

A Value Investing Manifesto

Choosing individual stocks without any idea of what you're looking for is like running through a dynamite factory with a burning match. You may live, but you're still an idiot. ~ Joel Greenblatt

Investing is hard.

It's a game of relative comparisons. We have limited capital and nearly unlimited opportunities to deploy it. Our job then as traders/investors (I use the terms interchangeably but will use investor from here on out) is to use our tools to sift through the thousands of stocks, bonds, and currencies to pick and select the handful of assets we think will give us a higher return than the market. This is obviously no easy feat...

The question we get from readers more than any other is about the framework we use to identify these asymmetric opportunities. They want to know how to sift through all the noise and numbers and find the stocks that are going to make them money!

A big piece of this puzzle is by first defining what exactly it is you're looking for so you'll know it when you see it. Once you've defined it, you can create a framework and process for identifying it. Then rinse and repeat...

That's what we're going to do in this month's report. We're going to discuss the different classifications of equity investing opportunities and then focus on our favorite, that of the long-term compounder. We'll walk you through the first principles of value investing and then go through the step-by-step process of our framework for identifying stocks with massive long-term compounding potential.

You may be asking, aren't you guys macro traders? Why are you writing about fundamental value investing?

That's a fair question... You see, the key point about being a macro trader is that we're not constrained by a rigid and narrow approach to markets. Our sole guiding philosophy is to make high risk-adjusted returns using whatever means necessary.

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This is a flexible and opportunistic approach. We care only about positive asymmetry and not about what tools or mental frameworks (ie, technicals, fundamentals, classical macro etc...) we need to use to find them.

In reality, nearly every investment includes some combination of different factors and drivers. The best trades are the ones where the entire Marcus Trifecta of technicals, sentiment, and fundamentals align together in a fat pitch setup.

Like a warrior going into battle we don't see the utility in limiting ourselves to a single weapon or style of fighting. Similar to Bruce Lee's Jeet Kune Do, we aim to use anything and everything that works to help us win.

Value investing and understanding how to discover and identify long-term compounders is an essential tool in the macro trader's toolkit. And that's what we're going to give you a master class in today. We'll conclude by using this framework to analyze two stocks that we believe have long-term multibagger potential.

And hopefully after reading this report you'll never feel like you're running through a dynamite factory with a burning match again...

Breaking it down to the principle level

I believe there are an infinite number of laws of the universe and that all progress or dreams achieved come from operating in a way that's consistent with them. These laws and the principles of how to operate in harmony with them have always existed. We were given these laws by nature. Man didn't and can't make them up. He can only hope to understand them and use them to get what he wants. ~ Ray Dalio

Every investing framework and process we build needs to be built upon clear, simple, and universal principles. Let's discuss what some of these are.

An investor can have any combination of the following three edges:

1. **Informational:** They can be privy to information that the market is not; through proprietary data (ie, using satellites to track foot traffic at stores) or by extreme due diligence in less watched areas of the market (really digging into the micro cap space) or by less scrupulous methods (insider knowledge).
2. **Analytical:** They can look at the same data but come to different and superior conclusions through greater due diligence and/or better frameworks for understanding the world.

3. **Behavioral:** They have better understanding and control of their own nature and thus exploit behavioral anomalies that arise in markets largely due to short-term emotional overreactions.

We briefly touched upon in last week's note how the informational advantage has largely been arbed away due to the wide scale availability of powerful quantitative tools and screeners and information dissemination in general. At least for the retail investor, who doesn't have access to proprietary credit card and store receipt data, and can't plug into their satellite that's tracking Walmart North American store traffic, they are left with the final two edges of analytical and behavioral — we can use this fact to our advantage.

The talented hedge fund manager and value investor Scott Miller said recently in an interview that he welcomes the proliferation of quantitative investing, remarking (emphasis mine):

I actually want quantitative strategies to proliferate. I want money to pile into them, gobs and gobs of it. The more money into quant strategies the better, as I think they are likely to create distortions that I can take advantage of over time. You can have your backward looking quantitative data and use that for the foundation of your decisions. I would rather understand the product, market, and management team of the companies I am investing in.

We agree with Scott.

Our analytical edge needs to be in seeing the same data but assembling the pieces differently, in the hopes of creating a truer representation of the underlying business and its intrinsic value.

Joel Greenblatt often mentioned in his investing class at Columbia that he believed he was only average at valuation work (he had little edge there), but where he excelled — where his edge lay — came in being able to put the information together in context; view things from the bigger picture and pinpoint the factors that really mattered.

He was quoted as saying:

Explain the big picture. Your predecessors (MBAs) failed over a long period of time. It has nothing to do about their ability to do a spreadsheet. It has more to do with the big picture. I focus on the big picture. Think of the logic, not just the formula.

He only had access to the information everyone else had but he was able to piece it together to come to a completely different and more true conclusion — develop a **variant perception**. This is what an analytical edge is.

So we know that our value investing framework needs to include mental models for viewing and interpreting data in a more useful way. It needs to help give us a variant perception of reality and strengthen our analytical edge.

There are a number of ways to think about the behavioral edge. One being the emotionally driven overreactions to certain events (could be a missed earnings, negative press, or a broader market selloff) that create large valuation gaps. Long-time hedge fund manager, Bill Miller, puts it like this:

*The securities we typically analyze are those that reflect the behavioral anomalies arising from largely emotional reactions to events. **In the broadest sense, those securities reflect low expectations of future value creation, usually arising from either macroeconomic or microeconomic events or fears.** Our research efforts are oriented toward determining whether a large gap exists between those low embedded expectations and the likely intrinsic value of the security. The ideal security is one that exhibits what Sir John Templeton referred to as "the point of maximum pessimism."*

Which brings us to another foundational principle about value investing: The best value investments will always have a well articulated and very convincing logic as to why they're priced the way they are. These bearish arguments will always be predicated on a certain amount of truth. It's this convincing narrative that creates the large mispricing. The thing is, these narratives tend to build on themselves. As they become more popular they tend to extrapolate the negative data points on which they're built, further and further out the left tail, driving the price lower and further away from probable outcomes.

And like Howard Marks likes to say, there's no such thing as a good or bad stock just good or bad prices.

A value investor must use their analytical edge to develop a variant perception in order to capitalize off the market's behavioral overreaction.

Another aspect of behavioral edge is one of timeframe. The market which is becoming increasingly quantitatively focused has gotten very good at predicting earnings 1 to 2 quarters out. But with this short-term quantitative edge, comes the loss of long-term context and so the players in the market have become more and more myopic and short-term focused.

This trend towards market myopia widens the behavioral edge for those willing to peer a little further into the future and play the long game in their investing. This is a kind of time arbitrage that allows a patient investor to capitalize on the market's broader short-termism.

To turn back to Bill Miller who said this about time arbitrage:

*For the market broadly, the recent trends are toward shorter investing time horizons and less active stock selection, which gives us confidence in our competitive advantages of long-term, actively managed investing. The average holding period for mutual funds is now down to just six months, compared to our time horizon of three to five years. **We believe that the one constant in the markets is the behaviors of groups of people and the advantages provided by a focus of behavior inefficiencies.** The broad features of human behavior have not changed, and social psychologists have mapped pretty well how large numbers of people behave under various conditions. **We try to arbitrage between perception and reality in behavior.***

Our value investing framework needs to capitalize on our behavioral edge by objectively exploiting market overreactions — letting the fundamentals dictate our actions and not be reactive to short-term price moves — and arbitraging time by peering further into the future and being more patient with our investments.

And so we have some clear foundational principles on which our framework can be built. We need to:

- ❖ Utilize an analytical edge to arrive at a variant perception.
- ❖ Exploit behavioral driven market overreactions that result in large mispricings.
- ❖ Arbitrage time by playing the long game of peering further into the future and practicing infinite patience.

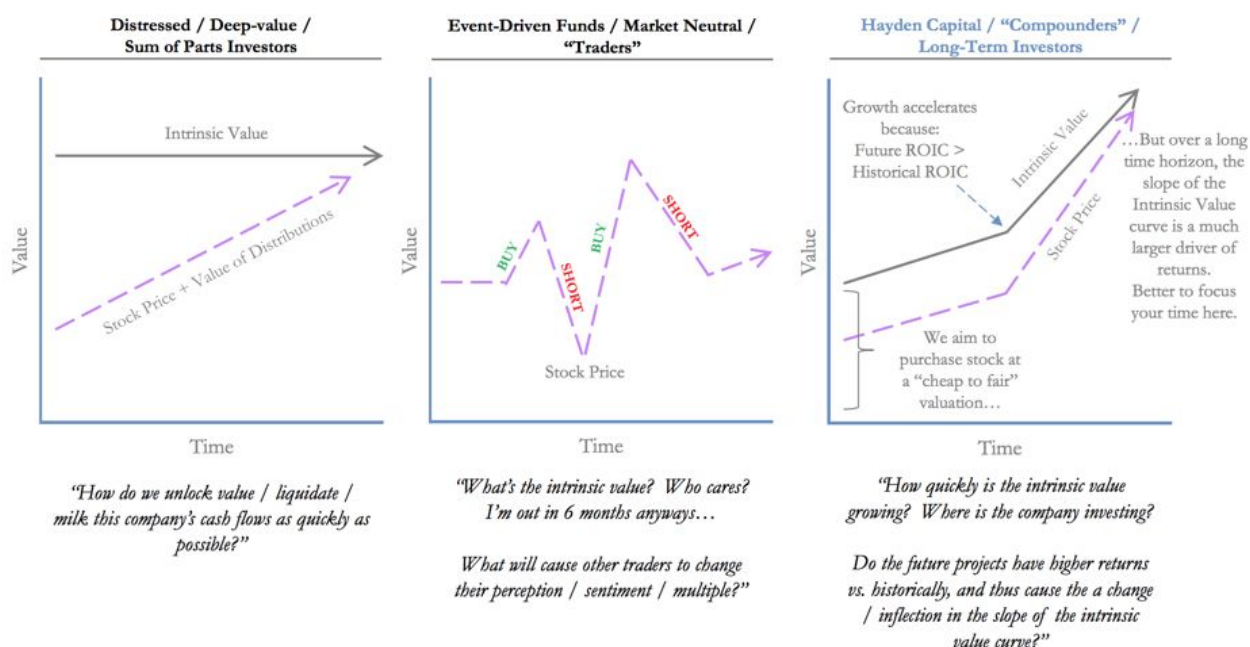
Moving on...

In our quest to further define what it is we're looking for we can bucket equity investments into two broad categories:

1. **Macro:** These are trades where the primary driver of returns is from macro inputs and not due to individual stock specifics. Cyclical commodity stocks fall under this category where their returns are driven by the capital cycle and the price of the underlying commodity. Market timing and sentiment driven trades also fall under this category.
2. **Fundamental Value:** These trades are primarily driven by the conditions and valuation of the underlying company. Fundamental value trades can be bucketed further into three separate categories.
 - a. **Classic value:** These are the deep value sum of the part investments and the classic Graham net-net plays where the investment thesis rests on the mispricing of the company's current intrinsic valuation; a valuation which depends less on the company's future growth and more on the price given to its current assets and earnings stream.

- b. **Special situation:** These are Joel Greenblatt style anomalous mispricings caused by spinoffs or a host of other reasons. These aren't typically long-term plays but are held until the valuation gap caused by an event is closed.
- c. **Long-term compounders:** These are the real money makers. These are the special stocks that grow in value exponentially over long periods of time. They are run by skilled capital allocators, typically with large amounts of skin in the game, and are companies with wide moats that allow for enduring returns above the cost of capital.

These graphs below from Hayden Capital show the different intrinsic value growth curves and stock price path.



It's the graph over on the right hand side where we want to focus the majority of our time and which we're going to discuss today.

Long-term compounders are the stocks that can create generational wealth — if held on to. The problem is that they can be difficult to identify *a priori* but that's what we're going to solve for today.

First, let's start with a simple math exercise from Scott Miller that shows the incredible power of compounding.

Example: We underestimate the power of compounding and the impact of difference in return rates over a long period of time.

Question: What is the difference in ending capital between \$100K that grows at 10% for 30 years vs. \$100K that grows at 20% for 30 years?

Answer: \$21M+

10% -> \$1,744,940

20% -> \$23,373,631

\$21M+ dollars is quite a lot from just a 10% difference in annual returns over a long period. George Soros and Stanley Druckenmiller are both worth billions of dollars because they compounded money at an average of 30% return over decades!

This brings us to another foundational principle in markets and the people who play in them:

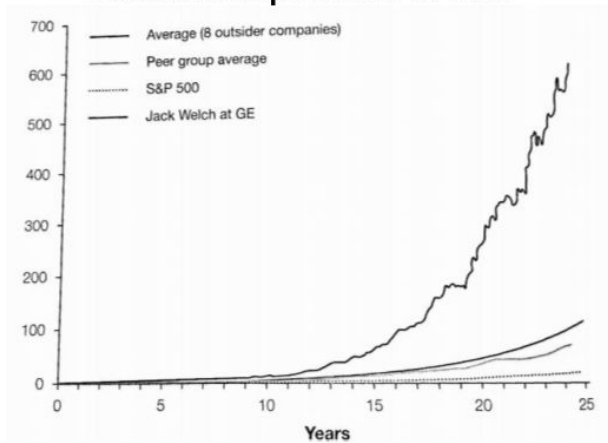
Humans are inherently bad at understanding the scale of exponential growth and the power of compounding...

We're linear creatures who think in logarithmic terms. But if we want to harness the 90/10 distribution of market returns and put the power of compounding to work then we need to think in and seek out exponential growth opportunities for our capital.

Investing in a long-term compounder is essentially like allocating your capital to a compounding wizard like Druck or Soros. You can think of these companies almost as the best private equity firms, but ones with access to niche markets and the best information and deal flow available; along with an appropriate incentive structure that creates the opportunity for extraordinary alpha.

William Thorndike's excellent book *The Outsiders* is a case study of the 8 best long-term compounders and the operators who ran them. Below are graphs to show the difference in returns over long periods of time that identifying and investing in a long-term compounder, an *Outsider* stock, can provide.

Value of \$1 Invested in Average Returns The 8 Outsider Companies over 25 Years



Value of \$1 Invested with Jeff Bezos in Amazon Since its IPO in 1997



"In assessing performance, what matters isn't the absolute rate of return but the return relative to peers and the market. You really only need to know three things to evaluate a CEO's greatness: the compound annual return to shareholders during his or her tenure and the return over the same period for peer companies and for the broader market (usually measured by the S&P 500)"

"The Outsiders were not high-profile CEOs like Steve Jobs ... they were geniuses with enormously powerful ideas. Their circumstances were a lot like those of the typical American business executive. Their returns, however were anything but ordinary"

The differences in return outcomes are extraordinary... they're exponential...

The market's inability to properly comprehend and analyze exponential growth is one of our biggest analytical edges. It's the reason why you have many self proclaimed "value" guys shorting high growth stocks — stocks with super high ROICs — and essentially throwing themselves on the burning pyre as sacrificial lambs because they're doing linear math in a geometric world *cough Einhorn cough*...

Hopefully, you now get my point about the power of long-term compounding and exponential growth and how finding these stocks can be life changing. Understanding the power of compound growth and factoring that into your value analysis makes for a big analytical edge.

Okay, great! So now how do we find them... What makes one stock a long-term compounder and another just average?

Great question... here's the answer.

Macro Ops Long-term Compounders Identification Framework or (MOLCIF)

Lucky for us, due to globalization and the advent of the internet and technology we live in a day and age of super compounders; businesses that can grow faster and to a larger scale than ever before. The scale that's achievable today was just not possible even 20-30 years ago.

For example, take a look at the largest US stocks by market cap today: Amazon, Facebook, Google, and Microsoft. All of these companies require virtually no additional capital to grow. They are extremely asset light (with the exception of maybe Amazon) and all enjoy extremely high returns on investment.

John Huber of Saber Capital recently remarked on this phenomenon, saying.

Facebook, which was founded just over a decade ago, did \$27 billion of revenue that had 45% operating margins last year.

In just the last twelve months, the company grew its pretax earnings by \$6.2 billion on just \$3.7 billion of additional capital investments, including acquisitions (good for a healthy 170% incremental ROIC). In fact, the business probably would be growing even without that additional capital, and the nature of Facebook, Microsoft, and Google's main businesses are that they produce huge returns on capital, significant cash flow, and require little to no capex.

All of these businesses got to scale much more quickly than Carnegie's steel plants, Rockefeller's oil refineries, or Mellon's banks. It took decades of toil and significant sums of capital to go around the country and cobble together a network of refineries in the late 19th and early 20th century. It took Zuckerberg just eight years to build a business from scratch that reached a \$100 billion valuation, and four more to reach \$300 billion. In 2010, Facebook had \$1.9 billion in revenue. Last year it did over \$12.5 billion in pretax profits. These are businesses that Carnegie and Rockefeller could only have dreamed about.

Technology and the internet have engendered us with a super scaling capitalist system with the ability to create the largest and fastest exponential returns on capital in the history of man.

Pretty impressive stuff...

The most important thing

The most important variable that drives a long-term compounder is its ability to sustain a high return on incremental capital aka. ROIC. Here's some words from the original OGs on the importance of ROIC.

“Leaving the question of price aside, the best business to own is one that over an extended period can employ large amounts of incremental capital at very high rates of return.” – Warren Buffett, 1992 Shareholder Letter

“If the business earns 6% on capital over 40 years and you hold it for that 40 years, you’re not going to make much different than a 6% return—even if you originally buy it at a huge discount. Conversely, if a business earns 18% on capital over 20 or 30 years, even if you pay an expensive looking price, you’ll end up with a fine result.” ~ Charlie Munger

ROIC is the THE MOST IMPORTANT factor in a stocks long-term return.

So what is it exactly?

It’s simple, kind of... ROIC is the return a business earns on the capital it invests in its growth over time (ie, whether one dollar invested in the business generates more than one dollar of value in the marketplace). [Here’s](#) a great write up on ROIC with all the nitty gritty details on how to break it down by Credit Suisse.

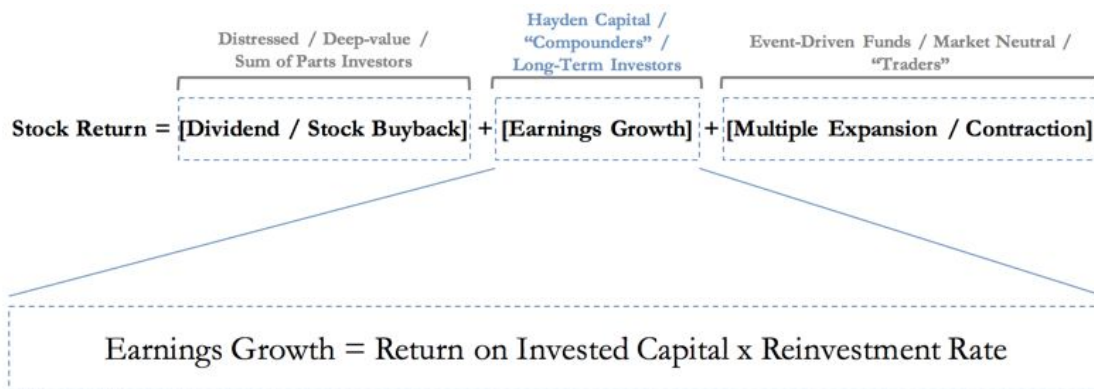
Here’s the gist on how to calculate it. Some use earnings or a measure of bottom line cash flows and then divide that by the company’s total debt and equity (its capital). Joel Greenblatt prefers to use a company’s tangible capital, so he uses earnings before interest and taxes (EBIT) divided by the working capital (current assets minus current liabilities) plus net fixed assets, which is essentially the same as adding debt and equity while subtracting goodwill, excess cash, and intangibles.

$$\text{Return on invested capital (ROIC)} = \frac{\text{Net operating profit after tax (NOPAT)}}{\text{Invested capital (IC)}}$$

Now don’t worry about getting too lost in the weeds with all of this accounting jargon and math. We never use complex excel models or Python script to decide whether a company is worth investing in. We prefer back of the envelope simple number crunching with more attention paid to the qualitative factors that mostly live out in the future.

To put another way, we don’t need an atomic grade scale to tell us a 400lb man is fat. We know he’s fat just by looking at him. We’re looking for stocks that are obviously heifers but who the market is calling thin and we don’t care if we’re off by a few pounds...

Now Hayden Capital provides this nice little diagram relating which factors drive a stock’s return, depending on which category the stock falls into (classic value, special situation/event driven, and long-term compounders).



We can see that earnings growth (we're interested in cash earnings not accounting earnings so measures of free cash flow or [owner's earnings](#) are what we're looking at) is what drives the long-term returns of compounder stocks. This earnings growth is comprised of ROIC times the reinvestment rate.

Here's an example of our earnings growth equation.

Let's say Company X has a stock price of \$10 and produces \$1 in cash earnings per share, giving the stock a PE of 10x. Business is good at Company X and so they reinvest 100% of their earnings back into their business earning an after tax return of 20% (a 20% ROIC). This business has built a good brand with a loyal customer following in a niche but growing market. This moat or competitive advantage allows them to maintain an annual 20% ROIC over the next 10 years.

Here's what the business will look like in 10 years time:

- ❖ Year 1 EPS = \$1.00
- ❖ Year 10 EPS = \$6.19

If Company X just maintains its low earnings multiple of 10x then in 10yrs time the stock would be worth over \$60 for a compound annual growth rate (CAGR) of 20%.

Earnings growth = ROIC + reinvestment rate. Since Company X had a ROIC of 20% and invested 100% of its cash earnings back into the business it then grew its intrinsic value by 20% a year. If Company X had a ROIC of 20% but only reinvested 50% of its earnings then its intrinsic value would have only grown by 10% a year. Pretty simple...

Now what if we paid 20 times earnings instead of 10x, so a price of \$20 a share back when it was earnings \$1 per share. Let's see what the value of the stock and its 10 year CAGR will be at various PE multiples if we had paid double the price.

- ❖ 10 P/E: \$60 a share (11.6% CAGR)
- ❖ 15 P/E: \$90 a share (16.2% CAGR)
- ❖ 20 P/E: \$120 a share (20% CAGR)

Even if the earning multiples on this stock got cut in half over our 10-year holding period, we still walk away with a CAGR of 11.62%. This goes to show that though the price (the multiple you pay) is important, what's more important is the company's ability to grow its intrinsic value over the long-term by having a high ROIC and high reinvestment rate.

This is why incremental returns on capital and the ability to reinvest them are so important. They determine a company's ability to grow its long-term intrinsic value which thus drives the stock's long-term return. A company that produces 4% returns on capital is just not going to compound much over time, even if it reinvests 100% of its earnings back into the business. But a company that has 35% returns on capital will grow its intrinsic value at high rates, even if it's only reinvesting 50% of its earnings (a 50% reinvestment rate on 35% ROIC = 17.5% CAGR) and distributing the rest back to shareholders via buybacks and dividends.

Now that we know long-term compounding is driven by long-term owner earnings growth which is a result of a company's ROIC + reinvestment rate, all we need to do is construct a framework for identifying stocks that have the potential for a high ROIC + reinvesting opportunity. And that's what I've put together for us.

To identify long-term compounders that have high ROICs and high potential for reinvestment opportunities we want to focus on the following.

- Runway
- Accounting and context
- Foundation
- Leadership
- Value proposition

I was going to try and make an acronym out of this but RAFLV just doesn't have a good ring to it. But anyways, let's go through our long-term compounders checklist and discuss what each checkpoint is and why it's important.

Runway: Think of long-term compounding stocks as giant B-52 airplanes. These are powerful flying machines that need a really long runway to reach the necessary speed to takeoff and fly up to high altitudes. Well, our long-term compounders also need a long runway in the form of a

large total addressable market (TAM), that has few potholes (low competition risk), so it can reach the necessary speed (high sales and cash earnings growth) so it can fly up to high altitudes and compound away.

Let's break each of these things down, starting with high sales and cash earnings growth.

Here's a slide from Hayden Capital which shows that sales growth is the long-run driver of stock performance. This makes sense, because a company needs to be able to sustain a certain level of sales growth for it to be able to sustain a high ROIC and reinvestment rate. In fact, the three should work in a virtuous cycle where high sales growth produces a high ROIC and indicates ample opportunity for the company to reinvest in growth, thus driving further sales growth and so on.

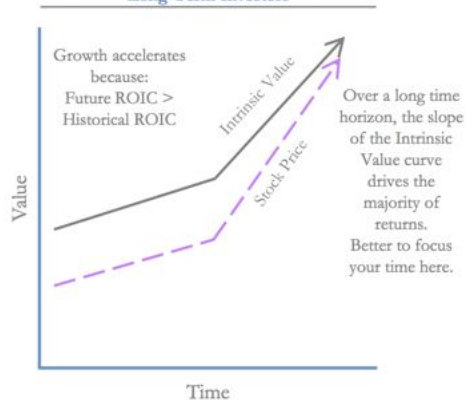
Sales and Earnings Growth Drive Long-Term Performance

- At Hayden, we aim to invest with a decade-long investment view.
 - Over this time period, sales and earnings power growth drive ~90% of equity returns (i.e. fundamental business performance).
 - It's not worth our time looking for "catalysts" to get multiple expansion, or understand why other investors will pay a higher multiple for the company in the future.
- We get a higher return on time by understanding the underlying returns / unit economics of projects the companies are investing in, and buying these businesses at a good-to-fair price.
 - If we can understand the drivers of the high incremental ROICs, this is what will drive higher earnings power, and therefore intrinsic value growth in the future.

Incremental ROICs Approximate Intrinsic Value Growth

Focus on fundamentals, and the stock price will follow

Hayden Capital / "Compounders" /
Long-Term Investors

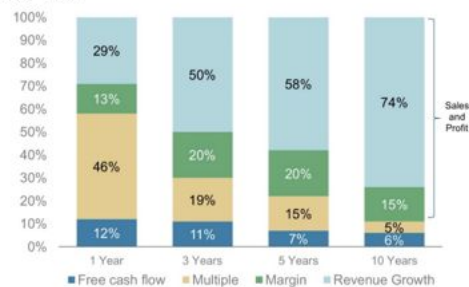


Sales & Earnings Power Drive Returns Over the Long-term

From Morgan Stanley Research

Topline Growth the Long-Run Driver of Stock Performance

Sales Growth Is the Key Driver of Long-Term Stock Performance
Sources of Total Shareholder Return for Top-Quartile Performers
S&P 500 (1990 – 2009)



We want our long-term compounders to have sustainable annual revenue growth rates above 15%. Look at the best market performers over the last decade and they've all had enduring revenue growth rates above 20%.

- Facebook has a 5yr avg revenue growth rate of 51% (which is insane for a company of its size)

- Amazon has a 5yr avg revenue growth rate of 24% and this rate has been going up in recent years
- Google has a 5yr avg revenue growth rate of 20%

For a company to be able to maintain high long-term sales growth it needs to have a large addressable market. This is why the total addressable market (TAM) is a key component when thinking through the overall growth equation for a stock.

This is why the incessant rise of the FANG and many other internet stocks have frustrated bears so much. In the old economic model, companies of their size (\$100B+ market caps) had already saturated their markets and just couldn't grow as fast. But today, we live in a digitally borderless world. The Googles and Facebooks have a TAM that's the size of nearly the entire world (7+ billion people). And even better, they don't need to invest much in expensive plants and equipment to reach each additional 10 million new customers. The software is already there and easily duplicable by them.

In addition to needing a large TAM we also want there to be relatively low competition risk. Ideally, we want our companies to be unregulated monopolies or have the potential to become so. Low competition risk is essential for a company to be able to maintain high levels of revenue growth as well as fat margins. For a company to be able to fend off competition and develop monopoly like hold on its market, it needs to have a strong competitive advantage or moat. We'll discuss this more in the value proposition section.

So to sum things up, we know that long-term sales growth is essential to maintain a high ROIC and reinvestment rate and thus is the largest determinant in a stock's long-term returns. Therefore, we want to only seek out stocks with the potential to grow revenues at above 15% annually over the long-term. And to do this, the company needs to have a large TAM with low competition risk.

Accounting and context: We write often on the failures of GAAP accounting to properly "account" for the economic value and health of a business in today's world.

First, there's the issue of how intangibles versus tangible assets are accounted for, as noted by fund manager Bill Nygren of Oakmark, who recently wrote ([link here](#)):

If you were paging through Value Line in February looking for cheap stocks, it would have been easy to skip right past Gartner. Value Line says, "Gartner Inc. is the world's leading information technology research and advisory company..." You would have quickly seen that it is a database-driven, asset-light business that would be expected to command a higher than market P/E ratio. Despite the stock falling from \$142 to \$119, its P/E was still 31 times expected 2018 earnings and its book value was only \$2 per share. Gartner didn't look like a value stock and, in fact, it was even included in the Russell

1000 Growth Index. But last quarter we bought it for the Oakmark Fund. So, it's fair to ask: has Oakmark changed, or does Gartner somehow meet our value criteria?

A closer look reveals that Gartner stock fell when management opted to substantially increase selling and marketing expenses to pursue accelerated organic growth, which in turn decreased the company's reported earnings. The way GAAP (generally accepted accounting principles) works, because the future benefit of a marketing expense is uncertain, the cost is immediately expensed. But at a company like Gartner, these marketing expenses could easily be seen as long-term investments in company growth. That's because a Gartner customer tends to remain with the company for a long time—a little more than six years, on average. So we adjusted the sales and marketing expenses to reflect a six-year life, just like GAAP would treat the purchase of a machine that was expected to last six years. With that one adjustment, Gartner's expected EPS increased by almost \$3. Using our adjusted earnings, which we believe reflect a more realistic view of those intangible assets, Gartner appears to be priced as just an ordinary company. And, as we have said many times, buying an extraordinary company at an ordinary price is value investing at its finest.

Throughout Oakmark's history, we've been on the lookout for situations where GAAP obscures economic value. Though value investing has always implied buying at a discount to value, the early descriptions of value relied more on assets than earnings.

As the economy has become more asset-light, intangible assets—such as brand names, customer lists, R&D spending and patents—have become more important. Today, the relative importance of tangible assets compared to intangibles has completely flip-flopped from what it was 40 years ago. Intangibles now account for over 80% of the average company's market value. But much like Graham, GAAP doesn't even attempt to value those assets.

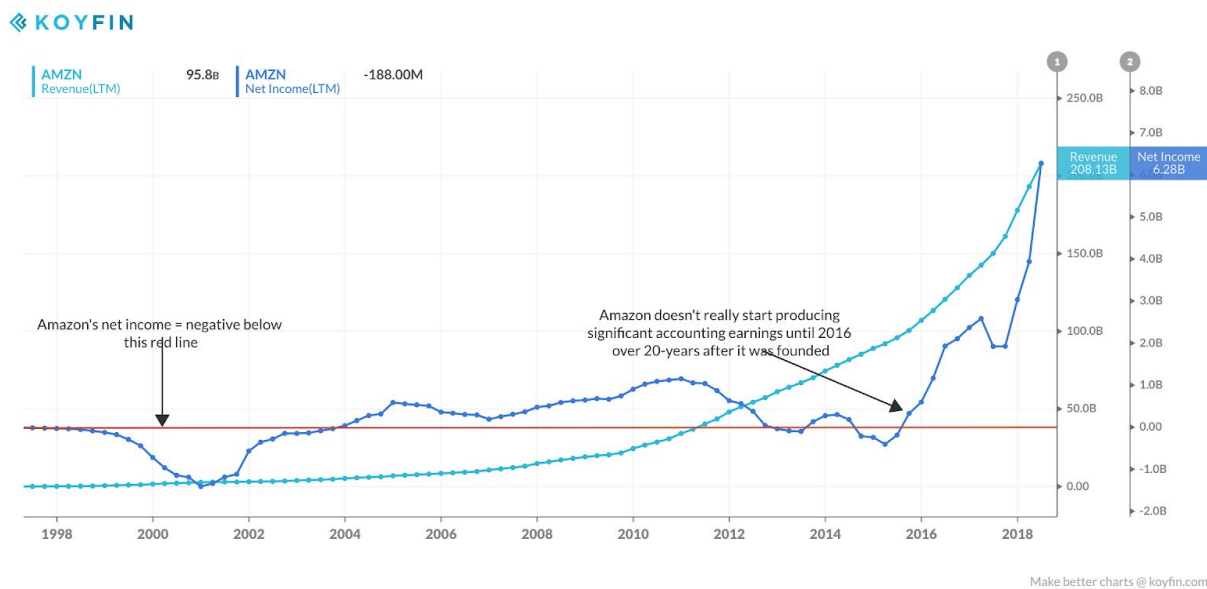
The most valuable companies in the world today are tech companies whose majority of intrinsic value is derived from their intangible assets (software, patents, R&D etc...) and which GAAP standards don't even really recognize.

Next, the way GAAP accounts for earnings does not often give a full or fair picture of the true earnings health of a business. Net income and thus your popular metrics like EPS and P/E ratios can be easily manipulated with some perfectly GAAP approved accounting gimmicks.

More importantly, like we said above, we want our compounders to have high ROICs and to be investing as much of their earnings back into growing their intrinsic values. This means that if they're truly a compounder they should be reporting little to no GAAP income — their EPS should be zero or negative because all of the earnings are being plowed back into the business.

Amazon is a perfect case study in the failure of GAAP accounting to reflect the true health and value of a growing business.

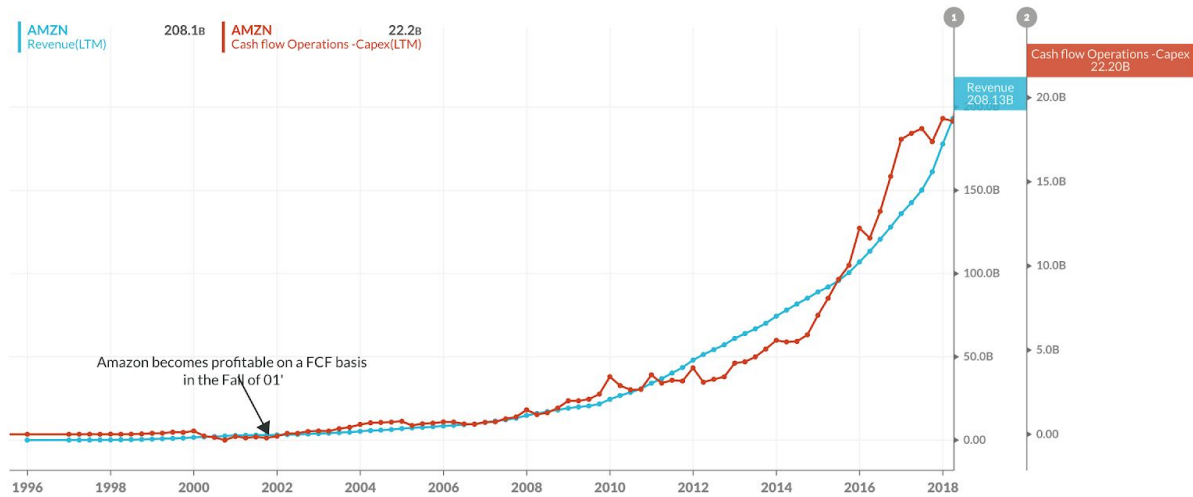
Shown on the chart below, Amazon spent the majority of its first 20 years in existence producing either negative or very low net income even though the company was seeing geometric revenue growth over the same period. Amazon didn't begin seeing hockey stick growth in net income until just 2016. This is why bears have derided Amazon as being extremely overvalued during its entire meteoric rise — they've been focused on GAAP accounting measures sans context which has blinded them to Amazon's fast growing intrinsic value.



But if you had just taken a look at free cash flows or owner earnings you would have seen a completely different picture ([here's](#) Bezos in his own words on why FCF is a much better performance metric than net income).

This chart shows that Amazon became profitable on a FCF basis all the way back in the Fall of 01' and FCFs have been following the same parabolic trend as revenues ever since. The reason this FCF doesn't show up in net income is because Amazon has been reinvesting all of it back into growing its business, moving into new markets (think AWS), and increasing the size of its moat (aka. rapidly increasing its intrinsic value).

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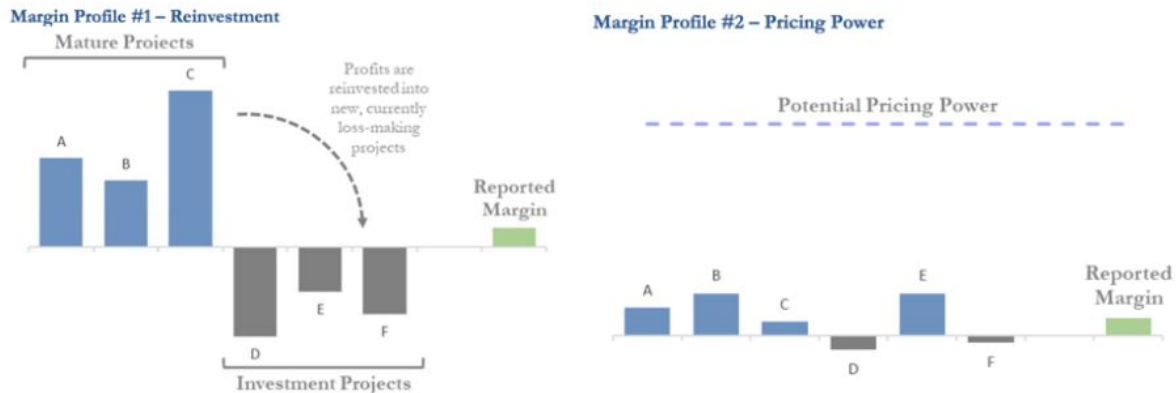
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This is why context in accounting matters. GAAP numbers don't show a businesses' true health. It's a poor reflection of a company's intrinsic value. It's also why most quantitative tools and screeners can't identify compounders. The truth is in the context and that context is usually missing from the most commonly observed accounting numbers.

This is why a large analytical edge exists for those willing to do the work and thinking necessary to understanding a businesses' unit economics (ie, the direct revenues and costs associated with each business line).

The best compounders will often look like terrible businesses on the surface. They produce little to no income and appear to be high cost / low margin businesses. But when some thinking and context is applied we find that the unit economics of the business are actually great. And this accounting distortion is most often due to either reinvestments or intentionally underpricing products squeezing profit margins in the short-term in order to gain longer-term advantage.

These two charts again from Hayden Capital show how smart value enhancing business decisions (reinvestment and underpricing) often make the current attractiveness of a businesses' unit economics look poor.



Hedge fund manager Scott Miller wrote in a recent Investors Letter about the inadequacies of GAAP accounting, using one of his recent investments in a micro tech company as an example, saying:

*I think the inadequacies of GAAP accounting create opportunities. For example, we own a tiny software company, SharpSpring. For every dollar they spend on marketing, they generate seven dollars of lifetime value. **As long as the marketing spend is that productive, they should be spending every dollar they can find on marketing.** Profits should be zero, or less than zero. **The future value of the customer base they are building does not show up on the balance sheet under GAAP.** However, if you treat a portion of the marketing spend as growth capex the financials are far more attractive. **The adjustments matter, the qualitative matters, the setup matters, customer value proposition matters, network effects matter, but these items are frequently obscured by GAAP accounting or lost in a simple P/E or price to book ratio.***

The important point here is that you have to be able to discern whether the future unit economics of the business are attractive. There's plenty of companies that are out there that are in the business of selling a dollar for 50 cents. Think Movie Pass for example, it can generate high revenue growth but no amount of scale will make the current business model profitable.

Foundation: Foundation refers to the balance sheet of a company. You can think of the balance sheet as the immune system or literal foundation of a building. It's what keep things together when things go wrong as things will inevitably do for all businesses at some point in time.

If a company is saddled with lots of debt and its cash flows are unreliable and vulnerable to being drastically reduced in a recession then the company is at risk of dying a premature death.

Since the majority of value in a business is in the future, the higher the risk of a premature death equals a lower value now.

This doesn't mean debt in and of itself is bad. Many of *The Outsiders* companies used a lot of leverage to grow. But they were extremely smart and careful about it and they only used leverage for accretive growth that provided the steady cash flows to easily cover the debt. Like everything in value investing, context matters.

A strong balance sheet = a strong foundation for a company to build upwards.

Leadership: Quality management with aligned incentives isn't everything to a long-term compounder but it's pretty close. It's management after all that decides where to allocate capital that drives what levels of ROIC the business can produce.

Unfortunately, not all management is created equal. And more often than not, the players who end up in executive positions of major public companies are only really good at one thing: and that's playing office politics and climbing the corporate ladder. These leaders are often more interested in prestige and expanding the size of their fiefdom even if it means doing dilutive actions and buying low return businesses.

To guard against this, we want to look for companies that are run by management who have high insider ownership — or skin in the game as Taleb would say — and whose interest are aligned with that of long-term shareholders. It's important to study management's track record and find out how they think about the business and make capital allocation decisions (ie, read/watch interviews, listen to earnings calls, read annual letters etc...). Founder/CEOs often make the best leaders because they've shown they can build a profitable business and have the grit and vision to continue expanding it.

Value proposition: Not to expose myself as too much of a Bezos fanboy (I think he's the one of the best capital allocators of our time) but here's another quote from him on the increasing importance of creating customer value:

The balance of power is shifting toward consumers and away from companies. The right way to respond to this if you are a company is to put the vast majority of your energy, attention and dollars into building a great product or service and put a smaller amount into shouting about it, marketing it.

The internet and widespread dissemination of information and availability of nearly free marketing has flattened the business world. In today's digital age, brands have become less important, less of a moat.

Think about it, do you care if Johnson and Johnson makes your baby powder or if General Mills is behind your cereal brand? Probably not... that's because you're a better informed consumer and likely turn to online reviews from other customers to discern a product's quality versus seeing which brand is behind the product.

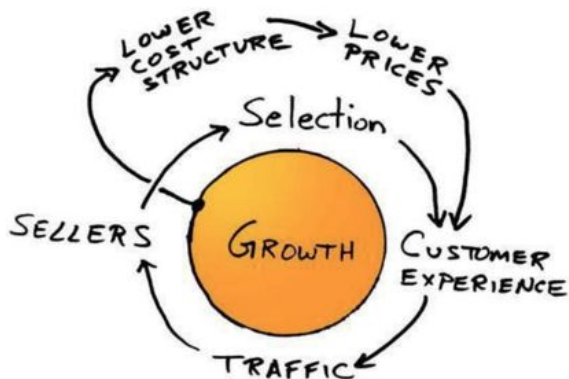
In today's age where companies can sell directly to consumers and small businesses can gain notice and scale infinitely faster, the biggest competitive advantage is in providing high value to the consumer.

The strong value proposition helps ensure not only long-term growing demand but also pricing power. This keeps revenue growth high and allows for operating leverage to increase over time. To use Amazon again as an example, how many people do you know who canceled their Prime memberships after Amazon hiked prices 20%, from \$99 a year to \$119 a year? I don't know any, they could have hiked it 50% to \$149 a year and I would have thought it fair. That's pricing power...

And the best businesses are ones where raising prices actually increases the value proposition to the customer. This can happen because the price rise leads to greater cash flows which are then reinvested in creating even greater value for the new price point for the customer (such as Amazon offering Prime video and music or Netflix investing in new original content).

These are the best types of businesses because they benefit from the positive feedback effects of an economic flywheel. The idea of the "flywheel effect" is that once a business model gains momentum the outputs of the business lead directly to positive inputs (ie, greater scale leading to lower costs per units) which then leads to better outputs (ie, lower costs and a better value proposition to the consumer) in a extremely kinetic virtuous cycle.

Amazon's Famous Flywheel Sketch



The economic models of many tech companies are built around trying to develop this virtuous flywheel. The platform business model (the Facebooks and Googles) and the two-way marketplaces (Ebays and Shopifys) have been able to generate unbelievable amounts of shareholder value because they benefit from powerful network effects that are intrinsic to their business models. The online platform business model allows for a near limitless TAM and amazing opportunities for reinvestment that lead to incredible scale and a great value proposition.

The ability to continuously increase your value proposition is the new competitive advantage. Companies that benefit from flywheel and network effects are those that can increase their value proposition and thus widen their moat, the fastest.

Summary: In the above pages we've covered what you need to look for in order to identify a long-time compounder. These are:

- **A Long Runway:** We know that long-term sales growth is the primary driver of stock returns over time. We're interested in companies that can generate over 15% revenue growth for many years. For a company to maintain high sales growth it needs to have a large addressable market (TAM) and low competition risk.
- **Accounting and Context:** GAAP accounting distorts the true health and value picture of a business. This distortion can be an analytical advantage. Accounting numbers need to be put in context. Understanding a businesses' unit economics is essential to modeling out its future path and current valuation. Free cash flow measures and owner's earnings are a much better measure of a company's health. And we need to be aware of the impact of reinvestments and underpricing on the current margin picture.
- **Foundation:** A company's balance sheet is it's immune system, it's the ground on which the rest of the company is built. It needs to be resilient and able to weather the inevitable storms. Debt by itself isn't evil. Leverage can be a very powerful tool in generating shareholder wealth. It all depends on the company's ability to service that debt, so the levels and predictability of cash flows are what's important in figuring out if a company is too overleveraged.
- **Leadership:** Company management are the ones who make the capital allocation decisions (both good and bad) that drive the long-term ROIC. Most business leaders out there aren't great capital allocators and they're more interested in prestige and power over generating shareholder wealth. We want managers whose incentives are aligned with our own (they own a significant amount of shares and their paid is tied to long-term performance). We like founder/CEOs and leaders with a strong track record of past success leading our businesses.
- **Value Proposition:** A company's ability to continuously increase its value proposition is the new moat. This creates lasting product demand and gives the company pricing power and the potential for creating a positive feedback loop or economic flywheel.

Micro: Stratasys Ltd (SSYS)



Stratasys (SSYS) is a massively underpriced stock with huge long-term compounding potential. The centerpiece of this long thesis goes back to one of our foundation principles that:

Humans are inherently bad at understanding the scale of exponential growth and the power of compounding...

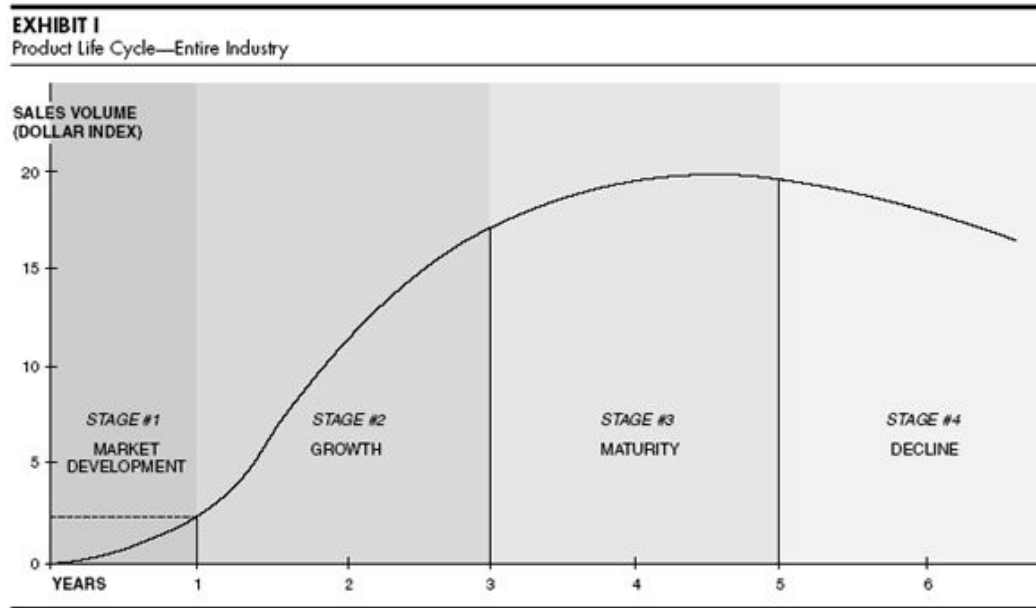
SSYS is in the additive manufacturing (AM) or 3D printing business. They're industry leaders in polyjet and fuse deposition modeling geared towards industrial manufacturers.

The additive manufacturing industry serves as a perfect case study of the product adoption S-curve and Gartner's hype cycle. As I'll show, both are indicating that the AM industry and SSYS specifically are about to enter a sustained period of exponential growth that the market is not at all accounting for.

Let's start with a quick explanation of the S-curve.

The product S-curve life cycle is the typical growth and maturation path of new technologies.

The chart below shows the four stages of this cycle and what the growth curve looks like for each one.



The [Harvard Business Review](#) defines the four stages as the following:

Stage 1. Market Development

This is when a new product is first brought to market, before there is proven demand for it, and often before it has been fully proved out technically. Sales are low and creep along slowly.

Stage 2. Market Growth

Demand begins to accelerate and the size of the total market expands rapidly. It might also be called the "Takeoff Stage."

Stage 3. Market Maturity

Demand levels off and grows, for the most part, only at the replacement and new family-formation rate.

Stage 4. Market Decline

The product begins to lose consumer appeal and sales drift downward, such as when buggy whips lost out with the advent of automobiles and when silk lost out to nylon.

The key takeaway is that in a new industry the growth follows a shallow linear curve. But as the technology develops, product adoption begins to pick up rapidly. When the industry or product enters stage 2, the slope of the growth curve becomes steep and sales begin to increase exponentially. This point is called the knee of the curve. This phase continues until the market matures and adoption is widespread. Then growth slows down and the steepness of the curve lessens.

The Gartner Hype Cycle is a model that shows the typical hype and narrative cycle around a new technology, product, or market. This is important because narratives and especially powerful “hype” narratives drive the stock market.

Gartner identifies five overlapping stages in a technology’s life cycle via [Tech Target](#):

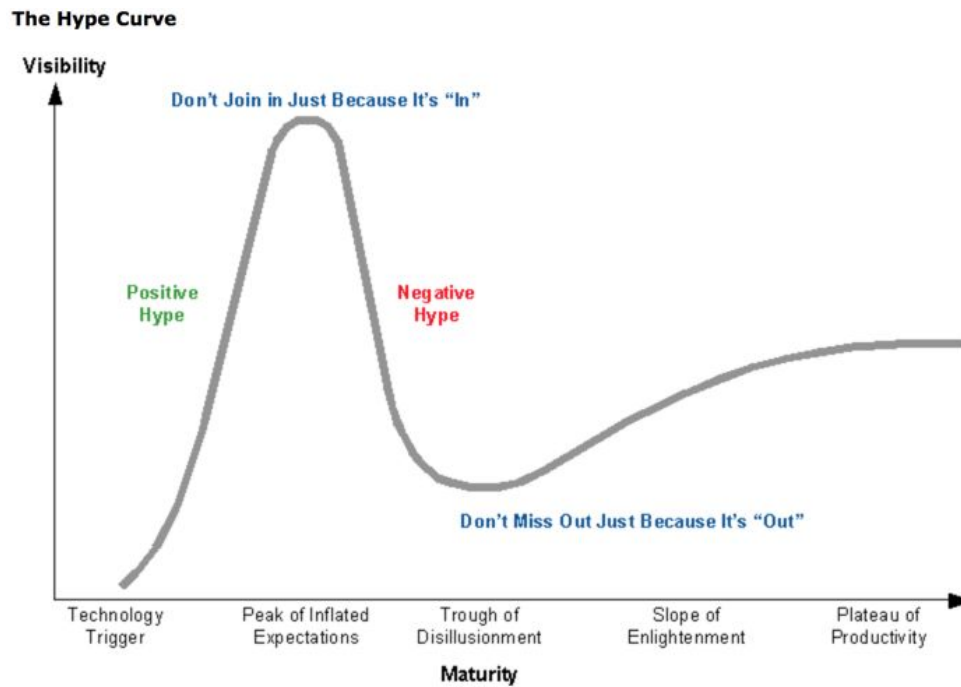
Technology Trigger: In this stage, a technology is conceptualized. There may be prototypes but there are no functional products or market studies. The potential spurs media interest and sometimes proof-of-concept demonstrations.

Peak of Inflated Expectations: The technology is implemented, especially by early adopters. There is a lot of publicity about both successful and unsuccessful implementations.

Trough of Disillusionment: Flaws and failures lead to some disappointment in the technology. Some producers are unsuccessful or drop their products. Continued investments in other producers are contingent upon addressing problems successfully.

Slope of Enlightenment: The technology’s potential for further applications becomes more broadly understood and an increasing number of companies implement or test it in their environments. Some producers create further generations of products.

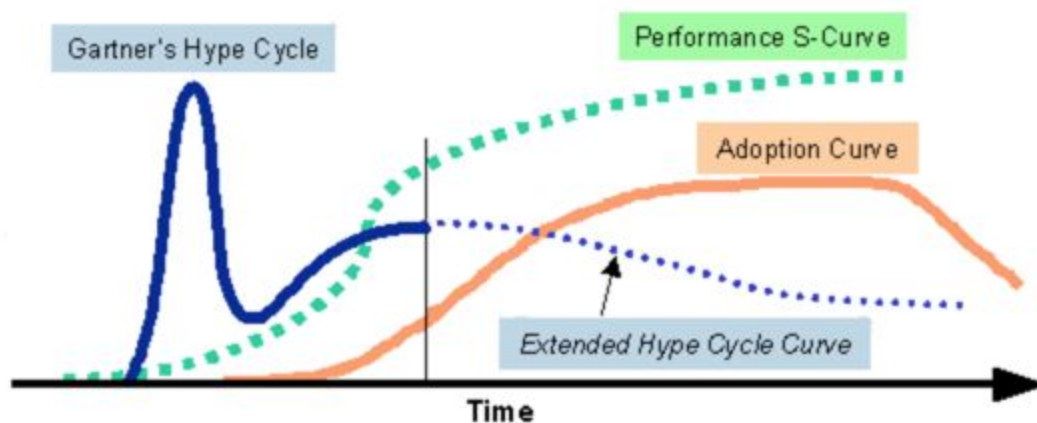
Plateau of Productivity: The technology becomes widely implemented; its place in the market and its applications are well-understood. Standards arise for evaluating technology providers.



Source: Gartner Research (May 2003)

When put together, the product adoption S-curve and Gartner's Hype cycle look something like the graph below. Hype peaks while the technology and market are still in their infancy. Then after hype has turned to disillusionment and/or total disinterest the technology begins maturing and adoption starts picking up.

Figure 2
Technology Life Cycle Models



Source: Gartner Research (May 2003)

Cryptocurrencies are following the Gartner's Hype cycle to a T. They've just past through the "Peak of Inflated Expectations" and are now on their way to the trough of disillusionment. I

expect in a few years time we'll see some real technological advancement in that space and actual use cases and large scale product adoption — but by then, very few people will probably be paying much attention.

To get back on topic, the AM industry hit their peak of inflated expectations back in 2013. Remember when 3D printer stocks were all the rage and financial journo's were talking about how we'd all soon have 3D printers in our homes and we'd never need to go buy stuff in a store again?

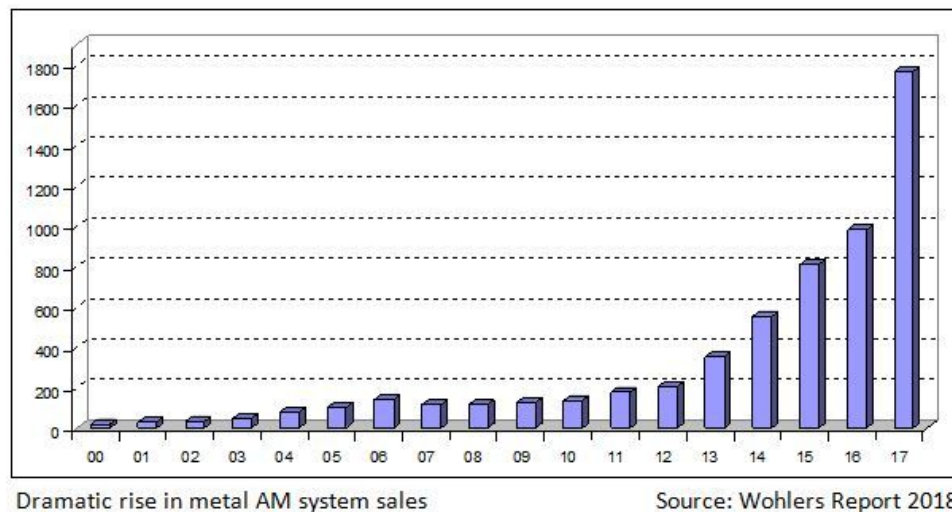
That hype has long passed, and 3D printer stocks have been dead money for the last 4+ years. They have clearly passed through the trough of disillusionment and are now quietly climbing the slope of enlightenment and on their way to the plateau of productivity.

More importantly, the data indicates the industry is in the process of passing through the knee of the product adoption S-curve and we should expect growth to begin increasing exponentially in the years ahead.

Read the following from Forbes (emphasis by me):

*Wohlers Associates is recognized as one of the preeminent 3D printer experts in the world. Their detailed annual report on the state of the 3D printing industry -- the eponymous Wohlers Report 2018 -- **reveals significant increases in metal additive manufacturing (AM) this year. Investors will appreciate the solid 21 percent growth as the AM industry exceeds \$7.3 billion .***

*While some industry reports focus on projections of where the market is heading, the Wohlers Report compiles details on how many 3D printers are actually sold each year. According to the new report, an estimated 1,768 metal AM systems were sold in 2017, compared to 983 systems in 2016, **a surge of nearly 80 percent.***



21% industry growth is good, but this is likely just the start and we should see even stronger growth going forward as the technology continues to improve and consumers become aware of the huge value proposition the technology represents. Ark Capital recently discussed some of the enormous benefits of the technology.

The 3D printing market will revolutionize manufacturing for low volume, highly customizable parts. Applications will be broad based in the consumer market, as well as industrial markets such as medical devices and implants, automotive and aerospace, chemical and energy, and even manufacturing in outer space.

3D printing will collapse the time between design and production. It will shorten lead times, reduce prototype costs, produce lighter products and provide for greater design complexity in manufacturing. General Electric GE estimates that it currently uses 3D printing in some form for 10% of its manufacturing, but projects that number to grow to roughly 20%-25% in 10 years, and to 50% within 20 years. Since GE's cost of sales were about \$80 billion in 2013, if 3D printing were to be used in more than 50% of its manufacturing processes, GE would save billions of dollars. Lockheed Martin LMT, another trailblazer in this market, is using 3D printing for titanium satellite components, and has reduced cycle times by up to 43% and costs by 48%.

...ARK believes 3D printing, now in its earliest days, is poised to grow more than 40% per year over the next five years.

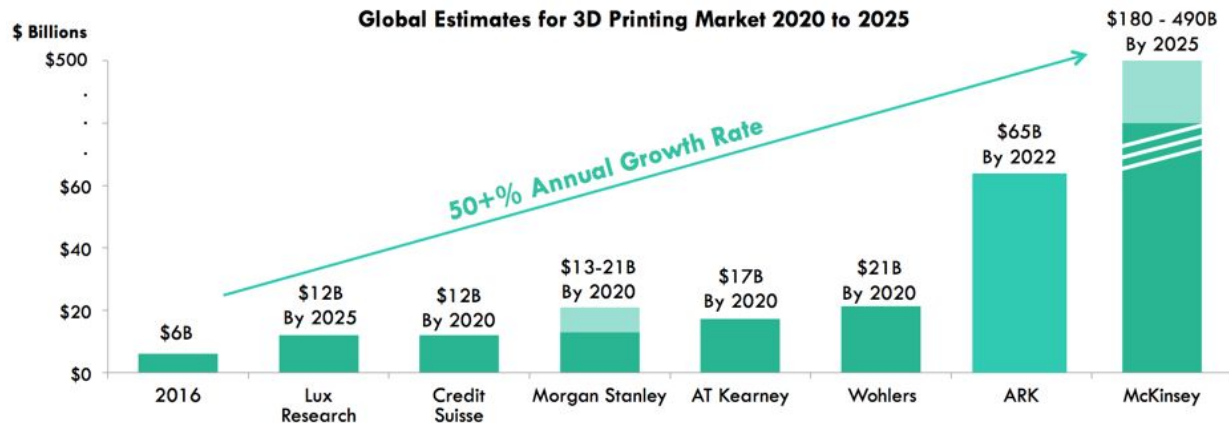
Here's a chart from them showing a list of predicted total addressable market (TAM) size for the AM industry. It's huge... even the more conservative estimates via Wohler predict a near tripling of the market over the next two years.

7. 3D Printing

The 3D Printing Market Could Increase Nearly Ten-Fold By 2022

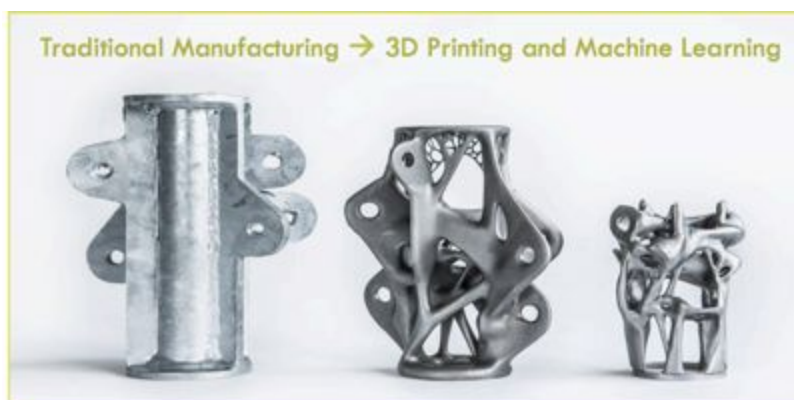


ARK's research predicts the 3D printing market could grow to \$65 billion by 2022.



We're of the belief that the global market size for AM will be in the higher end of estimates but that growth won't start *significantly* accelerating until a couple more years out. In our opinion, the most promising business opportunities are in the industrial space where additive manufacturing combined with machine learning is able to design and create incredibly new and efficient parts.

See the picture below via [Arup](#). All three structural nodes support the same weight but the node on the right — created using AM and machine learning — is 75% less weight and half the size of the traditional node on the left.



This technology is going to clearly reshape manufacturing from aerospace to autos and beyond. SSYS has long been partnered with a number of leading aerospace and auto manufacturers. What's interesting is that because of the extremely high quality control and approval stages necessary to introduce new manufacturing processes to both these industries, there's a long

lead time between trialing something like AM and then making it an integral part of their manufacturing process.

All current indications point to their customers being extremely excited about using SSYS tech and many are nearing the end of their testing and approval processes, at which point order deliver should pick up significantly (the knee of the adoption curve).

The opportunity is obviously very large here. Now, here's why SSYS offers us an extremely asymmetric bet on this nascent industry and why it checks most of the boxes to be a long-term compounder.

Runway: We've covered the runway for AM and it's a long one. The TAM is likely to grow to \$50B+ within the next few years and rapidly increase from there over the following decade. As far as competition risk, SSYS is a leader in its niche space of polyjet and fuse deposition for industrial manufacturers. Which, due to the many quality and testing regulations inherent to the performance-critical industrial space (think airplane parts) the barriers to entry are extremely high and so SSYS's current partnerships should prove very defensible.

Accounting and context: SSYS, along with other AM companies, got caught up in the 3D hype cycle back in 10'-13' and over extended itself into the consumer 3D printing market (a much smaller TAM than commercial) by overpaying in some acquisitions, like that of Makerbot. SSYS has since taken a write-down of more than \$1B and has completely restructured its consumer printer line.

SSYS's net income shows a small trailing-twelve-month (TTM) loss of \$37M, but it produced TTM free cash flow of \$89M. And more importantly, management is guiding for revenues to come in at the end of the year between \$670 and \$700M — the first year-over-year increase in a few years. We should see both begin to steadily rise over the coming quarters and I fully expect revenue growth to get back up above a CAGR of 20+% in the next few years. The macro dynamics are just that strong, so a rising tide will lift all boats and SYSS is one of the better boats.

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Foundation: SSYS has a rock solid balance sheet with hardly any debt, a current ratio of 3.7 and a history of producing steady reliable positive free cash flow. This is a strong foundation for SSYS to fund its growth once the industry begins accelerating faster up the S-curve.

Leadership: SSYS only gets half a mark here. CEO Ilan Levin decided to step down at the beginning of this year so Elan Jaglom (also Chairman of the Board) is currently serving in the interim as they search for a new leader. So we'll have to see who ends up in the top spot but SSYS has a high quality board and I expect they'll find someone good. But insiders do own a good number of shares in the company which suggests an alignment of incentives with shareholders.

Value proposition: We've discussed the value proposition which is significant. AM is likely to completely reshape the manufacturing process in the decades to come. But since SSYS is a hardware manufacturer there's little opportunity for the kind of flywheel positive feedback loop advantages in value creation that we see in software and internet companies. Still, the company's technology offers its customers a host of use advantages and as it further develops and matures SSYS should be able to make itself an integral part of its customers operations, thus giving it long-term demand and steady pricing power.

The best part is we can buy this company that has a solid balance sheet, steady positive free cash flow, with industry leading niche technology in a market that has a huge TAM and which is just hitting the knee of the adoption S-curve, for less than 2x revenues. That's a great price and a good margin of safety for a company with this type of runway that's setup for powerful long-term compounding...

Micro: Yelp Inc. (YELP)



Yelp (YELP) is a website and mobile app where users can rate and review businesses. Here's a short overview of the company in their own words:

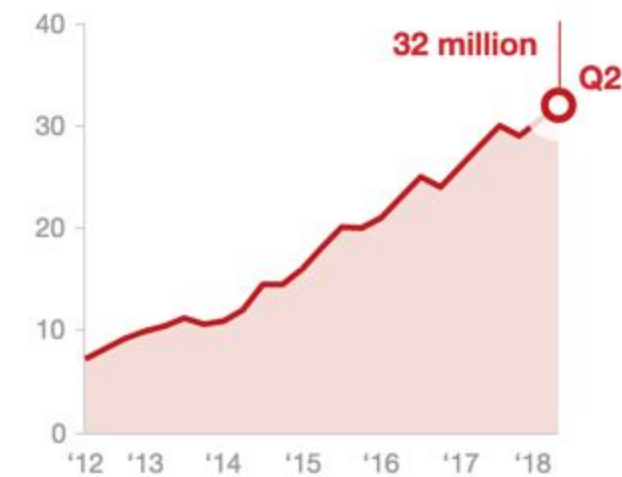
Founded in July 2004, Yelp has taken root in countries across the globe, making it the leading local guide for real word-of-mouth on everything from boutiques and mechanics to restaurants and dentists. The Yelp community is made up of engaged locals who connect online and off to share their opinions about local businesses.

I first came across the compelling value thesis for Yelp from work done by Scott Miller of Greenhaven Road Capital. The bullish thesis for the stock is simple. Yelp is a long-term compounder with a huge runway, run by a founder/CEO with skin in the game, but whose true value and business health is obscured by its short-term reported accounting numbers due to some recent positive changes in its business model.

Here's the rundown...

Runway: Yelp has a strong and growing community. It's average monthly mobile uniques are 32 million and steadily rising. Cumulative reviews increased 22% year of year in the most recent quarter.

Average monthly mobile app unique users

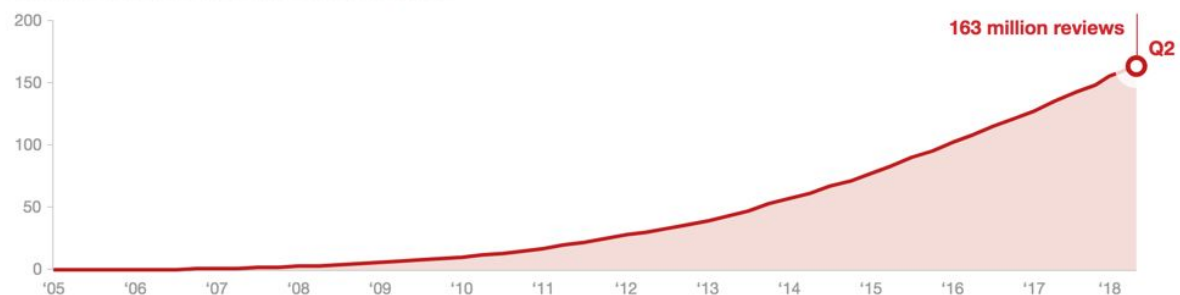


Calculated as the number of unique devices accessing the app on a monthly average basis over a given three-month period, according to internal Yelp logs.

It has a library of 163 million reviews in over 30 countries from around the world. My wife and her friends hardly ever eat at a restaurant before checking its yelp rating and reviews. The reviews tend to be much more detailed and informative than what you can find on Google. This library of quality review content represents a considerable moat.

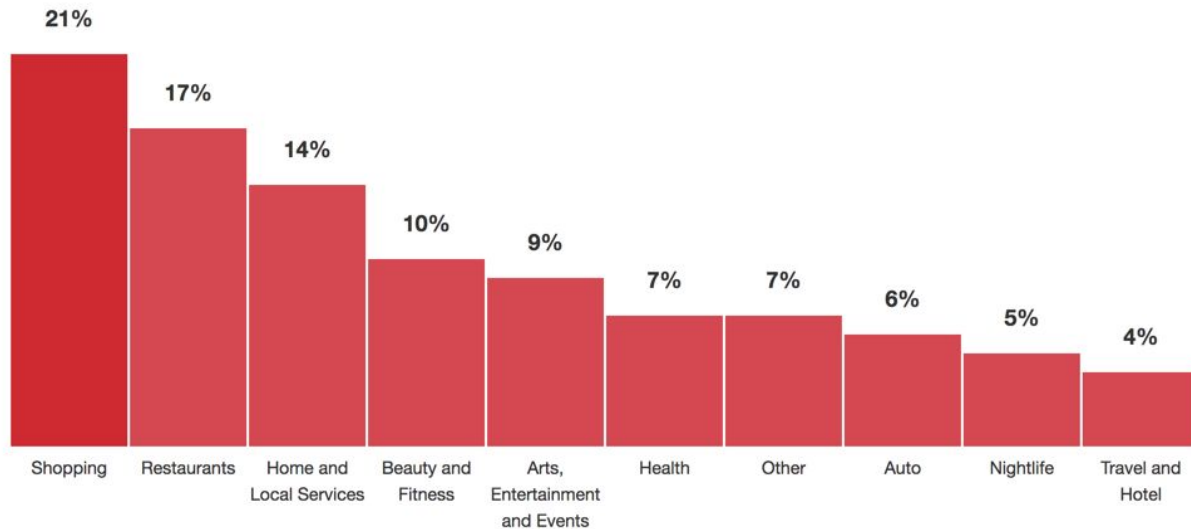
Review Statistics as of June 30, 2018

Cumulative reviews contributed since inception



These reviews now span the entire spectrum of consumer interests.

Reviewed Businesses by Category



At its current size, Yelp is only scratching the surface of its TAM. In addition, it's making a number of moves that should considerably boost revenue growth and operating leverage. One of these is Yelp's new "Request A Quote" feature that allows users to request quotes for a service job from multiple vendors without ever leaving the app. Users can post a single project description (such as needing tree trimming in their yard) and then read the reviews of prospective tree trimmers and request a quote from up to 10 of them at once. Tyler used this service recently to find an electrician and was extremely happy with the ease and convenience of the process.

Yelp directly influences 100s of billions of dollars in consumer spending a year but has been purposefully underearning as it's extended its reach and increased its market share. There's a whole number of levers that the company can, and are, beginning to pull to dramatically increase the monetization rates of this audience.

Accounting and context: This is the crux of the thesis and why the significant undervaluation exists. Yelp has been undergoing a number of business model changes which have depressed its recent financials and distorts the true health and value of the business.

One of these big changes is Yelp's sale of its high revenue growth but negative margin food delivery business "Eat24" to GrubHub for \$250M. This sale has depressed top line growth to 12% in the past quarter. But when adjusted for the sale, core business revenue growth is still rising at a 20%+ yoy basis and the company has a 5yr CAGR of 43%.

Eat24 is still directly integrated into Yelp's app — even though GrubHub now owns it — where users can order directly through it. But Yelp now collects a high margin revenue stream from GrubHub for driving spending to them.

Another major positive transition in Yelp's business model is their move away from an annual advertising contract model which was a holdover from the days when the Yellow Pages was seen as their primary competitor. The old model required merchants to commit to a year long contract that costs thousands of dollars. This was not an easy sale to risk averse small businesses who rarely have long-term visibility and don't like to commit to lengthy and costly contracts without a guarantee of high return.

Instead, over the last year, Yelp has moved to a flexible contract model that allows companies to switch on and off their ad spending whenever they want. The most recent data suggests this was a smart move... advertising accounts were up 27% yoy in the latest quarter.

Foundation: Yelp has an iron clad balance sheet and produces over \$200M in ttm free cash flow. The company trades at less than 4 times its cash, with over \$800M sitting on its balance sheet. This cash can be used for strategic acquisitions or buybacks; likely a mixture of both.

Leadership: Yelp gets five stars in the leadership category. The company is run by its founder/CEO Jeremy Stoppelman who has shown himself to be a long-term pragmatic businessman and capital allocator. Jeremy has lots of skin in the game, holding over \$100M worth of the company's stock.

Value proposition: Yelp checks all the boxes for its value proposition to the customers of its two-sided marketplace (consumers and vendors/advertisers). It's extensive library of quality reviews creates an active and loyal user base. The platform also increasingly provides a frictionless low cost way for small vendors to reach and connect with consumers in targeted ways (ie, its Request A Quote feature). Yelp has been intentionally under monetizing its large and growing user base. It has significant pricing power and enduring demand growth and should fully benefit from the network and flywheel effects that are inherent to its business model.

Yelp has all the makings of a long-term compounder and we can buy this stock for just 2.5x EV/Sales (note: YELP is up 25%+ as this issue goes to press. It's still a steal after this pop). That's an incredible margin of safety for a company with a significant competitive advantage whose just beginning to monetize its large user base and has ample opportunities to reinvest and earn a consistently high ROIC.

Quant: Macro Ops Hedging Technique

With SPX back at the highs and VIX back at the lows, we've started to receive a steady trickle of emails asking about hedging strategies to protect against a revisit back down to the 200 MA.



In this section we'll lay out our general philosophy of hedging long positions. And then we'll get into a few specific hedging strategies that you can use depending on your market assumption.

To start, before even thinking about hedging strategies we first take a look at our long holdings to assess whether we still like the positions. This includes double checking our position sizing, and our potential max drawdown if the longs were to hit all of their stops.

It's important to double check longs because market context changes over time, and adjustments need to be made in order to reflect those changes. Also, we need to quantify the dollar amount of risk on our book so that if we do decide to hedge we know how much exposure we're dealing with.

In most cases, if we're worried about a market decline or uncomfortable with the risk exposure of the long book we'll trim the longs rather than hedge. Selling longs is a cheaper way to offload risk from a transaction costs standpoint and it accomplishes the same thing as a hedge.

Plus it doesn't make much sense to have a bunch of longs on the book if we're unwilling to endure the volatility of the positions. The market doesn't give profits away for free. Accepting downside volatility is the [price we have to pay](#) for long-run returns.



Morgan Housel
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 Follow

Volatility is price of admission. The prize inside are superior longterm returns. You have to pay the price to get the returns. Many aren't.

But sometimes trimming longs and core holdings doesn't make the most sense. We might love the individual name despite an unfavorable short-term macro forecast. The stock may have an important earnings event coming that we want to hold through, or selling the long could create a tax liability. In that case we'll consider hedging.

There's two ways to hedge out a long book using VIX based products.

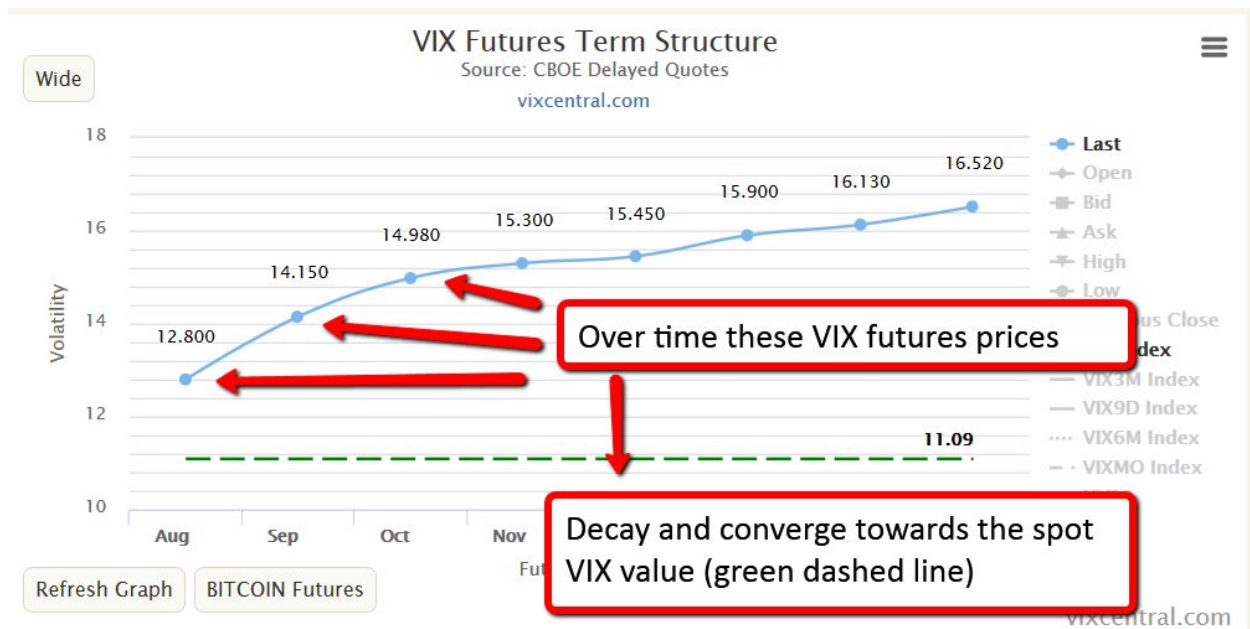
1. Passive VIX option structures that roll every month until you change your market bias or the market falls
2. Active trading of volatility funds or volatility futures once volatility starts to pop

The passive option structure creates the most safety and security — it guarantees protection. But it's also really expensive to carry.

The active trading tries to time the market and reduce the negative carry. But since it's not always on the book, there's a risk that the drop comes and the hedges aren't activated leaving the portfolio exposed.

Passive Option Structures

Most traders pick to passively hedge with VIX out-of-the-money calls. It's a simple structure with unlimited upside. But VIX options have "double decay" which makes this strategy extremely costly. Just like any other out-of-the-money option, VIX calls decay in value as time passes. But they decay a second time because they are priced off VIX futures, not the actual VIX index. VIX futures decay in price overtime as well, hence the second source of decay for the VIX options.

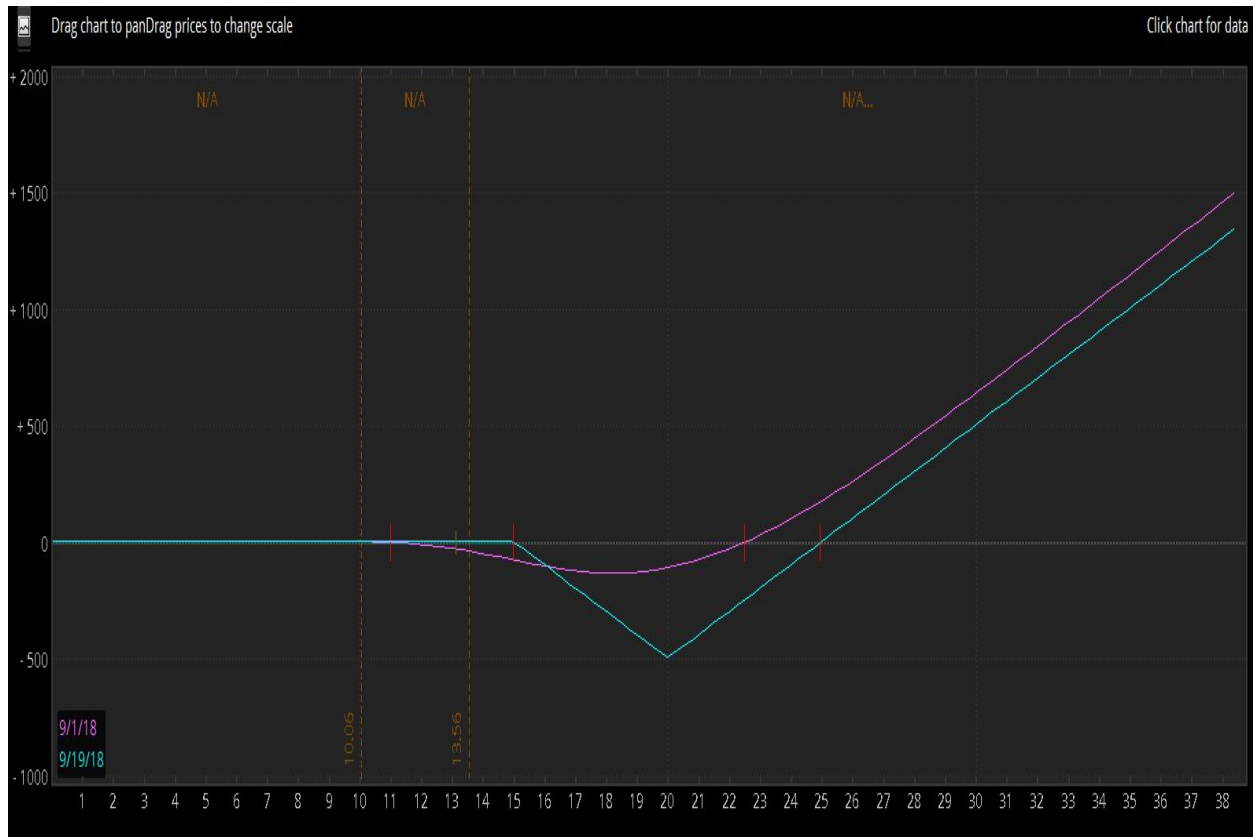


The double decay is why most people are unsuccessful trading VIX options, the costs are insanely high.

Whenever we use VIX options for hedging we like to use spreads in order to shave off some of this cost.

We like the 1x2 call backspread which involves selling one VIX call close to the money and then buying two VIX calls further away from the money. The short call dramatically reduces carrying costs of the hedge. And sometimes it's possible to actually receive a small credit for the hedge. But the market never gives free lunches. This spread can still lose money if the VIX has a "medium" move up and fails to follow through.

Here's a p&l graph of the option structure so you can get a better idea of how the 1x2 pays out.



The above graph plots the payoff of a short 15 VIX call and two long 20 VIX calls. If markets remain calm and the VIX stays under 15 this spread won't lose any money. And the 20 calls still protect a portfolio from a left tail event. But a VIX in between 15 and 20 will cause losses. And those losses get larger and larger the closer to expiration (light blue line). It's usually a good move to roll this spread further out in time once the options get down to 7 days left.

Deciding how far out to buy depends on our market assumptions. If it's a 3 month period we want to protect from we'll buy 3 months out. After the 3 months pass, and if we still want to protect the portfolio, we'll just roll the position again.

The final step with passive option structures is to determine how many contracts to buy.

First we add up all of our long risk on the portfolio. We quantify that risk by looking at our portfolio wide drawdown if every stop on every stock got hit at once.

Once we have that "max pain" number we have to figure out how much of that we want to hedge. That number ranges from 10%-100%. It all depends on market assumptions. From there it's back to the payoff graph of the option structure to determine the dollar payout at each level

of VIX. We look at VIX levels of 10, 15, 20, 25, and 30 on the graph to see what the corresponding p&l would be per structure.

Let's say we had \$100,000 of long risk that we wanted to completely hedge out. If the payoff graph tells us that we can expect a \$1,000 payout at a VIX 25 level then we would buy 100 spreads.

Active Volatility Trading

The other hedging method, our preferred method at Macro Ops, involves actively trading in and out of hedges depending on the term structure of volatility.

Explosive VIX jumps occur when the futures curve starts to flatten out and invert. Here's what the curve looked like the Friday before the Feb. 5 flash crash.



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There's an easy way to quantify the volatility term structure by looking at the ratio between VIX and VIX3M. When this ratio starts to spike above 1.0 it's an early warning sign that a major VIX spike and SPX drop is in the cards.



Once the term creeps above 1.0 we start to place long positions in VIX futures, VXX, or UVXY. Most of the time the ratio ends up reversing back below 1.0 and we exit the hedges for a small loss. But when the market follows through to the downside, these long vol positions explode in value.

This strategy saves a ton on hedging costs but it comes with the downside of not offering protection during the initial stages of a sell off in SPX. The volatility term structure only inverts when market stress has already started to build. So while using this, we have to take some pain during the initial SPX descent.

We also have an intraday hedging system that we like to use on large sell off days. It works well, but it only triggers on large down days. If the market slowly moves down this intraday system won't trigger.

Here's how it works:

If the SPX is down by 1.5% or more from yesterday's close and it's after 2PM EST we short ES futures and exit the entire position at the close.

This strategy takes advantage of late day systematic selling from funds that need to dersik their books as volatility starts to expand.

The key with the intraday hedge is waiting until late in the day — that's when the fund's risk systems trigger to sell short the market in order to offload exposure. Trying to jump the gun and short ES earlier in the day results in too many false signals over time.

If the sell off in the market begins with a really low VIX value (like we saw earlier this year on Feb. 5) the intraday hedge works even better by going long VIX futures/VXX/UVXY instead of short the market. There's more embedded convexity in a long VIX position than in a short ES position.

This little intraday strategy worked wonders during the Feb. 5 flash crash.



Summary:

- **Make sure you have a good reason to hedge. It might make more sense to reduce core holdings.**
- **If you must hedge there are two ways to do it, passive option structures, and active trading.**
- **For passive structures in VIX we like the 1x2 call ratio spread.**
 - **Sell one call closer to the money and buy two further from the money**
 - **Buy enough time in the options to cover the period you are fearful of**
 - **Size the structure based on the amount of open dollar risk in your portfolio**
- **Active trades we implement include one swing trade system and one intraday system.**
 - **Buy volatility futures/ETPs when the term structure starts to invert, sell the hedges once the curve goes back to upward sloping**

- **If the market is down over 1.5% on the day and it's after 2PM EST consider selling short the market into the close and cover by the end of the trading day**