



Why Volatility and Beta Matter

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Last week, I ran across an article on investing on *The Motley Fool* that I found chilling. The author's position is that worrying about risk measures such as Beta and volatility for the assets in your portfolio is pointless. He correctly points out that risk is typically measured by Beta and the standard deviation in returns (known as volatility). Then he makes his thesis:

“I couldn't care a lick about whether or not a stock's returns deviate from the market average as long as those returns are better than the market average. For example, I know I wouldn't object to have owned these seven volatile (betas greater than one) stocks over the past year...”

<http://www.fool.com/investing/general/2007/05/03/the-time-bomb-in-your-portfolio.aspx>

The author is referring the standard deviation in returns when he writes about how a ***stock's returns deviate from the average***. The author, Tim Hanson, then goes on to list some of the great stocks that demonstrate that Beta and high standard deviation don't matter in asset selection. Mr. Hanson's list of these stocks includes Juniper Networks (JNPR), Tyco (TYC), Morgan Stanley (MS), Hewlett Packard (HPQ), IBM (IBM) and Cisco (CSCO) among others. These stocks have delivered high returns over the past year but have high Betas, which is the basis for Mr. Hanson to say that Beta and volatility are irrelevant. The author is apparently unaware that high Beta stocks are ***supposed*** to do well in a rising market---it's when things decline that high Beta gets troublesome. High Beta amplifies returns in both directions.

Those Who Forget The Past

I found this article truly scary—if people actually invest this way. Perhaps Mr. Hanson has not looked back more twelve months in his analysis, but I find his selection of stocks nothing short of ironic. JNPR, for those who are unaware, was one of the dot-com darlings. JNPR closed at \$219 at the end of September of 2000. JNPR closed at \$9.70 at the end of September 2001. Today, it is trading at around \$23-\$24. Tell any of those

investors who got into JNPR at anywhere near \$200 that risk does not matter and that volatility is an academic construct. Mr. Hanson's proposed solution?

“After all, there's an easy way to take the volatility out of a volatile stock: Don't check the price.”

(Excerpt from Mr. Hanson's article linked above)

How long should we simply 'not check the price'? It is going to be very long time before people who bought JNPR back when it was above \$100 are made whole—if ever. To me, it is irrelevant that JNPR has generated 25% in return over the past twelve months if you don't take risk into account.

Volatility as a Leading Indicator

Let's take a look at measures like Beta and volatility (which is measured by the standard deviation in return) that Mr. Hanson deems pointless. At the end of September of 2000, with JNPR trading at \$219, JNPR had only been public for about 15 months—and it was going up like a rocket. Trailing returns were high. To examine the volatility of JNPR from the perspective of September 2000, I will use Quantext Portfolio Planner (QPP). QPP calculates those measures like Beta and Standard Deviation in return and projects the risk of assets and total portfolios. When I use Quantext Portfolio Planner (QPP) to calculate the forward-looking risk of JNPR, using market data from when JNPR went public through September 2000, I can look at the projected future returns from JNPR. Using data available only prior to October 2000, QPP predicts that holders of JNPR have a 10% chance (a 1-in-10 chance) of losing 93% or more of their investment over the next 12 months. QPP projects that JNPR is fully eight times as volatile as the S&P500! JNPR did, in fact, lose 95.5% of its value over the next 12 months. (Note: I typically use three years of trailing data for risk calculations, but JNPR did not have three years of history prior to the start of October 2000).

This same case occurs again and again in the selection of high Beta stocks for which Mr. Hanson says that Beta and volatility don't matter. This issue doesn't just apply to tech stocks, either. Morgan Stanley was trading at \$81.5 (adjusted backwards for splits and dividends) at the end of September 2000. At the end of September 2001, MS was at \$41.9. I used QPP to calculate the projected risk (volatility) and expected return on MS using three years of data up through September 2000. QPP projects that MS has a 1-in-10 chance of losing 38% or more over the next 12 months starting from the end of September 2000. MS actually lost 48.5% over that period. Almost seven years since September 2000, MS is trading at about \$85. Going from \$81.5 to \$85 in almost seven years is not a great return—regardless of what MS has done in the last 12 months. The point here is that very volatile assets can swing downwards for very long periods. There are plenty of investors in JNPR who will never get a decent return out over their investing lifetimes. It is possible that a volatile stock like JNPR will rebound really fast, but the whole point is that this is a risky play. On a risk and split adjust basis, JNPR was trading at \$24.83 at the close of its first month as a public company (June 1999) and it is trading at 23.47 today.

Mr. Hanson is, technically correct---you can ignore risk if you have an infinite investing horizon. How long will it be until people who bought into JNPR at anything greater than \$100 will even break even? It's at less than \$24 today and it has no net earnings...\$1 invested in HRL when JNPR went public is worth more than \$1 invested in JNPR on the same date. Over long enough (think decades), JNPR will probably outpace HRL, but can you wait that long?

The Goldilocks Problem

Mr. Hanson makes the point in his article that there is a substantial risk to investors who are too risk averse. By putting too much into bonds, investors reduce their market risk but run the risk is getting such anemic growth that they won't be able to fund their future income needs. I agree with this point in his article, but the solution is not to ignore risk measures and simply invest your money regardless of volatility. This is an equally bad

recipe. Many people who ignored Beta and volatility (as Mr. Hanson suggests we should) and loaded into high tech stocks in the dot com boom lost the majority of their net worth. I know a number of people who were ready to retire comfortably but have had to go back to work for the long haul because they did exactly what Mr. Hanson is endorsing.

So what is the solution? People in finance refer to the challenge of asset allocation as a ‘Goldilocks problem.’ Risk and return go hand in hand. If investors are too aggressive, they run the risk of such large losses that they will never recover them in their investing lifetimes. If investors are too risk averse, they do not get the capital appreciation they need to build the wealth that they will need. The best way to find the right balance of risk and return in your portfolio is to use a good portfolio planning tool (such as QPP). From using QPP to look at typical portfolio allocations, my results suggest that the traditional wisdom on the allocation to bonds is too conservative---and these results are closely mirrored by lengthy study from Alliance Bernstein:

<http://www.quantext.com/RiskChoices.pdf>

These results are a far cry from endorsing the idea that investors ignore risk measures and pile into assets with no regard for their risk properties.

The idea that Mr. Hanson is proposing—that volatility is irrelevant—contradicts modern financial theory and practice. The Uniform Prudent Investor Act lays out a set of standards that fiduciaries are expected to abide by:

<http://www.ifa.com/Media/Images/PDF%20files/UniformPrudentInvestorAct.pdf>

This is succinctly summarized in UPIA in the following statement:

The tradeoff in all investing between risk and return is identified as the fiduciary’s central consideration.

Risk, in modern portfolio theory, is measured by Beta and the standard deviation in return—exactly the same measures Mr. Hanson disregards.

Enter Warren Buffett

Warren Buffett has, quite famously, criticized the use of risk measures like Beta and volatility to guide investment decisions. His main point can be easily summarized. After a major decline in a stock, the volatility may be higher than the volatility before the decline. Mr. Buffett posits that a stock is less risky after a major decline because it is now trading at a substantial discount to where it was trading before the decline:

“...under beta-based theory, a stock that has dropped very sharply compared to the market - as had Washington Post when we bought it in 1973 - becomes "riskier" at the lower price than it was at the higher price. Would that description have then made any sense to someone who was offered the entire company at a vastly-reduced price?”

Source: <http://www.berkshirehathaway.com/letters/1993.html>

If you were to analyze a stock which has just weathered a major decline, the volatility may or may not be higher---Mr. Buffett's point is not necessarily correct. Whether or not the volatility is higher, does a major decline necessarily make a stock a good bet because you are buying at a discount? These are really separate issues. Let's look at an example that helps to elucidate the issue. At the end of September 2000, JNPR was trading at \$219. At the end of January 2001, JNPR was down to \$105. JNPR was trading at a major discount as of January 2001—more than a 50% discount from its high. How can we analyze the value proposition? When I run JNPR through QPP, using historical data through January 2001, QPP projects that JNPR has annualized volatility (going forward) of 113% albeit with an expected return of 57%. This is an enormous amount of volatility. So, JNPR was trading at a massive discount---but this is still looking like a very risky bet. From the end of January 2001 through the end of September 2001, JNPR went from \$105 to \$9.70, a decline of 90%. **In other words, a major decline in a stock may make the price a substantial discount from its previous level, but that does not mean that there is not a lot of risk!** It would have been very useful for the prospective buyer at \$105 to have these estimates of volatility.

I have done extensive analysis that suggests that Mr. Buffett's investments are very consistent with portfolio theory (and is the source of Beta and volatility as measures of risk)—even if he dislikes the jargon. When I analyzed Berkshire Hathaway's equity holdings using Quantext Portfolio Planner (QPP), QPP and Mr. Buffett appeared to be in very good agreement as to what makes a good portfolio:

<http://www.quantext.com/BuffettMC.pdf>

In other words, while Mr. Buffett criticizes a simple-minded approach to assessing risk, he is not really addressing the right problem. Berkshire Hathaway's equity holdings appear to manage volatility and Beta very well, as the paper above discusses.

Wrapping Up

In response to the idea that volatility and Beta don't matter, I will simply refer you to the dot-com implosion. Portfolio volatility and Beta provided major warning signals before the crash. The advice to ignore Beta and volatility is just like the advice many investors were following right before they lost a lot of wealth in the early 2000's. There is a very sensible grounding in theory and practice that investors and advisors need to pay attention to both risk and return in building a portfolio. Mr. Buffett's issues with volatility measures perhaps stem from some unfortunate interactions with one or more quantitative MBA's, but my own analysis using quantitative projections of portfolio risk and return (using QPP) suggests that Mr. Buffett's equity holdings are actually remarkably consistent with portfolio theory. Whether or not a stock or asset class is trading at a major discount is a consideration, but a solid projection of future volatility is also important. For every Washington Post case, there is also a Juniper Networks. It is unwise to ignore volatility in your asset allocation decisions, but many investors do just this. This poses no problem during a rising market—the pain comes when the market declines.

Note: All of the discussion in this article has focused on the 'cost' of volatility in terms of aggregate portfolio returns. Once you get to the phase of your life in which you are

withdrawing funds, the cost of volatility is even more acute. For a review of that issue, see the following overview: <http://www.quantext.com/BeyondFourPercent.pdf>.

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/gpage3.html>