



Preparing for a 'Volatility Shock'

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Many of my articles on portfolio planning make the point that overall market volatility has been at very low levels over the past several years. During periods of low volatility, investors tend to get increasingly aggressive. This happened during the technology stock boom of the late 1990's and it is happening now with emerging markets and energy stocks, as well as a range of commodities. This situation reminds me of my son when he tells me that he doesn't need to wear his helmet while skateboarding because he did it yesterday without a helmet and didn't get hurt. There is an analogous case for many investors. If they invest aggressively for a year and get high returns with little or no downside, they tend to continue to invest aggressively the next year—and then some. The problem with this behavior is that investors may end up with portfolios that become dramatically more volatile when market volatility returns to normal levels—and they may try to sell off these positions quickly—which fuels the decline, as well as generating the predictably bad returns from selling into a declining market.

This issue is starting to get a lot more attention. The International Monetary Fund (IMF) has recently warned that they are worried about exactly this scenario, which they refer to as a “volatility shock.” This discussion is worth reading:

<http://www.imf.org/External/Pubs/FT/GFSR/2007/01/pdf/summary.pdf>

Interestingly, the IMF sees more potential for problems from a volatility shock than they do from issues in the U.S. housing market. *The Economist* provided a nice overview of the issues in more accessible terminology, as well as providing some broader financial context:

http://www.economist.com/finance/displaystory.cfm?story_id=9009170

A recent article quotes Merrill Lynch's chief U.S. strategist, Richard Bernstein, on the issue of volatility and it resonated strongly with my own perspective:

<http://www.reuters.com/article/bondsNews/idUSN0518674620070405>

Mr. Bernstein suggests that (1) an increase in market volatility is a highly likely (he is quoted as saying "Our main theme for 2007 remains that volatility will increase as the year progresses"), and (2) higher-quality stocks will benefit from this increase in

volatility. I am broadly in agreement with these statements. When volatility kicks up, we are quite likely to see a ‘flight to quality.’ When investors are scared and/or have taken losses, they tend to sell riskier assets and look to large, stable companies. This cause-and-effect makes a lot of sense.

It is important to understand that a resurgence of volatility, while potentially uncomfortable, is to be expected unless the global markets have permanently shifted into a lower volatility regime. There is no reason to believe that global capital markets have become permanently less volatile—so it is only a matter of time until volatility reverts upwards. It is normal for market volatility to cycle—and it is time for volatility to cycle upwards—see, for example, this chart of the VIX, which tracks the volatility of the S&P500: <http://finance.yahoo.com/q/bc?s=%5EVIX&t=my>.

One of the most valuable uses of Monte Carlo simulation is to stress test your portfolio allocation. What will your portfolio do if volatility reverts to historical normal levels? Quantext Portfolio Planner (QPP) provides this type of projection. Consider, for example, this sample portfolio of ETF’s:

Name	Ticker	Percentage of Funds
iShares S&P500 Index	IVV	15%
iShares Russell Growth Index	IWZ	15%
iShares EAFE Index	EFA	15%
BLDRS Emerging Markets Index	ADRE	15%
iShares Cohen & Steers REIT	ICF	10%
iShares GS Natural Resources	IGE	15%
iShares Dow Jones Utilities Index	IDU	10%
iShares Lehman Aggregate Bond	AGG	5%

Sample portfolio

This is not a particularly good portfolio in terms of design, but it has done very well over the past several years—it has thrived in the current capital markets environment. Over

the three years through April 2007, this portfolio has generated an **average annual return of 20.3% with annualized Standard Deviation in return of only 9%**.

This portfolio has significant weights in many of the very popular sectors—10% in Real Estate (ICF), 15% in natural resources (IGE), 10% in utilities (IDU), and 15% in emerging markets (ADRE). IGE is skewed towards oil, with top holdings including BP, COP, CVX, ECA, and XOM. Morningstar classifies IGE as a Large-Value and IDU is classified as Large-Value, so we also have a chunk of the portfolio in a growth index fund (IWZ). This would not typically be considered a ‘high risk’ portfolio although it has been considerably more volatile than the S&P500---about 25% more volatile. With returns of 20.3% per year, though, we haven’t been feeling this volatility at all over the past three years.

When I run an analysis of the probabilities of getting a certain level of returns in a one-year period for this portfolio using market conditions that we have seen over the past several years (using QPP), the results are very nice:

Percentile	Return
1%	0%
5%	5%
10%	8%
15%	10%
20%	12%
25%	14%
30%	15%
35%	17%
40%	18%
45%	19%
50%	20%
55%	22%
60%	23%
65%	24%
70%	25%
75%	26%

Percentiles of annual return under trailing conditions for sample portfolio

This portfolio generates a median annual return of 20%. In the worst 1% of predicted future outcomes, this portfolio generates 0% in a year. The worst that can happen is that you break even—not bad. Who wouldn't take this bet?

The problem, of course, is that this kind of return profile is not sustainable and investors would be foolish to assume it is. Let's take a more realistic look into the future. Rather than using trailing performance, I have used QPP's forward-looking analysis to generate percentiles of annual return for this portfolio (below). QPP incorporates a default assumption of historical levels of 'normal' volatility for capital markets and this impacts all sectors—albeit in different ways, depending on the sector. The higher volatility is also likely to be accompanied by lower average returns.

Percentile	Return
1%	-31%
5%	-21%
10%	-14%
15%	-9%
20%	-5%
25%	-2%
30%	1%
35%	4%
40%	7%
45%	9%
50%	12%
55%	14%
60%	16%
65%	19%
70%	21%
75%	24%

QPP projected percentiles of annual return for the sample portfolio

The projected median returns are pretty good for a broad index-based equity portfolio, with a median annual return of 12%. This is markedly higher than anyone expects for the S&P500, and rightly so. QPP projects a future in which the volatility of capital markets

returns to its historical levels—and this has a major impact on the prospects for this portfolio. This portfolio is projected to lose money in between 25% and 30% of one-year periods (the 30% percentile is a 1% return and the 25% percentile is -2%, above). To put this in historical context, the S&P500 has delivered negative returns in 6 of the last 30 years—meaning that it has lost money at the 20th percentile over the past 30 years. In the QPP projections shown above, the 5% percentile return is the annual return that you are expected to be at or below in the worst 1-in-20 years (i.e. 5% of years). The S&P500 generate a return of -22% in 2002, its worst return in the past twenty years, by way of comparison. The point here is that these projected ‘worst case’ returns are not especially bad by the historical standards of broad equity indices.

Note: If you want to understand how QPP generates its projections and why they are superior to looking backwards, see, for example, this article:

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

Most investors do not have calculations for the percentiles of return for their portfolios, but people develop a feel for the returns from their portfolios. *If you have gotten used to returns like the trailing returns for this portfolio, but you experience the kinds of returns in the projections, what will you do?* If you stress test your portfolio in a tool like QPP, you will at least be aware of the impacts of this kind of volatility shock. If you are in the income-drawing phase of your life, a substantial draw down could have a major impact on your future prospects. You may decide that the impacts of a volatility shock are untenable with your current portfolio. If you have 15+ years until you will need to draw income, and you have the discipline to ride out the volatility, a ‘volatility shock’ may not matter—beyond the fact that paper losses can cause sleepless nights. The IMF’s concern is that many investors in this situation will panic and sell.

During low volatility periods, riskier assets can provide spectacular returns with little apparent downside (as in our sample ETF portfolio). Many investors will sell off their shares in boring (and far more stable) assets in order to get the higher returns of more exciting assets. When higher volatility reminds investors of the inexorable

relationship between risk and return, many investors will turn to larger ‘blue chip’ stocks. These stocks often have very low correlation to the broader market because of this effect—which also makes them superior sources of diversification. For a discussion and examples of these stocks, see this article:

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

In summary, then, there are several key points. First, the smart money is on an increase in overall market volatility. Second, it is a good idea to know how this would affect your portfolio and whether it is necessary to perform proactive steps to manage the impacts of increased market volatility on your portfolio. If you are going to panic and sell if volatility kicks up and the market swoons, it is probably better to be realistic and develop a less volatile portfolio before a ‘volatility shock’ occurs. If you are in retirement, especially near the start of retirement, it is a good idea to look a realistic projection of your portfolio volatility. A substantial decline in portfolio value in the early years of retirement can have a serious impact on a retiree’s ability to reliably fund future income. This effect can be tested in a Monte Carlo simulation, such as provided in QPP. This does not mean that investors should get overly conservative, however. That can easily lead to such low levels of growth that your portfolio will not be able to sustain your future income. Third, it is quite often the case that high-quality stocks will provide a safe haven during periods of higher volatility and decline. Investors who wish to manage the potential for a ‘volatility shock’ may want to consider adding these types of assets to their portfolio allocations.

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>