Asset Mispricing

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Law of one price: assets with identical payoffs should trade at the same price.

Recently, this paradigm has been challenged by examples of asset prices that appear to diverge from their fundamental values.

- On-/off-the run spread (Krishnamurthy, 2002)
- TIPS-Treasury spread (Fleckenstein, Longstaff and Lustig, 2014)
- Agency-Treasury bond spread (Longstaff, 2004)
- Bond-CDS basis (Bai and Collin-Dufresne, 2013)
- Deviations from CIP (Du, Tepper, Verdelhan, 2017)

Growing theoretical literature:
- Intermediary capital
- Funding liquidity
- Slow-moving capital
- Liquidity frictions
Contribution

We use a unique sample of *corporate bonds guaranteed by the full faith and credit of the U.S.* to comprehensively test the empirical implications of these theories.

- The guaranteed bonds have the same cash flows and credit risk as U.S. Treasury bonds.
  - Price deviations from Treasury bonds constitute a violation of the law of one price.
- For these bonds, we have information on:
  - intermediary funding costs and haircuts
  - dealer networks and inventory positions
  - trading and positions of non-dealer financial institutions
- Panel data set ideally suited to examine the time-series and cross-section implications of the theoretical models.
Theoretical Models (1)

A number of theoretical models have proposed different types of frictions that could result in mispricing:

1. Intermediary capital
   - The capital constraints of financial intermediaries

2. Funding liquidity
   - Disruptions in the ability of market participants to obtain funding
     - Examples: Chowdhry and Nanda, 1998; Gromb and Vayanos, 2002; Brunnermeier and Pedersen, 2009; Gârleanu and Pedersen, 2011
Mispricing caused by:

3. Slow-moving capital
   - Slow movement of capital to trading opportunities due to search frictions or investor inattention

4. Liquidity effects
   - The impact of illiquidity on asset prices
Empirical Implications (1)

1 Commonality in Mispricing
   - Both the intermediary capital and funding liquidity literatures imply that mispricing is correlated across bonds.
     - Correlations are larger when intermediary capital is constrained.
     - Correlations are larger between bonds that share the same primary dealer.
     - Correlations are larger between bonds that share the same dealer network.

2 Determinants of Mispricing (time-series)
   - Intermediary capital
   - Dealer inventory positions
   - Margins and funding spreads faced by intermediaries
   - Customer volume and interdealer volume
Feedback Effects

- An increase in mispricing is followed by:
  - A decrease in intermediary capital
  - An increase in margins
  - An increase in funding spreads
  - An increase or decrease in inventories
  - An increase in customer and interdealer trading activity

Determinants of Mispricing (cross-section)

- In the cross-section, mispricing is related to:
  - Margins
  - Intermediary capital costs
  - Size of dealer network
  - Dealer inventory holdings
  - Customer and dealer trading
  - Bond liquidity
The FDIC Debt Guarantee Program

We analyze a sample of corporate bonds issued under the FDIC’s Debt Guarantee Program.

- The program was introduced in October 2008 as part of the Temporary Liquidity Guarantee Program (TLGP).
- Financial institutions issued debt in their own name, but backed by the full faith and credit of the United States.
- The guarantee was for timely payment of principal and interest.
- In case of default, the FDIC was required to make scheduled payments of principal and interest pursuant to the terms of the original debt instrument through maturity.
- The guarantee covered newly issued senior unsecured straight debt issued between November 2008 and October 2009, and expired on December 31, 2012.
Data

- **Bond Pricing Data:**
  - Full (non-public) version of TRACE
  - The inventory of each dealer is inferred from TRACE order flow
  - Bond characteristics from FISD

- **Dealer Data:**
  - We identify the primary dealer for each bond
    - The primary dealer is the dealer with the largest inventory holdings at the end of each month
    - The 12 primary dealers account for 82% of the total inventory holdings of sample bonds
  - Repo margins for primary dealers from FRBNY
  - Dealer CDS spreads from Markit

- **Other data**
  - Institutional holdings from eMAXX
  - Funding spreads from Bloomberg
Measure of Mispricing

We measure mispricing by comparing the yields on guaranteed bonds with comparable Treasury yields.

1. **The yield spread**
   - Spread over Treasury bonds with identical coupon and maturity
   - Spot curve constructed from off-the-run, fixed coupon Treasury securities with residual maturities of 90 days or more (Gurkaynak, Sack and Wright, 2006)

2. **The state income tax adjustment**
   - Adjustment follows Elton, Gruber, Agrawal and Mann (2001): $c\tau_s(1 - \tau)$
   - The average size of the state income tax effect is 3.8 pbs
Time Series of Explanatory Variables (1)

- Average CDS
- Average Haircut
- Libor-OIS Spread
- Total TLGP Inventory (Percentage of Outstanding)
Time Series of Explanatory Variables (2)
Is There Commonality in Mispricing? (1)
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What Drives Average Mispricing? (1)

Time-series regressions of weekly changes in average mispricing on explanatory variables.

1. Changes in CDS Spread (+)
2. Changes in Haircut (+)
3. Changes in LIBOR-OIS (+)
4. Changes in Inventory (–)
5. Changes in Customer Volume (+)
6. Changes in Interdealer Volume (–)

Vector-autoregressions of weekly changes in mispricing and the same variables confirm these results.
What Drives Average Mispricing? (2)

CDS Spreads → Mispricing

Haircuts → Mispricing

Libor-OIS → Mispricing

Inventory → Mispricing
What Drives Average Mispricing? (3)
Is Mispricing Destabilizing? (1)

Mispricing → CDS Spreads

Mispricing → Haircuts

Mispricing → Libor-OIS

Mispricing → Inventory
Is Mispricing Destabilizing? (2)
### What Explains the Cross-Section?

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<th>Coeff.</th>
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</table>
Findings (1)

1. Commonality in Mispricing
   - Support for the intermediary capital and funding liquidity literatures.
   - Mispricing has more to do with the state of the financial sector than with asset-specific characteristics.
     - Correlations are larger when intermediary capital is constrained.
     - Correlations are larger between bonds that share the same primary dealer.
     - Correlations are larger between bonds that share the same dealer network.

2. Determinants of Mispricing
   - Primary dealer capital position/CDS spread
   - Margins and funding spreads faced by intermediaries
   - Size of dealer networks
   - Dealer inventory positions
   - Customer volume and interdealer volume
   - Limited support for bond-specific characteristics and liquidity
Feedback Effects

- An increase in mispricing is followed by:
  - An increase in margins
  - An increase in funding spreads
  - A possible increase in CDS spreads (some evidence)
  - A possible decrease in dealer inventory (some evidence)

Economic Mechanisms

- A decrease in dealer capital is followed by:
  - An increase in funding spreads
  - Find no evidence of an increase in haircuts
  - A decrease in dealer inventory

- An increase in haircuts is followed by:
  - A decrease in dealer inventory