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# Liquidity and the Development of Robust Fixed Income Markets

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# Outline

- Importance of liquidity in fixed income markets.
- Theory and evidence on liquidity in fixed income markets.
- Features and characteristics of fixed income markets: corporate and sovereign.
- Special aspects of over-the-counter markets.
- Liquidity effects during financial crises
- The new regulatory regime – Dodd Frank, European Market Infrastructure Regulation (EMIR) and Basle III.
- Lessons and challenges for global fixed income markets.
- Conclusions and issues for discussion.

# Why are liquidity effects important?

- Assets with similar risk characteristics have different expected returns.
- One candidate for explanatory factor – liquidity.
- Liquidity differentials may explain differences in return performance *for the same level of risk*.
- Liquidity raises trading volume and reduces the cost of capital – even small improvements reduce the cost of capital substantially.
- Illiquidity in the fixed income markets causes investors with short horizons to withdraw from the market.
- In the absence of liquid fixed income markets, small investors are forced to rely solely on bank deposits.

# Theory about liquidity effects: The current literature

- Reasons for costs of illiquidity (or liquidity premium  $\Leftrightarrow$  decrease in price):
  - Adjustment for the present value of future transaction costs including, bid-ask spreads, trading costs, market impact and asymmetric information.
  - Required rate of return adjusts to compensate investors for the *level* of illiquidity and the *risk* of illiquidity.
  - Liquidity has an option value due to the possibility of selling the asset when necessary.

# Theory about liquidity effects: The current literature (Contd.)

- Distinction between *level* and *risk* of illiquidity.
- Are these effects priced? How much?
- All these arguments *assume* that the marginal trader has a *long position*.
- What happens if investors are allowed to go *short* and if the marginal trader has a short position?
- Implicit *assumption* that the asset is in positive net supply.
- Relationship between the asset and other positions of the agent. Is it a hedge?

# Features of corporate bond markets

- Reduce reliance on bank finance, common in many countries, with the exception of US and UK.
- Lessen strains on bank capital adequacy and liquidity.
- Provide avenues for long term investment for emerging middle class segment, other than real estate, gold, stocks etc.
- Create wider dispersion of risk among a large number of investors.
- Reduce the macro-risks of an over-leveraged banking system.
- Provide better opportunities for information revelation and price discovery.

# Characteristics of the global corporate bond markets

- Large number of corporate bonds in the US: over 40,000 with some activity, but quite illiquid.
- Reliable transaction data (TRACE) available for the US from 2004 onwards. Other data from Markit, S&P, Moody's, Bloomberg etc.
- New data base on structured products made available from 2011.
- Relatively small corporate bond market elsewhere – most financing takes place through banks.
- Lack of reliable corporate bond market databases in Europe and Asia.
- Growing role of credit default swaps market, in price discovery.

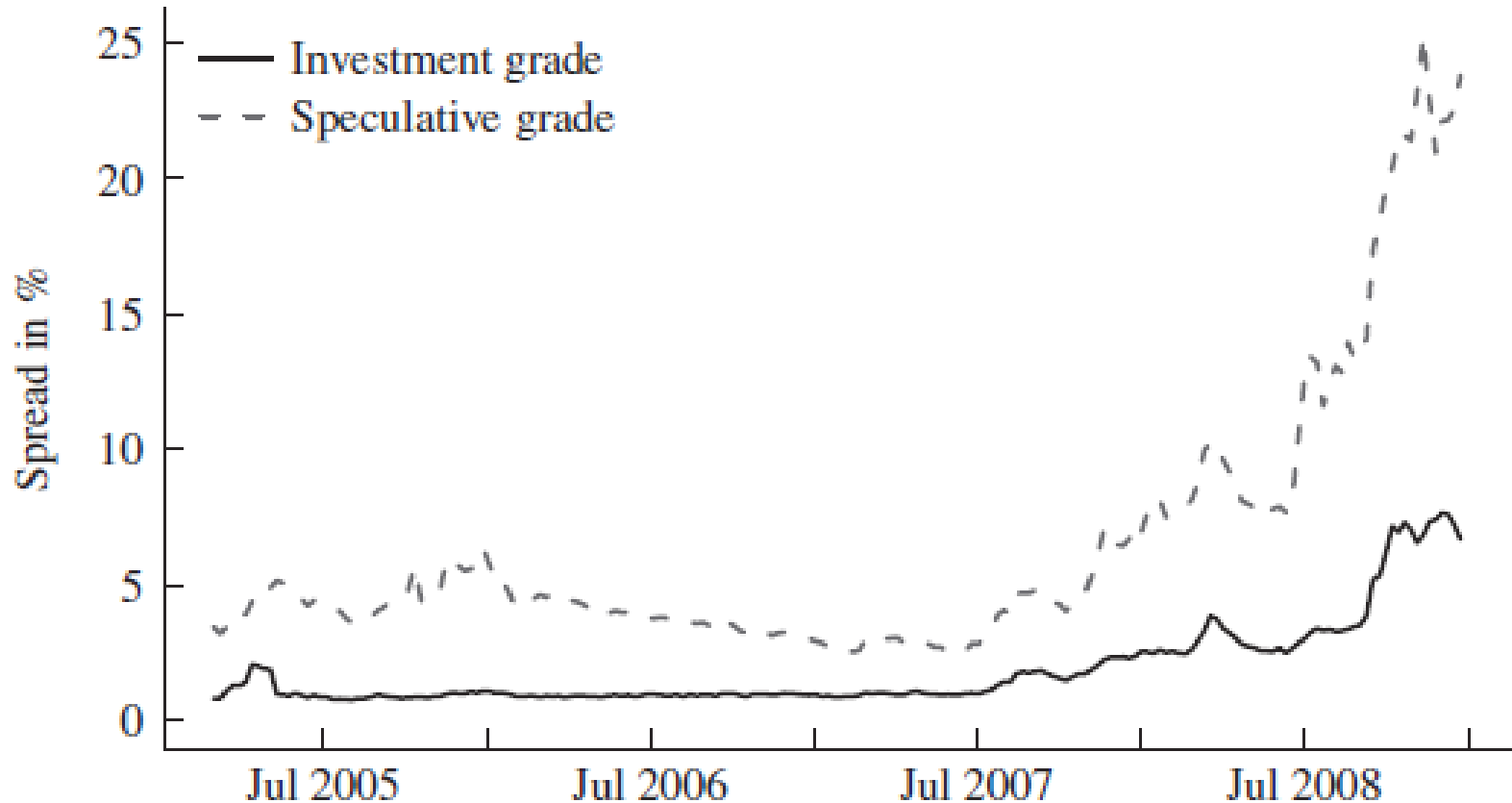
# Empirical evidence on liquidity effects in corporate bond markets

My research with various co-authors demonstrates:

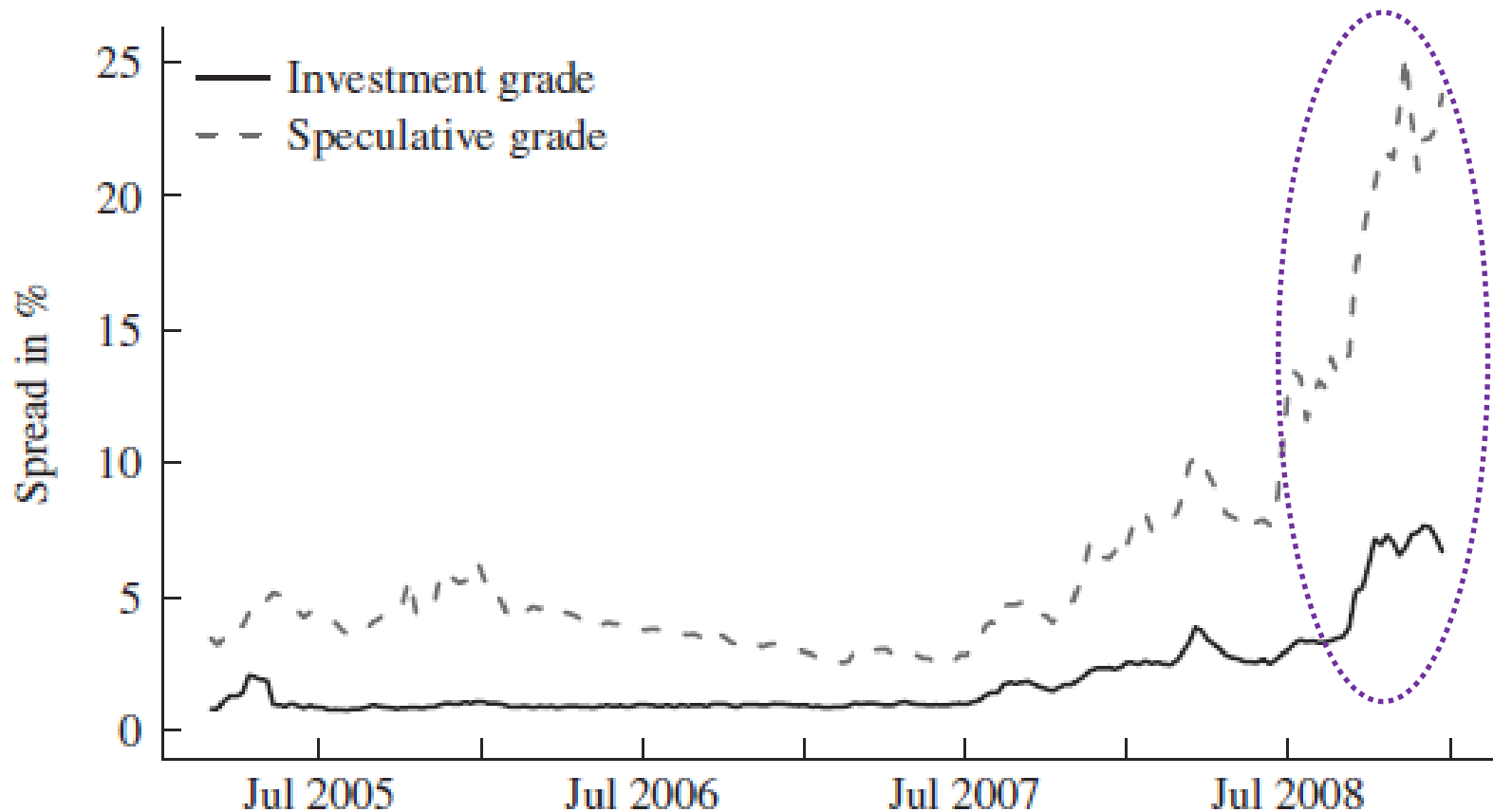
- A one standard deviation change in liquidity, changes yields and the basis by **0.1 % in the US corporate bond market.**
- A one standard deviation move in the direction of greater illiquidity increases the yield spread **by 0.2 % in the US corporate bond market.**
- A one standard deviation increase in the illiquidity measure increases the yield spread **by 0.46 % in the US fixed income structured product market.**
- A strong linkage between credit risk and illiquidity.



# Credit risk and illiquidity in the corporate bond market



# Credit risk and illiquidity in the corporate bond market



# Liquidity during financial crises: Main insights for corporate bonds

- Liquidity effects explain about 14% of the explained market-wide corporate yield spread variation.
- During periods of crisis, the economic impact of the liquidity measures increases significantly (more than doubled in the sub-prime crisis.)
- More pronounced liquidity effects are seen in the speculative grade segment, particularly in the sub-prime crisis.
- Results are relevant for pricing, risk management, and regulatory policy.
- Need to address liquidity provision to market makers during periods of crisis.

# Features of sovereign bond markets

- Increases in government deficits in many countries resulting in rising debt levels.
- Massive intervention by major central banks around the world: Fed, ECB, BoJ.
- Near-zero and even negative yields on a substantial proportion of sovereign bonds.
- Credit risk of sovereign bonds in many countries and linkage with liquidity.
- Negative consequences of negative yields for investment and growth.

# Characteristics of the global sovereign bond markets

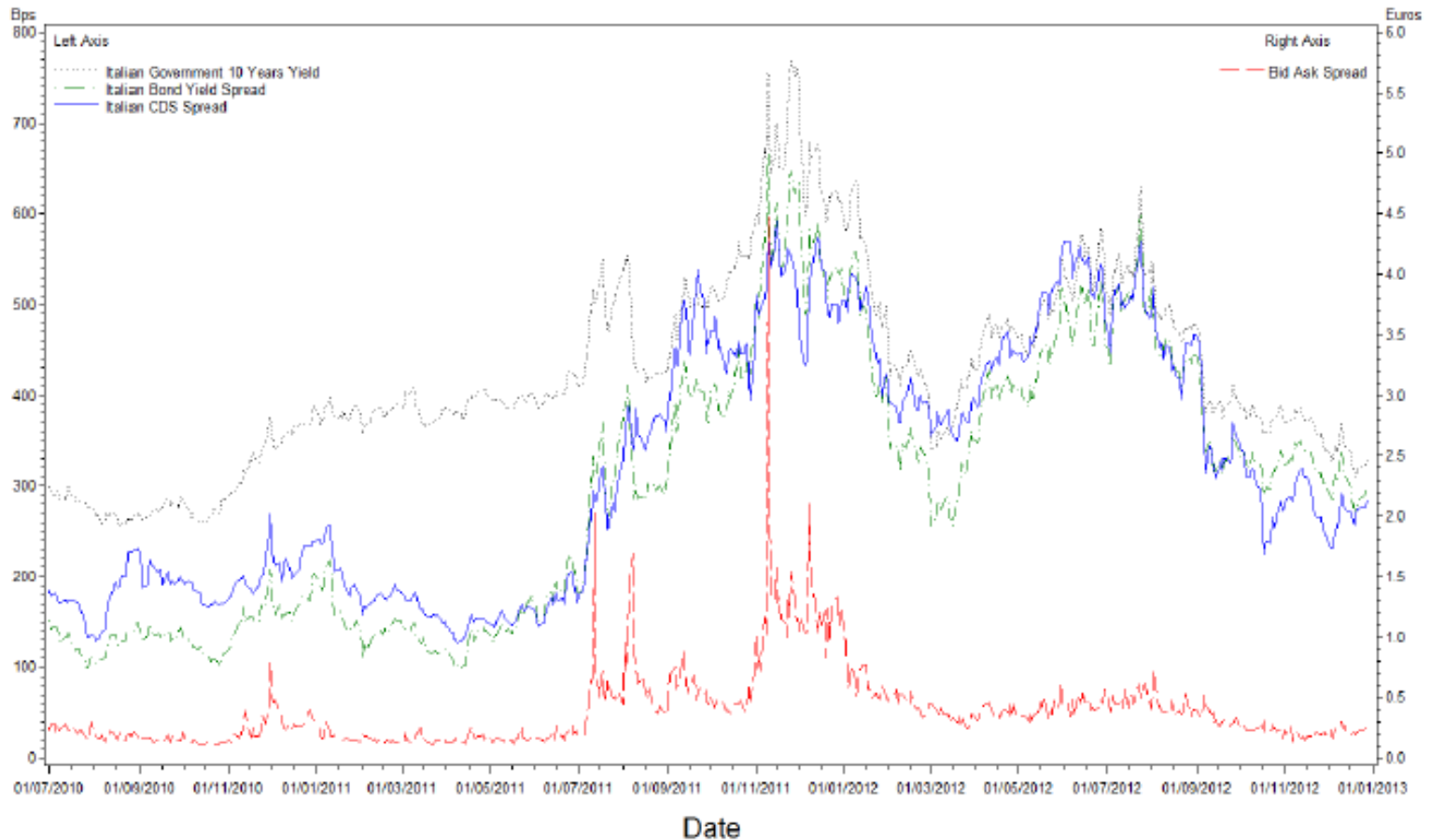
- Substantial size of sovereign bond markets: US: ~ USD 16 Trillion, Japan: ~ USD 8 Trillion, ~ Italy: USD 2 Trillion, Germany: ~ USD Trillion.
- Massive purchases by major central banks: Fed: ~ USD 2 Trillion , ECB: ~ USD 1.5 Trillion (and counting), BoJ: 2.5 Trillion (and counting).
- More than 50% of sovereign debt is trading at negative yields!
- Illiquidity in key sovereign bond markets.
- Sovereign bonds carry credit risk.
- Sovereign bonds mostly traded OTC, with important exceptions such as MTS, a European exchange.

# Liquidity during financial crises: Main insights for sovereign bonds

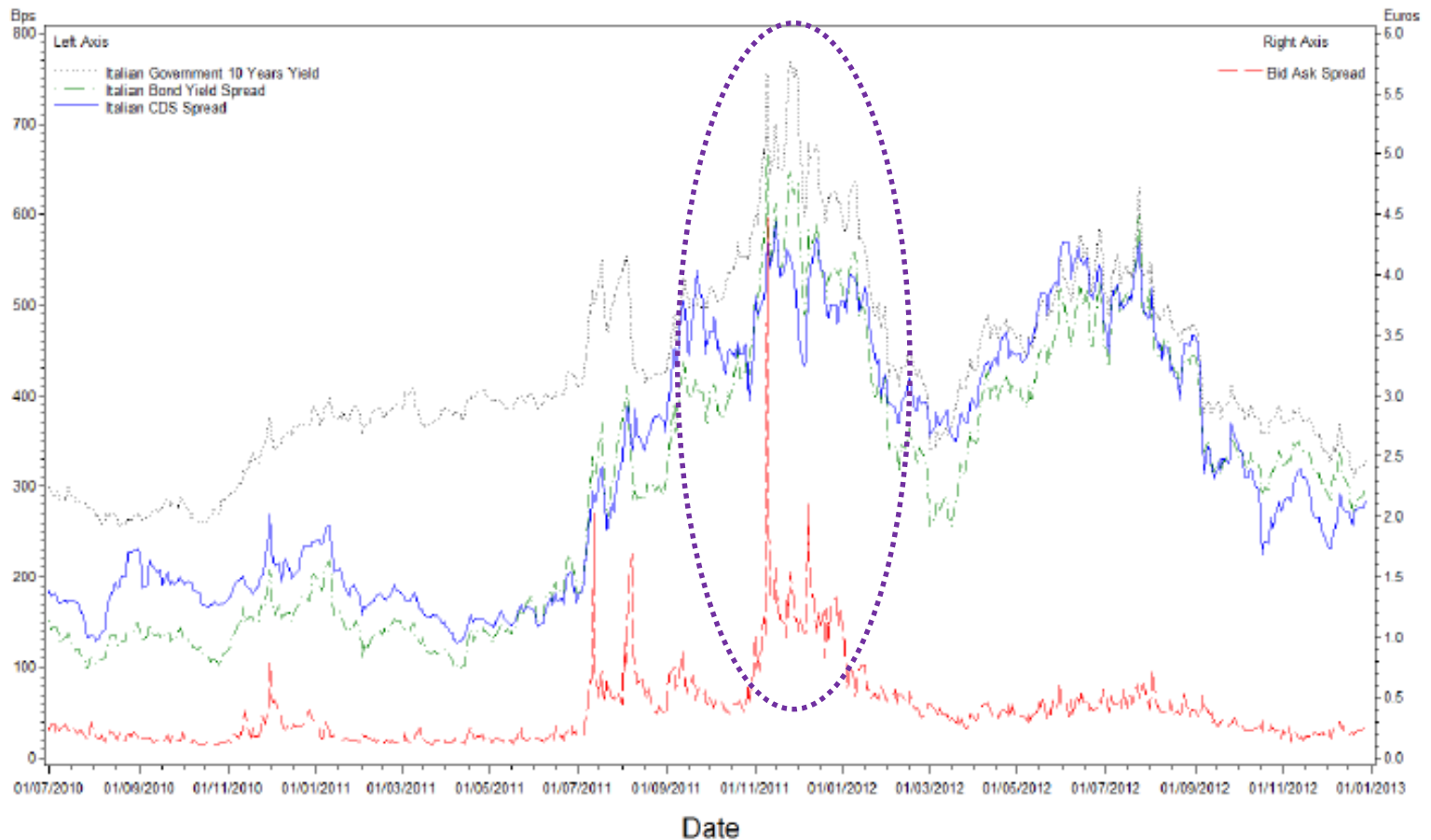
My research with various co-authors demonstrates:

- Interplay between credit risk and illiquidity (with no feedback effect).
- Linkage between credit risk and illiquidity stronger and faster when spreads rise above 500 bps.
- Central bank intervention weakens this linkage.
- Arbitrage activity between cash and futures markets gets intensified with central bank intervention.
- Liquidity problems intensify at the “zero-bound.”
- Market makers play a crucial role in liquidity transmission; bank regulators need to consider this.

# Credit risk and illiquidity in the sovereign bond market



# Credit risk and illiquidity in the sovereign bond market





# Special features of over-the-counter markets

- Importance of over-the-counter (OTC) markets: Real estate, bond (Treasury and corporate), most new derivative markets, etc.
- Microstructure of OTC markets is different from exchange-traded (ET) markets.
- Lack of centralized trading platform: Trades based on bilateral negotiations → occur at different prices at the same time.
- Search costs for investors and inventory costs for broker-dealers (and information asymmetry).
- Challenges of assembling market-wide data.
- Important issues of illiquidity, in crises such as the global financial crisis and the Eurozone sovereign debt crisis.

# Fixed Income Markets in the New Regulatory Regime

- Key features of Dodd-Frank/Basle III/Vickers/EMIR etc.:
  - Restrictions on proprietary trading (Volcker rule).
  - Capital adequacy for banks.
  - Centralized clearing for derivatives.
  - Data repositories.
  - Supervision of hedge funds and private equity funds (through prime brokers).
- Withdrawal of banks from market making and carrying inventories.
- Improvement in transparency and systemic risk from centralized clearing.
- Improvement in price discovery due to data repositories.

# Lessons and challenges for global bond markets

- Strengthen, deepen and broaden liquidity in global fixed income cash and derivatives markets.
- Improve transparency, even if the OTC structure is maintained.
- Introduce data platforms (e.g., TRACE) and trading platforms (e.g. MTS, MarketAccess, Tradeweb, Gsessions).
- Introduce centralized clearing for credit derivatives.
- Encourage securitization of bank loans.
- Provide access to capital for market makers and other liquidity providers.
- Reduce regulatory and listing requirements for quality issues.

# Lessons and challenges for global bond markets (Contd.)

- Improve the transparency of the credit rating process.
- Encourage the creation of bond indices and bond mutual funds for cash and derivatives trading.
- Provide incentives for retail investors to participate in corporate fixed income markets, e.g., tax, regulatory concessions for bond mutual funds, etc.

# Conclusions and Issues for Discussion

- Liquidity and liquidity risk are important aspects of asset pricing – a premium for assets in positive net supply.
- Corporate (and some sovereign) bond markets are highly illiquid, hence the liquidity premia could be quite large.
- Need to improve liquidity by improving transparency and developing metrics for liquidity e.g. liquidity ratings.
- Reduce the cost of illiquidity through more efficient trading platforms and dissemination of price data.
- Role of bond market indices for trading in cash and derivatives markets.