Lecture 7: Money Management Industry

In this lecture, we will discuss

- differences between active and passive management
- index funds and ETFs
- measures of fund activity
- smart beta
- socially responsible investing
- the future of the money management industry

Active vs. Passive Management

- Well known fact: Active money managers as a whole (or on average) do not outperform the market.
- This is not surprising. Define "passive management" as holding the market, "active management" as holding something other than the market. Then active management as a whole cannot outperform passive.
- In fact, because active management incurs costs due to trading and information gathering, we can prove that *passive management as a whole always beats active management as a whole*, after costs.
  - Passive holds the market, by definition.
  - Passive holdings plus active holdings sum up to the market, so *active as a whole holds the market*!
  - Therefore, the aggregate active management return *before costs* is the same as the market return.
  - Therefore, the aggregate active management return *after costs* is less than the market return (and less than the passive management return).

  We just proved that the average active investor must underperform the average passive investor, after costs!

"Most investors would be better off in an index fund." Peter Lynch, Fidelity Magellan's superstar active manager, Barron's, April 2, 1990.

- The above argument is known as the "arithmetic of active management" (Sharpe, 1991)
  - But the argument is oversimplified
- **Caveat:** We defined active managers broadly as those not holding the market. That includes not only active fund managers but also my grandma.
  - In fact, professional active managers as a whole can outperform at the expense of individual investors, investors with nonprofit motives, and index funds.
- What is necessary for some managers to add value?
  - Since the average investor holds the market, good traders can outperform the market only if there are some bad traders who underperform the market.
  - For there to be winners, there must be losers.
- Are there any losers?
  - Yes. Mostly individual investors, day traders, etc.
  - Recall that individuals underperform institutions
  - Some people are simply confused

"In every market, there is a fool. If you don't know who the fool is, he is probably you." Warren Buffett

- **Example of confused investors:** Rashes (2001)

Company name	Ticker
Tele-Communications Inc.	TCOMA
Transcontinental Realty Investors	TCI

  - On October 13, 1993, news came out of a potential merger between Bell Atlantic Corporation and **T**ele-**C**ommunications **I**nc.
  - Unsophisticated investors incorrectly bought shares in Transcontinental Realty Investors (TCI), a small and thinly-traded real estate stock
  - The price of TCI stock rose from $15.50 to $17.875 in minutes
  - 56 trades in TCI stock, representing 55,000 shares, occurred before the NYSE halted trading in the stock at 10.27 a.m. (The day before, total trading volume in TCI was 100 shares.)
  - Trading later resumed and the stock ended at $15.25

- **Example:** October 4, 2013: Tweeter vs Twitter
  - TWTRQ vs. TWTR...

- We can also "prove" the existence of some "losers" (traders with no superior information) simply by observing that there is trading in financial markets

No-Trade Theorem

- If people trade *only* if they have better information, and if everybody is rational, there will be no trade.
- Everybody thinks the other person has better information. Adverse selection. You refuse to trade with anyone who wants to trade with you.

  "I don't want to belong to any club that will accept me as a member."
  Groucho Marx

- Since we do observe trading in reality, it must be that either some people are irrational, or some people are trading without having private information, e.g.
  - They sell because they need money to buy a car
  - They buy to invest money they just inherited
  - They trade for tax reasons
  - They think they have private information but don't
  - They are your typical day trader
- These are the losers we are looking for!

- Since there are (and always will be) losers in the market, some skilled money managers can add value

Grossman-Stiglitz Paradox

- If markets are perfectly efficient, if all information is reflected in stock prices, then there is no point in trying to gather information to beat the market.
- But if no one gathers information, then the market cannot possibly reflect any information!

  $\Rightarrow$ Such an informationally efficient market can't exist unless information is free

  – This paradox is due to Grossman and Stiglitz (1981)
- How do we resolve the paradox?

  – It is costly to gather information. Investors will do so only if the benefits outweighs the costs.

  – In equilibrium, it pays to gather information up to the point where costs = benefits.

  – Markets are only partially, not perfectly, efficient. You can beat the market, as long as your cost of gathering information is less than other people's.

- Conclusion: Active management under its broad definition destroys value, on average. Nonetheless, individual active managers can make money. As long as there are some losers out there, you can be a winner.

Size of the Active Management Industry

- The active management industry has underperformed passive benchmarks, yet it remains large; why?
- Popular to blame it on ignorance or marketing
- Pastor and Stambaugh (2012) propose a rational story, based on decreasing returns to scale
- Any fund manager's ability to find mispricing declines as the industry's size increases, due to competition
  - α becomes more elusive as more money chases it
- Industry's alpha, α_t, depends on industry's size:

$$\alpha_t = a - b(S/W)_t \quad , \qquad b > 0$$

  where S is the industry's size and W is total wealth
  - It's very likely that $a > 0$; why?
- Poor performance $\Rightarrow$ Investors infer $\alpha_t < 0 \;\Rightarrow$ They pull money out of active funds $\Rightarrow$ S/W shrinks
  - But not as much as it would under constant returns to scale ($b = 0$) because investors know that when they pull money out, α_t will improve
- Applying their model to observed active mutual fund returns, PS can rationalize the current industry size

Passive Management

- Return from investing in a fund consists of

  Expected passive return
  + Return from active trading
  − Trading costs
  − Management fees

- Compared to active managers, passive managers have small if any return from active trading, low trading costs, and low management fees
- Typical approach: Tracking an index (e.g. S&P 500)
  - You can buy the whole index, or just a subset
  - If buying a subset, use *stratified sampling*
- **Tracking error** of fund P relative to benchmark B:

$$TE_P = \text{Std}(R_P - R_B)$$

  - *Tracking difference*: $R_P - R_B$
- Main sources of tracking error:
  - Error due to not holding the whole index
  - Transaction costs when reinvesting dividends
  - Transaction costs when adjusting to changes in the composition of the index

- Objectives of passive management:
  Minimize both tracking error and transaction costs
  - Need to find the optimal tradeoff between the two

- **Index reconstitution** creates costs for index funds
  - Largest for popular indexes: S&P 500, Russell 2000
  - Index provider announces changes in index composition in advance, to give funds time to prepare
    * "In two weeks, stock A will replace stock B"
    * What happens to the prices of stocks A and B?
  - How do you trade if you want zero tracking error?
  - How do you trade if you want to make money?

    $\Rightarrow$ Dilemma for index funds: When do I trade?
    * Tradeoff: Tracking error vs. transaction costs
  - How to minimize the reconstitution costs?
    * Track less popular indexes
    * Improve index methodology

- Index funds have been growing fast
  - The first equity index portfolio was created in June 1971 by Wells Fargo Investment Advisors to track the NYSE Composite Index
  - The first equity index mutual fund was created in 1976 by **Vanguard** to track the S&P 500 index

"Sooner than I dared expect, my explicit prayer has been answered. There is coming to market, I see from a crisp new prospectus, something called the First Index Investment Trust."
Paul Samuelson, Newsweek, August 1976, commenting on Vanguard's index fund

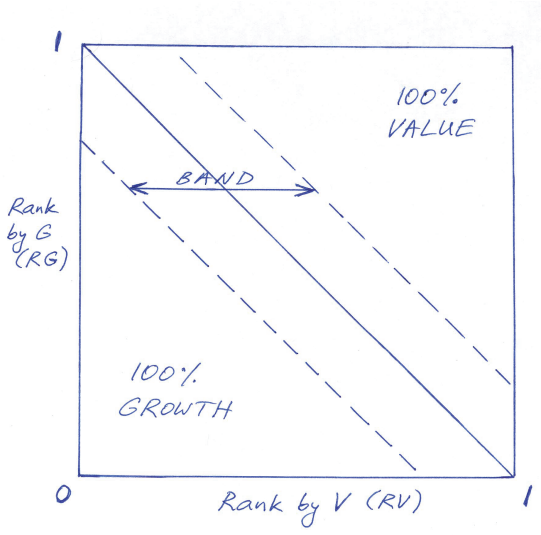
- Vanguard is the passive management industry leader
  - Founded on September 24, 1974 by John Bogle
  - Has grown spectacularly over time
  - Main objectives: Minimize costs while providing high-quality service
  - Management company owned by the shareholders of the funds it serves

- Index choice is becoming increasingly important
  - Indexes have different license fees, methodologies

- Case study:
  "S&P Indices and the Indexing Business in 2012"

CRSP Indexes

- Developed here at Chicago Booth
  - Center for Research in Security Prices (CRSP) is one of the research centers at Booth
- Originally 26 domestic investable indexes
  - Total market, size and value dimensions, sectors
- Some properties:
  - Different treatment of size, value, growth
  - Efficient migration of securities
    - Patient migration; partial weighting



- In 2012–2013, Vanguard moved 16 funds from MSCI indexes to CRSP, 6 from MSCI to FTSE
  - In 2015, CRSP Indexes were tracked by $650bn, including the largest mutual fund in the world

Measuring Fund Activity

- How can we measure the degree of a fund's activity?
- Simplest measure: **R-squared** from the regression

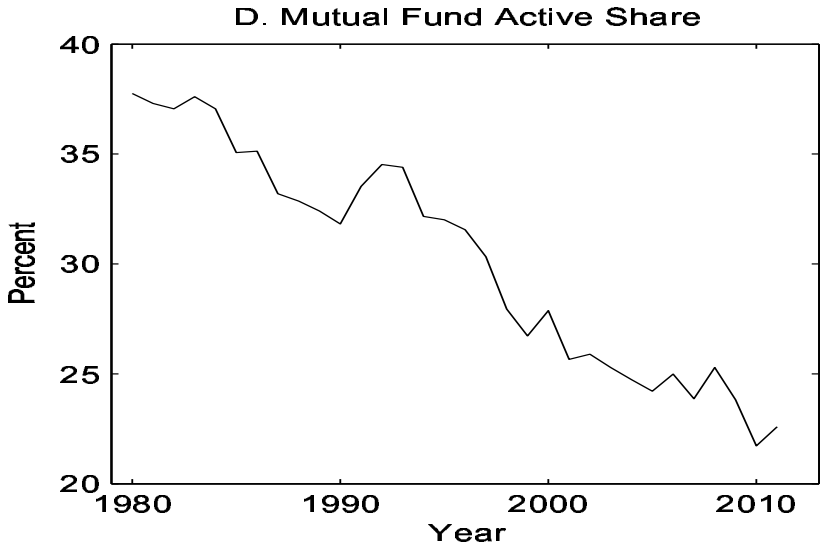
$$R_{P,t} = \alpha + \beta R_{B,t} + \epsilon_t \ ,$$

  where P is the fund portfolio and B is the benchmark
  - Funds with higher R^2's are less active
  - Index funds have $R^2 \approx 1$
- Another measure: **Active share**

$$AS = \frac{1}{2} \sum_{i=1}^{N} |w_{P,i} - w_{B,i}| \ ,$$

  where $w_{P,i}$ is the weight of portfolio P in stock i and $w_{B,i}$ is the benchmark weight in stock i
  - Funds with higher AS are more active
  - Index funds have $AS \approx 0$
  - Developed by Cremers and Petajisto (2009)

- Active funds have become less active over time
  - Beware of "**closet indexing**"
  - Some funds masquerade as active but they more or less just track an index
  - How can you tell a closet indexer?

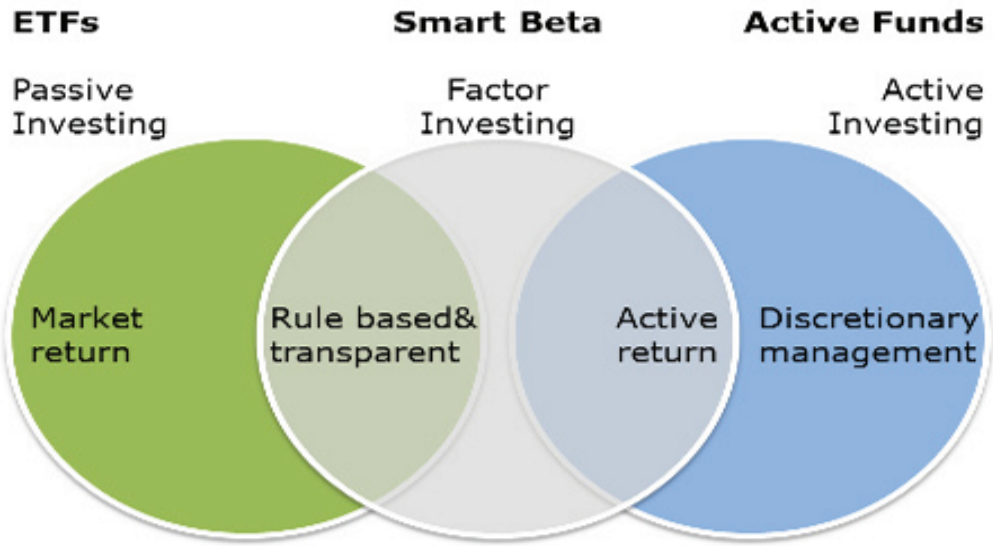


(Stambaugh, Journal of Finance, 2014)

- Do active funds perform better?
  - Cross section
    - Funds with lower R^2 perform better (Amihud and Goyenko, 2013)
    - Funds with higher AS perform better (Cremers and Petajisto, 2009)
      - But this result does not seem robust (AQR)
      - Cremers and Pareek (2016) find that only high-AS funds that trade patiently outperform
  - Time series
    - Pastor, Stambaugh, and Taylor (2017) find that funds perform better when they trade more
      - Higher-than-usual turnover this year predicts higher-than-usual performance next year

"Smart beta"

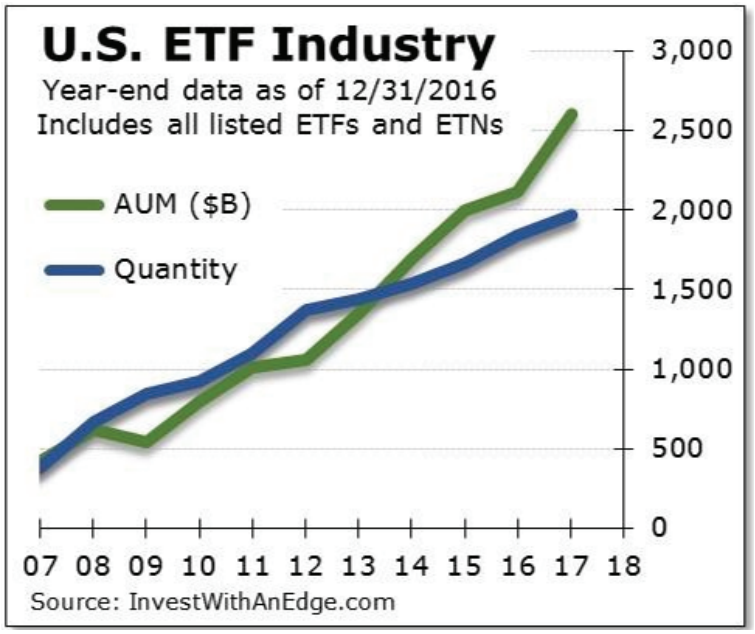
- Low-cost way of doing very basic active management



- Tracking an index that is not cap-weighted
  - Weighting by sales, dividends, book value, etc... anything but market capitalization
  - Idea: Underweight overpriced stocks
- Clever but misleading label; there is nothing "dumb" about tracking a cap-weighted index!
- Essentially a standard beta with a value tilt
  - How expensive is it to replicate?
- Rebalancing costs?
- Recent growth in popularity

Exchange-Traded Funds (ETFs)

- In January 1993, AMEX began trading Standard & Poor's Depositary Receipts, or "SPDRs", or "spiders"



- ETFs account for most of the growth of the passive management industry since 2000
- $2.61 trillion in 1,729 U.S. ETFs (January 2017; ici.org)
  - Domestic equity ETFs: 785 ($1.63 trillion)
  - International equity ETFs: 631 ($535 billion)
  - Bond ETFs: 287 ($443 billion)
- ETFs have become the most actively traded securities

- Physical vs synthetic ETFs
  - Physical: Hold underlying securities (standard)
  - Synthetic: Counterparty delivers index return
- **Physical** ETFs are essentially index funds that trade on stock exchanges like stocks
  - Most are shares in a trust holding a basket of stocks
  - Examples: SPY (S&P 500), QQQQ (Nasdaq 100), DIA (Dow Jones), IWM (Russell 2000), VTI (CRSP), EFA (MSCI EAFE), TIP (TIPS), GLD (gold)
- **Synthetic** ETFs do not own the underlying assets
  - Negotiate a swap with a bank, which promises to deliver index return
  - Some counterparty risk; pay attention to collateral
  - Need more transparency
- What makes ETFs different from passive index funds?
  - Trading during the day vs. at day-end
  - Commissions
  - Availability for shorting
  - Tax efficiency (dealing with capital gains)
  - Dividend reinvestment
- Features of both open-end and closed-end funds

- ETF shares can be created or redeemed by large traders
  - These broker-dealers, or 'authorized participants', effectively act as market makers, trading both in the open market and with the ETF provider
  - Exploit arbitrage opportunities when the ETF price gets out of line with the underlying index
- Thanks to this feature, ETF shares tend to closely track the performance of the underlying index
  - If a discrepancy emerges, large traders can exploit it by creating or redeeming shares in the trust and trading the underlying individual stocks
  - This arbitrage does not work well for illiquid assets such as corporate bonds (Pan and Zeng, 2017)
  - ETFs are essentially closed-end funds, except for their creation/redemption feature
- Closed-end fund shares tend to deviate more from the value of the underlying basket than ETFs do
  - They tend to trade at a discount relative to their net asset values
  - No creation/redemption arbitrage mechanism
- Petajisto (2017) reports inefficiencies in ETF pricing
  - Larger mispricing for ETFs holding international and illiquid securities

- Recent developments in ETFs
  - Tracking new targets: commodities, hedge funds, convertible bonds, volatility, etc.
  - **Leveraged ETFs** (betas of 2 or even 3)
    - Pitfalls?
    - Explore leveraged ETFs in Assignment 7!
  - Short ETFs (betas of -1, -2, or even -3)
  - Active ETFs
    - Tracking an active manager's return
    - Disclosure complications
  - Fundamental-weighted ETFs ("smart beta")

- Exchange-traded notes (ETNs)
  - Debt instruments
  - Issuer promises to pay index return minus fees
  - Tracking risk vs. credit risk

- Ben-David, Franzoni, and Moussavi (2014) argue that ETFs increase the volatility of stocks in their baskets

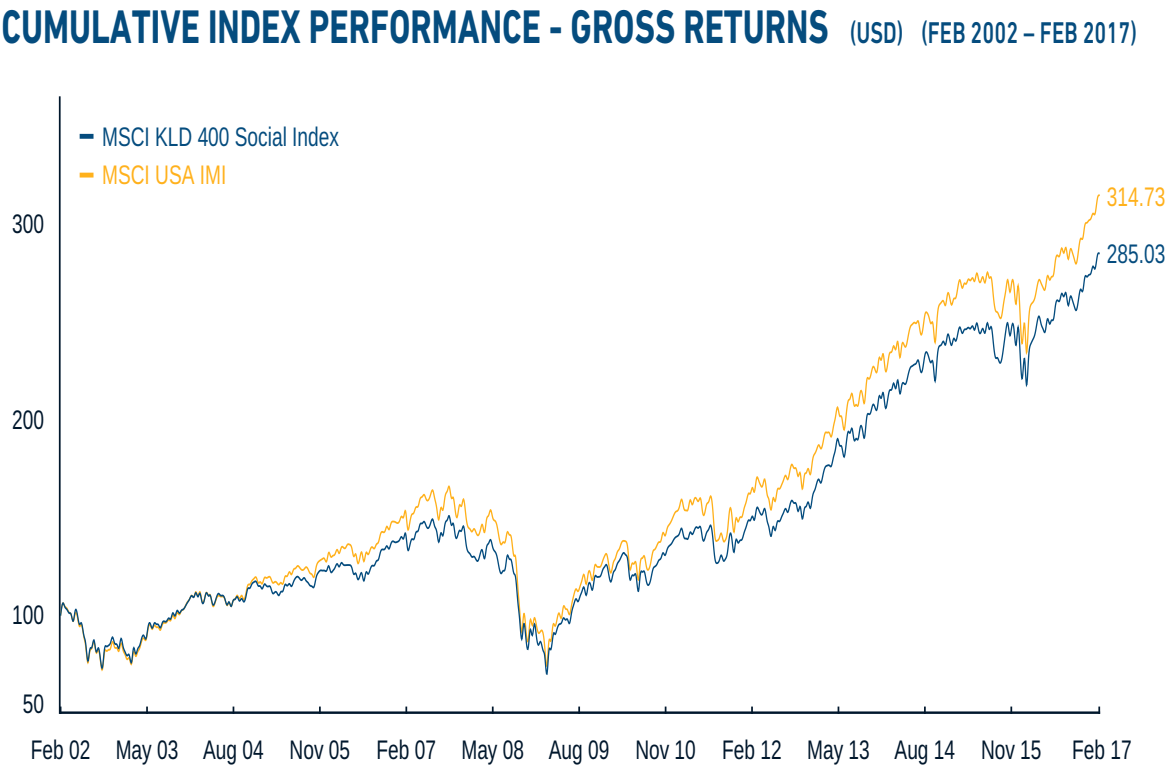
Socially Responsible Investing (SRI)

- SRI considers objectives beyond just financial return

- Examples of non-financial objectives: **ESG**
  - Environment
  - Social justice
  - Corporate governance
- SRI encourages corporate practices that have *positive externalities* for society as a whole
- Increasingly popular

- Preferences, and thus also strategies, differ across clients
- One approach in public equity: Shareholder advocacy
  - Seeks to change corporate behavior by pushing through resolutions at stockholder meetings
- Inclusive versus exclusive SRI
  - **Exclusive**: Screen out investments deemed to have negative externalities
    - E.g., alcohol, tobacco, weapons, gambling, etc.
  - **Inclusive**: Impact investing
    - Invest in projects with positive social impact
    - Example: Green investing
- **Costs of SRI**
  - Optimal risk-return tradeoff
    - Constrained investment allocations are inferior to unconstrained ones in financial terms
    - Geczy, Stambaugh, and Levin (2005) find non-trivial certainty equivalent losses associated with SRI restrictions
  - Average return
    - If investors are reluctant to hold non-SRI stocks, such stocks should offer higher average returns
    - Do they?

- Hong and Kacperczyk (2009) analyze "sin" stocks: Public firms producing alcohol, tobacco, and gaming
  - Find that sin stocks are less held by norm-constrained institutions such as pension funds
  - Find that sin stocks have had higher average returns by 2.5-3.5% per year
- **Example:** MSCI KLD 400 Social Index



- So there are both costs and benefits
- Investor must derive enough utility from the non-financial benefits to offset the costs

Future of the Money Management Industry

- Money management industry should be providing
  1. Low-cost diversification
  2. Exposure to clearly defined asset classes
  3. Outperformance due to superior investment ability
- The industry is not performing at its optimum
  - Some passive managers, like Vanguard, are doing well on (1) and (2)
- Perhaps the money management industry, and the mutual fund business in particular, is like a small country town, pre-Walmart. Vanguard = Walmart.
- The industry may shrink. Too many stock pickers. Also too many passive funds tracking the same index.
- Fees should go down. Why pay for closet indexing?
- Some opportunities going forward:
  - Creating new markets and new securities
  - Finding new informational advantages
  - Discovering new quantitative strategies