

## The Anatomy of Portfolio Risk

While working on factor investing, I was reminded of several famous studies reporting on an “anomaly” in finance theory, i.e. stock with low volatility have better returns compared with stocks with much higher volatility (see graph above). This obviously goes against the well established assumption of rational investors -- investors prefer more return and less risk -- and efficient markets – investor realize higher return by taking more risk. In the more popular explanation that I know of, this anomaly is attributed to Behavioral Finance (see *Benchmarks as Limits to Arbitrage: Understanding the Low-Volatility Anomaly* - Malcolm Baker, Brendan Bradley, and Jeffrey Wurgler). What I found amusing is that no academic is questioning a simple fact: could it be that, in testing this anomaly, they are using the wrong metric for risk? Could it be that we continue to confuse risk with volatility and, more dangerously, we precisely measure risk with momentum or derivatives of a Normal Distribution? Would it not be more practical to test a conceptually more robust assumption: risk is lack of intrinsic value, i.e. zero intrinsic value, 100% risk, and high quality/value, low risk? Following is an internal piece we penned on “financial” risk reflecting our take on the subject...

## The Anatomy of Risk & Portfolio Construction

There are two essential and equally crucial elements of successful portfolio management: idea origination (aka, stock picking) and portfolio construction (aka, asset allocation). Despite this somewhat obvious statement, if one quizzes investors on how they pick and assess their portfolio managers, chances are one will hear a litany of superlatives (or diminutives!) on the first element, but very little on the second one. One will almost never hear “...my manager is excellent at portfolio construction”. Yet, it is not by accident that the biggest (~\$ 140 billion and counting) and reportedly successful hedge fund is (mostly) famous for being a trail blazer in applying an effective portfolio construction technique known as *Risk Parity*.

The reason for this broad apathy toward portfolio construction boils down to the simple fact that portfolios are risk management tools – otherwise one would invest everything into the higher-promising investment. And portfolio risk management has landed squarely into the lap of the *mad statistician*, the assumption being that risk is a pure play on “measurable” probability. The problem is that risk by its very nature and definition is random, accidental, unexpected, impromptu, etc. Thus, while Portfolio Risk can be perceived, it can hardly be “precisely” quantified. Yet, there is an army of professionals that has made a distinguished (and lucrative) career in quantifying risk by looking at the past (the rear-view mirror) and use it to predict the future, a dangerous exercise in overconfidence.

This disappointing state of affair rests squarely on the somewhat misguided interpretation and definition of Portfolio Risk! Ever since Harry Markowitz came out in 1952 with his “canonical” study on Modern Portfolio Theory trumpeting the benefit of diversification, risk has become synonymous with price volatility. And volatility in turn has become “measurable” by the standard deviation of the past historical market movements. I.e., investment risk – or *basis risk*, *country risk*, *default risk*, *delivery risk*, *economic risk*, *exchange rate risk*, *interest rate risk*,

*liquidity risk, operations risk, payment system risk, political risk, refinancing risk, reinvestment risk, settlement risk, sovereign risk, etc.* -- is now all neatly and conveniently quantified by the most basic statistical parameter: the standard deviation of a population which is (courageously) assumed to be Normally distributed. That is, the industry is “managing” risk by looking at the proverbial rear view mirror. At the apex of the 2008 financial crisis, a major U.S. investment quoting a fancy statistical techniques (PVaR), famously concluded and defended its losses by simply stating that the 2008 Great Financial Crisis was an event with a probability of “...one in 10,000”; not that comforting for those who permanently lost their money!

To be sure, there are other “metrics” of risk besides the (in) famous standard deviation; some based on more “erudite” assumptions on the underlying distribution of past observations – e.g. Binomial: the risky event is there or is not, risk on/risk off, the Euro breaks or doesn’t. There is also *Relative Risk* – or what is also commonly referred to as *Tracking Error* relative to a benchmark, cash or similar. Nevertheless, all these “risk” measures are still based on history, statistics or comparative analysis...as Warren Buffet is fond of saying “*if history is all there were to the game, librarians would be the richest people in the world!*”!

The advent of *Big Data* and faster computer, while empowering the short-term speculators, has made “things” even worse, at least for some of us diehard, value-driven investors. The most brilliant minds are now occupied with concocting ever-more complex statistical techniques and “algorithms” to harness risk; i.e. these most brilliant minds are looking at the same set of data, yet from different angles and expecting different results - an uncomfortable similarity with Albert Einstein definition of insanity: *doing the same thing over and over again and expecting different results every time!*

The point is that while there is no denying that volatility measures are a useful element in managing portfolios, they do not meet the obvious and essential definition of Portfolio Risk, i.e.: the possibility and probability of a permanent loss of capital, that is having to bail out of an investment at a loss with no possibility to recoup this loss.

Thus, according to this pragmatic definition, instead of attempting to quantify risk via ever-more sophisticated and complex calculations based on the past, portfolio risk should be assessed through good old fashion investment analysis. That is, risk should be assessed by understanding, following and applying cardinal financial and economic laws shaping financial outcomes and driving market developments. While statistics and quantitative techniques can be very powerful and useful tools if applied judiciously, they should not be the primer and/or sole driver of portfolio construction.

Portfolio risk (i.e. permanent loss of capital), rather than being “precisely” quantified, can be “skillfully” managed by applying old-fashioned yet paramount investment tenets. For example, quoting Benjamin Graham, or the father of Value Investing “*...value is that margin of safety large enough so that one’s capability to predict the future [i.e. risk] becomes completely irrelevant*”. Meaning: an investment perceived to be risky must have a cheap price/valuation with plenty of room to be wrong. Equivalently, risk is part and parcel with value and is inseparable/embedded in the monetary value (price) of ANY investment alternative.

Thus, and for example, investment risk in European markets is the uncertainty generated by the monetary experimentation of Quantitative Easing by the ECB to, among other things, save the botched attempt of a currency union. The question then is: are Euro Zone assets cheap enough (i.e. do they have a large margin of safety) to compensate an investor for the possibility of a break up in the Euro...i.e. a permanent loss of capital and not just volatility? More to the point, are 2-year Italian Treasury bonds with negative yields realistically cheap enough to compensate for the risk of a Euro break up? Obviously not. Yet and per their standard deviation, they must be among the most stable and therefore less risky investments in the World!

Volatility, in whatever statistical shape or format, is better left to the traders and speculators, necessary and legitimate market participants and provider of liquidity. Investment risk on the other hand is better left to the investment professional, i.e. the professional portfolio manager tasked with the systematic discovering of value...***with a margin of safety large enough to offset in total or in part any potential unpredictable and permanent loss of capital, a.k.a Portfolio Risk.***

Simon E. Nocera

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