

Technology and “Big Data”: Effects on Asset Manager Economies-of-Scale

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Some Theory...

- Dugast and Foucault (2021) build a realistic model of increasing computing power and data abundance—and the effect on competition in the asset management industry
- Assumptions:
 - Greater computing power is costly, but reduces search costs for new alpha “signals”
 - More data can result in higher search costs (a “needle in the haystack” problem)
 - Active managers respond to these changes
- Some key takeaways from the model’s equilibrium results:
 - 1. (Low-cost) increases in computing power may increase the average alpha of asset managers—more “needles in the haystack” located
 - 2. Greater data abundance may decrease the average alpha if the “best information” is concentrated in a small number of (difficult to locate) “places”—a “bigger haystack with the same number of needles”

Some Empirical Results...

- Brogaard and Zareei (2019) use a genetic algorithm approach to find technical trading rules
- Average time needed to find the optimum trading rules for a diversified portfolio of ten NYSE/AMEX volatility assets for a 40-year sample is 459 days using an Intel i7 CPU
 - Drives home the important role of increasing CPU power

Areas of Technology Change in Asset Management

- Collection of raw data (e.g., EDGAR and “screen-scraping”)—the advantages held by Amazon/Google/Facebook/Twitter/Orbital Insight/Sharethis
- Interpretation/data-mining of the raw data—machine learning, AI, boosted regressions, random forest—high CPU intensity and specialized labor
- “Selling” the alpha signal to potential investors (distribution)—AM’s with <\$100B in AUM seeing biggest outflows
- Implementing/trading the alpha signal—algorithmic traders
- Compliance costs as new technologies make previously unimaginable schemes available
 - Exploitation of small and large “loopholes” in regulation
 - E.g., Rob Jackson paper on ftp access provided by the SEC
 - E.g., FOIA requests by SAC Capital

How does all this impact asset management economies-of-scale? Potential questions for the SEC to consider

- Hiring, leveraging, and retention of human capital may be strong economies-of-scale drivers
- Concentration of best human capital may lead to spin-off small asset-management companies or private (e.g., hedge) funds
 - Large companies may have to adopt performance-based profit sharing
- Higher compliance costs may favor larger asset managers, or at least disfavor mid-size management companies
- How long until (almost) all fundamental analysis techniques are spanned by human-assisted machine-learning techniques?

- Will the industry become more decentralized in some respects, where functions such as generating factor returns are dominated by one firm (e.g., Blackrock), and distribution to clients are dominated by one firm (e.g., Amazon)?
 - Effects on economies-of-scale could go either way
- As another trend, will only the largest advisors manage (almost) all passive products?
 - E.g., giant asset managers can sell indexed products at a loss, as long as they serve as a “loss-leader” for more expensive active products
 - Could serve to increase E-O-S