Disclaimer: These are notes of Tom Denkenwolf's opinions. Those opinions are his own, not his firm's, and are subject to change as data changes. This is not financial advice. Also, mistakes in the notes are likely. The notetaker apologizes :)

EA Investing Course Notes

Taught by Tom Denkenwolf, October-December 2022

Week 1: Investment Basics plus Patient Philanthropy

Passcode: bKs%pm%8

In this week of the program, you will meet your cohort, review the basics of investing, and discuss the case for patient philanthropy. Patient philanthropy is the view that one might be able to do more good by investing today and giving away at a much later time, versus just giving today.

Curriculum

Core materials

- https://www.investopedia.com/terms/a/assetclasses.asp - Article about asset classes. (Read time ~5 minutes)
- https://www.investopedia.com/terms/e/efficientfrontier.asp - Article about the efficient frontier. (Read time ~8 minutes)
- https://80000hours.org/podcast/episodes/phil-trammell-patient-philanthropy/ - Phil Trammell Patient Philanthropy interview on 80K podcast. (If you don't have 2.5 hours to listen to the episode, you can read the introduction and highlights in about 10 minutes.)

Real return is what matters: it's approx. the "nominal return" minus the inflation rate.

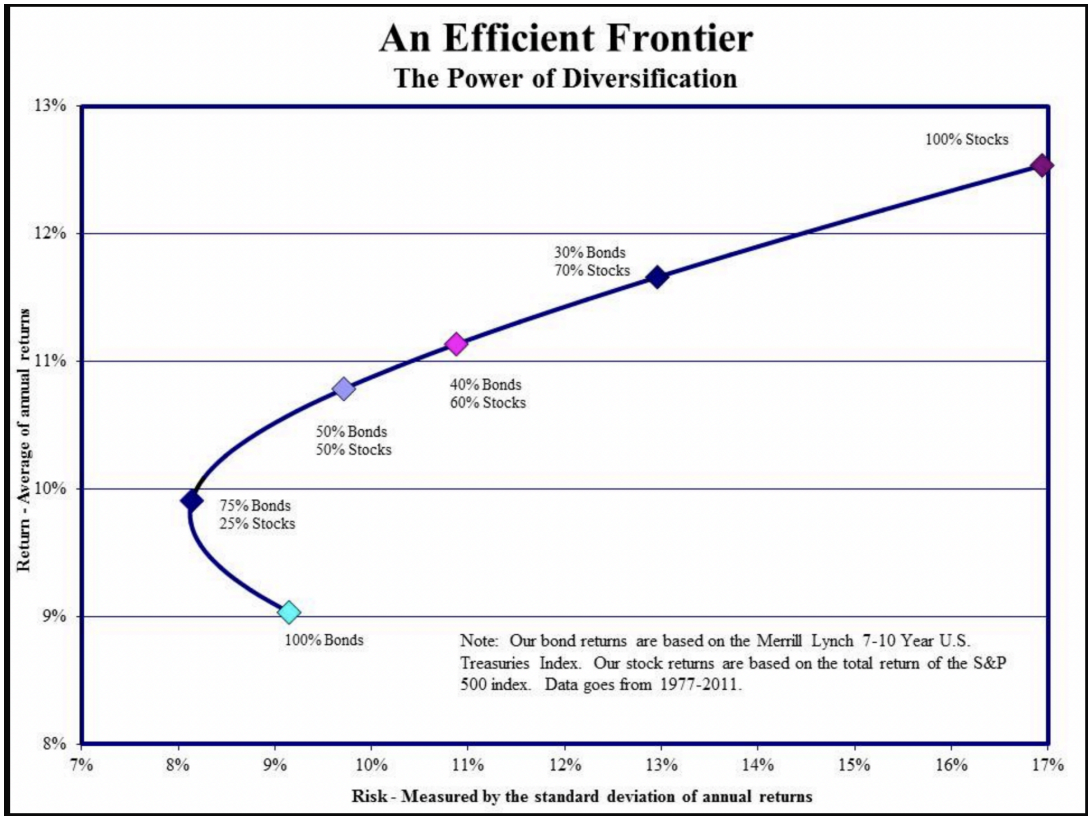
Asset classes

- Cash & cash-equivalents
    - e.g. very short-term bonds, like 3 month
    - low risk, low return
- Bonds
    - about 2% real return

- Real estate
    - Diverse; owning a home is ~1-2% real return; business real estate could be closer to stock returns
- Gold
    - ~3.5% real return
    - Gold standard: 1-to-1 exchange rate between paper money and gold
        - We ended this at the end of WW2 – global economies came together, started IMF, pegged the world to US dollar (35 USD = 1 ounce of gold)
            - Did this for ~25 years, then in 1971, Nixon took us off the gold standard; gold can free float now, not tied to money
            - We've been printing about 7% more USD each year; gold has also (not coincidentally!) grown about 7% per year in nominal value
- Stock
    - Owning a share of a business
    - 98% or 99% of richest people invest here
    - 6-7% real return
    - Sub asset class: stock factors
        - Use a repeatable simple algorithm for selecting stocks
        - Value and momentum investing
            - Have added 3-4% return *above* normal stock return in the past; maybe will be about 2% above in the future
            - Momentum is really great for long time horizons. If you're investing for 10+ years, you should be almost 100% into value (60%) and momentum (40%) factors
- Other possible ones: currencies, commodities, futures, art, collectibles, crypto (these do not have cash flow, nor do they pay dividends, so the rate of return is likely to be about 0%, but art, collectibles, and crypto have done much better than 0% so they might continue to do well)

The efficient frontier

- The theoretical optimal (highest return) combination of all asset classes, for a given risk level



- Note that 100% bonds is higher risk and lower return than adding in a bit of stocks.
    - In general, mixing asset classes will be better than any single one
- Crypto would be more risky and more return-y than the max on the above graph (backwards-looking). Forwards-looking, it's unclear.

Patient Philanthropy

- Idea that we can do more by investing now and giving later, than giving now
- If a health initiative today can increase a person's income by 20%, that's great and sounds better than the 7% stock return, but that 20% would need to keep compounding enough to keep up with the *annual* 7% returns (which is unlikely because after the above average "catch up" growth in the third world, the growth rate regresses toward the general economic growth rate (G) which has historically been less than the rate of return of investment (R). The theory is that R should remain greater than G due to impatience. But if all investments come to be owned by the patient, R might decay to G. If this occurs in the future, it might be that now is a fleeting opportunity to earn a rate of return above G. I (Tom) have not researched these arguments about G and R: I am just repeating what I heard in the Phil Trammel 80K interview.)

Week 2: Momentum Factor

Passcode: fekCkC5$

In this week of the program, we will thoroughly analyze one of the two most robust investment factors - momentum. This factor has been shown to produce excess returns across multiple asset classes and in nearly every market studied. Compared to other popular factors, it has historically produced the highest excess return. Do you think it will continue to yield excess returns into the future? Would you use this factor when investing your patient philanthropy assets?

Core Materials

- **https://www.aqr.com/Insights/Research/Journal-Article/Fact-Fiction-and-Momentum-Investing Click on this link and then click on the Download box just under The Journal of Portfolio Management to download a PDF of this article. The article is 14 pages long, but its detailed analysis of momentum is essential reading for hardcore adherents to the efficient market hypothesis.**
- **https://alphaarchitect.com/2015/11/how-portfolio-construction-affects-momentum-funds/ This short article specifically looks at how stronger selection of the momentum factor produces significantly higher returns.**

Efficient Market Hypothesis: stock market is full of people adjusting their value of companies, and the crowdsourcing of wisdom of *so many* people is super smart – that makes the market so efficient that nobody can beat the market

- Nobel prize work! But contradicting work got a Nobel Prize that year too!
- There's enough evidence to discount the strong version of this, e.g. Warren Buffet beating the market for 50 years would be suuuuper improbable under the hypothesis
- Weak version: can admit that some people have won due to skill, but as a normal human, there are low odds to be one of those people

Time-weighted vs. investor- or dollar-weighted rate of return

- time-weighted: measure how well the investment did regardless of whether the investor took out/put in money
- Investor-weighted: counts performance of *more* dollars as more important
    - If an investment is doing great, then investors typically flood in… just in time to get the crash. This is why investor-weighted return is typically lower than time-weighted.
    - Difference between the two gets bigger as the funds get riskier

Mentality notes

- No factor can work *every* year. Thus the need to be patient.
- Really need to be "invested" (haha) in the factor you plan to use, so you don't get caught up in the highs and lows. Worst thing you could do is see the crash and sell.
- Algorithms vs. individual managers: the latter is less reliable; could go into mental decline; can study algorithms more easily

Momentum factor: Sort stocks by their rate of return in last 12 months, but ignoring most recent month. Many strategies look at the top third of those.

- Called UMD - up minus down
- Factors used to be called anomalies (didn't follow theory)
    - One anomaly was the size factor: portfolio with smallest 10% of companies did way better than largest 10%
- Academics like to look at symmetry of factor. Humans just want a method to buy stocks that do well. Academics want to isolate the value of a factor, so will compose a factor that's 100% long the third of stocks that exhibit the good factor and 100% short the stocks that have the bad factor. That nets out the effect of the stock market.
- One paper looked at momentum factor from 1927-2013: ~8% return
    - 1963-2013: ~8%
    - 1991-2013: 6.3%
        - In 1991 the first paper sharing momentum factor was published; so then people knew about it! Probably caused the dip from ~8 to ~6%.
            - In general, people knowing about these factors is why we might predict a lower return in the future than in the past
    - Also compared momentum to other major factors like value and size.
        - Over one year rolling periods during 1927-2013:
            - Size factor was positive 58% of the time
            - Value 63%
            - Momentum 81%
        - Over five years:
            - Size factor 65%
            - Value 89%
            - Momentum 88%
        - Conclusion: size factor least robust; value was medium; momentum most robust
- Main reason for the "anomaly" of momentum investing: cognitive bias of underreacting to new data
    - Humans statistically underreact to new data (e.g. lack confidence in your business which is growing year over year), but we can also overreact…
        - But there's an asymmetry – we see loss as twice as bad as equivalent good. So when we see something go up, we underreact; if we see something going down, we overreact.
    - An algorithm can correct our behavioral bias!

Does momentum pass the three checks for a good factor?

1. Well-studied in the academic literature: passing statistical literature, withstanding critical analysis over many years ✔️
2. Works in the real world with real $. This is partially to be sure that the transaction costs of the factor possibly often changing your portfolio is worth it. ✔️

3. Passes the economic/behavioral test: do we know why it works, and expect it to continue to work? ✔️
    a. Momentum might not continue to work if bots take over *all* trading, but it should continue working if humans continue trading. We'll likely keep the cognitive bias of underreacting to data, maybe only getting slightly better at it.

Universality: does a factor work in the US, and Europe, and elsewhere? And does it work across asset classes?

- Momentum factor does, yes.

Value-weight Portfolios (1970-2016)

VW CAGRs									
		Number of Stocks Selected each month							
		50	100	150	200	250	300	500	Universe
Holding Period for each Stock	1	17.36%	15.85%	15.49%	14.01%	13.51%	12.95%	12.12%	10.27%
	2	16.35%	15.41%	15.05%	13.92%	13.28%	12.83%	12.12%	10.27%
	3	15.97%	14.68%	14.09%	13.35%	12.84%	12.53%	11.90%	10.27%
	4	15.25%	13.86%	13.58%	12.94%	12.61%	12.30%	11.78%	10.27%
	5	14.79%	13.53%	13.35%	12.71%	12.31%	12.15%	11.74%	10.27%
	6	14.15%	13.07%	13.01%	12.55%	12.20%	11.96%	11.61%	10.27%
	7	13.87%	12.86%	12.87%	12.41%	12.04%	11.81%	11.52%	10.27%
	8	13.47%	12.72%	12.70%	12.25%	11.89%	11.67%	11.43%	10.27%
	9	13.06%	12.37%	12.37%	11.97%	11.61%	11.45%	11.29%	10.27%
	10	12.57%	12.11%	12.06%	11.74%	11.42%	11.26%	11.17%	10.27%
	11	11.94%	11.73%	11.73%	11.42%	11.18%	11.05%	11.04%	10.27%
	12	11.42%	11.35%	11.39%	11.12%	10.89%	10.82%	10.89%	10.27%

Source: https://alphaarchitect.com/2015/11/how-portfolio-construction-affects-momentum-funds/

- Holding period of 1 (top row) means you do a rebalancing each month, selling the stocks that fell and buying the new top % of stocks
    - As you increase your hold period, it's more likely that an earlier well-performing stock will regress to mean → that's why it's good to rebalance
- Number of stocks out of 1000 (column)
- In the real world, transaction costs of the top left cell would be large (because of ask/bid spreads); and it'd be like 200-300% turnover per year, so investors wouldn't buy it. That means a product that does this for you isn't really available; you'd have to do it yourself…
    - The typical investment firms have ~300 stocks! Much more appealing to a broad risk-averse audience.
    - Small boutique investment firms like Alpha Architect do more volatile, fewer # of stock funds. (Alpha Architect specifically is super academic.)
        - Their returns will still not be as good as the chart, because they charge a fee, and there are transaction costs.

        - Charts lower on the page show just how volatile they can be. For example a 50-stock, 3M-hold momentum factor had a month return of -37% once!
- Note: the more you invest, the worse the transaction fees will be, so you'll wanna check on this once you get to billions of $s

Where can we find these momentum funds?

- https://etfdb.com/etfs/investment-style/high-momentum/ - can look at the fund's number of holdings as a quick check.
- Alpha architect is one of the only players doing a strong expression of momentum factor.
    - There are more strong value expression funds.
    - QMOM is the specific symbol for the very aggressive Alpha architect momentum fund.

Side note: the theoretical optimal is to be risk neutral over *any* period of time. So the typical advice of being more risk-averse when you're closer to retirement isn't actually the optimal, barring psychological effects.

Tom is 90% confident that a strong expression of momentum factor (top 50 stocks and refreshing every 3 months) will outperform the market average over the next 50 years.

Tom would put ~40% of his patient philanthropy portfolio into the momentum factor.

Week 3: Value Factor

Passcode: 1gT*Uj4D

In this week of the program, we will thoroughly analyze the second most robust investment factor - value. This factor has been shown to produce excess returns across multiple asset classes and in nearly every market studied. Compared to other popular factors, it has historically produced the second highest excess return. Do you think it will continue to yield excess returns into the future? Would you use this factor when investing your patient philanthropy assets?

Core materials

- Fact, Fiction, and Value Investing - AQR Capital Management This 17 page paper carefully walks through the realities and myths about value investing.
- https://alphaarchitect.com/2016/05/how-portfolio-construction-affects-value-funds/ This much shorter article explores how a stronger selection of the value factor produces higher returns.

- https://alphaarchitect.com/2021/05/value-and-momentum-investing-combine-or-separate/ This article shows that investing 50/50 in pure momentum/pure value outperforms a portfolio that selects stocks based on their combined momentum and value characteristics.

Other good articles:

- https://alphaarchitect.com/2021/04/how-portfolio-construction-impacts-the-reliability-of-outcomes/ This is a long, but excellent article that has a lot of interesting data about momentum and value returns based on the extremeness of the selection.
- https://alphaarchitect.com/2021/05/value-investing-still-beats-growth-investing-historically/ This article walks through additional evidence for value investing.

Premise: buy things that are cheap; on sale.

- You could try to identify companies that are undervalued, but that's pretty risky.
- You could also use a simple algorithm: value investing
    - Need a value metric. Looks at a company's price vs. its value.
        - Most common: PE ratio, price divided by earnings
            - Average is 16-17
            - EP ratio is "earnings yield," average 6.25% – close to longrun real return of stock market
            - A year ago, Tesla had a PE ratio of 250!!! Then it went down to 160. Now it's 72.
        - High PE ratio: maybe overvalued
        - Also PC, PS, PB, etc.
            - PB is price/book value. Average PB ratio is 1.6. An assessment of how much you'd pay for the company, compared to how much physical stuff the company owns.
                - Software companies typically have very high PB ratios since they have little concrete assets; mechanical engineering companies might have lower PB ratios
            - PB is the ratio historically used in academia

- Impatience premium: worth more to have $1 today than in a year

Why do higher risk things give higher returns?

- Explanation from the side of the business: if there's a great, consistent business, they find it easy to get money (people want to buy them), so they can do experimental things. On the other hand, for companies that do badly or we don't like, like oil or tobacco companies, they have to work hard to get money, so they can only do their highest return thing
    - Explains why 1985-2010 was great return years for tobacco

Why does value investing "work?" Two answers; both are true; one might explain some cases more than the other.

1. [efficient market hypothesis] If you buy a basket of undervalued companies, you're taking on the risk of those companies being duds/on their way out, so you should be compensated better for that risk
    a. Example: great depression
2. [behavioral] When a company has been doing badly for a few years, people typically want out–they'll sell for anything, making the PB ratio <1. If you buy it then, and it gets out of the rough patch (even to just be an ~average company with 1.6 PB ratio), you'll have profited well
    a. Like mean reversion
    b. Example: dot com bubble (there were PB ratios of 50!!)

If you rank the 500 S&P stocks by their PB ratio, the top third has ~8% returns, and the bottom third has 12% returns. Whole basket has ~10% (in the last 100 years).

How do both value and momentum factors work? They seem contradictory.

People can underreact to good data at the beginning ("nah, I'm skeptical that it's that good)", then suddenly overreact/pile onto the "hey did you see Gamestop?"

Shorting a stock: never advised. You can only gain ~your initial investment, but you can lose much more. If you're going to do it, do it with a *basket* of stocks, never an individual one. Also, only ever experiment with a small percent of your portfolio.

100 largest stocks in the US. 1970-2016:

VW CAGRs									
		Number of Stocks Selected each month							
		50	100	150	200	250	300	500	Universe
Holding Period for each Stock	1	15.70%	15.13%	15.34%	14.72%	14.20%	13.73%	12.44%	10.23%
	2	15.22%	14.96%	14.94%	14.40%	13.90%	13.49%	12.31%	10.23%
	3	15.06%	15.11%	14.79%	14.26%	13.66%	13.35%	12.29%	10.23%
	4	14.80%	14.98%	14.65%	14.13%	13.57%	13.31%	12.25%	10.23%
	5	14.63%	14.74%	14.39%	13.96%	13.45%	13.21%	12.18%	10.23%
	6	14.49%	14.46%	14.09%	13.73%	13.29%	13.09%	12.17%	10.23%
	7	14.33%	14.36%	13.85%	13.64%	13.23%	13.04%	12.17%	10.23%
	8	14.32%	14.26%	13.74%	13.60%	13.16%	13.00%	12.19%	10.23%
	9	14.36%	14.21%	13.72%	13.53%	13.12%	12.98%	12.19%	10.23%
	10	14.36%	14.15%	13.72%	13.52%	13.15%	13.01%	12.21%	10.23%
	11	14.43%	14.18%	13.73%	13.53%	13.18%	13.04%	12.24%	10.23%
	12	14.44%	14.24%	13.73%	13.54%	13.19%	13.06%	12.29%	10.23%

Source: https://alphaarchitect.com/2016/05/how-portfolio-construction-affects-value-funds/

- More extreme expression of the value factor → higher rate of return
- They're using the value metric "EBIT (Earnings before interest & taxes) / TEV"
- Top left cell: 50 stocks, rebalancing every month. Best returns, but the transaction costs would eat into those returns
- Worst monthly return and worst drawdown is worse.

- EW (equal weight) is essentially a dilute version of value investing, since it doesn't do the thing of putting more in the overvalued things.
- Market capitalization weighting is weighting higher-valued things more, lower-valued things less

- Higher/frequent turnover is much more helpful in momentum than value; therefore momentum is more likely to suffer from transaction fees

Should you try to blend value and momentum stocks?

- Hold some of each, but separately. Automatically rebalance between them.
- Ranking stocks for the best *combined* momentum plus value score, and choosing the top of those: does well (~12%), but not as well as a pure value & a pure momentum held separately (~15%).
    - You're basically diluting both factors.
- Source: https://alphaarchitect.com/2021/05/value-and-momentum-investing-combine-or-separate/

Historical data for momentum & value 1974-2021

- Momentum: 19.08%, Stdev 25%
- Value: 17.49%, Stdev 19%
- 50/50 split and rebalance: 18.92%, stdev 20% (benefit of anticorrelation)
- Note: started particularly low & ended particularly low, so don't fixate on particular returns
- Shows benefit of anticorrelation: if we had no rebalancing, always 50/50, the average of 19.08 and 17.49 is 18.285%
    - But from rebalancing, we got 18.92%, or 0.635% more! Yay anticorrelation & rebalancing
- Value is anticorrelated with momentum. When momentum has a great year, value is apt to have a bad year. Good to have both.
- 60% momentum, 40% value: 19.05% return, 20.84% stdev
    - Basically as good return as momentum, but much lower stdev, so more comfortable to hold
- 70% momentum, 30% value: 19.13%, 21.74% stdev
    - Beats both individual funds!

Tom thinks there's a 90% chance of value continuing to overperform. Lots of historical data, solid behavioral explanations, etc.

Historically, momentum has had a higher rate of return than value. What academics solve for is the highest sharp ratio, i.e. highest return per risk. 60% value and 40% momentum is the best sharp ratio, but not the highest return.

Shannon's demon: harvesting noise. If you have things randomly going up & down, and you systematically sell the high & buy the low, you can harvest the return.

QVAL is the ticker symbol for the strongest value expression. COWZ is also good.

Week 4: Risk/Return Optimization: Risk Reducing Factors

Passcode:?zf^FKg9

In this week of the program, we will explore several different asset classes, investment methodologies, sectors, factors, and how they can be combined to optimize expected return per risk. This fast paced session will cover stocks, bonds, real estate, gold, crypto, managed futures, style premia, commodities, counter cyclicals, non cyclicals (defensive), growth at a reasonable price (GARP), and quality. How much risk should you take in your personal investments? How much risk should you take in your patient philanthropy investments?

We'll talk today about some investments that have very good return *per risk,* but that aren't necessarily the highest return possible. This is stuff for personal stuff like buying a house, retirement, etc.

3 versions of risk management

1. Asset class diversification
    a. Cash - low risk, low return; bonds - slightly higher risk, slightly higher return; real estate (1-3% real return); gold (~3%); stocks (~6-7%); others: crypto, commodities, art/collectibles, futures
    b. Combining stocks & related estate: not that beneficial since they're highly correlated; not much risk mitigation
    c. 3 asset pairings are very non-correlated: long-term bonds have ~0 correlation to stocks; long-term bonds have ~0 correlation to gold; gold has ~0 correlation to stocks
        i. The variance of those 3 asset classes are very similar.
        ii. Risk parity: weight each of them so they contribute equal risk to the portfolio
            1. Higher stdev? Less weight in portfolio. Lower stdev? More weight.
        iii. Why aren't they correlated? Some economic situations in which they should be correlated; some where they should be anticorrelated
    d. Any individual asset class is not normally distributed in its outcomes – so just investing in one is riskier
    e. Would be great if we had *more* not-correlated asset classes
2. Investment styles

    a. Managed futures, basically the investment methodology of “trend”
        i. Similar to momentum. Trend selects things that are in an upward trend.
        ii. Short things in a down trend
        iii. The strategy has ~0 correlation to stocks, bonds, and gold
        iv. Can have high expense ratios
    b. Style premia
        i. long/short in stocks, in bonds, in value factor, and in momentum factor
    c. Quality minus junk
3. Other minor factors that can be added in (there are not totally non-correlated, but can decrease risk by adding diversity)
    a. Commodity stocks
        i. Commodities generally go up during inflation, whereas stocks usually go down, so this is good diversification / hedge against inflation
        ii. Commodity *futures* are likely to have slightly negative rate of returns
    b. Counter cyclical
        i. Some businesses do better during a recession – have some stock in that
        ii. No current fund for this; Tom is trying to make one. There aren’t that many counter cyclical businesses
    c. Non cyclical
        i. Businesses that aren't affected by recession
        ii. Healthcare, consumer staples, etc.
    d. GARP - growth at a reasonable price
        i. Quality, growing companies
        ii. Basically value within a basket of quality companies
        iii. Only ~20 years of data vs 100 for momentum/value
    e. Quality

- Stdev of your portfolio is a measure of how risky it feels.
- Sharpe ratio: return per risk
    - The best sharpe ratio would have very low risk
        - Could do this and “leverage up,” but it’s not practical
- Stocks of bigger companies are more likely to be properly prices - lots of analytics on wall street working on that
- Simplest algorithms ever: mean reversion (value), status quo (momentum)
- https://www.portfoliovisualizer.com/

Week 5: EA Analysis of Socially Responsible Investing

Passcode:w6jp=H4=

In this week of the program, we will analyze the six main types of socially responsible investing (SRI). In particular, we will use the 'importance, neglectedness, tractability' framework to estimate the value of each type of SRI. Which (if any) style (or styles) of SRI will you use for your investments?

Core Materials

- *https://sankalagroup.com/letters/Sankala%20Group%20Letter%20-%20A%20Brief%20History%20of%20Socially%20Responsible%20Investing%20-%20Q2%202019.pdf* This article provides the history and overview of the six main types of socially responsible investing.
- https://www.aqr.com/Insights/Perspectives/Virtue-is-its-Own-Reward-Or-One-Mans-Ceiling-is-Another-Mans-Floor This article details exactly how negative screening and ESG investing work to effect change.

SRI is surprisingly old - started in 1758 with the Quakers!

6 main types of SRI

1. Negative screening
    a. Simplest. Excludes some industries based on social/environmental criteria
    b. Don't hold tobacco, guns, etc.
    c. This increases the cost of capital for "bad" companies and decreases the cost of capital for "good" companies. Can also raise awareness socially of "bad" companies.
        i. This makes it a slightly better investment for people who *are* willing to invest
        ii. Also, it makes the bad companies have to focus on fewer, more profitable profits
            1. The larger the effect of this, the worse your returns are gonna be…
    d. E.g. Divestment movements
    e. Average fees are slightly higher and performance is slightly lower
    f. Vanguard FTSE Social Index
    g. Importance is high, tractability is low/moderate (and it's indirect), neglectedness is low/moderate
2. Environmental, Social, and Governance (ESG) screening
    a. Selects investments that score high
    b. Negativity doesn't sell – this is like a "positive" version of negative screening. Way more popular
    c. Same economic and societal theory of change as negative screening
    d. Also, like negative screening, **slightly higher expense ratio and slightly lower performance**

    e. By not excluding industries, ESG screening encourages all companies to try to improve on metrics they can control: reduce waste, increase efficiency, fair pay, worker benefits, gender equality, board diversity, etc.
        i. Sometimes tobacco companies and other “bad” funds can score pretty high on these metrics though
    f. Importance is high, tractability is low/moderate (and it’s indirect), neglectedness is very low
    g. The governance part of this can actually indicate slightly higher performance (companies that treat their employees well probably produce better work)
3. Shareholder advocacy
    a. Stakeholders attempt to positively influence corporate behavior
        i. Talk with management, file proposals, etc.
    b. If you do it personally, the time cost is huge and your effect is small. If done at a fund level, then **average management fees are slightly higher and performance is slightly lower**
    c. Parnassus core - largest example of this
        i. This fund in particular did better than S&P (but did worse than managed not-shareholder-advocacy fund)
    d. Does cause corporate behavior changes.
    e. Importance is high, tractability is moderate (direct engagement), neglectedness is moderate
4. Community investment
    a. Investing directly in an institution that works to help a community
    b. Generally, money is loaned in the form of a bond that pays interest and is repaid at maturity
    c. If done personally, time cost is large.
    d. If done at a fund level, then **average management fees are slightly higher and performance is slightly lower**
    e. Importance is high, tractability is moderate/high (direct project funding), neglectedness is moderate (becoming much lower with time)
5. Impact Investing
    a. Investing in not-publicly-traded companies focused on social/environmental change
    b. Money is invested as seed capital. This enables the company than
    c. If done personally, time cost is large.
    d. If done at a fund level, then **average management fees are slightly higher and performance is slightly lower**
        i. But hard to find data on this
    e. Importance is high, tractability is moderate/high (direct business funding), neglectedness is low
    f. Generally you need to be an accredited investor: have like 300k+ salary or liquid net worth of ~2+ million
        i. Initiatives like Wefunder might let unaccredited investors invest in this
6. Investing to Give

a. Not a standard category
b. Investing for financial return only, then giving it away
c. Two forms: standard and risk neutral
d. The value of the investment returns that are given away *is* the cost of the strategy. Performance is the same as standard investing.
e. Importance is high, tractability is high, neglectedness is high

All SRI strategies do *some* good. Some are more effective than others. You can choose more than one to do at once.

Side note: it's always better to donate an appreciated stock than cash. Some nonprofits accept this directly, or you can give into DAF.

Week 6: Model Portfolio Analysis

Passcode:7duZz1H&

In this week of the program, we discuss components of a portfolio.

We'll focus on two extremes: patient philanthropy (more risk neutral, very longterm), and shorter term personal investments (more risk averse)

> Note: time frame isn't *necessarily* tied to risk tolerance. You *could* always be risk neutral, but probably you don't wanna be for shorter term things, e.g. if you need that money to buy a house.

First, the shorter-term, more risk averse personal investments. Here are some pretty not-correlated funds:

Correlation Matrix | Rolling Correlations

Name	Ticker	QSPIX	ADAIX	EBSIX	ASFYX	PARWX	EDV	IAU	GUNR	GBTC	RHS	A
AQR Style Premia Alternative I	QSPIX	1.00	-0.13	0.16	0.08	0.12	-0.34	-0.11	0.19	-0.06	0.27	
AQR Diversified Arbitrage I	ADAIX	-0.13	1.00	-0.08	-0.12	0.55	-0.07	0.06	0.50	0.16	0.19	
Campbell Systematic Macro I	EBSIX	0.16	-0.08	1.00	0.80	-0.04	0.12	0.14	0.00	-0.04	0.17	
AlphaSimplex Mgd Futs Strat Y	ASFYX	0.08	-0.12	0.80	1.00	-0.14	0.09	0.19	-0.01	-0.02	0.12	
Parnassus Endeavor Investor	PARWX	0.12	0.55	-0.04	-0.14	1.00	-0.21	-0.05	0.73	0.17	0.67	
Vanguard Extended Duration Trs ETF	EDV	-0.34	-0.07	0.12	0.09	-0.21	1.00	0.39	-0.23	0.16	-0.01	
iShares Gold Trust	IAU	-0.11	0.06	0.14	0.19	-0.05	0.39	1.00	0.27	0.12	0.18	
FlexShares Mstar Glbl Upstrm Nat Res ETF	GUNR	0.19	0.50	0.00	-0.01	0.73	-0.23	0.27	1.00	0.17	0.54	
Grayscale Bitcoin Trust (BTC)	GBTC	-0.06	0.16	-0.04	-0.02	0.17	0.16	0.12	0.17	1.00	0.18	
Invesco S&P 500 Eql Wt Cnsm Stapl ETF	RHS	0.27	0.19	0.17	0.12	0.67	-0.01	0.18	0.54	0.18	1.00	

If you weighed these funds with a risk parity model (less of riskier stuff), how does it compare to Vanguard Balanced funds (60% stocks, 40% bonds)?

Vanguard thing had 9.87% stdev, more diversified portfolio only 6.28% stdev
Vanguard sharpe ratio 0.66, more diversified portfolio 1.13 (wow, good!)
Diversified had like 1% better return over last ~7 years. Still worse return than S&P.

Note that any *one* asset class, even if it has low stdev like bonds, is risky.

Now the higher-risk, longer term investments.
We're gonna ignore leverage here - that's risky, and not usually offered easily by Vanguard/Schwab/Fidelity.

Baseline is just investing in the vanguard world stock fund – with that, you'll probably get your 5-6% return.

Why don't we do an even *stronger* expression of momentum? Well, practically, if you only hold e.g. the top 1% of momentum funds and rebalanced each month, you'd have huge transaction costs and such. No one offers that.

Alpha architects - very academically rigorous firm. They want to deliver the academic portfolio. That said, they're not the lowest cost. Expense ratios are ~0.49%. That said, they historically get like 4% excess returns. In the future they might get an excess 2% return.

QMOM - their momentum fund
QVAL - their value fund

Both did much better than S&P in the last 40 years. Had like 6% excess return. That said, it had a much higher stdev and maximum drawdown.

Optimal rebalancing timeline: do it annually (or maybe each 36***5*** days for tax reasons - so the gains are classified as *longterm* capital gains)

One possible issue: factor funds aren't globally diversified; are basically just US. Probably good to have some international diversification in case of e.g. war in the US.

Week 7: Practical Details of how to Invest and Give

Passcode:5Xuv.Md9

In this week of the program, we discuss practical details of investing and giving.

Fidelity is very similar to Schwab. Vanguard has very low fees (because they're a nonprofit!), but they have slower service on the phone.

Tips:

1. Big obvious win: get your donation matched
    a. Every.org
    b. Facebook
    c. Your company (maybe)
2. Always donate appreciated stocks
    a. Most charities accept that directly
    b. You don't need to pay capital gains that way
    c. If you want to keep the same amount of the stock, just buy more of the same stock!
3. Bunching: bunch your giving to one year so that you go over the standard deduction (and therefore get tax benefits that year)
    a. If you make very little money and don't give the standard deduction even over multiple years, or you give *way* more than the standard deduction every year, this won't help you
    b. Standard deduction is $12K for individuals
    c. Note that you can always give more, but there are limits some years on how much tax deduction you can get (some years, something like 50 or 60% of your AGI)
    d. Bunching can help you even if you always give over the standard deduction!
    e. Mayyyyybe the optimal thing: take standard deduction every year, until you've saved up enough to take the *maximum* deduction (whatever the limit that year is)
        i. But maybe not, because the first few thousand dollars of tax deductions are the most valuable since they skim off the higher tax bracket taxes
4. Donor advised fund (DAF)
    a. Private foundations have lower limits for how much donations can be tax deductible
    b. DAF is a 501(c)3

c. You could bunch your donations *to* the DAF, then distribute annually *from* your DAF
d. How does it compare to a private foundation?
    i. For most people, DAF is the way to go.
    ii. A private charitable foundation requires more work.
    iii. Foundations can employ family… is more of a family thing
    iv. DAF simpler and does what you want
    v. Foundations don't have to go to a 501(c)3, so probably allow e.g. political donations
e. DAFs are often pretty limited in terms of what you can invest in – won't be able to donate to e.g. factors inside of DAFs
    i. Recommendation for Greater Horizons, Schwab with at least $250k, or maybe iGiftFund if the fine print checks out

Week 8: Final wrap up Q&A

Passcode:#A9A#Ybe

Open question and answer format - come with your questions!

Note: My notes are particularly sparse this time 🙂

Tim: Why would you use a DAF?

For example if I wanna donate my current-$10k in like 5 years. I could donate it now to my DAF, get $10k tax deductions, then donate the grown-to-$20k in 5 years from the DAF. Or I could invest the $10k myself, then donate $20k in 5 years, and get the *$20k* tax deduction in 5 years (better!)

→ Tom: the answer depends on the tax drag you're gonna have on that investment if you invest it yourself outside of the DAF. Bunch of different variables… expected rate of return on investment, expected tax bracket, what you're gonna do with the money you saved from tax deduction

→ DAF also helps prevent value drift. It *locks in* your donation. Attrition rate might be as high as 2% for engaged EAs!

Marrying a non-EA might especially cause value drift.

Will: What's Tom's take on stock lending?

→ Tom's never personally done it. David has, on ally, and got about 1.2% one year.

→ Tom thinks it's a generally low risk thing but that you might not get much from it.

→ Famous mutual fund company DFA pioneered securities lending.

Will: What about HSAs? [Note: Tom says he doesn't know a ton about this.]

→ Super tax-efficient way to pay for medical expenses. No taxes when you contribute, and also no taxes when you withdraw. Instant 22% savings, if you're in the 22% tax bracket

→ Most HSA accounts have pretty limited investment options.

→ Never pay for medical expenses out of pocket. The longer you have the money in the HSA, the less annualized benefit you get from the 22% annualized instant savings.

The reason people say to keep stuff in your HSA is because after you're like 59, you can use it as a savings vehicle for your retirement. As your HSA grows, you pay no taxes, so it's kinda like saving money in an IRA, which *is* better than a taxable account.

But the investing options in an HSA are much worse than a normal taxable account, so you're probably getting at least a 1% worse return per year than funds in a normal taxable account would be…

Tom's advice: definitely fill up buckets in your IRA and 401k – those are the main/optimal retirement things; use HSA as more of an immediate 22% rate of return savings thing, i.e. for current medical expenses.

If you're paying out of pocket, you're literally paying 22% more than if you paid out of the HSA

Carina: What percent do you recommend to "set and forget" vs. play with in your portfolio?

→ Tom: technically correct answer is 100% set & forget, 0% play since the odds that you'd beat factor benchmarks are super low.

It should be small enough to not be a big piece, but big enough that you're not tempted to dip into the set & forget bucket. 5%?

If you have a play bucket, use a platform that tracks your performance for you.

Will: If you did invest in high-risk/high-reward things, e.g. you invested individually in each of the S&P 500 stocks, and then donated only the specific stocks that did best/appreciated most? Would that be better than buying just the S&P500 stock?

→ Tom: Hmm, I think theoretically it could have an advantage. Could back-test this. But you run into the practicality issue of it not being an index fund… It's hard to be an active manager. It could be that the S&P500 mostly does fine because of the top few stocks – if you donate those off, you won't have a good portfolio any more.

You'd have to do a rebalance. Could buy the exact thing you donated again.

Tom's gonna investigate this idea…

Will: What do you think about the notion that the reason to invest more riskily when you're young is because your lifetime income will be way more than what you currently have?

→ Yep, that's well-understood in financial circles, just not in popular advice

Will: And what about people who say stocks might be risky, like how Japan stocks are down since 1990?

→ Well, yeah, even in the US we had a 12-year period where you would've made no money. Japan had the mother of all bubbles – people were paying a Schiller PE ratio of 86 (that's like paying $86 for every $1 the company makes). If you were smart, you wouldn't have invested in Japan during that time.

Will: How do you diversify internationally?

→ A while back, the Schiller PE ratios were published for most countries. You can probably find that data online now. That number is most useful to avoid the obvious nos (like if your home country has a *huge* ratio)

Not that important if you're doing a strong factor expression.

IMOM - alpha architect international momentum fund

FNDE - emerging market fund, weak value factor expression

ECOW - stronger value factor expression

FEMS

Tim: Where can you get good leverage?

→ Interactive Brokers has the best options, likely the lowest cost

Will: Is it true that the stock price of companies being added to the S&P500 jumps right when they're added?

→ Yep! True.

Will: Any gotchas that newbies should avoid?

→ Using the value factor approach to its extreme, on a *very small number* of stocks. Very undervalued companies might be about to go bankrupt. Tom doesn't use any value stock pickers, only algorithms.

→ Also, sticking to an individual country. One country can basically go to 0, like Russia did earlier this year.

→ Otherwise, keep fees low, be wary of overconfidence bias. Even if you're much above average in intelligence, you won't necessarily get excess returns in investments. Smarter people might even have lower returns than normal people! Similar to the Dunning-Kruger effect.