

Panel on market liquidity

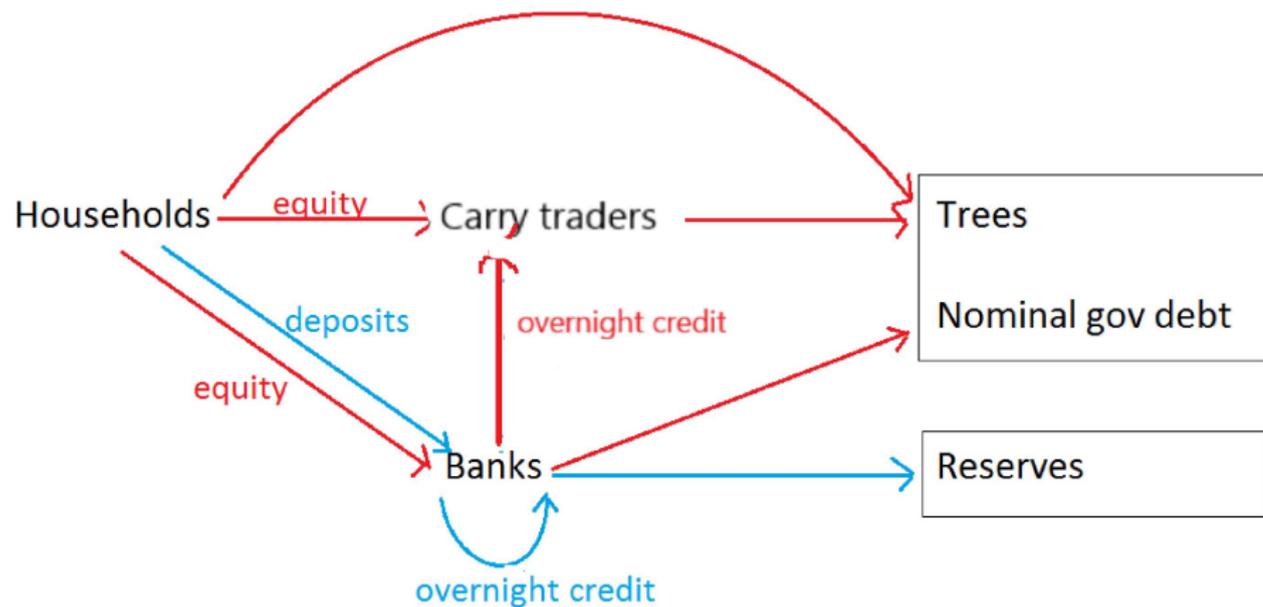
Martin Schneider
Stanford & NBER

New York MFM meeting, January 2018

Overview

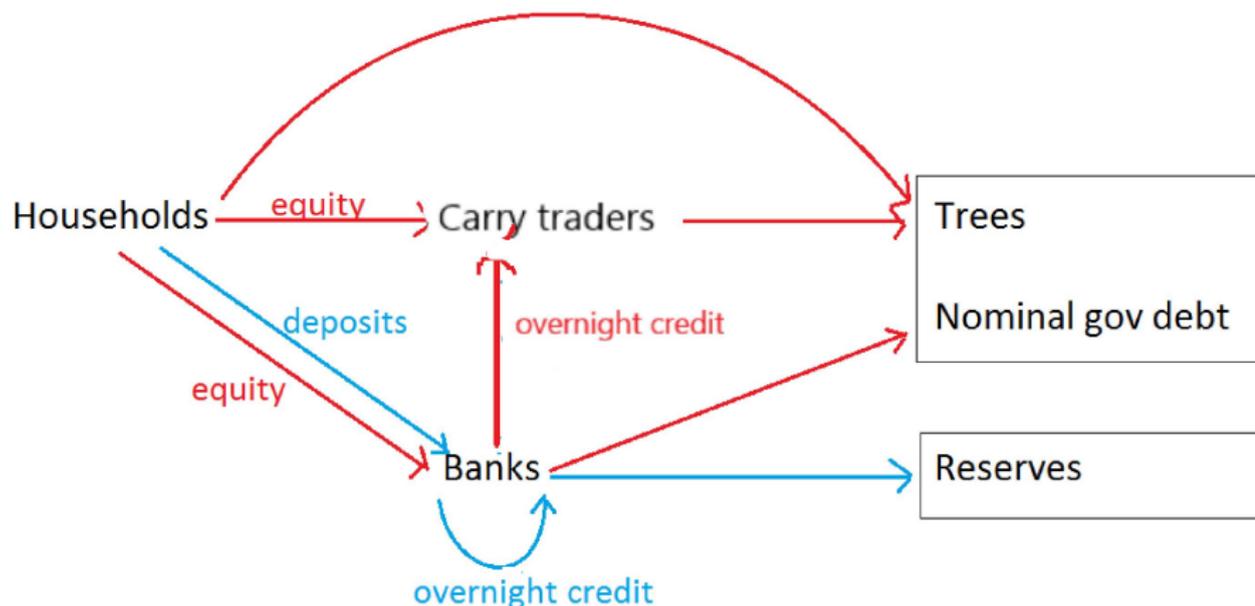
- Did market liquidity decline post-crisis? Two very nice papers:
 - ▶ Fleming et al.: mixed evidence
 - ▶ Dick-Nielsen & Rossi: some trades more costly→ differentiated products oligopoly?
 - ★ regulation affects some products more than other
 - ★ no single "true" effect of regulation
- Exciting area for future research
 - ▶ new data on OTC market evolution
volume, spreads, network structure, types of trades...
 - ▶ policy analysis: what are the key forces for welfare?
 - ★ need to know where volume comes from!
 - ★ information aggregation, hedging, skills?
 - ★ too much or too little trading?
 - ★ role of balance sheet constraints, implicit government guarantees
 - ▶ towards quantitative analysis of regulation with structural models
 - ★ Brancaccio, Li, Schuerhoff (2018) on muni bond market
- Rest of remarks: market liquidity & monetary policy
 - ▶ dealer borrowing in part backs inside money
 - ▶ interaction between payment system & macroprudential regulation?

Piazzesi & Schneider (2017) model of payment system



Two basic assumptions govern tradeoffs

1. inside and outside money have liquidity benefits
2. leverage costs increase in debt, decline in assets

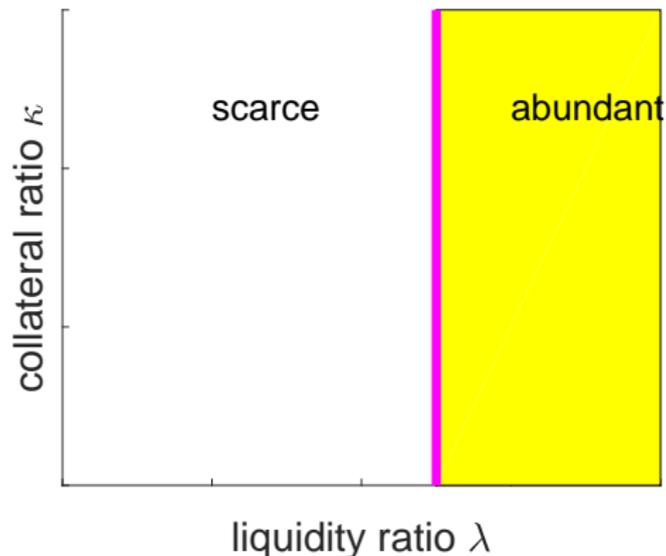


Competitive equilibrium with flexible prices

- Nominal price level & inflation: quantity equation
 - ▶ depends on supply of inside money
 - ▶ hence on collateral available to banks to back inside money
- Asset pricing: endogenous segmentation
 - ▶ overnight debt has collateral benefit for banks (convenience yield)
 - ▶ overnight debt held & priced only by banks, not households
- Monetary & fiscal policy
 - ▶ interest rate on reserves, paths for nominal debt & reserves
 - ▶ lump sum transfers adjust to satisfy budget constraint
 - ▶ two channels
 - ① real return on reserves
 - ② mix of collateral available to banks
 - ▶ permanent liquidity effects on real overnight rate
- Carry trader balance sheets
 - ▶ smaller if trees more uncertain, leverage cost higher
 - ▶ larger if lower real overnight rate

Characterizing equilibrium

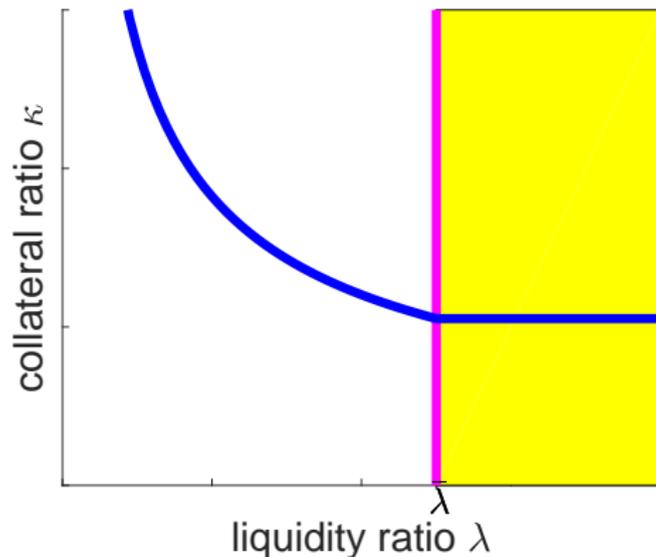
- Two key ratios summarize role of banking system
 - ▶ liquidity ratio $\lambda = \text{reserves} / \text{deposits}$
 - ▶ collateral ratio $\kappa = \text{risk-weighted assets} / \text{debt}$
 - ▶ same for narrow bank, very different for modern banks!



- lower κ
 - = safe assets scarce
 - = lower overnight rate
- lower λ
 - = hi money multiplier
 - = higher price level
- high enough λ
 - = banks never borrow overnight

Liquidity management curve

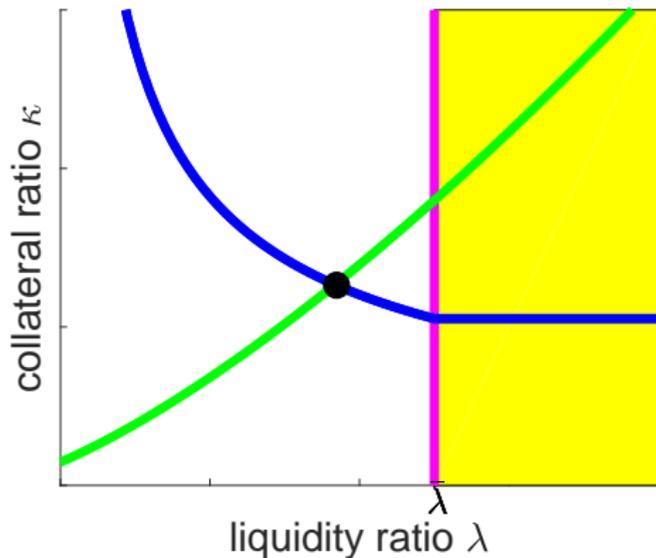
- How much collateral is optimal for liquidity ratio λ ?
 - ▶ derived from bank first order conditions
 - ▶ slopes down: hi $\lambda \Rightarrow$ borrow overnight less often \Rightarrow lower κ ok
 - ▶ abundant reserves: no further reduction in κ



- “money demand”:
 - high collateral ratio
 - = high interest rate
 - = high opp cost $i - i^R$
 - = low liquidity ratio
- “liquidity trap” for high λ

Capital structure curve

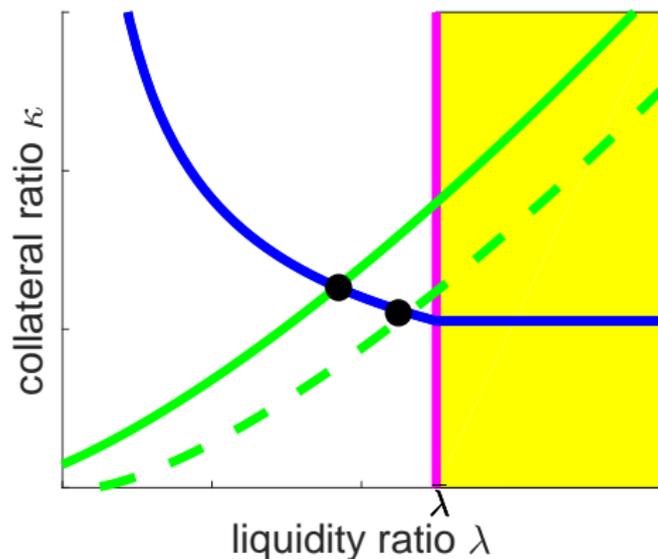
- Given other collateral, what λ achieves a given κ
 - ▶ derived from balance sheet identities & market prices
 - ▶ curve slopes up: to get more collateral, add reserves
 - ▶ narrow bank: $\kappa = \lambda$



- flatter if carry traders more sensitive to overnight interest rate
 - ▶ higher κ
 - higher interest rate
 - less carry trader borrowing
 - less collateral
 - more reserves needed

Bad shock to dealer business

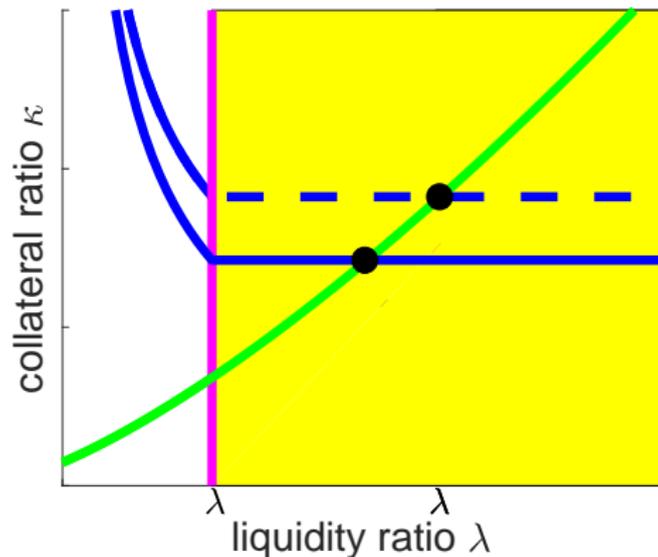
- Increase in leverage cost or uncertainty of trees
 - ▶ may capture regulation, changes in customer demands
- CS shifts right: higher λ needed to maintain any collateral ratio κ



- dealer borrowing ↓
 - less bank collateral
 - need more λ
 - money multiplier ↓
- deflationary!

Tighter money: higher interest on reserves

- Banks choose higher collateral ratios for given λ
 - ▶ higher return on reserves \rightarrow same RoE at lower leverage
- LM shifts up: banks hold more collateral at any λ



- higher interest rate, κ
- higher λ
- lower money multiplier
- deflationary!
 - ▶ how much depends on CS slope
 - ▶ hence on dealer response!