



Estimating Future Stock Returns

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Estimating the future returns from stocks is one of the great challenges of security analysis. There are many ways that future returns can be estimated, but the two dominant classes of tools may be called *fundamental analysis* and *statistical analysis*. Many companies apply fundamental analysis to estimate future returns—and Morningstar is one of the best-known providers of this kind of analysis for retail investors. Statistical analysis (not to be confused with technical analysis) applies statistical models to estimate risk and return on the basis of various factors, which may include historical performance, Beta, historical volatility, firm size, etc. *Quantext Portfolio Planner* (QPP) is a statistical model that estimates future performance on individual stocks and total portfolios. It is always of interest to see how well various methods agree or disagree in projecting future performance and a recent article by Morningstar inspired me to do some comparisons.

When Jeffrey Ptak at Morningstar recently came out with a list of four stocks that he predicted “should return at least 15%,” I had to take a closer look:

<http://news.morningstar.com/articlenet/article.aspx?id=202979>

The stocks in question have recently been upgraded to Morningstar’s highest ranking of five stars. The article states that a stock is given five stars when the price is trading at a substantial discount to Morningstar’s estimated ‘fair value.’ The method by which Morningstar generates its ratings for stocks is a fundamental approach:

<http://news.morningstar.com/articlenet/article.aspx?id=4982>

Using their model for discounted future earnings, Morningstar estimates the fair value of a company’s stock today. In theory, if you can buy stocks at a discount to their fair value, you should be able to generate higher returns. Morningstar assigns the star rating to stocks on the basis of how far the price of a stock is below its estimated fair value. The trailing performances of various strategies driven by their stock ratings are shown below (updated in March 2007). The basic approach used to test the effectiveness of the ratings is to assume that you buy any stock with a five-star rating and sell any stock with ratings of either one star, three stars, or at fair value:

<http://news.morningstar.com/articlenet/article.aspx?id=183630>

The Morningstar approaches appear to have generated positive impacts on total portfolio returns under various strategies, although the analysis ignores both transaction costs and taxes.

Morningstar's approach, as they describe it, is a value-oriented strategy. The long-term impact of value-driven investing has never really been resolved, although there has been enormous effort put into to this problem. The basic value-vs.-growth argument and the evidence for long-term gains in value investing are discussed in this article:

<http://etf.seekingalpha.com/article/12637>

The Morningstar stock rating approach also assigns risk ratings to stocks. The risk levels are classified as *Average* or *Below Average* for all four stocks Mr. Ptak projects will generate at least 15% per year. Morningstar calls its risk rating a measure of 'business risk,' by contrast to broader risk measures. I am not sure what this accomplishes—investors are impacted by all risks—driven by the market, by specific events that impact the company, and by investor reactions to these events. My understanding is that the Morningstar 'business risk' measure is supposed to capture the analyst's perception of the odds that something will happen to lower the 'fair value' of the company or relative competitive position. It appears to me that stocks that achieve five stars under Morningstar's system are likely to be riskier on average (in terms of total risk) than the average member of the universe that they draw from. A stock must be trading substantially below 'fair value' to get a five star rating. A stock that is highly volatile is more likely to be trading substantially below estimates of fair value simply because such a stock is more likely than its cohorts to suffer a major decline in price. Unfortunately, Morningstar's assessment of its stock rating strategy does not include measures of the total risk of its picks by star classification.

By contrast to the fundamental approach favored by Morningstar, *Quantext Portfolio Planner* (QPP) takes a purely statistical approach. QPP knows nothing about the underlying fundamentals of a stock. QPP generates statistical outlooks for risk and return for assets using only historical performance data, combined with assumptions about the

equity risk premium, long-term market statistics, and related data about the correlations between assets and the broader markets. QPP's projections for risk and return for individual assets and for a range of portfolios have been extensively tested, and typically are twice as accurate (i.e. have half the levels of error) as using trailing performance data as your estimate of future performance:

<http://seekingalpha.com/article/38568>

After reading the Morningstar article, I thought that it would be interesting to look at QPP's projections for risk and return for the four stocks analyzed by Mr. Ptak. The four five-star-rated stocks that Mr. Ptak projects will generate "at least 15% per year" are Bayer (BAY), Moody's (MCO), Morgan Stanley (MS), and NuStar Energy (NS). The return estimates are for the next three years, with data through August 3, 2007. The trailing three-year performance statistics are shown below:

Trailing 3-Year Statistics (through July 2007)			
Ticker	Beta	SD	Average Annual Return
BAY	158%	19%	39.1%
MCO	208%	24%	18.8%
MS	127%	18%	17.8%
NS	-4%	14%	13.7%
SPY	100%	8%	11.4%
EEM	161%	18%	34.3%

Trailing three-year performance of four five-star stocks and two ETF's. (SD is the standard deviation in annual return)

I have also included the same statistical measures for SPY, an S&P500 ETF, and EEM, an emerging market index ETF. I included the two ETF's to provide reference points for understanding these stocks. There are a number of interesting features of these data. First, all four of these stocks have volatility levels that are far higher than the S&P500--- and three of them meet or exceed the volatility in the emerging markets ETF. These are high volatility stocks, as compared to the S&P500. Three of the four stocks have Beta's substantially greater than 100%--again an indication that these are fairly high volatility (read: risk). A portfolio that is allocated equally to each of these four stocks has had a

trailing three-year volatility (measured by standard deviation in return) that is 50% greater than that for the S&P500 over the same period. These stocks have a heck of a lot of market risk---so Morningstar’s ‘business risk’ measure must be taken with some caution.

Now, let’s look at the projected returns for these stocks generated by QPP. Morningstar reports its estimates for multi-year annual returns in terms of compounded annual return, while QPP’s standard reports provide average annual return—so I have converted QPP’s projections to compounded annual return (also known as **Compounded Annual Growth Rate** or CAGR). The table below shows QPP’s projections for annual average return and CAGR, assuming that the S&P500 will have average return and volatility equal to what we have seen over the past three years:

Projected Performance		
Ticker	QPP Projected Average Return	QPP Projected CAGR
BAY	17.1%	15.5%
MCO	19.5%	17.0%
MS	16.6%	15.1%
NS	14.5%	13.6%
Average	16.9%	15.3%

QPP projections using trailing 3-year equity risk premium

Note that the QPP-projected CAGR is for an average of 15.3% per year for these stocks—remarkably consistent with Morningstar’s 15% value. By showing the average annual return and CAGR, you can also see the effects of volatility drag—the impact of volatility on long-term returns. Volatility drag results in CAGR always being less than average annual return. It is actually quite remarkable that QPP is as close to Morningstar as it is in these results. The caption to the table above states that these results are using the ‘trailing equity risk premium.’ What does this mean? To generate statistical outlooks for the equities using a model like QPP, you need to assume something about the amount of return that equity investors can expect, on average, for bearing the risk in the equity markets. The higher return that investors get for bearing risk is called the **equity risk**

premium. This is a really important factor underlying capital markets—and a review and discussion why is given here:

<http://etf.seekingalpha.com/article/12293>

The stock market has been delivering high returns with very low risk over the past five years—and especially over the past three. The return-to-risk that the market has been generating for investors is simply too high to be sustainable. Further, most experts expect the equity risk premium to be lower in future decades than it has been in the U.S. for the recent decades—for more details read the article above. Over the past three years, the S&P500 has delivered about 11.3% per year in annual average return, with a standard deviation in return of less than 8%. If this were to continue, we would all be very happy--but this is unlikely to be the case. As most investors are aware, volatility is swinging substantially higher and this is likely to continue. To get the returns listed in the table above from QPP for the four stocks, I had to assume that this situation of a high equity risk premium would persist--but I don't really think it will. Somewhere in Morningstar's analysis of the future returns for stocks, there must be some implied equity risk premium—but I can't find any explicit discussion on this issue in their discussion of the method:

http://news.morningstar.com/articlenet/article.aspx?id=4982&_QSBPA=Y

It appears to me from reading this document, that the source of the 15%+ return for five-star stocks is, in fact, purely backward-looking (see the section called “*What determines whether a stock gets 1, 2, 3, 4, or 5 stars?*”)—which is consistent with how I needed to run QPP to obtain these results.

On a forward-looking basis, the predominant expectation is that equity markets will generate lower returns per unit of risk than they have in recent decades—and certainly lower than we have seen over the past five years. QPP's baseline setting assumes that the S&P500 will generate slightly more than 8% per year in average return, with a standard deviation of 15%. This is fairly conservative, but QPP is principally designed to assist in long-term planning and a conservative approach is, therefore, the right place to start. Using the baseline settings in QPP, the projected performance of these four stocks looks far less rosy:

Projected Performance		
Ticker	QPP Projected Average Return	QPP Projected CAGR
BAY	12.6%	10.1%
MCO	16.4%	12.1%
MS	10.3%	8.6%
NS	14.8%	11.3%
Average	13.5%	10.5%

QPP projections using default settings

Rather than an average of 15.3% per year, QPP is now projecting an average of 10.5% per year. This lower return for CAGR is caused by the projected future returns for equities to be lower and for risk to be higher than we have seen in the past five years.

It is important to understand that Morningstar's projections for each of the four stocks are all higher than 15%---see their article for more details. The 15%+ return level comes from the benchmark performance of 5-star / low-business-risk stocks under their classification. Morningstar uses the 15% level as their benchmark for this group of stocks because of the historical performance of stocks in this category. ***QPP and Morningstar use completely different models for estimating future return, but the baseline estimates for return are remarkably consistent if QPP is set to assume that the equity markets will yield the same equity premium as we have seen in the past several years.*** I find this result quite fascinating and also fairly encouraging. These results also highlight the importance of what we assume about the equity risk premium in future years. If the equity risk premium is lower than we have seen in recent years (as most experts predict), my analysis suggests that Morningstar's estimates for future returns could turn out to be substantially too rosy.

Quantext Portfolio Planner is a portfolio management tool. Extensive case studies, as well as access to a free extended trial, are available at <http://www.quantext.com>