Maximizing Diversification to Lower Volatility

UNDERSTANDING DIVERSIFICATION

Different assets can share common risks such as currency risk on foreign exchange or sector risk with a particular industry. When assets have common risk factors they can also experience value changes simultaneously if a negative (or positive) event effects either one of them. This is where the benefit of portfolio diversification comes into play. For diversification to be fully effective, the commonalities between stocks need to be taken into account when building a portfolio.
Diversification Requires Understanding Exposure

Intuitively speaking, just looking at a portfolio's weightings does not give a complete picture of the nature of the portfolio's risk exposure. Investors need to dig a little deeper. As an example, consider a U.S. stock portfolio and answer the following two questions to determine common risk factors:

Question 1: How much is the portfolio exposed to oil price variations?

In order to answer this question, you shouldn’t run to your office and count the barrels of oil in the portfolio. The scientific answer to this question is to calculate the portfolio’s correlation to the variations of the price of oil. Ask yourself how this U.S. portfolio’s performance is related to the changing price of oil. If the performance and oil prices both move up and down at the same time then they’re highly correlated and you could be taking higher risk.

Question 2: How is the portfolio exposed to the variations of Ford’s stock price?

The answer to this question is not as simple as referring to the stock weight in the portfolio. Imagine you own 2.5% of your portfolio in Ford shares. If this 2.5% is combined with 97.5% of other stocks that have a low correlation to Ford, your overall exposure to Ford is generally low. However, if you have 1% of Ford stock and the remaining 99% is highly correlated to Ford, such as other automotive manufacturers or companies that make the parts for Ford cars, the overall exposure to Ford is high.

The scientific answer to question two is thus to calculate the degree to which the portfolio is correlated to the variations of Ford’s stock price. Indeed, for a one standard deviation move of Ford, everything else being equal, the portfolio can be expected to move by one standard deviation multiplied by its correlation to Ford.

A portfolio’s true exposure to any given source of risk is measured by the portfolio’s correlation to this source of risk. The source may be related to any industry, commodity or individual company such as the price of oil, the inflation rate or the price of Ford’s stock.

What is True Diversification?

True diversification means a portfolio has more even exposure to the main sources of risk available in the universe of assets. When this happens the portfolio is said to be unbiased. Being evenly exposed to all sources of risks prevents a portfolio from being more exposed, or more biased, towards one particular asset.

Research by TOBAM, an award-winning Europe asset manager, proves that a TOBAM portfolio is less correlated to any of its holdings than to any stock it does not hold. TOBAM President and Chief Investment Officer Yves Choueifaty expands on this point using TOBAM’s Most Diversified Portfolio® (MDP) as a proxy: “Any stock not held by the MDP is more correlated to the MDP than any of the stocks that belong to it. Moreover, all stocks belonging to the MDP have the same correlation to it.”
Exhibit 1 below gives an illustration of this mathematical concept: it shows that all assets in a given universe are effectively represented in a Most Diversified Portfolio®, even if the portfolio does not physically hold them. For example, the diversified portfolio constructed using S&P 500 stocks may hold approximately 50 stocks. However, this quantity of stocks does not mean that the portfolio is not diversified. In fact, the 50-stock portfolio is more correlated to the 450 stocks it does not hold than to the 50 stocks it actually holds.

Since a truly diversified equity portfolio generally has more even exposure to the main sources of risk available, it is particularly immune to a sharp, idiosyncratic drop in prices.

EXHIBIT 1: CORRELATION OF STOCKS BOTH WITHIN AND OUTSIDE OF A TOBAM PORTFOLIO

NOTES
1 Choueifaty, Yves; Froidure, Tristan; Reynier, Julien; « Properties of the Most Diversified Portfolio », Journal of Investment Strategies, Vol. 2 No. 2, Spring 2013, Section 3.2 “The Core Property of the MDP”.
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