Monetary Policy: A New Normal? & The I Theory of Money

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Stability concepts & interconnections

- OUTPUT (GAP) PRICE STABILITY

$$E[W(\ y_t - y^*,\quad \pi_t - \pi^*,\qquad)]$$

- Instruments

short-term interest rate

unconventional MoPo

Stability concepts & interconnections

- OUTPUT (GAP) PRICE STABILITY FINANCIAL STABILITY FISCAL DEBT

E[W($y_t - y^*$, $\pi_t - \pi^*$, risk concentration, sustain.)]

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micro-prudential fiscal rules

LOLR

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The Fiscal Theory of the Price Level

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The Fiscal Theory of the Price Level

Diabolic Loop
Bank-Sovereign Nexus

- Instruments

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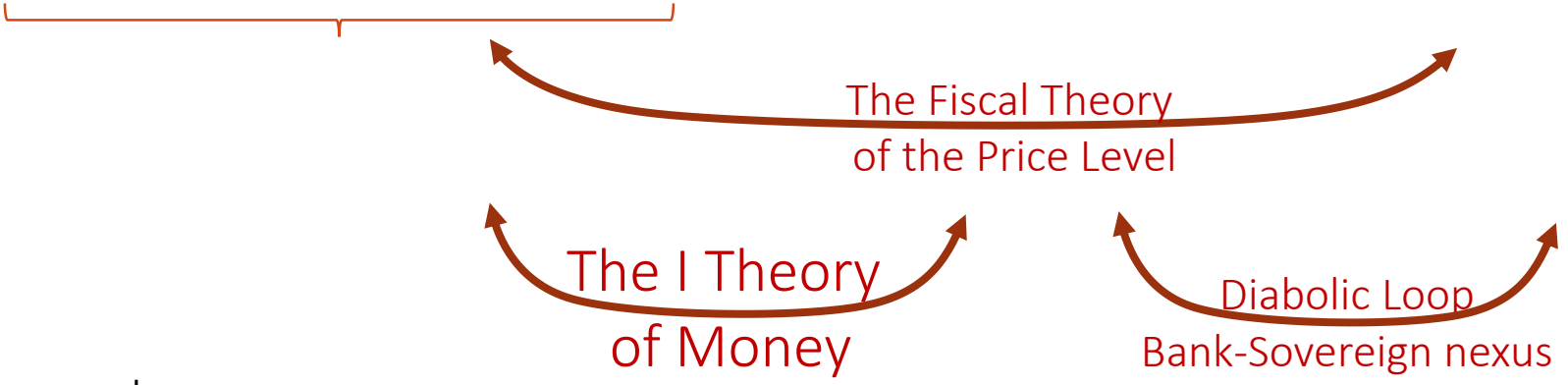

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For complete description:
Brunnermeier Sannikov (2013) "Redistributive MoPo" (Jackson Hole paper)

Financial Stability in the I Theory

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

- Endogenous risk (dynamics)
  - Amplification
  - Runs
- Risk premia (time varying)
  - Term spread: expectations hypothesis fails
  - Credit spread: default risk + risk premium predicts future economic activity

Gilchrist & Zakrajsek

Risk premium news the main driver

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Depends on "undercapitalization" of critical sectors

Risk premium news the main driver

Brunnermeier & Sannikov 2014

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- Volatility Paradox
  - Measured volatility is low when risk builds up (in background)

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Risk premium news the main driver

- Volatility Paradox
  - Measured volatility is low when risk builds up (in background)
- Measure of Topography (distribution) of risk concentration pockets
  - Distribution of Liquidity Mismatch

Liquidity Mismatch

A | L

Technological liquidity

- Reversibility of investment

Market liquidity

- Specificity of capital
  Price impact of capital sale

Funding liquidity

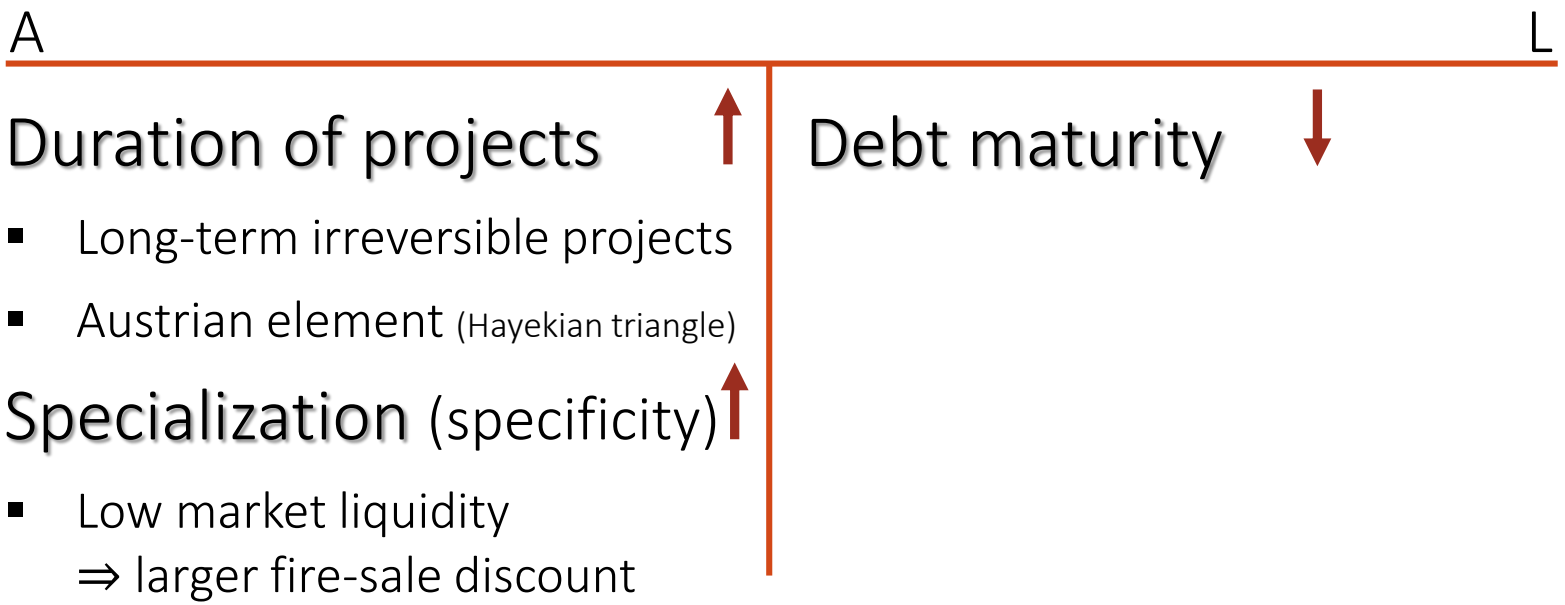
- Maturity structure of debt
  - Can't roll over short term debt
- Sensitivity of margins
  - Margin-funding is recalled

Liquidity ~~Maturity~~ mismatch

- Distribution of Liquidity Mismatch (with Gorton & Krishnamurthy)
  - Across sector
  - Substitutability of sector
  - Wealth shifts/undercapitalization likely, also shift risk premia

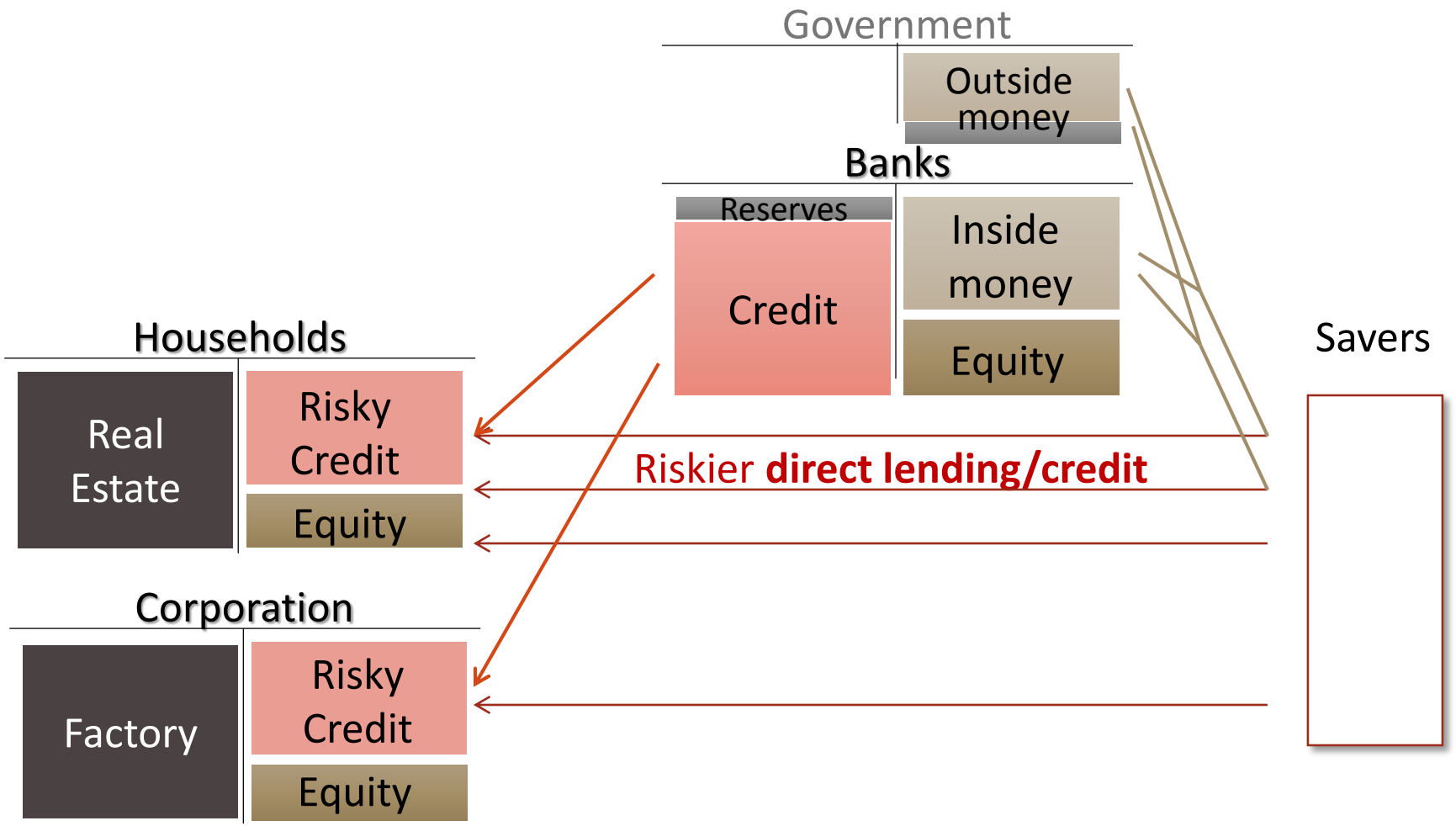
Risk Build-up Phase – "Volatility Paradox"

- Liquidity mismatch increases during tranquil times



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

Sectorial analysis



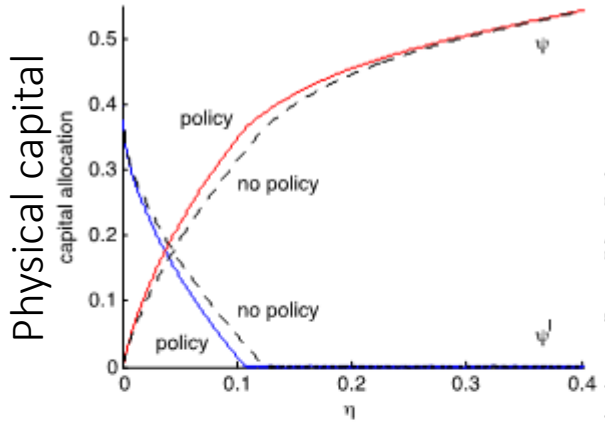
	"Bare bone" NK Model	I Theory
Friction	Price/Wage stickiness	Financial friction
Manage	Price dispersion	Potential wealth shifts - Amplification/runs - Risk premia Balance sheet constraints[i]
	Linear around Steady State	Non-linearities
Transmission mechanism	Euler equation (STABLE) Substitution effect	Time-varying & depends on - {LM}^{sectors} - Financial/mortgage contracts - Borrowers' bank dependency Income/wealth effects - ex-post: redistributive - ex-ante: insurance ⇒ affects risk premia (Hanson-Stein on 10 year Tips)

	"Bare bone" NK Model	I Theory
Friction	Price/Wage stickiness	Financial friction
Money/Interest	Interest rate prime focus (moneyless economy)	Endogenous inside money creation (by financial sector)
Instruments	Interest rate & QE	Interaction with MacroPru - Complements - Substitutes
Rule	$i_t = \pi_t + r_t^* + \lambda(y_t - y^*) + \alpha(\pi_t - \pi^*)$ coefficients of Taylor rule are constant/stable	$\begin{pmatrix} i_t \\ capital_t \\ liquidity_t \\ \dots \end{pmatrix} = F \begin{pmatrix} y_t - y^* \\ \pi_t - \pi^* \\ VaR_t[y_{t+\tau}] \\ \{LM\}^{sector} \\ \dots \end{pmatrix}$ Possibly unstable coefficients and nonlinearities to capture substitutability/complementarity
Long-term interest rate	Expectations hypothesis	Term risk premia (time varying)

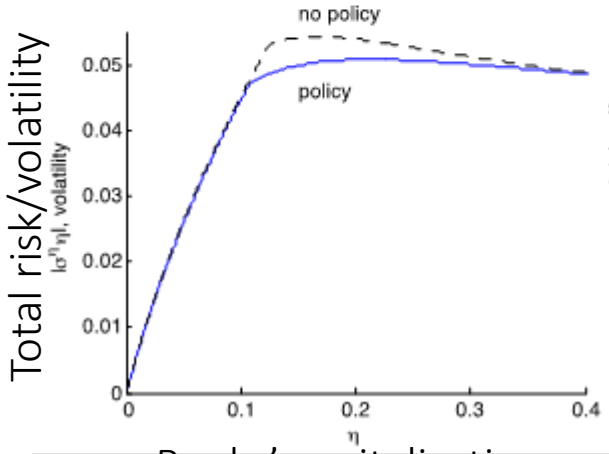
Trade-off: Price vs. Financial Stability

- Induce "financial risk taking" during crisis in order to reduce endogenous risk, contraction & disinflation
  - Precautionary delevering leads to
    - Fire-sale prices — Liquidity spiral
    - Disinflation — Disinflation spiral

    Inefficient due to pecuniary externalities
  - Take on "financial risk" to
    - boost economy,
    - reduce endogenous risk (& risk premia)

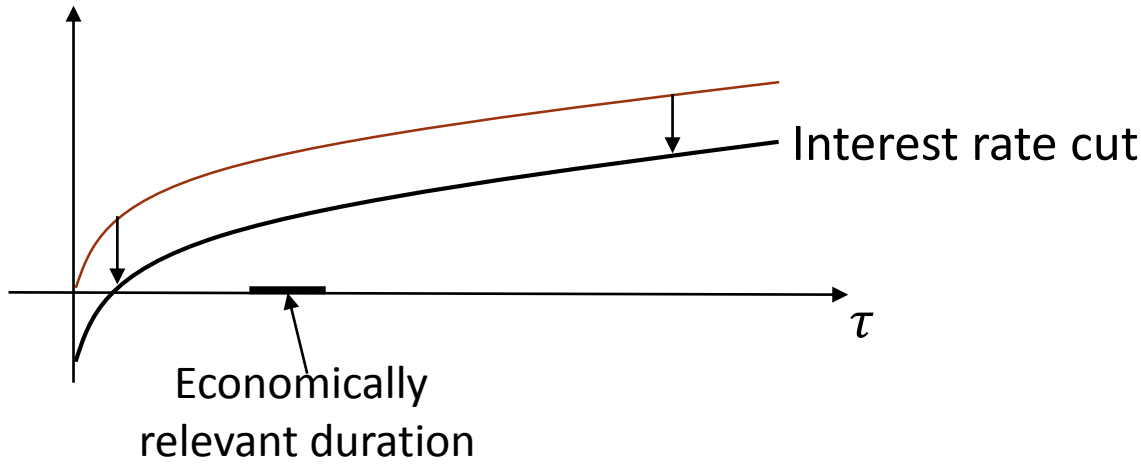


1. "Stealth" recapitalization of impaired sector (bottleneck)
   - Banking vs. insurance, SMEs,
   - Corporate sector, household,…
2. Make risk-taking attractive



Interest rate cuts vs. QE/Forward Guidance

- Mainstream: QE = interest rate cut below 0



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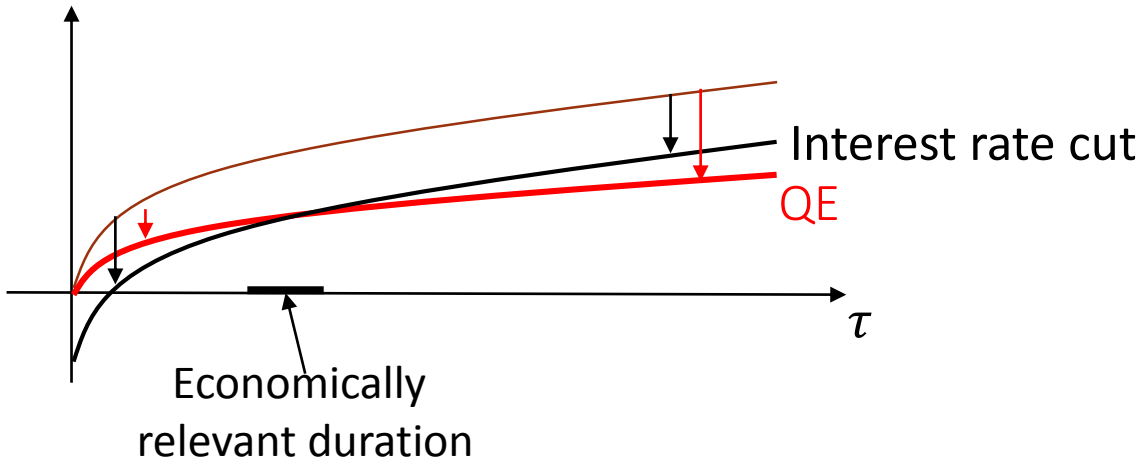

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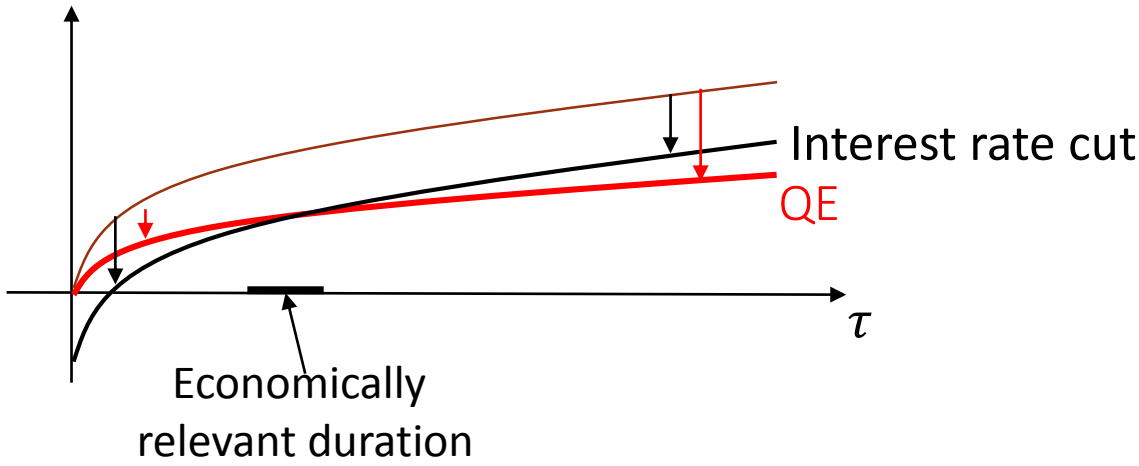

- I Theory view: different distributional implications
  across and within financial sector
  - banks borrow short and lend long
  - insurance/pension funds companies
  - households – depends on mortgage market

Bottleneck MoPo: Whose balance sheets are impaired?

Inflation Index: Core vs. Headline

- Empirical view: "core" is better predictor of future $\pi_{t+\tau}$
  - exclude energy since it is mean reverting

- NK view: Core excludes less sticky prices
  - exclude energy since prices are flexibel

- I Theory view: price changes cause wealth effect
  desirable or not?
  - exclude energy (in Europe) since it causes wealth transfer to middle east/Russia

(Is oil price drop and lowflation bad for Eurozone?)

Conclusions – the "Forgotten Normal"

- Price stability and financial stability are linked
  - Money is created by financial sector
- Monetary policy and Macro-prudential policy interact

- Taylor rule has to be expanded
  - Instruments (LHS of Taylor rule) are multi-dimensional
- I Theory: Wealth/income effects vs. substitution effects
- Financial stability – price stability trade-off:
  More financial risk taking (in crisis), less disinflation
- QE/Forward guidance ≠ interest rate cut (below zero)
- Reinterpretation of Optimal Inflation Index
  - Optimal inflation index depends on which sector is impaired