

# Discussion of “Liquidity Hoarding” by Douglas Gale and Tanju Yorulmazer

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<sup>1</sup>The views expressed in this discussion do not necessarily reflect the views of the Federal Reserve Bank of Richmond or the Federal Reserve System.

# What This Paper is About

Liquidity in a competitive equilibrium with incomplete markets

# Model Basics

$t = 0, 1, 2, 3$

Bankers and creditor pairs (continuum)

## Preferences

Banker  $\rho c_0 + c_3, \rho > 1$

Creditor - linear, shock determines which period to consume  
(main role is to force withdrawals of cash from banks)

## Endowments

Banker - one unit “cash”, one unit “asset”

Creditor - owed one unit of “cash” by bank

## Model Basics (cont.)

### Technology

Cash - gross return of 1 each period

Asset - produces  $R > 1$  in  $t = 3$  (0 if liquidated earlier)

Liquidity shocks at  $t = 1, 2$

fraction of creditors receive need for one unit of cash

size of fraction is random (**aggregate uncertainty**)

If banker cannot pay cash, long-term project liquidated (and pays 0)

### Markets

Spot markets - asset can be traded for cash

## Basic Forces in Model

Banker likes consuming cash at  $t = 0$  ( $\rho > 1$ ).

But less cash means more frequent liquidation of the asset, giving up on return  $R$ .

Optimal for banker to consume some cash at  $t = 0$ .

# Social Optimum and Competitive Equilibrium

## **Social Optimum**

Some optimal amount of aggregate cash.

Given that amount of cash, the optimum is to use it until cash runs out or all liquidity needs in economy are met.

This minimizes liquidation in the economy. (Linear preferences matter here.)

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## **Competitive Equilibrium**

Markets are incomplete, there are externalities. CE is inefficient.

Banker making decisions in own interest. Absence of traded contracts that force a bank to do things it doesn't always want to do, like deliver liquidity.

# Hoarding Liquidity in CE

## **Precautionary Motive**

At  $t = 1$ , save some in case have liquidity need at  $t = 2$  and cash is expensive.

## **Speculative Motive**

At  $t = 1$ , save some in case don't have a liquidity need (but lots of other banks do) and asset is cheap.

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Banks have an incentive to hold more liquidity than is socially optimal at  $t = 1$ .

## Also Problems with Initial Liquidity Holdings

**Three period model** (Drops one of the intermediate periods.  
No hoarding issues.)

Marginal condition for a social optimum

$$\frac{\delta \text{ failure prob}}{\delta \text{ cash}} [(R - 1) + 1] = \rho$$

Marginal condition from banker decision

$$\frac{\delta \text{ failure prob}}{\delta \text{ cash}} [(R - 1)] = \rho$$

Difference is what a creditor receives from preventing failure.  
Banker ignores this, its not priced in his decision, so get too little liquidity.

## Miscellaneous Comments on Model

Unusual bank - only one creditor per bank.

Incentives to form a larger bank - reduces need to reallocate cash across banks

Size distribution of banks will matter a lot

# Model Implications for Basel 3 Liquidity Standards

In terms of model, require banks to hold minimum amount of “cash”

- Good at  $t = 0$
- But, limits a bank’s ability to create “liquidity” at  $t = 1$ 
  - If near regulatory floor, can’t buy the “asset” of other banks
  - Impedes “liquidity” creation from trade

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Maybe rules will reduce the chance of a crisis, but once a crisis starts, will these rules encourage hoarding and make the crisis worse?

## Example: Panic of 1907

National banks had a reserve requirement that 25% of assets be specie or legal tender.

During the worst part of the panic, rates in the call loan market for stocks shot up, threatening to shut down the NYSE.

Some evidence that the reserve requirements limited the ability of the national banks to lend to this market. (Moen and Tallman (1990))