

Trampolines and Standard Deviation

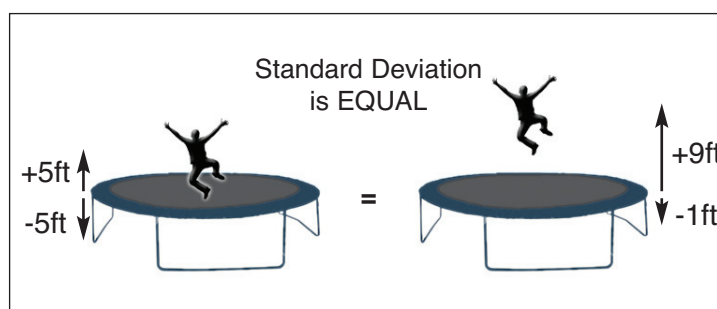
Standard deviation is one of the most widely used risk statistics in the investment industry. However, it is possible to use standard deviation to extract information which may not be immediately obvious and yet be extremely valuable when making investment decisions. Recall that standard deviation is a measure of volatility on either side of the average range of returns for a given period. As such, it represents a snapshot of volatility for the period in question, but it is important to recognize that one also loses the perspective of volatility over time.

Suppose an investor is considering two investment alternatives (“A” and “B”) each with the same standard deviation using a trailing five-year period. However, in the early years of the observation, investment “A” was wildly volatile and has since become very stable. Yet the opposite is true for investment “B,” which had been very stable but is now much more volatile. A static reading of standard deviation does not capture the trends in risk. How do we resolve the issue? One method would involve rolling the time periods. For example, calculate the standard deviation for the first year, advance forward a quarter, and calculate for the next annual period. The result is an illustration of how standard deviation is moving. In the above mentioned case, the trends in standard deviation would become immediately obvious.

Interestingly, standard deviation is an equal opportunity reflector of risk, both good and bad. To illustrate a way of isolating bad (negative) standard deviation, consider the case of two trampolines: one soft and flexible, the other firm and unyielding. Imagine that one person is

bouncing on each trampoline. They are both moving up and down the exact same distance, 10 feet, so the standard deviation is the same for each. However, the first person is moving down below the level of the trampoline by five feet and above by five. The second person is moving downward by only one foot and up nine. If the trampolines represented investment choices, clearly one would like to identify the investment that exhibits less downside volatility (the second trampoline) - *but how?*

Taking standard deviation and isolating only the downside variability can be done using the downside standard



deviation (also known as downside risk or, for those who wish to be more formal, semi-standard deviation). Thus, a high standard deviation might not be so bad if the investment had a low downside risk.

By becoming more comfortable with some of the nuances surrounding commonly used investment statistics, investors can make more informed investment choices.

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