Asset Pricing in Intermediated Markets

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Asset pricing models: SDF and demand system approaches

- **Any** asset pricing model that starts from preferences, beliefs, . . . , implies
  1. An SDF that can be used to price assets using $\mathbb{E}[MR] = 1$.
  2. A demand system, $Q_i(P)$, that can be used to price assets by imposing market clearing, $\sum_i Q_i(P) = S$.

- Why can it be useful to study asset demand systems?
  1. **Testing theories** Demand curves depend on ex-ante information and can provide more powerful tests of asset pricing models than Euler equation tests that average ex-post returns.
  2. **New moments** By testing the model’s implications for demand curves (e.g., demand elasticities and cross-elasticities), we expand the set of testable moments in a meaningful way.
Asset pricing in intermediated markets

- The structure of modern asset demand systems:
  - Households allocate to intermediaries (mutual fund flows, insurers, ... ) and invest directly.
  - Intermediaries allocate to other intermediaries and invest directly.

- The traditional view that intermediaries do not matter at all is counterfactual, e.g., CIP deviations [2].

⇒ When, and how much, do intermediation frictions matter?
Asset pricing in intermediated markets

- The structure of modern asset demand systems:
  - Households allocate to intermediaries (mutual fund flows, insurers, ...) and invest directly.
  - Intermediaries allocate to other intermediaries and invest directly.

- The traditional view that intermediaries do not matter at all is counterfactual, e.g., CIP deviations [2].

- As intermediaries are a key part of the demand system, agency, behavioral, and regulatory frictions may matter for prices, not only during times of stress.

- Demand systems can be used to test theories and to quantify the importance of various frictions.
Examples of new moments

- Estimates of demand systems yield puzzling facts compared to current asset pricing theories as, empirically,

1. Demand is more inelastic [7; 4; 5].

2. Latent demand\(^1\) explains a large fraction of price variation [1; 5].

3. Consideration sets, i.e., the stocks institutions invest in, are small and persistent [5].

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\(^1\)Latent demand: The component of investors’ demand that cannot be explained by prices and observable characteristics.
New targets for empiricists

- Typical models of preferences combined with the assumptions
  1. Returns follow a factor model
  2. Betas and alphas of stock $n$ depend on $x(n)$

Imply for the demand of investor $i$ for stock $n$:

$$\ln Q_i(n) = \beta_{0i} \ln P(n) + \beta_{1i}'x(n) + c_i + \epsilon_i(n),$$

where $\mathbb{E}[\epsilon_i(n) \ln P(n)] \neq 0$.

- Questions for empiricists: How to specify and credibly estimate the asset demand system featuring intermediaries.

- Estimating demand requires an instrument and asset pricing faces the same identification challenges as other fields (e.g., corporate finance and macro, [6; 3]).
New targets for theorists

The demand of investor $i$ for stock $n$:

$$\ln Q_i(n) = \beta_{0i} \ln P(n) + \beta_{1i} x(n) + c_i + \epsilon_i(n).$$

New targets for theorists

- Which models of beliefs, preferences, regulatory or agency frictions provide quantitatively reasonable values for $\{\beta_{0i}, \beta_{1i}, \epsilon_i(n)\}$?
- How do investors select (sparse) consideration sets?

These questions can be answered by institutional type (mutual funds, insurance companies, banks, ...), and for households, which decentralizes the research agenda.
Counterfactual analysis

- A better understanding of the asset demand system provides more credible answers to counterfactual questions involving quantities.
  - What is the impact of unconventional monetary policy on asset prices?
  - How much does the risk regulation of, e.g., banks and insurance companies influence fixed income markets?
  - How much do different types of institutions amplify or reduce volatility?
  - How do changes in institutional structure (e.g., the shift from DB to DC pension plans) affect prices?
Conclusions

- Asset demand systems provide a useful way to understand and test asset pricing models.

- Big data on portfolio holdings allow us to explore new dimensions of models (see appendix).

- **What constitutes progress?**
  1. Well-identified estimates of the asset demand system, including consideration sets.
  2. Micro-founded models that can explain the facts documented by the empirical literature for households and intermediaries.

- By understanding the basics of demand, and the supply response of firms, asset pricing models can become more realistic, micro-founded, and testable.
References


Data on portfolio holdings

1. SEC Form 13F: Quarterly U.S. stock holdings of institutions managing over $100m since 1980.


3. Thomson Reuters eMAXX: Quarterly bond holdings of institutions (mutual funds and insurance companies) since 2002.
   - Insurance companies: Schedule D since 1991.

