Discussion of:

In Search of the Origins of Financial Fluctuations: The Inelastic Markets Hypothesis

by

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This Paper

- Theory and empirics on how flows affect aggregate stock market valuation.
- Main takeaway: Flows have large effects.
  - Flows equal to 1% of aggregate stock market valuation raise it by 5%.
- Theory: Low price elasticity stems from restricted mandates of asset managers.
- Empirics: Price elasticity is estimated using Granular Instrumental Variables (GIV).

Theory

- Two-period model. Extended to multiple periods.
- Bond fund: Invests in riskless asset with exogenous return r.
- Mixed fund: Invests in riskless asset and in stock (aggregate market). Exogenous demand for stock:

$$\frac{PQ^D}{W} = \theta e^{\kappa \hat{\pi}},$$

where:

  - P is stock price.
  - Q^D is quantity of shares.
  - W are assets under management.
  - (θ, κ) are constants.
  - $\hat{\pi}$ is expected excess return $\delta - (1 + r)$, where δ is dividend yield $\frac{E(D)}{P}$.

Main Theoretical Result

- Suppose that investors transfer ΔF from bond fund to mixed fund.
- **Proposition:** Stock price goes up by

$$\frac{P - \bar{P}}{\bar{P}} = \frac{1}{1 - \theta + \kappa\delta} \frac{\Delta F}{W}.$$

- Demand elasticity $\zeta \equiv 1 - \theta + \kappa\delta$:
  - Is zero when $\theta = 1$ and $\kappa = 0$.
  - Increases when θ becomes smaller than one.
    - Portfolio rebalancing is automatic stabilizer.
    - Stock price increases $\rightarrow$ Fraction invested in the stock increases.
  - Increases when κ becomes positive.
    - Substitution effect.
    - Stock price increases $\rightarrow$ Expected return decreases $\rightarrow$ Fraction invested in the stock decreases.

Extensions and Comments

- Extension 1: Multiple periods.
  - Flows have a larger effect when they are expected to be permanent.
- Extension 2: Multiple stocks.
  - Micro vs. macro elasticity. Macro elasticity is smaller under plausible assumptions.
- Comments on model:
  - Simple model of limited arbitrage.
  - Restricted mandates of asset managers, combined with no reallocation of investor assets across managers (lack of information).
    - See Buffa-Vayanos-Woolley (2019) for a related equilibrium analysis with tracking-error constraints.
  - Other frictions have been explored in the literature.
    - Asymmetric information.
    - Participation costs.
    - Agency costs of raising capital, etc.

Empirics

- Assume that flows for different sectors have a common and an idiosyncratic component:

$$f_{jt} = \lambda_j \eta_t + u_{jt},$$

where:

  - f_{jt} is flow into sector j at time t.
  - η_t is common shock.
  - u_{jt} is idiosyncratic shock.

- Extract (η_t, u_{jt}) using PCA.

- Estimate elasticity ζ by OLS

$$p_t = \frac{1}{\zeta} \sum_j S_{jt} u_{jt} + \epsilon_t,$$

where S_{jt} is weight of sector j at time t.

- Must observe total flow into bonds and stocks.

Main Empirical Result

- Price multiplier (inverse elasticity) ranges from 4.5 to 7, across a wide variety of specifications.
- Specification 1: Sector-level flows (FoF).
  - Pros: Observe flow into bonds and into stocks.
  - Cons: Large heterogeneity across investors in a given sector, e.g., pure bond and pure stock funds.
- Specification 2: Investor-level flows (13F).
  - Pros: Observe large cross-section of investors within a sector.
  - Cons: Observe only stock portfolios.
- Consistency across specifications is remarkable and reassuring.

Comments

- This paper addresses a very important question.
  - What is price impact of flows into aggregate stock market?
- Estimates are surprisingly large.
  - Yet, not out of line with estimates from other markets. (Bond QE)
- Suggestions:
  - Make estimates more "tangible" (less black-box). Specific episodes?
  - Examine how estimates depend on cross-sectional and time-series characteristics.
  - Examine implications for return predictability.
  - Shorten the paper. (Main body is 52 pages!)

Bond QE

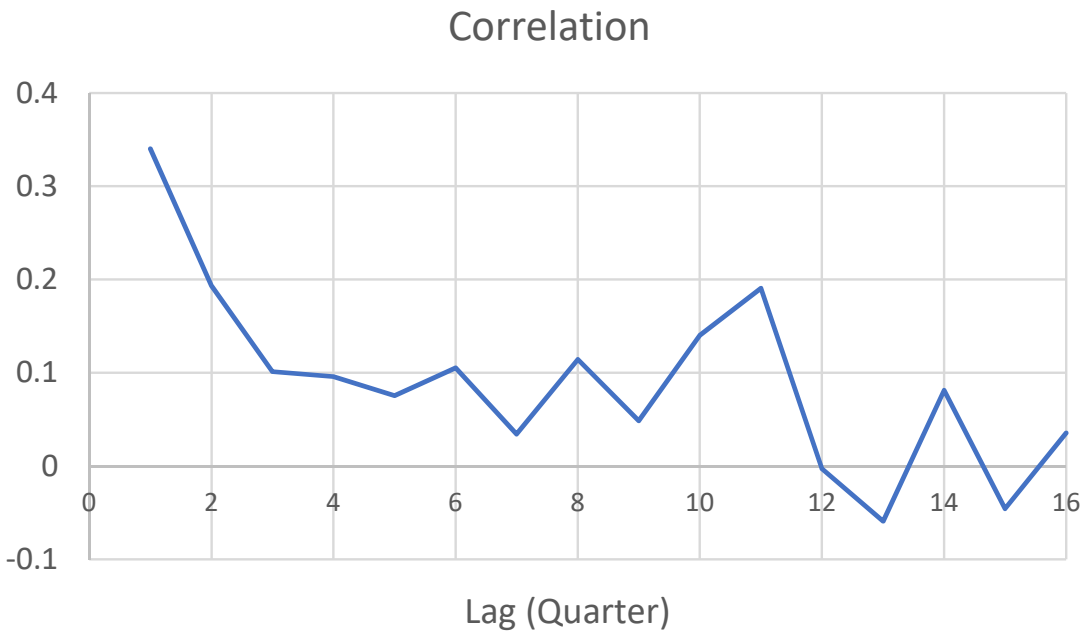
- Williams (2014) summarizes QE studies as indicating that:
  - \$600 bn of Fed purchases lower ten-year yield by 15-25 bps.
  - Price impact plays a significant part in driving this effect (compared to signalling about path of future short rates).
- Given GDP of \$15 tn in 2010, and debt to GDP of 91%, \$600bn are 4.4% of government bond market cap.
- Decline in ten-year ZC yield by 15 bps is 1.5% increase in price. Price multiplier is 0.33.
- 0.33 is a very conservative lower bound when extrapolating to stocks.
  - Stocks have larger duration. With 30-year duration, price multiplier becomes 1.
  - Stocks are riskier. (Model does not explicitly account for risk as a driver of inelasticity.) Doubling the standard deviation quadruples the price multiplier.
  - QE purchases are expressed as fraction of government bond market only.
    - Flows should be expressed as % of which market cap? (Model vs. empirics)
    - Market segmentation.

Dissecting the Effect of Flows

- To further tie the estimates to causal effects of flows, can explore how they depend on cross-sectional and time-series characteristics.
- Do flows have larger price impact during more volatile times?
- Do persistent components of flows have larger price impact than more transitory components?
- Do flows into aggregate stock market have larger price impact on stocks with
  - Higher cashflow beta?
  - Higher duration of cashflows?

Return Predictability

- Flows are estimated to generate return volatility of 5-8% (30-50% of actual volatility).
- Performing a similar calculation for return predictability could be interesting.
- That calculation would depend on the persistence of flows.
- Flows have a positive autocorrelation, which dies out over time.



Conclusion

- This paper addresses a very important question.
- Its estimates of the price impact of flows can have far-reaching implications.
- Possible improvements and future work:
  - Make estimates more "tangible."
  - Examine how estimates depend on cross-sectional and time-series characteristics.
  - Examine implications for return predictability.