



**Liquidity:  
A view of how our theories are changing**

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- Everybody “knows” what liquidity is...

BIS: Liquidity is the **ability to fund increases in assets and meet obligations** as they come due.



- Everybody “knows” what liquidity is...

Assets

Liabilities and Net Worth

Cash  
Securities  
Loans

Deposits  
Borrowed Funds  
Equity



- Why do we care about liquidity?
- Issues in finance
  - Existence of liquidity premium and effects on asset pricing
  - Design of financial markets
- Macroeconomic consequences
  - But are they distinct (or is “illiquidity” just a euphemism for “insolvency”)?



- What is new in recent accounts of liquidity?
- Compare some classic treatments with some recent ones
- New feature: emphasis on imperfect commitment



- Time line
- Keynes
- Hicks
- Bernanke
- Freixas and Laffont
- Diamond and Dybvig

And then:

- Geanakoplos, Holmström and Tirole,  
Brunnermeier and Pedersen, Vayanos and Wang



- Keynes in General Theory
- Liquidity is ease of transformation
- Ambiguity:
  - Uncertainty of sale price
  - Locked in to choices
- Liquidity premium for benefit of liquidity services
- Liquidity has the downside of a lack of commitment
- Implicated in economic fluctuation



- Hicks
- Value and Capital (1946): dichotomy between liquid assets, usable for transactions, and illiquid ones, not usable
- “Liquidity” (1962): liquid assets have low variance of value
- Crisis in Keynesian Economics (1976): liquidity means flexibility of position





- Formal models of flexibility (1970's)
- Frexias and Laffont (1979), Bernanke (1978): irreversibility of real investments requires higher return to undergo them.
- Limitation: for pricing tradable assets—supply and demand both part of story.



- Market Microstructure Literature
- Deviations from fundamental value of marketed assets (over very short term horizons)
- Liquidity demanders (“Noise traders”), dealers holding inventories,
- Effects of transactions costs for sales, asymmetric information, density of noise traders, market structure



- Vayanos and Wang
- “Liquidity and Asset Prices under Asymmetric Information and Imperfect Competition,” *Review of Financial Studies*, 2012
- “Theories of Liquidity” *Foundations and Trends in Finance*, 2012



- Vayanos and Wang
- Looks at effects on standard measures of illiquidity in financial markets of standard set of factors:

Transactions costs, Asymmetric information, Search, among others



- Vayanos and Wang
- Innovation: Noise traders have better motivation than earlier literature: shocks to holdings.
- Because it is equilibrium, standard liquidity measures don't always line up with a priori interpretations



- Vayanos and Wang
- Rudimentary consideration of funding constraints
- No consideration of contingent contracts or derivatives



- Arrow-Debreu and theories of liquidity
- “There is no issue of liquidity in an Arrow-Debreu world”
- Market incompleteness vs underlying physical characteristics



- Diamond-Dybvig as case study

“Bank Runs, Deposit Insurance, and Liquidity,”  
JPE, 1983





- Diamond-Dybvig
- Cash desirable because tradable, long term loans are not.
- Agent uncertainty about trading needs leads to contingent demand for cash.
- Insurance arrangement (banks) supplies it more efficiently than each individual holding on their own.



- Diamond-Dybvig
- Instability, but from suboptimal contractual arrangement.
- Assumes that financial claims on banks are not tradable.
- With private information, reopening trade destroys insurance (Jacklin) – in other words, illiquidity of contract necessary for liquidity provision.



- Limited commitment
- Distinctive characteristic of the new accounts
  - For example limited liability
  - Need for collateral
  - Alienable vs inalienable assets
- Take this as the source of missing AD markets



- Niehans *Theory of Money* 1978
- Informal theory of usefulness of assets (here fiat money) as a means of settlement in the presence of a limit to ability to borrow



- Geanakoplos
- Geanakoplos and Zame “Collateralized Security Markets,” 1997 et seq.
- “The Leverage Cycle,” 2010.



- Geanakoplos
- Borrowing includes specification of collateral haircuts: loans with different haircuts are different AD commodities.
- Differences in priors as source of trading
  - In principle not necessary, but gives result that agents choose limited number of collateral terms
    - In simple applications, collateral level chosen endogenously to rule out default



- Geanakoplos implications
- Collateralizable assets trade at premium to non-collateralizable equivalents
- Collateral terms can have greater variation than prices themselves as state shifts



- Endpoint
- Macroeconomic consequences:
- Effects from changes in relative price of pledgeable and non pledgeable assets
- Collateral spirals
- Need for linkage between bad news and variability of news





- Holmström Tirole

*Inside and Outside Liquidity, 2011*

- But source of demand for liquidity is limited liability
  - You can't force repayment; only extractible wealth is liquid.
  - More subtly: you can't force effort through punishments.



- Holmström Tirole
- New dichotomy: pledgeable assets fully contractible, non pledgeable assets uncontractible.
- As a result, liquidity can be reallocated in the economy. Aggregate pledgeable stuff only constraint.
- Role for government in improving the situation through its taxing power allowing more contingent liquidity provision.



- Brunnermeier and Pedersen

“Market Liquidity and Funding Liquidity” RFS  
2009

- Market liquidity vs funding liquidity (Hicks liquidity of asset vs liquidity of position)
- Margins and haircuts must be funded: in other words not just long side not pledgeable.



- Brunnermeier and Pedersen
- In other, other words, going through particular individuals reduces overall liquidity.
- (Admits cross margining would reduce this)
- Regulatory explanation



- Summary

Fundamental shift in understanding  
macroeconomic significance of liquidity

Role of flexibility replaced by role of limit to  
commitment.

Next challenge: incorporating role of  
counterparties



- My liquidity-related work:

- “Equilibrium Pricing Models for Illiquid Assets,” PhD Dissertation 1981
- “A Competitive Efficiency Wage Model with Keynesian Features” QJE 1988 with Dilip Mookherjee
- “The Role of Demandable Debt in Structuring Optimal Banking Arrangements” AER 1991 with Charles Calomiris
- “Ownership Structure, Speculation and Shareholder Information” JF 1998 with Andrew Winton
- “Payment System Settlement and Bank Incentives,” RFS 1998 with William Roberds
- “Settlement Risk under Gross and Net Settlement,” JMCB 2003 with William Roberds and James McAndrews
- “Transferability, Finality and Debt Settlement,” JME 2007 with William Roberds
- “Why Pay? An Introduction to Payments Economics,” JFI 2009 with William Roberds
- “Payments Settlement: Tiering in Private and Public Systems” JMCB 2009 with William Roberds
- “Private Payment Systems, Collateral, and Interest Rates” Annals of Finance 2013
- “Sources of Liquidity and Liquidity Shortages” 2013 with Wolf Wagner

