Rethinking Volume

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Discussion
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1. *Find better instruments...*
2. *Find the* **Smoking gun** *(This Paper!)*

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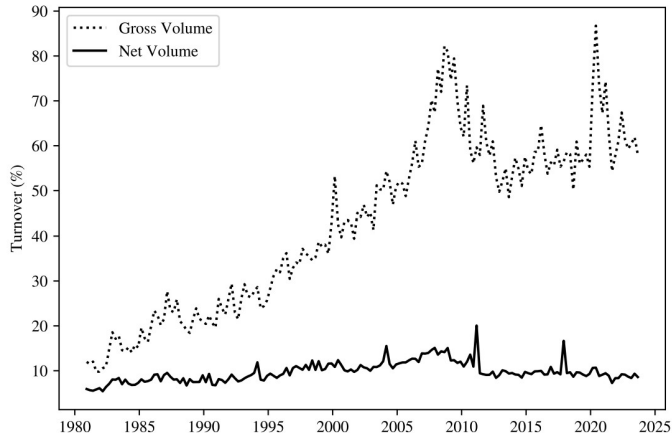
The Smoking Gun

- We know *volatility is high* (e.g., Shiller's 1981 excess volatility puzzle)
- That has to mean one of two things:
  1. investors are heterogeneous $\Rightarrow$ they disagree and trade a lot
     - High Disagreement (low ρ) $\Rightarrow$ lower vol because demand shocks "diversify away" as people want to trade in opposite directions
     - High Flow Volatitlity $\sigma_q^2 \Rightarrow$ more vol because people trade a lot
  2. investors are inelastic $\Rightarrow$ prices move a lot given little trading
     - Inelastic demand $\Leftrightarrow$ high price multiplier (or price impact) $\mathcal{M}$

$$\sigma_p^2 = \mathcal{M}^2 \frac{\sigma_q^2}{\left(\frac{1}{\rho} - 1\right)}$$

There is a lot of trading... Right? No.



Market microstructure $\neq$ Asset pricing

Inelastic Demand

$$\mathcal{M} \geq \frac{\sigma_p}{\sigma_q} \times \sqrt{\frac{1}{\rho} - 1}$$

- In the data:
  - Price volatility σ_p is high relative to flow volatility σ_q
  - (And investor homogeneity ρ is at an intermediate level)
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- This implies a **high price multiplier** $\mathcal{M}$ (or equivalently, low demand elasticity M^{-1})
- The paper validates its model-free bounds against standard estimates, which line up closely...
  - ... despite not being subject to recent critiques of instruments used in the literature

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- Back to excess volatility: historically, emhasis on **time-varying risk premia**
  - Are they missing here? **No!**
- "Demand view": prices (hence risk premia) changeas people trade
  - Inelastic demand means that **risk premia are more responsive** to investors' trading
- What is missing are things like the representative agent's time-varying risk aversion γ_t
  - More generally, **common unobserved demand shifts** make the bound slack

$$\mathcal{M} \geq \frac{\sigma_p}{\sigma_q} \times \sqrt{\frac{1}{\rho} - 1}$$

- Time-varying risk premia are **not missing**, but heterogeneity might not get all drivers

Comment 2: Taking the Framework further

- Imagine we want to know how AQR moves between value and momentum based on their risk premia. Do the elasticities (or multipliers) estimated here answer this question?

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- Imagine we want to know how AQR moves between value and momentum based on their risk premia. Do the elasticities (or multipliers) estimated here answer this question?
- **No!** They crucially depend on substitution = cross-elasticity terms of the elasticity matrix (e.g., Haddad, He, Huebner, Kondor, Li, 2025)
- All prices changes depend on all shocks through an $N \times N$ multiplier **matrix** $\mathcal{M}$

$$\sigma_{p,ij} = \sum_k \sum_l \mathcal{M}_{ik}\mathcal{M}_{jl} \frac{\sigma_{q,kl}}{\left(\frac{1}{\rho_{kl}} - 1\right)}$$

- Price covariances $\sigma_{p,ij}$ and flow covariances $\sigma_{q,kl}$ are linked through heterogeneity ρ_{kl} and the entire cross-elasticty matrix
- $N(N+1)/2$ $\mathcal{M}_{ij}$ terms (under symmetry) and as many equations $\Rightarrow$ **identify** $\mathcal{M}$ **matrix**
- (Imposing a factor structure might still be useful, like for Σs)

Comment 3: Implications of ρ

- Investor homogeneity ρ tells us **how correlated demand shocks** across investors are
  - Formally: ρ is the R^2 coefficient of regressing demand shocks on time fixed effects
- The existing literature typically estimates price multipliers using exogenous demand shock from some investor group (e.g., mutual fund flow induced trading)
  - Exclusion restriction: demand shifts of other investors are uncorrelated with those of MFs
  - Intermediate-level ρ suggests that on average, demand shocks are correlated, implying that existing multiplier estimates may be biased (*negative* result for existing estimates)
  - (Caveat 1: maybe this is just not a feature of the demand shocks used as instruments)
  - (Caveat 2: this is not an issue when using demand shocks as instrument for returns other than when estimating demand curves of investors whose shifts are correlated)

Conclusion

- Amazing paper!
- Paper pushes frontier on asset prices and quantities *without* need for exogenous variation
- Very useful to get model-free bounds on price multipliers (especially given recent criticism)
- I believe the method can be pushed even further...
- ... But I also don't view it as a replacement for natural experiments in asset pricing