Spend-Rate & Return Targets
How to Maximize the Odds of Success

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While maximizing return is often theorized as the proper objective for investing, the impact that losses can have on an investor's risk tolerance, time horizon, and ability to maintain target-spending levels can render maximizing return a moot objective in the real world. Instead, maximizing the probability of earning a minimum required return may be a more important objective, especially when spending needs are supported by portfolio returns. This requires knowledge of an investment strategy's distribution of returns over finite time periods (volatility), not just its mean.

How much extra return is needed to offset added risk? Or, in statistical terms, how much does the geometric mean of a distribution need to rise to offset a higher standard deviation if one's goal is to maintain a fixed probability of earning a given return over a finite time period? To answer these questions, we used a Monte Carlo simulation to determine the geometric mean return needed to maintain a fixed probability of earning an 8% (or higher) return over any 5-year period as volatility (defined by annual standard deviation of return) increased . An 8% minimum required return was chosen to support a target 5% real spend-rate while protecting against 3% inflation. The results appear below:

Rate of Return Needed to Maintain Fixed Odds of Earning Over 8% [1]

Annual Standard Deviation	% Odds Of Success Over 5 Year Periods				
	60%	**70%**	**80%**	**90%**	**95%**
±21.3%	12.8% (Return)	15.1%	17.7%	21.5%	24.8%
±16.0%	11.4	13.1	15.3	18.1	20.3
±10.7%	10.2	11.4	12.7	14.7	16.4

Key Observation #1 – ***For any given probability of success, the return must be significantly higher from a high-volatility approach than from a low-volatility approach.*** For example, an 11.4% return / ±10.7% standard deviation approach has the same 70% chance of providing an 8% return over any 5-year period as a 15.1% return / ±21.3% standard deviation approach. *This increase in geometric mean is higher than most sustainable manager alphas.*

Key Observation #2 ***– The more important it is to achieve a minimum return objective, the more important lowering volatility becomes.*** For example, to increase the odds of success from 60% to 95%, a low-volatility approach with a ±10.7% standard deviation must increase its return from 10.2% to 16.4%, an increase of 6.2%. The increase needed via a high-volatility approach (standard deviation of ±21.3%) is much greater - from 12.8% to 24.8% (a 12% increase). *Since it is nearly impossible to find investment approaches offering sustainable returns near 20%, investors wanting 90% to 95% odds of earning 8% over 5-year periods have little alternative but to reduce volatility.*

The above odds play out in real life - not just in simulations. To illustrate, the following table shows the actual incidence of *failing* to earn an 8% return over any rolling 5-year period since 1986, using our All-Cap Value approach and various value indices. While our returns and those of the indices were within ± 0.75% over the entire 22 years, the odds of *failing* to earn 8% during any 5-year period were quite different.

Index/EIC	Actual Incidence of A 5-Year (Annualized) Return Below 8% [2]	Rolling 5-Year Standard Deviation
EIC All-Cap (Gross)	**2.0%** (of the periods)	**±2.4%**
EIC All-Cap (Net)	**3.9%**	**±2.3%**
Russell Mid-Cap Value	6.8%	±4.4%
Russell 2000 Value	16.1%	±4.6%
Russell 3000 Value	23.9%	±5.9%
Russell 1000 Value	24.9%	±6.2%

Meanwhile, less value-oriented indices tend to show an even higher rate of failure in earning minimum return objectives due to their greater volatility, as shown below for the S&P 500, the Russell 1000 Growth, and NASDAQ indices.

Index	Actual Incidence of A 5-Year (Annualized) Return Below 8% [2]	Rolling 5-Year Standard Deviation
S&P 500	29.3%	±8.5%
Russell 1000 Growth	33.2%	±11.0%
NASDAQ	39.0%	±12.0%

Conclusion

Since volatility plays a significant role in determining investor failure rates, and since real-world excess returns (or alphas) tend to be low relative to standard deviations, we believe most investors will find a more reliable path in achieving their investment objectives by focusing on volatility minimization instead of return maximization (as long as mean returns are market-like). This is especially true for investors requiring high probabilities of success.

To say it in statistical terms, it is much harder to find a return distribution with a considerably higher mean than it is to reduce the tails of the distribution meaningfully, since it is the tails that tend to result in failure. The attached graph highlights our distribution of rolling 5-year returns versus the S&P 500 and Russell 3000 Value indices, showing much tighter distribution of returns. Our less volatile return distribution should appeal to individuals and endowments who cannot sustain long periods of poor absolute returns, whether due to fixed spending needs, retirement objectives or psychological intolerance for risk.

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[1] The simulation results were determined using the AASim Monte Carlo program from FinanceWare.com by iteratively altering the geometric mean return until a given probability of success was reached. All simulation results are geometric means and exclude fees for illustrative purposes. Standard Deviation is a statistical measure describing the degree of variability around an average. Assuming a normal distribution, two-thirds of observations fall within the historical mean, ± 1 standard deviation.

[2] The table illustrates the historical frequency that the annualized return over each of the 205 rolling 5-year periods since 1986 was less than 8% (including reinvestment of dividends and interest). EIC's returns represent a composite of non-wrap All-Cap Value equity accounts and are presented as supplemental information to a full GIPS® disclosure presentation, which is available upon request. All returns include reinvestment of dividends and interest. Index returns exclude fees and commission costs. Results are historical, and do not imply future rates of returns or volatility for EIC or the indices, which may be materially different from the past. Individual account results may differ from composite figures. See above for standard deviation definition.