

A TAMRIS Perspective

Another side of diversification, correlation and volatility

You may have heard the clichéd “*add this asset to your portfolio because it will add diversification and reduce risk*”.

The logic behind this argument is that by combining assets whose price movements have low correlations with each other, you can reduce the risk of your portfolio.

A low correlation means that when one asset is rising, another may be falling¹ and, by combining the two assets together the portfolio will neither rise as much nor fall as much as each individual asset².

This is great news if the asset you are allocating to is under valued relative to the assets you already hold. Not only will you reduce the average price movement of the portfolio, but because you will have to sell relatively overvalued assets, you will also increase potential return and reduce potential risk.

But this is not the case if the asset you are buying is overvalued. Investors whose advisors use *the standard “diversification” rule of thumb* to justify any sale, sorry asset allocation decision, risk reducing the return of the portfolio and increasing risk to capital invested³. Perversely, in this case, you can place capital at risk, reduce potential return and still end up reducing the volatility or risk of your portfolio.

However this is where it gets murky and slightly confusing for those who have long accepted the thin veneer of traditional sales patter.

It may sound insane, but risk of loss of capital is not actually a risk in modern portfolio theory; it is diversified away by holding what is termed the “market portfolio” and by the assumption that the market is always efficiently pricing risk. Theoretically, if you hold the full “market portfolio” it should be impossible to be exposed to any point in time risk whatsoever⁴.

Indeed, the only risk you can be exposed to, if you are fully diversified within an asset class, in modern portfolio theory, is market risk, but this is really only a diversified asset class risk and not the “market portfolio” risk.

Just what is market risk and just what is the real role of diversification in this context?

Market risk is the price movement caused by the allocation of demand for total direct and indirect real assets and nominal assets, at a point in time.

At any one point in time let us assume there is a finite demand for assets and a finite supply of assets. Let us call this the investment universe. At any one point in time, changes in the allocation of demand for an asset directly impacts the price relationships of all assets. All else being equal, if you hold all assets, the change in price of all assets sum to zero.

¹ Or the rise and fall of the asset may lag that of the other investment.

² In fact, as we will show later, what correlation really does is captures changes on relative demand; in order to fully benefit from risk reduction brought about by correlation benefits you need to be fully diversified across the market portfolio.

³ Note that in modern portfolio theory there is no risk to capital within a fully diversified portfolio. Indeed, if you are fully diversified across all investable assets (the market portfolio) there is no risk; all price movements sum to zero. The only risk that exists within a diversified asset class is market risk.

⁴ For a given set of assumptions; at a point in time and no change in overall demand.

If you hold all assets you are perfectly diversified and protected against any shift in relative demand. In fact, perversely, if you knew the asset allocation of the market portfolio, correlation would not be an issue. You would just buy the market portfolio.

It is the demand for and supply of assets that causes the price of an asset to move marginally different to or contrary to one another.

Demand for and supply of an asset causes;

- a) price movement; volatility is the price movement of an asset class caused by changes in relative demand for it and,
- b) relative price movement; correlation is the price movement relative to other price movements.

Since it is the demand for and supply of assets that underlies correlation and standard deviation, to have an efficient portfolio (*one that can manage this total relative valuation relationship*) we need to include all assets that form the relative demand equation.

This means not just cash, fixed interest, equities, but property and commodities and any other real, nominal or indirect asset class that is impacted by demand.

If you are not diversified across all asset classes you will not achieve the necessary diversification that modern portfolio theory is talking about. You will not have an efficient portfolio since there will be asset classes to which demand will move and to which your portfolio will not be allocated to. As such, you will be exposed to more than just market risk. If this shift in demand is permanent, so will the consequence of risk.

In this sense, diversification is all about managing the risk of relative price movement. In order to manage this in this context you need to be completely diversified across all asset classes within the investment universe.

Market risk is really the risk of not being diversified across all asset classes, in which case your portfolio will be exposed to price fluctuations and shifts in the dynamics of supply/demand relationships. In other words, because you do not hold the asset to which relative demand has shifted you are fully exposed to the loss of demand in the assets you hold.

As far as the stock market is concerned, market risk is therefore the risk when the demand for equities falls relative to other assets. In this context, you can only benefit from diversification if you hold all stocks in the market in accordance with their allocation in the market.

In a dynamic market place (*all points in time with changes in total demand for and total supply of assets and goods*) market place we know that demand and supply can rise and fall (*as interest rates rise and fall, as we introduce new sources of capital/inputs or new methods of improving productivity etc*). As such, market risk can be occasioned not just by changes in relative demand but by the introduction/subtraction of new demand and supply into the market.

If the only assets were stock market assets and the only place you could put your money was the stock market, the overall market would not be volatile, only the individual shares. The only risks would be economic risks; the impact that positive or negative changes in total demand and total supply have on prices.

But just what is this the efficient market allocation?

We live in a capitalist system. This system uses risk to allocate demand/supply and, risk in this sense is the uncertainty of future return, and this risk is implied by the price movement⁵ of assets or what has become known as standard deviation.

The equilibrium allocation of assets is where the risk adjusted returns of all assets are equal. In this sense, modern portfolio theory is an equilibrium pricing theory and because of this, in TAMRIS's view, it is not intrinsically a portfolio management theory; portfolio management is the management of actual point in time relationships in dynamic disequilibrium.

Dynamic disequilibrium & diversification

Modern Portfolio Theory is an equilibrium pricing theory because it relies on the assumption that all return is priced efficiently and no additional return can be obtained by buying and selling relative value.

In one sense of the word we are always at equilibrium, but only in the sense that the demand for and supply of assets is adjusted for by price movements. In another sense of the word we are never at equilibrium, in the sense that the price of risk does not always correctly price return; the global asset market is always under pricing or over pricing one asset or another.

In dynamic disequilibrium we still need to place an emphasis on correlation and risk and return, but we cannot rely on the market to price risk or return, nor can we rely on historical correlation to determine the current relative price movement.

We need to be able to value and to take contrary positions to relatively overvalued assets and relatively under valued assets and to make our own assumptions by implication about the equilibrium price and the valuation of assets relative to this price.

Allocating as if the investment universe were in equilibrium, when in deed it is not, results not just in a misallocation of resources but increased risk and reduced return.

Mean variance optimisers

Despite all the proverbial about modern portfolio theory, the mean variance optimisers that deliver modern portfolio theory portfolios do not actually deliver efficient market portfolios. For one, with Canada at 3% of world stock market capitalisation a portfolio with 60% plus of Canadian assets can hardly be efficient since it is hardly the market portfolio, which is itself a necessary prerequisite for the management of risk. Most retail portfolios are insufficiently diversified globally, for a start, to even consider calling themselves efficient. As the world becomes more global, it is therefore all the more important that small countries exposed to the greater vicissitudes of global demand and supply need more diversification and not less. Please note the TAMRIS perspective, "*Diversification is Risk; Warren Buffett and the Paradox of Diversification*".

Consumption of capital and fundamental nature of assets

But there are other problems with the use of an equilibrium pricing theory to allocate assets other than the fact that we are never at equilibrium.

- The first is that a portfolio theory needs to be able to cope with consumption of capital and the safe depletion of capital; unless you have a liquid market portfolio within an efficiently priced market place, this is not possible through a mean variance optimiser. Introducing consumption into the equilibrium pricing model of modern portfolio theory destabilises its paradigm.

⁵ Representing the sum of all buying and selling decisions.

- Secondly, relative price movements are not the only risks to which a portfolio, especially a portfolio required to meet liabilities is going to be faced with. Many of the risks which hit the real world do not hit perfect equilibrium universes.
- The third is that modern portfolio theory with its point in time fixation on relative price movements ignores the fundamental nature of assets and asset risks over time. The longer the time period, the risk that becomes most important to risk and return is economic risk and given that all components of return are directly related to the return on equity capital, in the absence of liabilities equities are the most efficient asset class.

Conclusion diversification, correlation and volatility

Merely stating that adding an asset class reduces risk ignores the fundamentals of modern portfolio theory. Naively accepting a mean variance optimisation structure as one that efficiently diversifies risk without understanding the prerequisites of its efficiency must place individual investors at risk.

Remember it is not a statistic that you are gaining exposure to but the physical properties of relative price movements determined by changes in the relative demand for assets. To do this effectively in anything other than an equilibrium state requires knowledge of point in time risk, point in time return and point in time relative valuation (implied risk and an implied return).

TAMRIS is all in favour of diversification, but managed diversification and diversification driven by point in time valuation of assets and not the blind diversification we see in the retail financial services industry; this also means for those purists gasping in shock and horror, that risk, return and relative price movements remain at the heart of portfolio theory.

All portfolio theory must have an asset allocation framework and all allocation frameworks must have a portfolio theory. If you are going to be efficient, you need to know the market portfolio you are basing your universe on.