

7.8: Standard Deviation vs. Beta

At this point, we have introduced two risk measurements. The first is standard deviation and the second is beta. In some cases, these two risk measurements will tell a different story. For instance, stock A may have a standard deviation of 30% and a beta of 0.8 while stock B may have a standard deviation of 25% and a beta of 1.3. Which stock is riskier? The answer is depends on the specific situation. Because each risk measurement is measuring a different type of risk (standard deviation measures total risk while beta measures market risk), we need to think of situations where each is appropriate.

Single Security and/or Poorly Diversified Portfolio

If you are going to place your entire investment into a single security or a poorly diversified portfolio, then standard deviation is the appropriate risk measurement. In this situation, you have not diversified away the majority of the firm-specific risk, so you need to include it in your analysis. Standard deviation does this because it includes both sources (market and firm-specific) of risk.

Adding a Security to a Well-Diversified Portfolio

If you own a well-diversified portfolio and you are planning to add a single security to that portfolio, then the firm-specific risk of the security you are adding is not relevant. The reason it is not relevant is because it will be one of many stocks in the large portfolio and the firm-specific risk will be diversified away. What matters is how that stock moves with the overall market. Since we measure this market risk with beta, our appropriate risk measurement here is beta.

Choosing Between 2 (or more) Well-Diversified Portfolios

If you are choosing between two or more portfolios that are each well-diversified, then you can use either standard deviation or beta as your risk measurement. The reason for this is that at this point, the firm-specific risk is already diversified away so that your total risk and market risk should be essentially the same. Thus, whichever portfolio has the higher standard deviation should also have the higher beta (if not, you know the portfolios are not well-diversified).

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