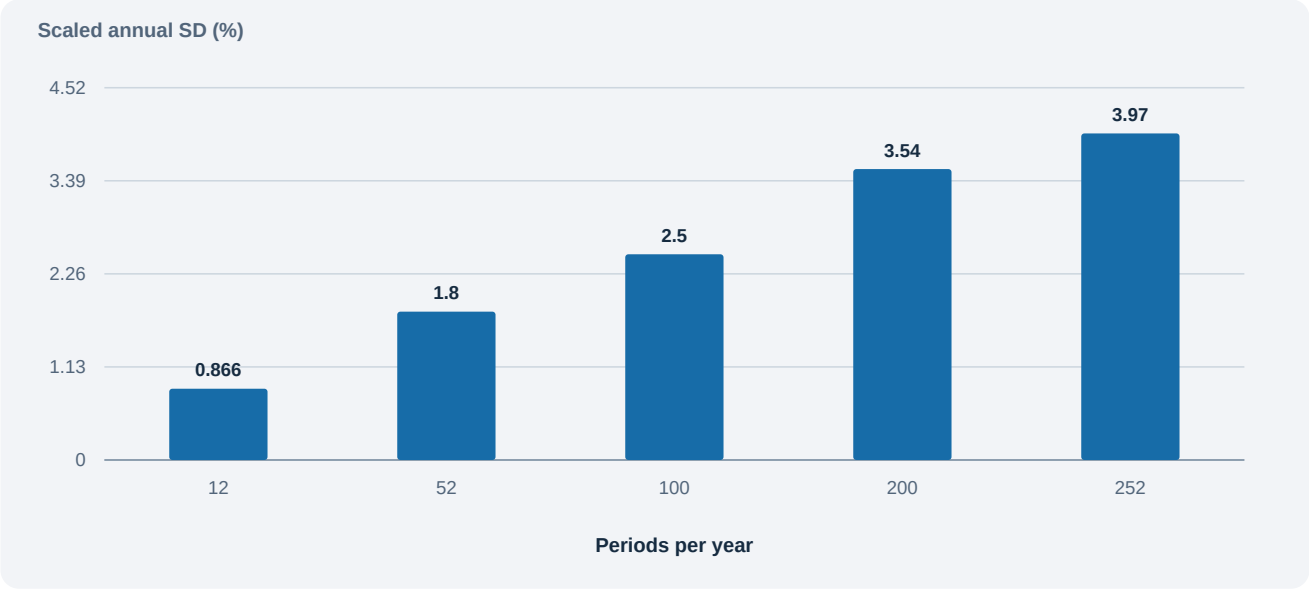
Square-root-of-time volatility scaling

Research and evaluation | Original synthetic example | Edition 2026-11-26

Multiplying period return standard deviation by the square root of periods per year is a common scaling approximation. It relies on assumptions about serial dependence and variance stability.

FORMULA Annualized SD = period SD x sqrt(periods per year)

SCENARIO 01: Period return SD 0.25%; compare scaling frequencies



WORKED EXAMPLE

With 252 periods per year, 0.25% x sqrt(252) = 3.97%, subject to the scaling assumptions.

COMMON MISTAKE

Applying the square-root rule across dependent or changing-volatility returns can misstate risk.

BEFORE YOU USE THE CALCULATION

1. Name the period frequency.
2. State the scaling assumption.
3. Check dependence and regime changes in real data.

COMPARE TWO MORE INPUT SETS

Scenario 05: Period return SD 1.25%; compare scaling frequencies. With 252 periods per year, 1.25% x sqrt(252) = 19.84%, subject to the scaling assumptions.

Scenario 10: Period return SD 2.5%; compare scaling frequencies. With 252 periods per year, 2.5% x sqrt(252) = 39.69%, subject to the scaling assumptions.

Synthetic values are not historical market data. Educational material; trading can result in substantial losses.