ECON 233 Finance 1- Week 9

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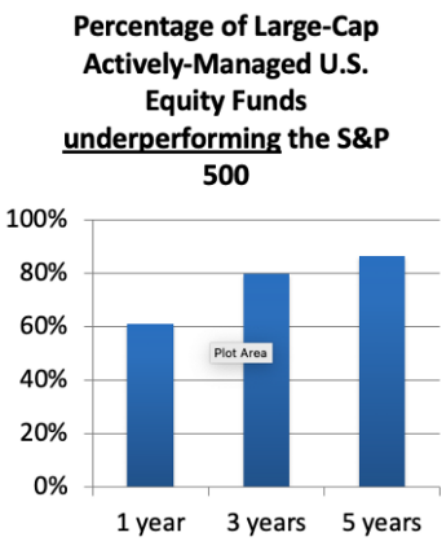
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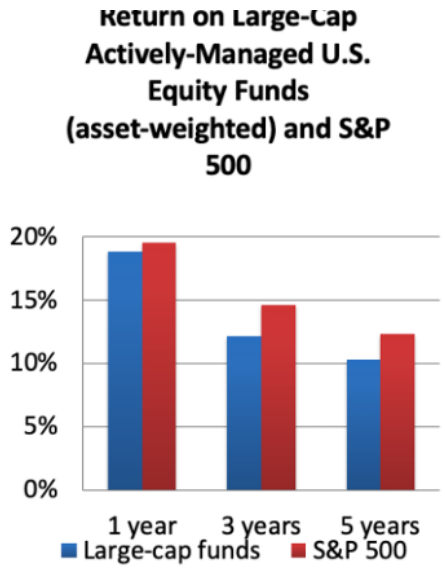
25 November 2025

Why does market efficiency matter?

- Market efficiency matters because it tells us whether prices reflect all available information.
  - How quickly new information is reflected in prices.
  - No aribitrage opportunities available.
- It tells us if there is any additional value to be added by taking the help of active fund managers.
  - Active fund managers, under perfectly efficient markets have no special information that would allow them to exploit arbitrage opportunities.
  - No need to pay high fees for something that gives you the same result as the SP500.

What does this mean?





- Over the years, it gets harder and harder to beat the SP500. It is extremely difficult to consistently keep outperforming the market
- Over time, actively managed fund returns diverge (negatively) more and more compared to the SP500. These are very smart finance bros in a sector with very high competition.
- SP500 is a very difficult benchmark to beat.

Is the US stock market truly efficient?

- In the previous slide you saw that large cap managed funds do progressively worse at beating the market consistently indicating no systemativ arbitrage opportunities.
- Public news shocks are absorbed almost instantaneously. Data releases, policy announcements, mergers and acquisitions etc.
- But, bubbles still form, market corrections still happen, over and underreactions, delayed reactions, small firms, high book value firms.
- Warren Buffet, Jim Simons etc. have consistently been able to reap extraordinary returns on top of the market.
- Many instances of insider trading shows there are people with access to priviledged information. - NP stock tracker etc.
- What do you think about the market right now?

Why do research if markets are semi-strong efficient?

- **Semi Strong Efficiency** - All publicly available information is reflected in prices.
- This means no arbitrage opportunity from analyzing public information. - But if everyone stopped research then information will no be incorporated into prices and market will stop being efficient.
- Acquiring information and incorporating it accurately is costly. Small investors cannot do it. Institutional investors can but bear cost of information acquisition.
- Their cost adjusted returns are small. Many analysts, managers etc. do their own research seeking small edges and collective exploitation of marginal "extra" info corrects mispricing.

How to save for retirement

- If markets are efficient, do invest in low fee ETFs. SP500. High fee actively managed funds historically do not out-perform SP500. Over the years the volume of funds poured into passively managed funds has increased rapidly.
- It can be shown that active managers also effectively hold the market portfolio. Show math
- If active investors as a group hold the market portfolio they will earn the market return even if markets are inefficient - additionally pay higher fees.
- Take advantage of tax havens and free employer matching schemes - Roth IRA, 401K etc.

What is the difference between a ROTH IRA, a traditional IRA and a 401(k)?

- Roth IRA (individual retirement account)
  - Contributions not tax deductible
  - Earnings on account not taxed when withdrawn
- Traditional IRA
  - Contributions are tax deductible
  - Earnings tax deferred until withdrawn
- Defined contribution plans (e.g., 401k plans)
  - Like traditional IRA
  - Employee and employer contribute set amounts
  - Retirement benefit depends on investment performance
- Defined benefit plans
  - Employer promises to pay defined benefit to employees
  - Employer bears risk

Tax Benefits

- Notation
  - ΔM: additional pre-tax income
  - $t_{m,w}$: marginal tax rate in working years
  - $t_{m,r}$: marginal tax rate in retirement
  - t_{cd}: tax rate on capital gains and dividends
- Traditional IRA or 401(k)
  - $FV = \Delta M\ (1+r)^N\ (1-t_{m,r})$
- Roth IRA
  - $FV = \Delta M\ (1-t_{m,w})\ (1+r)^N$
- Brokerage account with stocks (100% turnover)
  - $FV = \Delta M\ (1-t_{m,w})\ (1+ r(1-t_{cd}))^N$
- Brokerage account with bonds
  - $FV = \Delta M\ (1-t_{m,w})\ (1+ r(1-t_{m,w}))^N$

Dollar Cost Averaging

- Very simple principle. Set aside $100 to be invested each period.
- Invest the same amount in each period into an index fund (say)
- Fixed investment amount- when price is high you buy fewer shares. WHen price is low, you buy more shares. So you buy higher quantity when things are cheap and low quantity when it is expensive.
- Smooths volatility over time- hedge against volatile times.

Month	Price per Share	Amount	Shares Bought
Jan	$10	$100	10 shares
Feb	$5	$100	20 shares
Mar	$20	$100	5 shares

Total invested: $300

Total shares: 35

Average cost per share = $300 / 35 = $8.57, even though prices ranged from $5–$20.