

# Return and volatility risk



Wealth  
Management

## Volatility risk (standard deviation)

Volatility risk is the unpredictability of investment returns. Volatility risk is measured statistically using standard deviation, which is an estimate of the possible future variance of the actual returns to be generated by the asset class or portfolio around its estimated expected return rate.

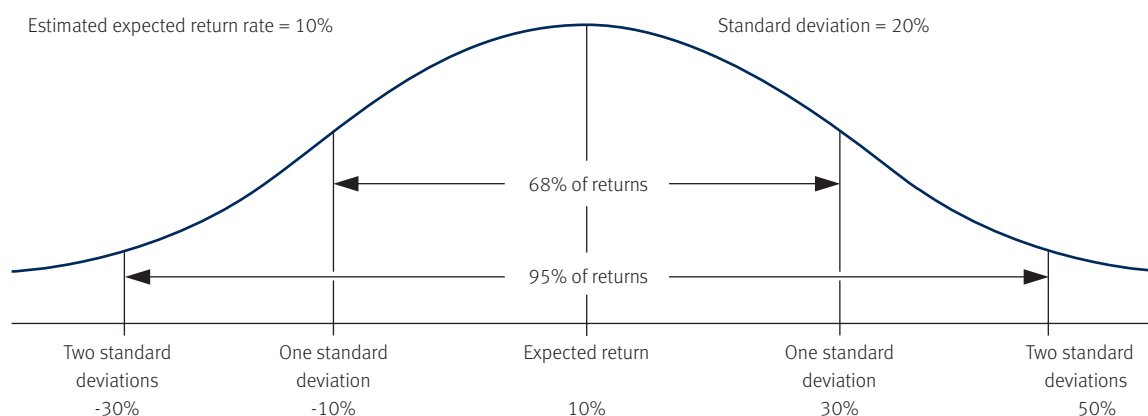
The standard deviation for an asset class or a portfolio represents its estimated average annual investment risk. Investment volatility risk is based on the notion of uncertainty. If it is less certain the asset class or portfolio will be near

its estimated expected return rate, the more uncertainty and risk is contained in that asset class.

### Example:

- **Portfolio expected return: 10%**
- **Portfolio standard deviation: 20%**
  - **One standard deviation:** -10% to 30%.  
About 68% of the time, the returns will fall in this range.
  - **Two standard deviations:** -30% to 50%.  
About 95% of the time, the returns will fall in this range.

- **Expected return:** the expected return falls in the middle of the chart. On the chart, 50% of the area is to the right of the expected return and the other 50% lies to the left of the expected return.
- **One standard deviation:** About 68% of the area falls within one standard deviation above and one standard deviation below the expected return.
- **Two standard deviations:** About 95% of the area falls within two standard deviations above and two standard deviations below the expected return.



The return distribution can be represented by the familiar bell-shaped curve. The area within the curve translates into the likelihood of occurrence.

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