Occam's Razor

APRIL 2015

WHY THE DOW
DOESN'T WORK

What is Occam's Razor?

Occam's Razor is a principle attributed to William Occam, a 14th century philosopher. He stressed that explanations must not be multiplied beyond what is necessary. Thus, Occam's Razor is a term used to "shave off" or dismiss superfluous explanations for a given event. This concept is largely ignored within the investment management landscape. This newsletter will "shave off" popular investment misinformation and present what is important for achieving long-term investment success.

WHY THE DOW DOESN'T WORK

With Apple's addition to the Dow (or more properly, the Dow Jones Industrial Average), now is a great opportunity to look at how to think about the Dow, and indices more broadly. Indices are great tools for understanding what is going on in the markets, but you need to understand what to do with those tools. Just like each tool has its uses, each index has a specific role. And some are better than others.

A Quick History of the Dow

The Dow Jones Industrial Average is the second oldest US stock index in the world. It was created in 1896 by Charles Dow, who also created the oldest US stock index, the Dow Jones Transportation Average. It's worth noting that Dow was also the founder of the Wall Street Journal, which explains why The Dow is so widely known.

We're going to spend a lot of time looking at how the Dow falls short, but it's important to remember just how incredibly powerful and forward thinking it was when the Dow was created. Wall Street was, infinitely more so than today, impenetrable to the average investor. Companies were not required to file quarterly or annual financial information, they actively tried to hide information about their balance sheets and operations, and there simply was no consolidated listing of stock prices. Charles Dow made this information available. He is the person that made investment possible for individual investors, and we all owe him a huge debt.

It's too strong to call Charles Dow one of the founders of the modern stock market and financial industry, but he's one of the people that the founders built off of. Dow was one of the first people to focus on a financial market as a whole, rather than individual stocks. He was also one of the first to state that a company's stock price is determined by its earnings. This seems fundamental to us, but it was revolutionary back then.

However, as important as Charles Dow and his indices are to the history of finance, there are simply

better tools available to us today.

Why the Dow Doesn't Work

The Dow, despite being the index you hear about the most, doesn't actually tell you much. If it's up or down a lot, it can tell you that US large companies had a good or bad day, but that's about it. There are two reasons for this:

• It only looks at a small number of really big US companies
• It measures them poorly

Let's look at these issues in turn.

Construction Issues

The Dow is really a highly concentrated, actively managed fund in disguise. Either of these would be bad enough on its own, but together they make the index nearly useless as a measure of the US stock market.

Because the Dow is comprised of a handpicked selection of 30 of the biggest companies in the US, it not only represents a small subsection of the market, but it's a bad representation of that segment. We ran a three factor regression that looks at the historical returns of the Dow (this is a fancy way of saying we analyzed its return components to see what the Dow is actually measuring.) What we found is about what we expected:

• The Dow represents the very largest companies in the US equity markets – it looks significantly less like the US stock market than the S&P 500 or the Russell 1000 indices (both of which also only describe US large companies – but at least they are closer to the whole of the US market)

• The Dow is not very well diversified - this means that the risk from the individual companies has not been properly diversified. With the other indices, there are enough companies included (the next smallest index by number of companies is the S&P 500, with, you guessed it, 500 companies) that the company specific risk effectively goes away – the random movements of the companies basically even themselves out and we are just left with the movement of the asset class as a whole. This does not happen with the Dow. When we are trying to extrapolate the returns of the Dow to the entire US stock market, this is problematic.

We knew going in about both of these issues, but it's nice to see them come out of the actual historical returns of the Dow. If you would like to go a little bit deeper, you can take a look at our write up of the analysis in the appendix.

Related to the diversification issue is that the components of the index are arbitrarily selected, rather than determined algorithmically. The selection committee is trying to build a "representative" sample based on industry. There are a couple of

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problems with this:

• Industry and Sector have no bearing on a company's expected return.

• Because the components are changed irregularly (the components of the index have only been changed 53 times in the 128 years the index has existed). To take Apple as an example, it has been the largest company in the world for a while before it was added to the Dow. You would think that Apple would have been good to include in the index for a while now…

• Going forward (which is really all we should care about), we don't know which companies will be "representative" of their industries. To continue using Apple as an example, a little over 10 years ago people were wondering just how long the company would be in business, and now it's the largest company in the world.

Measurement Issues

Even if we were to grant that the Dow's index construction made sense (which we don't,) we'd have some serious problems with how the index is measured. The way the Dow is measured is, in a word, strange. The Dow is a price weighted index. This means that unlike a typical index that uses market weights based on the size of the company, the Dow is weighted by the share price of the companies.

It's important to note that share price doesn't actually mean anything. There is no economic information embedded in the share price itself. The price is simply the value of the company divided by the number of shares outstanding. It is, more than anything, algebra.

Price weighting indices made sense back in the 1890s, when a computer was an actual person with a green visor, but we do not manually compute index values any more. We don't need to take shortcuts like this anymore, and we can see this as no other major indices use this methodology.

To understand the problems with a price weighted index, let's look at two separate companies that are both trying to return money back to their shareholders. They are both doing the same thing, but they go about it in different ways – Company A sends out a traditional dividend, and Company B will buy back some of its shares. Both methods are the same from an economic perspective, but they go about it in a different way.

These actions are economically identical – they both are returning value to their shareholders – but they have exactly opposite effects on a price weighted index. Company A will represent a smaller portion of the Dow, and Company B will represent a larger portion.

Now, the Dow does try to account for this, and many of the other things that can affect the stock price of a company, with what they call the Dow Divisor. The

problem is, it only tries to force continuity when there are events like stock splits or component changes. The divisor is applied equally to all of the component prices, so we are still left with the weighting issues that we discussed earlier. In essence, they are trying to force a clunky solution to a problem that we can simply step away from with a market weighted index.

When we look at the Dow, you can see that it doesn't tell us all that much about what is going on in the US market, let alone your investment portfolio. To be blunt, the only reason we know what the Dow is doing is because we hear about it on the drive home from work. Its movements don't tell us anything meaningful (aside from letting us know when we might be getting some questions about it.)

How We Use Indices

This leads us to the broader question of what indices we do pay attention to, and how we use them. We use indices to understand how specific sections of the market are behaving, so we use well diversified, market weighted indices, that have very clear definitions for what is in (and not in) the index.

The first thing to remember about an index is that it is a model. It's a model of a certain market, be that the global stock market, the US market, or part of a market. Indices are trying to summarize what is happening in that particular market. Since security returns are easy to measure, we look at how an index defines their segment to determine how useful the

index is. Some indices are simply too specific – such as the Index of the Power Utility Companies of the Republick Srpska or the Dow Jones 2008 Summer Games Index. Others don't define asset classes in ways that we like – such as S&P's definitions for growth and value stocks.

What we are looking for are indices that cover what we consider to be full asset classes, and that are objectively defined. Just like with your portfolios, we do not want anyone picking which stocks are in which indices, and we want to understand exactly why the construction rules are the way they are. Below are the indices that we use as a quick guide to how the market is doing on a day to day basis.

Asset Class	Representative Index
US Stock Market	Russell 3000 Index
International Stock Market	MSCI EAFE Index
Emerging Markets Stock Market	MSCI Emerging Markets Index
Global Stock Market	MSCI World Index
US Bond Market	Barclays US Aggregate Bond Index
Global Bond Market	Barclays Global Aggregate Bond Index

There are obviously a number of other indices that we use when we want to look at specific issues, or for monitoring the performance of the funds that we are using, but these give a good day to day (well, it should really be at least quarter to quarter or year to year) overview of what the markets are doing.

As valuable as indices are, it's important to remember that they are not designed around helping you achieve your financial goals. And constantly worrying about how you compare to the indices is a good way to hurt your chances of achieving your goals. Indices are designed to describe specific portions of the market – they are not designed to show you how you should be investing your money. We build your portfolios around empirically proven sources of returns, rather than how index companies break up the market (based on what they think will be most attractive to active and ETF managers – this is how index makers get paid). What matters is not how your investment returns compare to your neighbor's returns, but rather that you're on track to meeting your financial goals.

As we said at the beginning, indices are just a tool. They can help you understand how a certain segment of the market is moving, but we don't just invest in a single segment of the market. We invest in the whole market, which means you can't just look at one index, however good it is. You have to look at them in the context of a total portfolio. They each help you accomplish a specific task, but you can't get the job done with only one.

Next time you are asked "Have you seen what the Dow (or any other index) has been doing lately?" You can feel safe in saying, "No." The important thing is your Personal Benchmark. We don't monitor your portfolio against external indices, but rather what you want to achieve. We are not interested in simply

getting you the highest return possible, we want to help you achieve your goals, and we are constantly monitoring how you are doing relative to those goals. Where you are relative to your goals is the most important benchmark, not what you see in the news.

Appendix

To get a quantitative picture of what is going on with the Dow, we use regression analysis to understand what is driving the returns of the various indices or investments that we are looking at. For this, we will use the Fama-French Three Factor Model, which looks at the drivers of US equity returns. As you might infer, there are three drivers of US equity returns:

• Market Beta (Sensitivity to the broad US market)

• Size Factor (Company size – smaller companies are riskier, and hence have a higher expected return)

• Value Factor (This is essentially a measure of how successful the market thinks the company is – in other words, how much of a premium over the company's book value is the market willing to pay for the company. The lower that premium, the higher the expected return of the company.)

When we run the analysis, we can see what the Dow actually looks like compared to the broad US equity market, and some other indices in the large

Three Factor Regression 1/1979 - 2/2015
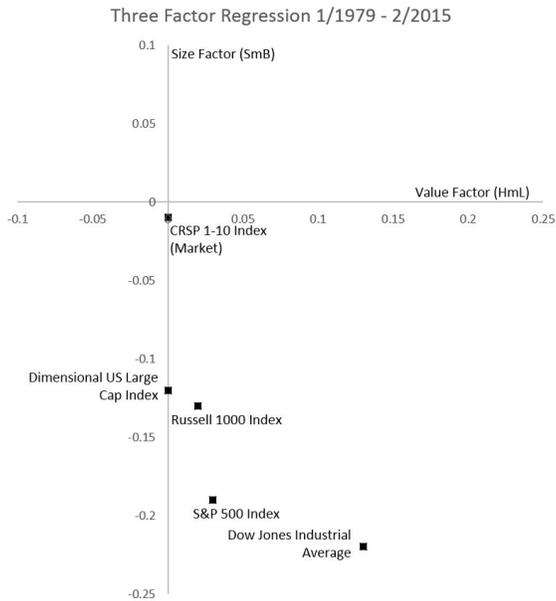
Analysis run from 1/79 – 2/15. Data courtesy of Dimensional Fund Advisors. Indexes are not available for direct investment. Index performance does not reflect the expenses associated with the management of an actual portfolio. Past performance is not a guarantee of future results.

Data Series	Size Factor (SmB)	Value Factor (HmL)	Adjusted R^2
Dow Jones Industrial Average	-0.22	0.13	0.90
Dimensional US Large Cap Index	-0.12	0.00	1.00
CRSP Deciles 1-10 Index	-0.01	0.00	1.00
S&P 500 Index	-0.19	0.03	0.99
Russell 1000 Index	-0.13	0.02	1.00

company space. As mentioned above, there are two main takeaways from this analysis:

• The returns of the Dow show that it looks like a

collection of large companies

• The Dow is not well diversified

Looking at the chart we know that the Dow is larger because it's closer to the bottom of the chart. But what this means is that the returns of the small cap premium (the returns of small cap stocks minus the returns of large cap stocks) explain more of the returns of the Dow than the other indices that we looked at. It's worth pointing out that, for our purposes here, you can think of the regression coefficients sort of like correlations – the larger the absolute value of the coefficient the better that factor explains the returns.

That the Dow is larger than the other indices is pretty straightforward. Determining that the Dow is not well diversified takes another step. If we look at the R^2 for each of the indices in the regression we can see that the Dow is the outlier. Aside from the Dow, all of the R^2s are 0.99 or 1.00. This means that the model is essentially perfectly describing the returns of these indices – we expect these types of numbers in well diversified, broad market indices over long periods of time. As those qualifiers start dropping off, we expect to see the R^2 drop off as well. We know that the Dow is larger than the other indices, so we would expect to see a drop off there. But look at the S&P 500, it's between the Dow and the Russell 1000, and it only drops off by 0.01, so this isn't the full story. We are running all of these indices over the same time period, so there's no effect there.

What we're left with is the diversification issue. Essentially, what that R^2 is showing us is that there is just noise in the returns that the model can't deal with. As you add more stocks to an index, their individual movements cancel out since they are based on what is going on within the companies themselves, not the broad asset class. In other words, the model is good at explaining asset class returns, not the returns of Apple or GE, or any of the other companies in the Dow. And without more companies in the Dow, the returns of those stocks are driving the returns of the index.

HAVE A QUESTION OR CONCERN?

Call (866) 827-0636 to talk to us today.

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