NBER Proposal for Big Data and High-Performance Computing for Financial Economics

Topic: Who is Afraid of Passive Funds?

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Research Objectives

The rapid growth of passive investment vehicles (e.g., ETFs and index funds) is bringing profound changes to the securities market as well as the asset management industry. In this project, we are particularly interested in how actively-managed money responds to the frictions created by passive investment. While recent studies suggest that passive investing has certain unintended effects on the pricing efficiency and liquidity of the underlying securities,[2] there has been little evidence on how active investors explore the friction and on how the interplay impacts the capital markets. Our proposed study attempts to fill this gap.

With the growth of passive money came the concern that index investing above certain scale may harm the functioning of the securities market as it weakens price discovery and harms the market's ability to self-correct from bubbles and distresses. However, such an argument might have underestimated the capacity and the flexibility of actively-managed money to offset, and to profit from, the adverse effects passive money could have on the securities market. A main objective of our study is to estimate how promptly and adequately active money fill in the imbalance left over by uninformed trades of passive money, and how much active money is needed to neutralize passive money.

In particular, we aim to address the following questions:

1. Does passive money induce predictable uninformed net trading (e.g., trading imbalance)?
2. Do active managers "trade against" the imbalance caused by passive fund flows?
3. Does active managers' trading offset the impact of passive money on the equity market, including stock liquidity and price efficiency?

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[2] Several recent academic studies have highlighted certain unintended consequences ETFs have on the underlying securities they hold. ETF ownership increases volatility (Ben-David et al., 2017), reduces liquidity (Hamm, 2014) and informational efficiency (Israeli et al., 2017), and increases the co-movement in returns (Da and Shive, 2018) of the underlying securities ETFs invest in. Agarwal et al. (2017) find stocks with higher ETF ownership exhibit greater co-movement of liquidity of underlying stocks.

Empirical Strategy

The first goal of our study is to relate trades by active money with passive flows. The active trading is measured as net selling (or buying) aggregated using trades by active managers covered by Abel Noser. The resulting measure, *NetSellingi,j,t*, where *i, j, t* are subscripts for firm, fund, and time period. The passive flows, $Flow_{it}$, are aggregated at the stock level using data on passive funds' daily flows covered by Morningstar and their portfolio holdings covered by Morningstar/Thomson Reuters.

Our main specification is as follows:

$NetSelling_{i,j,t} = f(Flow_{i,t}, MV_{i,t-1}, Liquidity_{i,t-1}, StkExRet_{i,t-1}, Book\text{-}to\text{-}Market_{i,t-1}, \%Portfolio_{i,j,t-1})$

Our preliminary results suggest that higher average passive inflows (outflows) predict more intensive net selling (buying), with the effect being largely driven by flows during the past one-five days. That is, active money trades in the opposite direction of flow-induced trades of passive funds.

Second, we test whether and how active funds' trading strategy mitigates mispricing. To this end, the dependent variable captures stock liquidity, noise trading, and mispricing, which are empirically proxied by daily $Bid\text{-}ask\ spread_{i,t}$, $|Bid\text{-}ask\ spread\ midpoint - previous\ transaction\ price|_{i,t}$, $Vol_{i,t}$, $Return_{i,t}$, variation ratio, R-squared. We perform a cross-sectional test shown below:

$Liquidity_{i,t} = f(Flow_{i,t} * NetSelling_{i,j,t}, Flow_{i,t}, NetSelling_{i,j,t}, MV_{i,t-1}, StkExRet_{i,t-1}, Book\text{-}to\text{-}Market_{i,t-1})$

Our preliminary findings indicate that stocks with high passive flow exposure are associated with a deterioration in market liquidity and price efficiency. We conjecture that the active managers' trades in the opposite direction could offset the impact of passive money in the equity market.

Data Size and XSEDE Resources

Our research fits into the category of "big data." First, our combined data of passive fund daily flows and portfolio holdings are over 20 gigabytes. Second, our transaction level data of active money managers from Abel Noser are over 30 gigabytes. Third, we need to use the TAQ data (over 100 gigabytes) to calculate various daily stock liquidity and price efficiency measures. Given our data structure, we expect to have large benefits to have access to XSEDE resources as we need use parallel computing to speed up the data analysis.

References

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