Case Study Proposal
Betterment

What Is It

Betterment is a so-called robo-advisor for the retail market. Like all financial advisors for individuals, Betterment manages their investment portfolios, which, in Betterment's case, consist entirely of exchange traded (mutual) funds or ETF's. Betterment and other robo-advisors differ from traditional financial advisors, first, in the way the customer interacts with them, and, second, in the way the portfolios are constructed.

The first interaction with the customer illustrates these differences. Where a traditional advisor would conduct a personal interview to determine the customer's risk tolerance, the robo-advisor presents the customer with a series of questions on their website. The robo-advisor's software would then quantify that risk tolerance and use it to compute an optimal portfolio, constrained by the quantified risk tolerance.

Most traditional advisors, especially advisors working with individuals, do not quantify their customers' risk tolerance. This prevents them from constructing portfolios using the theories of quantitative finance, most notably the Black-Litterman model. However, Betterment does. Betterment also uses sophisticated techniques to minimize the taxes due from the income on the portfolio.

Notes:

1. Implicit in the assumptions underlying the Black-Litterman model is the so-called random walk hypothesis, *i.e* that it is impossible to consistently "beat the market". However, the random walk hypothesis does not rule out the possibility of maximizing return with a given level of risk.
2. Other quantitative portfolio selection strategies – the ones employed by some hedge funds – *do* try to beat the market by a variety of means. That's not what Betterment is about.

Why This Matters

Global asset management is a *huge* business. Literally trillions of dollars are under management, generating over a hundred billion dollars in revenue for the managers. Most of this money is managed by traditional means, but interest in quantitative strategies is growing. One reason is that about 60% of traditional managers don't do as well as the major unmanaged indexes, such as the Dow Jones Industrial Average or the S&P 500. And the average individual investor does even worse.

Robo-advisors should have the wind at their backs for a few additional reasons:

- Demographics:
    - Large numbers of baby boomers are now reaching or have recently reached retirement age, so many have investable assets.

    - Many baby boomers' parents having lived into their 80's have recently or will soon die and leave their children money, which must then be invested.
- Younger investors are comfortable with technology and, in particular, the internet.
- Robo-advisors are typically *much* cheaper than traditional advisors, whose fees significantly degrade customers' net investment returns.

Why This May Be Interesting:

- Large amounts of money catch almost everybody's attention!
- The issues that any asset manager must consider – customers' risk tolerance and risk/return tradeoffs, long term vs short term investing, asset allocation, taxes, etc. – are fundamental to finance.
- The ideas behind the Black-Litterman model used by many robo-advisors' portfolio constructions are ideas that are important in quantitative finance
- ETF's, the assets from which Betterment constructs portfolios, are an important piece of the financial landscape.
- One might actually want to use a robo-advisor like Betterment.
- While there seems to be a shake-out among the start-up robo-advisors, it's because the larger financial institutions, such as Schwab and Vanguard, are creating their own offerings. Thus, there is overall growth in that industry.

Things to Keep in Mind for a Case Study:

- A presentation of the information in the "Why This Matters" section above
- A sample session in which a new customer enters information to determine their risk tolerance, leading to a discussion of the issues of risk/return tradeoffs, long term vs short term investing, asset allocation, taxes, etc.
- Explanation of what ETF's are and why they are useful to Betterment (and the individual investor in general)
- A primer on some or all of the ideas underlying the Black-Litterman Model, most notably
    - The undesirable effects of volatility
    - Diversification as a means of mitigating volatility
    - The correlation between price movements of various assets, if only because all assets are subject to the vicissitudes of the overall economy
    - the efficient market hypothesis

Resources:

- https://en.wikipedia.org/wiki/Random_walk_hypothesis (Wikipedia page about the random walk hypothesis)
- https://www.investopedia.com/terms/b/black-litterman_model.asp (Investopedia page about the Black-Litterman model, provided because the Wikipedia page is not very well written.)

- https://en.wikipedia.org/wiki/Robo-advisor (Wikipedia page about robo-advisors)
- https://knowledge.wharton.upenn.edu/article/fintech/ (Report from the Wharton School of Business at the University of Pennsylvania. The bottom of the article reports research to the effect that robo- advisors really do help investors boost returns.)
- https://en.wikipedia.org/wiki/Betterment_(company) (Wikipedia page for Betterment)
- https://www.betterment.com/ (Betterment website)