

## Diversification – what it is and is not

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Michael Furey | Delta Research & Advisory | 15 March 2018

Diversification is one of the central tenets of portfolio construction. Its validity was set in stone by Harry Markowitz in his PhD dissertation and 1952 *Journal of Finance* article, "Portfolio Selection", which demonstrated the effect of combining uncorrelated assets was to improve the portfolio's return per unit risk. This showed diversification to be the closest thing to the Holy Grail of investing and possibly the only "free lunch" (rebalancing may be the free dessert), as it was possible to improve the return expectation of a portfolio without necessarily increasing its risk (or vice versa – maintain the expected return while decreasing risk).

Today, the concept of diversification may seem to be second nature to us. However, some of its fundamentals are often misused and sometimes misrepresented.

Diversification is probably the most commonly used justification for investment recommendations. The word brings a sense of lower risk, which is always appealing. Unfortunately, some of its use appears to have shifted away from Modern Portfolio Theory (MPT) definitions, originated by Markowitz, William Sharpe, et al.

The purpose of this article is to return to some of the (forgotten?) foundations of diversification, and hopefully address potential misconceptions or misunderstandings.

### A SIMPLE EXAMPLE

It is not uncommon for practitioners to recommend a portfolio that improves on an investor's existing portfolio on the basis of greater diversification. A simple example may be the investor who has a lot of their wealth tied up in a single stock, maybe because of an employee share scheme or inheritance, etc. The practitioner would be concerned about concentration risk and would likely recommend a sell-down or reduced exposure to the stock to spread risk across a portfolio of managed funds or, perhaps, a larger stock portfolio. The justification is greater diversification because risk has been spread away from the single stock across a broader portfolio without necessarily compromising return potential.

This may be a valid recommendation with a valid justification. Spreading the risk from one stock to many is a simple example of diversification. But there is a little more to this than meets the eye.

### MEASURING DIVERSIFICATION

Modern Portfolio Theory (MPT) defines the completely diversified portfolio as the Market Portfolio. Without going into too much detail, because the Market Portfolio contains all assets, the market cannot be diversified away (except by other markets). So increasing diversification is an exercise in shifting a portfolio to be more "market-like". In the simple example above this was by way of a shift from the specific risk of one stock to many more stocks.

This means that the level of portfolio diversification, consistent with MPT, should be measured in the context of the market or market risk. Measures commonly used include active share, tracking error, or systematic risk, as defined by the R-squared of the Capital Asset Pricing Model (CAPM).

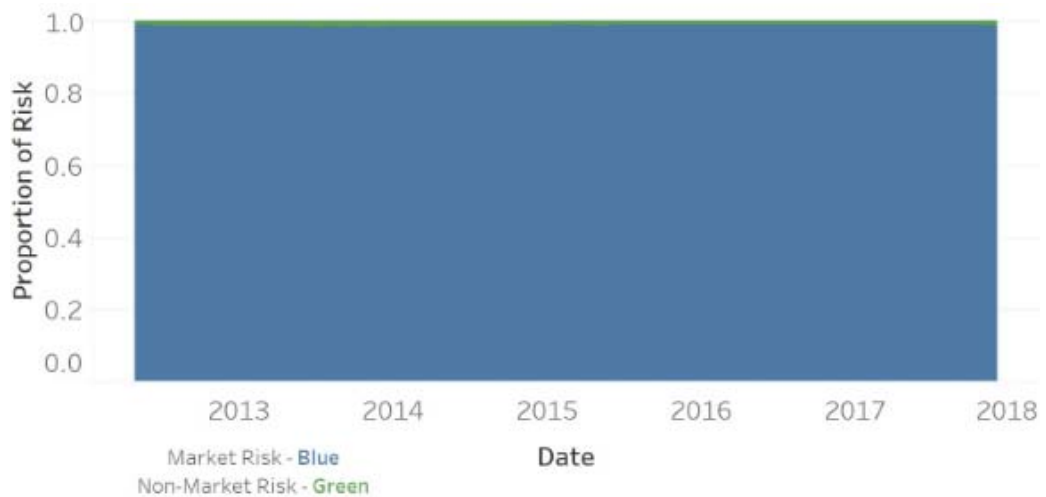
Using the CAPM R-squared measure, an index portfolio is close to 100% market risk, and active strategies will have variable market risk depending on how active and how diversified or

concentrated they are. The active strategy's obvious goal is to ensure that non-market risk produces excess risk-adjusted returns (alpha)... but by definition, active strategies will always have less diversification than the market.

As examples, Figures 1, 2 and 3 show the market risk (blue) and non-market risk (green) through time (using Markowitz defined risk) for:

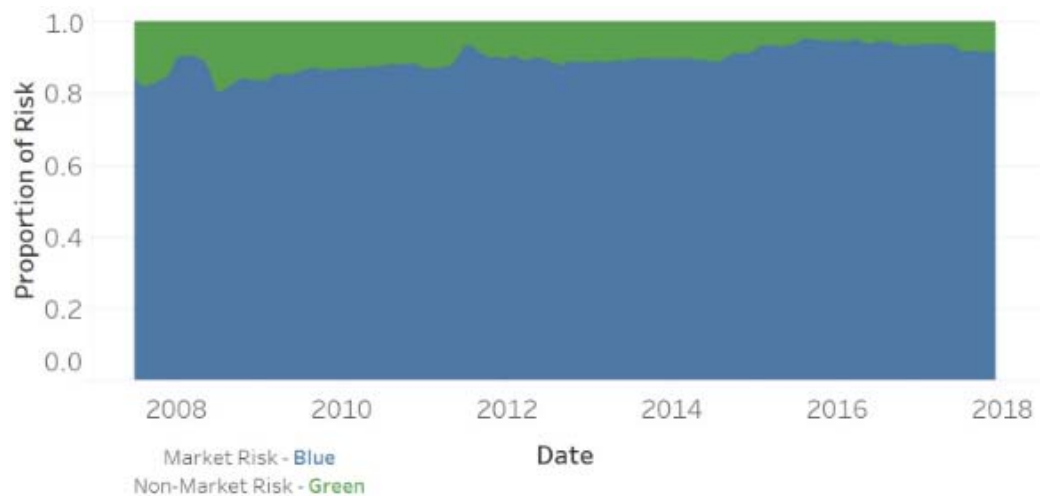
1. an Australian Equities index fund;
2. a popular, actively managed Australian Equities fund; and,
3. a popular, actively managed small-cap Australian Equities fund.

**Figure 1: Portfolio risk - Australian Equities Index Fund**  
Rolling 36 months



Source: Delta Research & Advisory. Note: Benchmark - MSCI Australia.

**Figure 2: Portfolio risk - Popular Active Australian Equities Fund**  
Rolling 36 months



Source: Delta Research & Advisory. Note: Benchmark - MSCI Australia.

Figure 3: Portfolio risk - Popular Active Australian Small-Cap Equities Fund  
Rolling 36 months



Source: Delta Research & Advisory. Note: Benchmark - MSCI Australia.

The index fund, as expected, is all blue i.e. all market risk. The active strategy is dominated by market risk but with a substantial proportion of non-market risk (sometimes called active or idiosyncratic risk). The Small Cap strategy, expectedly, has an even higher proportion of green (or non-market risk) as it excludes the large-cap stocks from the market.

So, when recommending changes based on diversification, it is possible to explicitly measure and demonstrate the changes and/or improvement in diversification using past performance risk measures.

### DIVERSIFICATION MISREPRESENTED

Many may argue that investment recommendations are sometimes looking to diversify away specific risks, as opposed to non-market risks, which may not result in the portfolio becoming more market-like. A popular example, is where a practitioner recommends a Small Cap Australian Equities strategy to diversify away the large cap bias of the Australian equities market which is dominated by large banks and materials companies. On the surface, this justification appears reasonable. But there are some issues.

Firstly, this is not diversification, it is actually the opposite. Asset allocation is the first step of portfolio construction, designed based on market expectations of asset classes (i.e. beta). The recommendation of a small companies strategy restricts the portfolio and therefore increases concentration risk to small caps and away from the market (or beta) recommendation. This shift potentially increases risks of market relative performance failure (i.e. compared to recommended asset allocation). Don't forget, a completely diversified portfolio contains all assets, which the restricted small cap strategy cannot.

The decision to move away from the market, dominated by large caps, is an active decision - likely made on the belief that small caps equities are likely to outperform large cap equities. Hence, it is a decision designed to outperform the market and generate "alpha risk" (similar to tracking error), not diversification. Diversification is actually alpha risk minimisation. A portfolio that contains a single security is the simplest example of a massive alpha bet while an index portfolio contains no alpha bet whatsoever.

## ALTERNATIVES

For the last ten to 15 years, alternative investment classes have started to appear in more and more investment portfolios – often justified for reasons of diversification. Sometimes this is true and sometimes it is not. Alternatives can bring diversification benefits to a portfolio by accessing markets that do not exist within a portfolio. This may be true of soft and hard commodities, private equity, and – perhaps – unlisted infrastructure. This is because these asset classes, or markets, are not represented in the traditional asset classes of bonds and equities. A market cannot be diversified away – except by a different market.

Where alternative asset classes do not diversify but actually increase concentration or non-market risk, is in the various equity and bond strategies executed by many hedge funds. This includes long-short, variable beta, and potentially other arbitrage or concentrated strategies. Including these strategies does not increase diversification, as it is always possible these strategies have the same market exposure as an index fund. Instead, they increase concentration risks linked to the success or otherwise of the specific strategy bets. Like the small cap recommendation, the inclusion of equity or bond "alternatives" is a recommendation based on capturing manager skill (alpha) and ability to outperform a market, not one based on improving diversification and minimising non-market performance risk.

## OVER-DIVERSIFICATION

Over-diversification is often mentioned in investment circles. In a cost-free world, it isn't possible. It occurs when the costs of adding securities or investments to a portfolio detract from the performance potential. When costs are nil or very low, over-diversification is difficult or impossible to achieve.

For example, a portfolio of many index funds for the same asset class will only be detrimental to portfolio returns compared to holding just the one index fund, if there are flat fees charged per investment. There is no over-diversification because there is no non-market risk to diversify and the return, irrespective of the number of funds, will be the market minus the average of the management fees. Diversification and return impact is likely to be minimal – although there is rarely any value in holding multiple index funds of the same market.

Over-diversification most frequently occurs when combining active managers of the same asset class. The more active funds there are in a portfolio, the more they diversify away the portfolio's non-market risk (remember, you can't diversify away market risk), potentially leaving a portfolio that resembles an index fund for an active management fee. Measuring this is possible using historical data as already discussed and shown with Figures 1, 2 and 3. But predicting the optimal number of strategies is difficult and can vary depending on how active and correlated each strategy is.

## FINAL THOUGHTS

Diversification can be used to justify more than it should. Diversification is a free lunch but only in the context of the market portfolio. It ceases to be free when concentration and greater specific risks are introduced. Diversification is a relative concept and is about reducing non-market risks and not increasing market outperformance potential.

There is no right or wrong level of diversification, as there are many schools of thought and examples with reasonable evidence as to what works and what doesn't. Warren Buffet is quoted as saying that "Diversification is ignorance" – yet he recommends most people should invest in index funds. Lower levels of diversification may be safest when investment skill exists, but finding true skill is difficult, sometimes expensive, and persistent skill is rare.

Investment recommendations are designed to reflect one's investment philosophy and to help an investor achieve their financial goals. If you believe markets are efficient, you have defined the appropriate level of diversification, and will recommend market portfolios. If not, the portfolio construction question to be answered is, how much diversification is enough?

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