Weekly Update #1

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Data Sources

- https://stooq.com/
    - Free market data (price, volume, and corresponding times) on U.S stocks.
- Center for Research in Security Prices
    - Access doesn't seem straightforward.
    - Comprehensive market data on U.S stocks and CRSP index stocks.
- Form 13Fs
    - Every quarter, investment managers with $100mm or more under mgmt have to file these.
    - Provides a breakdown of the securities held by the manager amongst other details.
    - Working backwards from these can tell you the major holders of a security, which we can use to see which stocks are held by passive and active management.

Overall, the purpose of this data is to understand the movement in price of individual stocks, levels of passive ownership in said stocks, and which stocks have seen larger jumps in passive ownership over time. We will likely need to determine thresholds to distinguish between those that have seen enough of an increase in passive ownership and those that have not.

Prior Literature

Haddad, Valentin, Paul Huebner, and Erik Loualiche. "How Competitive Is the Stock Market? Theory, Evidence from Portfolios, and Implications for the Rise of Passive Investing." *American Economic Review*, vol. 115, no. 3, 2025, pp. 975–1018, https://www.loualiche.com/docs/competitive_stockmkt_HHL.pdf

Authors:

- Valentin Haddad: Professor of Finance at UCLA Anderson; NBER Research Associate; expertise in asset pricing and investor demand.
- Paul Huebner: Finance researcher at Stockholm School of Economics; expertise in institutional portfolios and demand systems.
- Erik Loualiche: Assistant Professor of Finance at University of Minnesota; expertise in structural asset pricing and equilibrium models.
- The collective expertise across authors regards structural estimation of investor demand and strategic interaction using U.S. institutional portfolio data.

Main Conclusions: The paper finds that financial markets are not necessarily competitive enough to entirely neutralize changes in investor behavior. When investors become passive, which has zero demand elasticity, other investors respond by trading more aggressively, but this response offsets only ~2/3 of the initial effect. Moreover, measured empirically, the increase of passive investing / ownership over the last ~20 years has reduced the aggregate demand elasticity for U.S. stocks by ~11%, which implies higher price impact, greater volatility, and less informative prices due to lower amounts of fundamental investors. As a result, the paper finds that passive investing has meaningful equilibrium effects, even in markets with active investors.

Thoughts: We believe the main strength of the paper is providing a quantitative assessment of changes to equilibrium from the influence of passive investing, which helps explain why passive investing affects prices even when active investors are competing. Moreover, the paper considers the marginal nature of effects to equilibrium, rather than making the mistake of assuming either a full or offset.

Unanswered: The paper does not directly estimate volatility at the individual security level, but rather this is assumed using changes in elasticity of demand. Moreover, the paper does not consider shorter duration effects, like ETF arb or rebalancing within ETFs, and also treats passive investing / ownership as a single basket, rather than separating between ETFs, index mutual funds, etc.

Ben-David, Itzhak, Francesco Franzoni, and Rabih Moussawi. *Do ETFs Increase Volatility?* NBER Working Paper No. 20071, National Bureau of Economic

Research, 2014, https://www.nber.org/system/files/working_papers/w20071/w20071.pdf

Authors

- Itzhak Ben-David: Professor of Finance at Ohio State University; NBER affiliate; expertise in institutional trading and market frictions.
- Francesco Franzoni: Professor of Finance at University of Lugano; Swiss Finance Institute; expertise in asset pricing and delegated portfolio management.
- Rabih Moussawi: Finance researcher at Wharton; expertise in ETFs, mutual funds, and arbitrage.
- The collective expertise across authors regards ETF structure, arbitrage mechanisms, and market microstructure.

Main Conclusions: The paper establishes a causal link between the ownership of ETFs and higher levels of stock volatility. More specifically, it finds a one standard deviation increase in the ownership of ETFs raises daily stock vol (unsure of annual or annualized vol) by ~16%, which is a result of increased intraday vol. This increased vol non-fundamental in nature and mean-reverting due to changing levels of ETF trading activity, which hinders efficient markets in the short-run. The paper also tests the effects of ETF arbitrage on volatility through considering how liquidity shocks in the ETF market trickle down to underlying stock holdings, which increases the potential for turnover of a stock holding, increasing incremental buying and selling and subsequent vol.

Thoughts: We believe this paper is a high quality study because it properly distinguishes volatility from noise and volatility from informational flow. However, something to consider is the use of a quasi-experimental design, which is worse for proving causation as the paper concludes it has done.

Unanswered: While the paper focuses on ETFs, which have been the major beneficiary of increased passive investing flows, it doesn't consider other passive vehicles. Also, the paper does not consider longer duration efficiency in the market, the possibility of a threshold effect at low versus high levels of passive ownership, or how volatility from increased ownership / trading of ETFs can result in particular decisions by active investors (observed flows in ETFs → anticipation of flows into a stock or basket of stocks → increased buying in said stock or basket by active investors in anticipation of passive flows).

Krause, Timothy, Sina Ehsani, and Donald Lien. "Exchange-Traded Funds, Liquidity and Volatility." *Applied Financial Economics*, vol. 24, no. 24, 2014, pp. 1617–1630, https://doi.org/10.1080/09603107.2014.941530

Authors

- Timothy Krause: Associate Professor, Finance Director; Intrieri Family Student Managed Fund, Penn State; focuses on investments, derivatives, and risk management as a whole.
- Sina Ehsani: Assistant Professor of Finance at Northern Illinois University; concentrates on investments and empirical asset pricing.
- Donald Lien: Richard S. Liu Distinguished Chair in Business, Professor, Economics, UT San Antonio; focuses on the futures market and applied econometrics.

Main Conclusions: Stock-level volatility spills over from ETFs to their component stocks, showing that the direction of influence flows not only from portfolio stock to ETF, but in the other direction as well. The paper also found that spillovers increase as ETFs are more liquid, when the ETF holds a larger portion of a given stock than a similar instrument, and when there are deviations between the ETF price and the NAV (net asset value) of all the component stocks.

Thoughts: We thought it was interesting that they used time series analysis and variations of GARCH models to analyze these equities. Moreover, we believe it could be interesting to look at CCF/ACF plots for our research to see lagged effects if present in the dataset.

Unanswered: The paper doesn't conclude that ETFs increase overall market volatility, and doesn't show how individual stocks would react without the presence of ETF ownership.

Larsen, Lasse Mejlholm. *The Implications of Passive Investing on Market Volatility and Efficiency*. Master's thesis, Aalborg University Business School, 2023, https://vbn.aau.dk/ws/files/535873058/Master_Thesis.pdf

Authors

- Lasse Mejlholm Larsen: MSc Finance researcher at Aalborg University Business School.
- The author's demonstrated expertise regards empirical analysis of volatility, return co-movement, liquidity, and price discovery around S&P 500 index inclusion.

Main Conclusions: The paper found that stocks added to the S&P 500 from 2015 to 2017 experienced higher volatility, a higher return co-movement with the index, higher trading volume, and wider bid-ask spreads, with liquidity effects being mixed. The results align with other literature, specifically the idea of inclusion into an index increases volatility and correlation with the index and its returns due to the uptick in passive buying of stocks that have been included in the index. However, the paper does not have a clear conclusion on whether market efficiency is hindered by passive investing and its flows.

Thoughts: We believe the paper was effective in showing that stock-level volatility and efficiency of markets are distinct, which proxies for efficiency moving in various directions,

even when individual stock-level vol is increasing due to index inclusion and/or increased passive flows into the stock.

Unanswered: The paper proxies passive ownership rather than measuring it directly, which hinders the paper and author's ability to show a causal relationship. Also, the sample that is used, specifically S&P 500 index inclusions from 2015 to 2017, is likely too small.

General sources to learn about the research question:

- The Rise of Passive Management
- Understanding the shifting risks of passive investing
- The Dominance of Passive Investing and Its Effect on Financial Markets
- Passive's no bubble as active retains market control

Gaps in Expertise

Despite the literary sources showing evidence for passive investing affecting volatility of stock prices, they lack analysis of levels of passive ownership between stocks, required thresholds of passive ownership to determine whether or not passive ownership has increased, and a decomposition between types of passive ownership (for example, ETFs versus index mutual funds), along with mechanisms like ETF arbitrage.

Also, while the literary sources show a relationship between ETF movements and the underlying stock holdings, it remains unclear to us as to how much of this relationship is causal, and not just correlation. Due to ETF prices being mechanically linked to the prices of underlying stocks, the use of simple correlations cannot be used to determine whether ETF ownership or price movement is directly influential on underlying price movements (and subsequent volatility) of stock holdings. Some of the sources use advanced methods to prove a causal relationship, but we have a limited understanding of these methods, so we'd like to fix this gap in expertise.

Stakeholders

- Individual / retail investors whose personal or retirement savings are invested in passive investment vehicles like ETFs, index mutual funds, etc.
- Active fund managers who base their decisions on fundamentals and price movements observed in the market.
- Public companies whose issued public stock is held by ETFs, as executives with stock ownership could have misaligned incentives.
- Financial regulators and policymakers.
- Academics and market researchers who aim to understand market efficiency and relationships between securities and their return profile.

AI Use

We used Chat GPT 5.2 to summarize author information from each of the literary sources and explain complex formulas / definitions while reading said literary sources. For example, it was used to understand "volatility spillovers" and the dynamics of arbitrage when ETF prices differ from NAV of the underlying stocks. Also, we used Google Scholar AI to find additional academic sources based on our research topic.