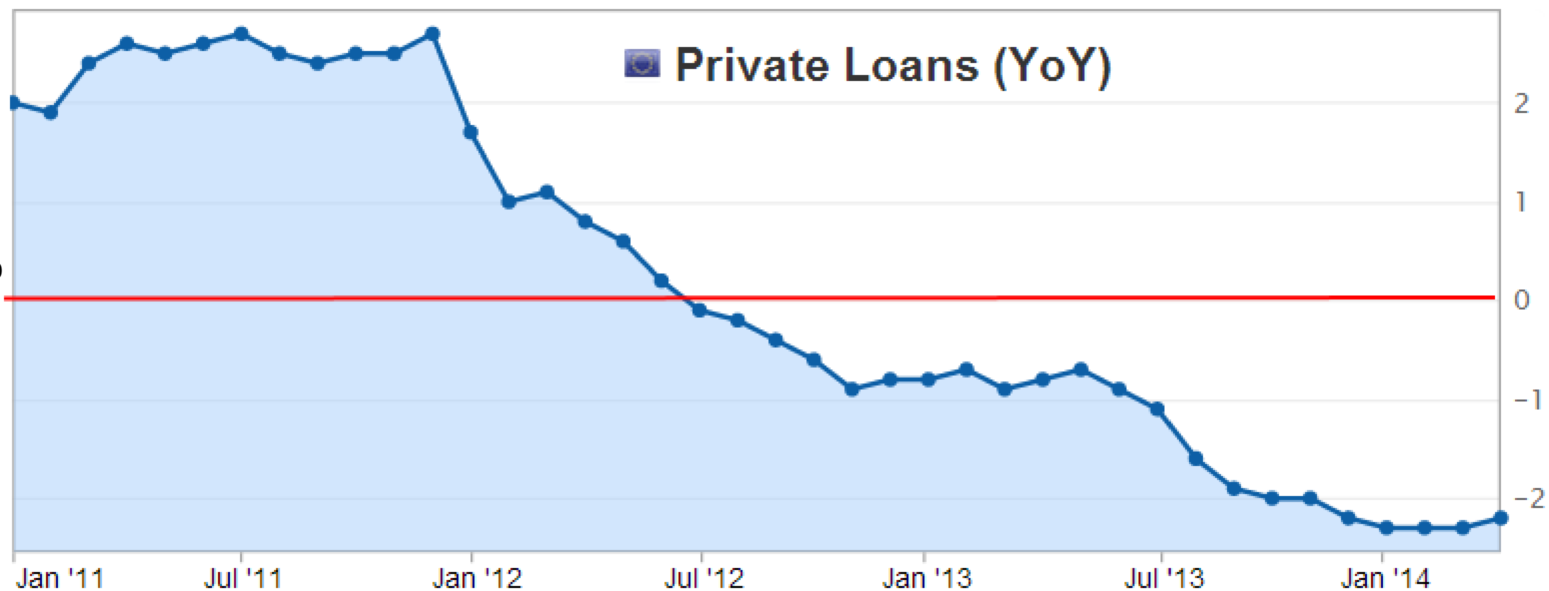
       abroad: Latin America in 1980s

       domestic: Japan 1990s
2. Attract new risk-bearing capital
   - Attract foreign competition S-Korea late 1990s
   - (Forced) equity issuance
   - Establish new efficient markets
     - Profit margins ↓
     - Volume ↑ ⇒ new credit to real economy

Prudent ABS market for SMEs

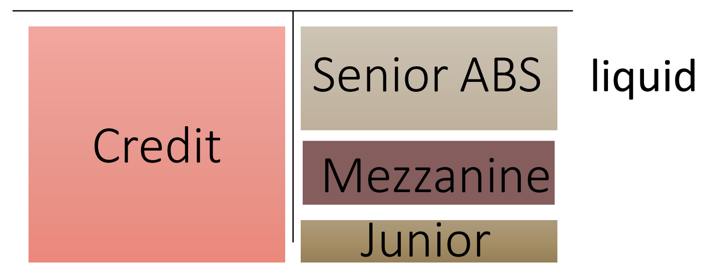
- New risk-bearing capital <u>targeted</u> at SME/consumers
- Current situation:
  - Sovereign rates stabilized at low levels
  - Corporate bonds rates also down
  - High demand for long-dated liquid assets
    - $26 trillion global Pension savings (OECD data), s.t. regulatory hurdles
  - Private loans & SME credit

Source: investing.com



Prudent ABS market for SMEs

- Convert illiquid SME/consumer loans → liquid asset class
- Short-run objective:
  - Stimulate credit growth to SMEs
  - “sectorally balanced” MoPo



- Long-run objective:
  - Re-establish Euro-wide intermediation
    - ECB can set EU-wide standards (e.g. by co-investing in Mezzanine)
    - Small scale purchase might be sufficient to restart market
  - Create collateral/safe asset (like ESBies)
  - Reduce diabolic loop
- Design choice
  No maturity transformation (ABS are long-dated assets)
  - Otherwise: liquidity/run risk + adjust monetary analysis

To sum up - the 3 main points

1. Monetary analysis
   - more than a cross-check in two pillar strategy
     in world with financial frictions and instability
   - Quantities in tranquil time help to identify vulnerability
   - Quantities in turbulent times help to identify "bottleneck"
   - Topography of liquidity mismatch across sectors
     (not simply credit/money)
2. Price and Financial stability are intertwined
   - Can't be separated
3. "Sectoral" impaired monetary transmission mechanism
   - SME are disadvantaged compared to sovereigns and large corporations
   - Prudentially designed ABS
     - Chance to re-establish European intermediation
     - Make illiquid loans into liquid standardized securities
     - Stay away from securitization that involves maturity transformation