Less Is More

How Less Risk Equals More Return – Part 1

Minimalist designers know the title of this article all too well as their credo. But they don't hold a monopoly over it. Every investor and trader will meet it as well on his/her way to success. Those who haven't, probably aren't there yet. It shows up, time and again, in different shapes. As a low information diet. As zooming out from intraday, real-time action to trend following bigger time frames. Or as aiming for less and/or less complex rules to build a stable and robust trading system. The 'less is more' dimension we are going to look at in this article shows how churning out higher returns in the end is near to impossible without continuously risking less along the way.

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» It is a common held belief, even amongst non-investors, that aiming for higher returns necessarily implies taking more risk. Put the other way around, taking more risk is the way to go for aggressive growth and hence more return. We beg to differ from many years of trading in the trenches. If you won't take our word for it (and you shouldn't), there's the math to prove it. Before going

into this, let's have a look where this popular wisdom comes from.

Portfolio Theory 101

Professionals, experts and beginners alike all seem to agree that higher than risk free returns are impossible to obtain without at least some exposure to risk. You can't make an omelette while, at the same time, trying to save the eggs.

The academic foundation for this goes back to a 1952 Journal of Finance article by economist Harry Markowitz. He studied the effects of asset risk, return, correlation and diversification on probable investment portfolio returns. His seminal theory of portfolio allocation under uncertainty was the first to incorporate an analysis of the impact of risk. According to Markowitz, the efficient portfolio is the one where no added diversification can lower the portfolio's risk for a given return expectation. Alternately, no additional expected return can be gained without increasing the risk of the portfolio. The Markowitz efficient frontier is the set of all portfolios that will give the highest expected return for each given level of risk. These concepts of efficiency were essential to the development of the capital asset pricing model (CAPM).

By choosing securities that do not correlate, Markowitz's model shows investors how to reduce their risk. This mean variance portfolio theory is often referred to as modern portfolio theory or MPT for short. The annotation 'mean variance' comes from the fact that it is all about expected, i.e. average (mean), returns and the standard deviation (variance) of the various portfolios.

Harry Markowitz furthermore made the following assumptions while developing the model. Investors prefer to increase consumption while being risk averse and rational either trying to maximise their portfolio return for a given level of risk or doing so for the minimum risk. Risk for a portfolio is based on the variability of its returns. Also, analysis is based on a single period model of investing. Finally, the investor's utility function is concave and increasing due to this risk aversion and consumption preference as depicted in Figure 1.

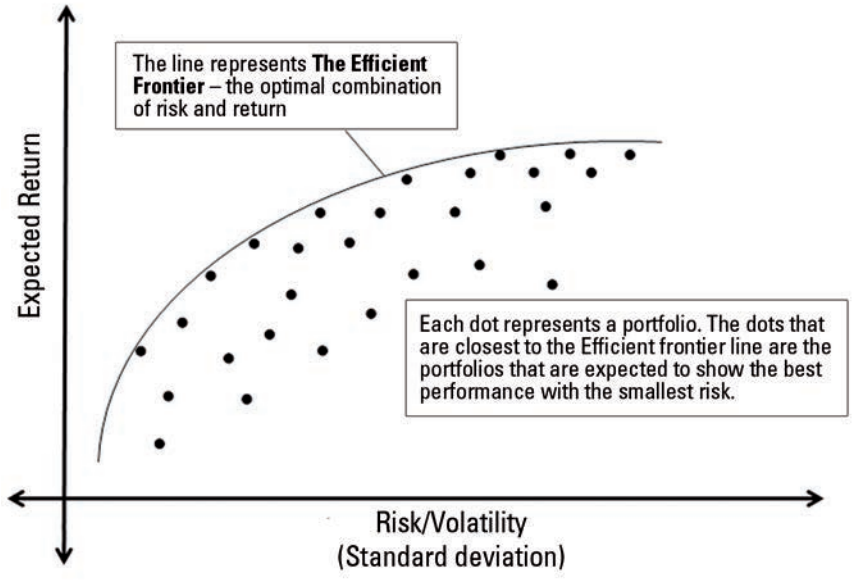
Given the Nobel Memorial Prize in Economic Sciences in 1990 for this, it is no wonder his theory is firmly in place ever since, withstanding the test of time.

In Depth Sceptic

We are not going to pretend to be in the know-all on this. But from our experience, something else made us the money in the past 20 years of active trading. So we started wondering why economic/financial theories, like this one, often seem to be written in stone. From a mathematical point of view the theory holds, given the assumption it is based on. So let's have a look at these assumptions to begin with.

For starters, the definitions of risk and return seem to be mutual recursive. Secondly, there is no doubt that we are risk averse. Prospect theory proved that a loss hurts about twice as much as a win of the same magnitude feels good. But that might actually imply that we are not acting rationally! As prospect theory goes, where the probabilities of outcomes are unknown, people make decisions based on the potential value of losses and gains, rather than the expected value. Prospect theory is as descriptive as MPT is theoretical. It tries to model real-life choices by real people, rather than optimal decisions made by some rational perfect average version of them. So as rational as we are, the problems we face in financial markets are framed, primed, and drowned in complexity, uncertainty and information overload and shortage at the same time.

F1) Graphical Depiction of Markowitz's Portfolio Theory



Markowitz's mean variance portfolio theory laid the foundation for what is now more commonly called modern portfolio theory or MPT for short.

Source: www.chartmill.com

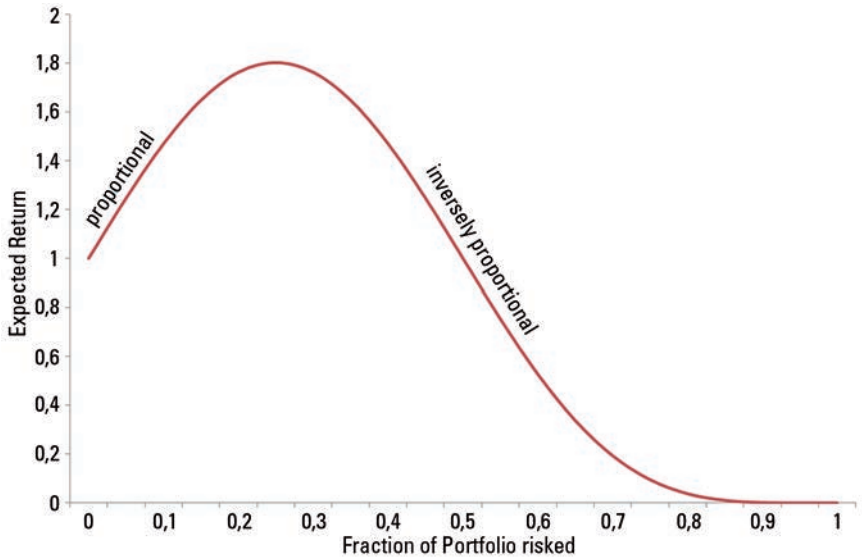
Of course no one is going to make the bad choice, as long as he knows it is the bad one. According to Markowitz, to choose the best portfolio from a number of possible portfolios, each with their own risk and return, two separate decisions have to be made. A set of optimal portfolios and, subsequently, selecting the best portfolio out of that efficient set. Go figure. However economically viable, it might be of no practical use to the layman nor the expert he depends upon for his advice.

Furthermore, being able to be rational doesn't mean we behave rationally when all we have are some genetically imprinted heuristics to go on and a lot of uncertainty. Binary heuristics that favour fear over death. Behavioural finance taught us that much over the past two decennia.

Finally, in our particular sector, it so happens we only have historical numbers. And it is close to certain these numbers will have nothing to do with a non-existing repetitive future. There is nothing to be said on the expected risk, return and correlation of tomorrow. Nassim Taleb showed us it is futile to go about our business thinking that outlier events can be ignored in the long run because of their low probability. Expectancy depends on outcomes as well as probabilities.

To finalise this, we have to be very careful with popular wisdom on account of what could be called 'consensual validity'. History has shown us that the amount of people accepting a theory isn't representative of its validity. After all, we seem to be overzealous pattern detectors and causal agent detectors with a tendency for anthropomorphism.

F2) Risk and Expected Return in a Coin Toss Game



Expected return in function of the (constant) fraction of equity that is repeatedly risked in a coin toss game in which the double amount is won, if one side comes up as is lost, if the other side shows. Most important here is the inverted U-curve shape showing return being nearly proportional to risk at its left side but nearly inversely proportional to its right.

Source: www.chartmill.com

What's Next?

We don't need to throw MPT overboard. It has its merits on a larger scale. But from the viewpoint of our personal portfolio we probably need to put it aside.

The problem is that Markowitz' theory is mainly concerned with single period averages and dispersion rather than one portfolio over multiple periods. As noticed before there is a big difference between possibility, probability and expectancy.

That something is possible doesn't make it probable. Expectancy further combines probabilities with payoffs. Moreover from a game theory point of view there is a big difference between a single experiment/game and a repetitive one. If you're a single player, statistics buys you only so much. Given that a virus gives you a ten per cent chance of dying is meaningless to the individual who carries it. Because from where he stands, nobody can be ten per cent dead. You either are or you aren't.

Let's take the case of tossing a coin. Heads gets you triple your investment, while tails makes a total loss of your investment. As soon as we start repeating this game, a whole new set of dynamics come in to play, because we know that eventually this game should make you good money. However risking it all on a single throw might take the possibility away. What is more astonishing is that in this game, as Figure 2 shows, you cannot only risk too much but also too little. So return, in this case, seems to be proportional to risk on the left hand side of the graph, while being inversely proportional on the right hand side of it.

In Conclusion

Although MPT seems to bring up the proportionality between risk and return (see Figure 2), we have to call into question whether this holds through for a single multi-interval portfolio. This is exactly what we are going to do in the second part of this diptych. «