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How Many Stocks Should You Own in Your Portfolio?

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> "Diversification is the only free lunch in investing." -Harry Markowitz, 1952
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> "Investors have been so oversold on diversification that fear of having too many eggs in one basket has caused them to put far too little into companies they thoroughly know and far too much in others which they know nothing about." -Phil Fisher, 1958

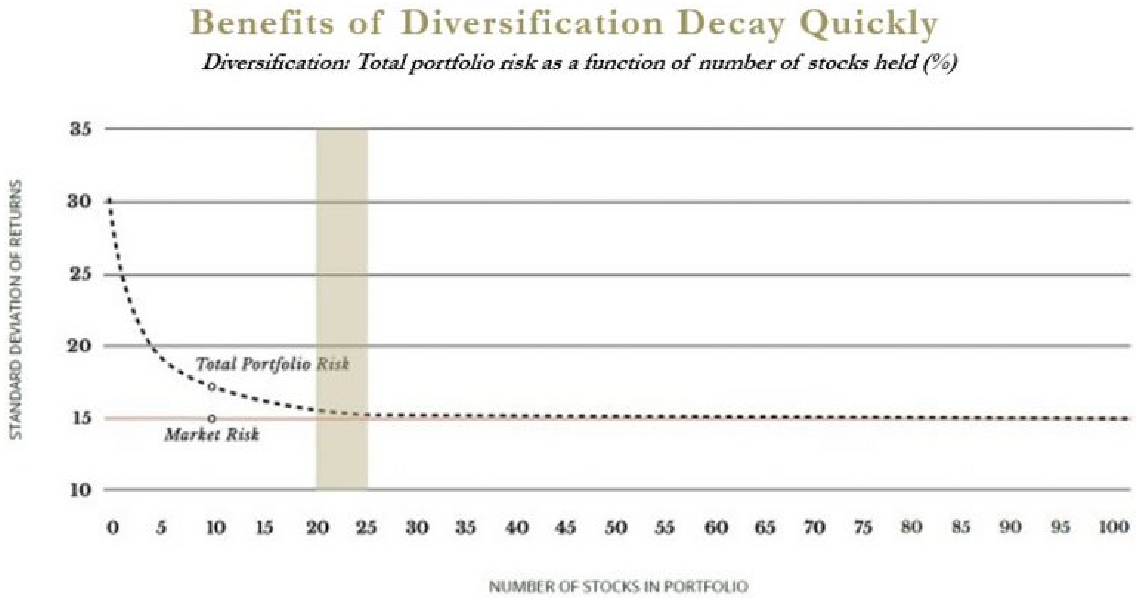
The value of diversification is one of the few areas in finance where almost everyone agrees. Diversification is good! We know that diversification is important because we know that we can't predict the future and so when we make investment decisions about stocks, diversification is critical since we may be entirely wrong about any one stock we pick. But like most things, diversification is best in moderation. Too much of anything can be bad for you and diversification can be taken too far. But the level at which "too far" kicks in is surprising to most people.

This isn't a new debate. Almost all of the most important topics in investing are timeless in nature and diversification is one of them. The quotes opening this post were penned over 60 years ago. For context it is important to know that Harry Markowitz is the founder of Modern Portfolio Theory and the main inspiration for Eugene Fama who created the Efficient Market Hypothesis, which among other things says that stocks are accurately (i.e. efficiently) priced at all times and thus, there is no systematic way for investors to beat the market. Phil Fisher on the other hand is one of the greatest stock pickers of all time, with an amazing record of out performance, and was a major source of inspiration for Warren Buffett.

Note that Fisher does not say that diversification is bad. He only says that investors have been oversold on diversification. He argues that the fear of owning too few stocks has caused investors to own too many stocks. But what is "too few" or "too many"? What is the right number of stocks for investors to own in their portfolio?

The answer depends on what an investor is trying to achieve.

This chart is based on a study discussed in the book *A Random Walk Down Wall Street*. The book, authored by Burton Malkiel in 1973, popularized the random walk hypothesis crafted by Eugene Fama in 1965. This hypothesis, which is joined at the hip to the efficient market hypothesis, says that stock prices move in an unpredictable manner so investors can't outperform the market. The data is Malkiel's, the title is ours.



What Malkiel's chart shows is that as you add stocks to a portfolio, the volatility of the portfolio declines. This is what diversification is all about. But Malkiel fully acknowledges that even if you own every stock in the world, you can't get rid of volatility. The best you can do is minimize the volatility of your portfolio down to the level of overall market volatility (labeled as "market risk" on the chart). Obviously, a one stock portfolio is going to be much, much more volatile than the total market. That's because on any given down, some stocks are up, some are down, and on net, a lot of the individual stock volatility cancels each other out. As you add stocks to your portfolio, you start seeing this same dynamic at play. A 10 stock portfolio is going to be a lot less volatile than a one stock portfolio because even with just 10 stocks, on any given day, some will be up, some will be down and on net a lot of the individual stock volatility cancels each other out, just as we see for a portfolio that owns the entire market.

So if your goal as an investor is to earn market returns, then wide diversification is exactly what you should do.

But what if your goal as an investor is to outperform the market? Well, the only way to outperform the market, is to own a portfolio that is different from the market. What this chart shows (and remember, this data comes from one of the key proponents of efficient market hypothesis, not from someone arguing in favor of investors' ability to beat the market) is that once you reach about 20-25 stocks in a portfolio you have captured almost all the benefits of diversification.

Now one key assumption behind this chart is that the stocks in the portfolio are selected randomly. If you buy 20-25 oil stocks or bank stocks, you will still see much higher volatility than the market. This is because banks and oil companies have financial performance that is highly correlated to each other. Since they tend to move together as a group, their volatility won't cancel each other out. But if you are an active investor seeking to outperform with an optimal level of diversification, you can come close to the same result by selecting stocks that are not overly correlated to each other by making sure they serve different end markets and have different business model, etc.

Markowitz, Fama and Malkiel were not seeking to outperform. So for them, there is no cost to adding a 50th or 100th or 300th stock to a portfolio. Each of these lowers volatility and even if the reduction is minuscule, you might as well take it because it doesn't cost you anything.

But for an active investor, adding names to a portfolio is very costly beyond a certain threshold. As Phil Fisher says, adding too many names to a portfolio leads to investing "far too little into companies [an investor] thoroughly known and far too much in others which they know nothing about."

Trying to find stocks that you think will outperform the market is hard! The biggest challenge we face at Ensemble is finding enough stocks that we believe strongly will outperform. This is a never ending battle because if we are right and a stock outperforms dramatically, in most cases it becomes less likely to outperform going forward and we become forced to find something new that we believe will outperform in the future. So for active investors, there is a huge cost to adding new names to a portfolio. And there is a huge advantage to be gained by prudently limiting your portfolio to the companies that you "thoroughly know".

The chart shows that as the number of stocks in a portfolio reaches 20-25 names, the incremental volatility reducing benefits of diversification reach near zero. This is the sweet spot for portfolio size for an active investor seeking to outperform the market. At 20-25 stocks, you've captured almost all the benefits of diversification, yet the number of companies you need to "know thoroughly" is still manageable.

To make things simple, let's assume the S&P 500 is the entire investment universe. If your goal is to earn market returns, you should own all 500 stocks. If your goal is to beat the market, you should own about 20-25 stocks. We'll relent a bit and agree that some strategies will benefit from owning somewhat more than 20-25 names. So let's allow for as many as 50 stocks to be part of a strategy designed to beat the market.

But what you should not do, is own a number of stocks in the middle. Owning 150 stocks or 350 stocks dramatically dilutes any ability you might have to beat the market without adding much in the way of diversification because you've already captured most of the benefits with your first 25 stocks.

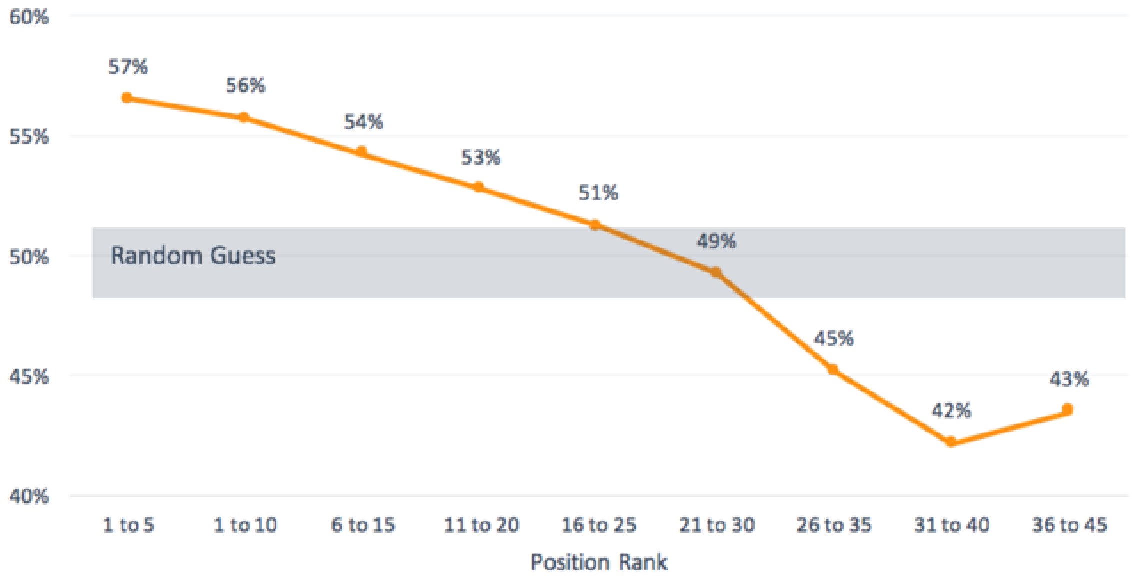
Yet this is exactly what most active managers actually do.

	Median # of Holdings	Avg # of Holdings	Median % of Assets in Top 10 Holdings	Avg % of Assets in Top 10 Holdings
Large Blend	130	177	26	29
Large Growth	63	123	38	39
Large Value	83	152	28	31
Mid Blend	109	358	18	21
Mid Growth	78	133	25	29
Mid Value	83	168	22	24
Small Blend	146	457	15	20
Small Growth	98	199	20	24
Small Value	105	237	18	21

Source: Morningstar Direct. Data as of Dec. 31, 2018.

Most active managers, "have been so oversold on diversification that fear of having too many eggs in one basket has caused them to put far too little into companies they thoroughly know and far too much in others which they know nothing about." Its no wonder that most active managers under perform the market.

And this isn't just theory. One of the best papers we've seen demonstrating that over diversification is the root of active managers' under performance comes from Alpha Theory, a firm dedicated to helping active managers refine their portfolio management strategies to maximize performance (disclosure: Ensemble recently became a client of Alpha Theory after realizing how closely their approach mirrored what we have developed on our own). In his white paper titled *The Concentration Manifesto*, Alpha Theory founder Cameron Hight demonstrates empirically that the top 20-25 stocks in active managers' portfolios do, in fact, outperform. But as the Morningstar data above shows, these talented stock pickers dilute their advantage by buying another 100-150 stocks that under perform! The chart below from Cameron's paper shows the likelihood that a stock pick outperforms relative to its ranking in a portfolio.



Source: Alpha Theory

Are there exceptions to our point of view? Sure. One obvious example is quant funds. An index like the S&P 500 is just a simple quant fund. The strategy of the S&P 500 is pretty much just to own the 500 largest companies. It turns out, that's a surprisingly good strategy. But we fully admit that there is strong evidence that some quantitative investment strategies can produce superior returns not be limiting themselves to companies the manager "knows thoroughly" but instead by creating an algorithm for selecting stocks that is superior to the S&P 500 algorithm. These types of strategies will typically try to capture sources of out performance that are spread across large groups of stocks and thus, they need to own many stocks. But most active managers, the ones that go on CNBC to tell you why they like a particular stock, are seeking company specific sources of out performance and diluting these insights away via excessive diversification is a huge mistake.

So to answer the question that is the title of this post: How Many Stocks Should You Own In Your Portfolio?

If you seek market returns, own everything in the market via index funds. This is a perfectly reasonable approach to investing. If you seek to outperform the market, own 20-25 stocks (or we'll allow for as many as 50 if you think the additional stocks are really critical to the success of your strategy). But do not end up with a portfolio that is stuck in the middle. Do not dilute whatever out performance generating insights you might have by adding your 100th or 200th best idea. This is a recipe for under performance and you might as well go buy index funds so you can at least earn market returns.