

How Efficient is Your Portfolio?

Virtually all investors would like portfolios that offer sufficient growth to meet their financial goals while taking the least amount of risk. While there will always be risk in investing, there has also been a great deal of investment research done in the academic world in an attempt to find the most efficient way of investing. This analysis of the stock market has led to a theory called the efficient frontier, which is a way of trying to achieve the maximum returns for a given level of risk through asset allocation.

The Birth of the Frontier

The history of investing can be divided into two periods: before and after 1952. Nineteen fifty-two was the year that an economics student at the University of Chicago named Harry Markowitz published his doctoral thesis. His “Modern Portfolio Theory” formed the basis for the efficient frontier. Markowitz’s theories were significant – he received the Nobel Prize in economics in 1990 because of his research and its long-lasting effect on how investors approach investing today.

What is the Efficient Frontier?

The efficient frontier is depicted in figure 1 on a graph representing a set of portfolios that maximize expected returns at each level of portfolio risk (or return volatility). The horizontal line (x-axis) reflects the portfolio risk and the vertical line (y-axis) shows the expected return. Sounds complex? Let’s break it down...

Returns

Calculating a portfolio’s return is the easy part. For example, a stock’s total return is the gain or loss in price plus any dividends received for a given period. For a bond, it is any interest received plus gains or minus losses to the price of the bond. Putting it all together, a portfolio’s return is the weighted average of all the individual securities’ returns.

Risk

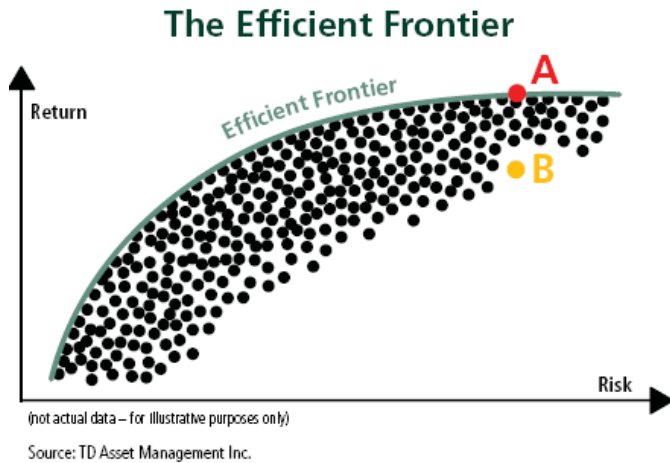
Risk is another matter. As investors, we often consider risk to be the possibility that our investment will lose money or that the return will be lower than our expectations. However, the efficient frontier measures risk in terms of volatility on an entire portfolio of investments. When calculating risk for an entire portfolio of investments, the risk level is not a simple average of the risk level of the individual stocks and bonds. The risk of one investment may offset the risk of another. Economic forces such as interest rates, commodity prices and market demand affect securities investments differently. The most common example is that a high price for oil is good for the oil industry, but bad for the trucking industry. It takes advanced calculus and some detailed calculations to determine the risk level of the portfolio. But as a general rule, the more you diversify your portfolio across various market sectors and asset classes, the greater the risk-reducing benefits.

Constructing the Efficient Frontier

When building the efficient frontier, analysts will use thousands of different portfolios and look at the historic risk, as measured by standard deviation (*see box for definition*), and the historic returns for each of these portfolios. By plotting risk on the horizontal line and return on the vertical line, the place where risk and return intersect for a portfolio is one point on the graph. By doing this for each portfolio, a curved shaped pattern starts to develop. As you move up the curve, you will generally see that the greater the risk of the portfolio, the higher the potential return, but that’s not always the case. Let’s look at two points on figure 1, Portfolio A and Portfolio B. As you can see, both portfolios have the same level of risk, as they are in the same area on the horizontal axis. However, Portfolio A is higher on the vertical axis, which means it may provide a higher potential return. Therefore, as an investor you would want to choose Portfolio A, which offers you a higher potential return than Portfolio B, while incurring the same amount of risk; Portfolio A is more efficient. It’s important



to remember that the calculations used for the efficient frontier are based on historical performance, which cannot predict future performance; they can only show how efficiently an investment or portfolio has performed in the past. Keeping in mind Markowitz's Modern Portfolio Theory, the Efficient Frontier can be a very powerful tool in managing your investment portfolio. However, the potential benefits of these principles, like most investment strategies, require a long-term investment outlook. Speak with your investment representative to help you create your optimal portfolio strategy.



Standard deviation: A quick definition

Standard Deviation measures the difference of a portfolio's actual returns around its average return over a given period, usually measured over three or five years. When a portfolio or mutual fund has a higher standard deviation, it means that its range of performance has been wide, which means that there is greater potential for volatility than those with low standard deviations.

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