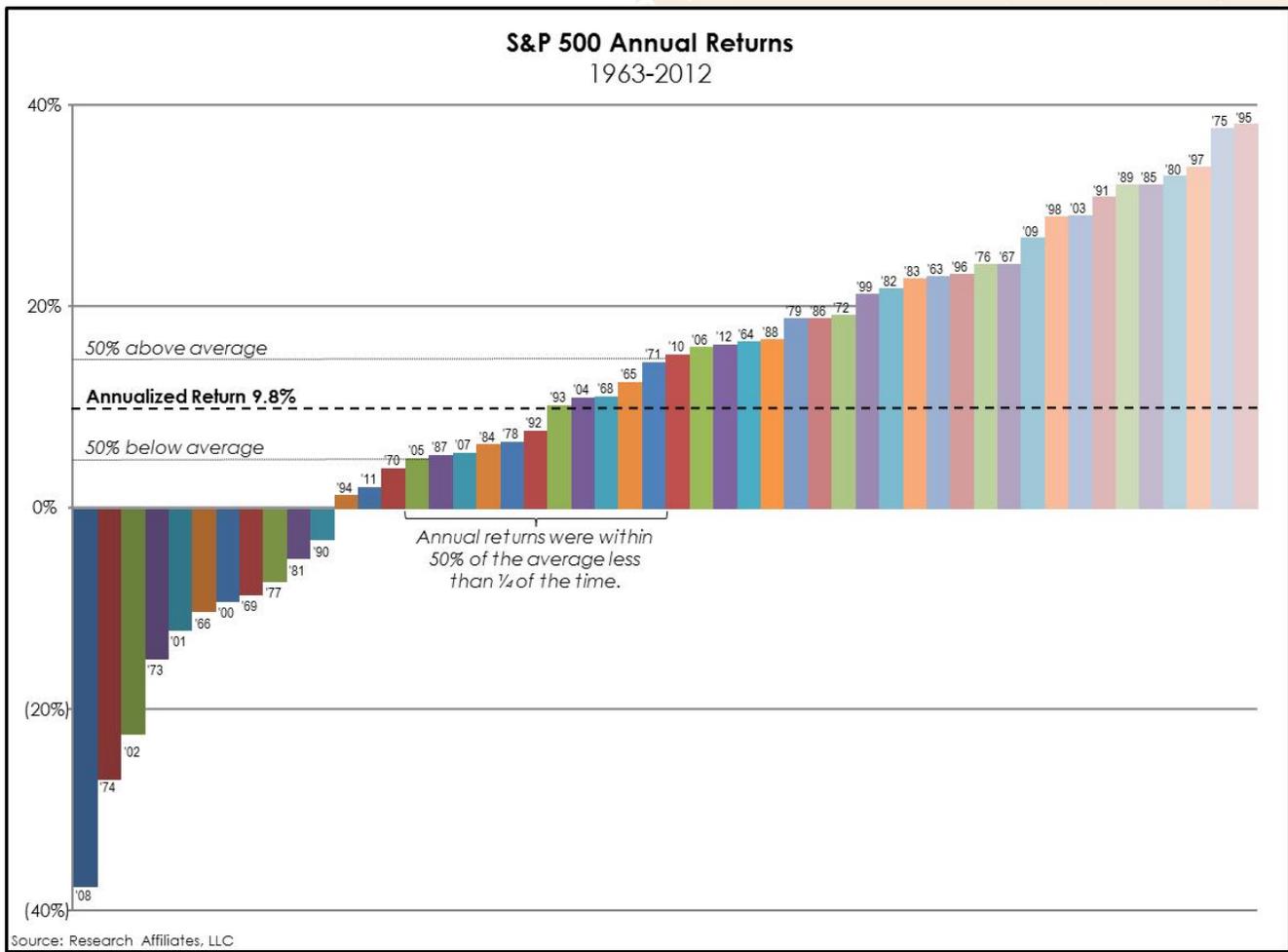


APRIL 2013

**CAPITAL MARKETS UPDATE** | Domestic equity markets vaulted higher (Large Cap +10.6%, Small Cap +12.4%) in the first quarter as the S&P 500 and Russell 2000 both set new all-time highs. International equities (+5.1%) performed well while Emerging Markets (-1.6%) and Commodities (-1.1%) both trended lower. The US bond market posted a slight loss (-0.1%) as price declines narrowly exceeded interest income. Major central banks continue to be active in markets with Japan being the latest to aggressively target higher economic growth and modest inflation.

**AVERAGES ARE NOISY** | Averages can be helpful. They summarize a complex stream of data. Averages can also be misleading. After all, an average is just one number that describes a potentially wide distribution of outcomes. Importantly, when investors consider average investment returns, the average provides no details about the journey. Were markets volatile? What were the portfolio's ups and downs? In all fairness, *averages are noisy*. It is important to consider the *distribution* of possibilities to fully understand the opportunities and risks of a given investment.

How volatile are equities? Very! All of us are well versed in stock market volatility after the roller coaster ride over the last 15 years (pre tech bubble, post tech bubble, pre financial crisis, post financial crisis). The chart below depicts annual investment returns for the S&P 500 over the last 50 years sorted from worst to best. The annualized (compound average) return over these 50 years was 9.8%. But look at the wide distribution of outcomes—the outer tails (both positive and negative) greatly impact the long run average. Note that the years with returns that were within 50% above or 50% below the average only account for 11 of the 50 years (less than ¼ of the total)! Actual annual returns logged little time around the average. Equities are indeed highly volatile.



**ONLY COMPOUNDED RETURNS MATTER** | It is also important to be clear about *which* average we are talking about. The financial press often uses arithmetic averages to describe returns. An arithmetic average or simple average is the sum of the returns for each year divided by the number of years. For the last 50 years, the simple average return for the S&P 500 was 11.2%. However, an investor in the S&P 500 did not earn the simple average return. *Only compounded returns matter.* A geometric average (or annualized) return is the only relevant average to an investor—it is the compound annual growth rate of the investment. Note in the chart above the compounded return was 9.8% or 1.4% less than the simple average of 11.2%. Though a 1.4% lower return seems modest, the compound effect over 50 years is huge: the investor’s ending wealth is half as much. Negative returns and portfolio volatility both dampen compounded returns.

**THE TYRANNY OF NEGATIVE RETURNS** | We know intuitively that negative returns are punitive. What can be surprising mathematically is *how* punitive. An example helps illustrate the challenge. Suppose an investor earns +20% one year and -20% another year—the simple average return is 0% but the investor is still down 4% from where he/she started regardless of the order of these positive or negative returns ( $\$1.00 \times 1.20 \times 0.80 = \$0.96$ ). The adjacent table notes the gain that is required to offset a given investment loss—the greater the decline, the more daunting the recovery. Big losses require enormous gains. Smaller losses are more manageable and have less impact over the long haul because there is less ground to make up.

Portfolio Decline	Required Increase
(50.0%)	100.0%
(25.0%)	33.3%
(10.0%)	11.1%
(5.0%)	5.3%

**VOLATILITY IS NOT YOUR FRIEND** | Less intuitive is the impact of volatility. Once again, only compounded returns matter. The distribution or variation of the actual annual returns directly impacts the long-term annualized return. Fortunately, there are three mathematical facts that we can always depend on as we design portfolios.

1. Portfolios with equal simple average returns will have different compounded returns if the component annual returns are different.
2. The compounded return is always less than or equal to the simple average return.
3. The greater the variance in the sequence of returns (the higher the portfolio volatility), the lower the compounded return.

Simple translation: *volatility is not your friend.* The chart below illustrates the negative impact of higher portfolio volatility on compounded returns.

	Portfolio				
	A	B	C	D	E
Year 1	10.0%	20.0%	30.0%	40.0%	50.0%
Year 2	10.0%	(5.0%)	(15.0%)	(25.0%)	(35.0%)
Year 3	10.0%	15.0%	15.0%	15.0%	15.0%
Simple Average Return	10.0%	10.0%	10.0%	10.0%	10.0%
Compounded Return	10.0%	9.4%	8.3%	6.5%	3.9%

In fact, volatility can be especially punitive for portfolios with regular withdrawals. If the portfolio has a volatile sequence of returns, the timing and magnitude of the withdrawals will significantly affect the sustainability of withdrawals over the long term. All other things equal, withdrawals during a big up year are “cheap” and have little long-term impact while withdrawals during a large downturn are “expensive” and can reduce portfolio longevity.

# Quarterly Newsletter



**INVESTMENT IMPLICATIONS** | The intent of this newsletter is not to disparage equities as an asset class. In fact, stocks are a critical long-term growth engine that most investors need to hold. However, expected volatility has important implications as we customize the strategy for individual client portfolios.

- Set and maintain a disciplined **risk budget**—how much volatility and downside risk is appropriate for the portfolio and the withdrawal objectives?
- Consider including some equity surrogates with stock-like expected returns and lower expected volatility (global tactical, high yield bonds, emerging market local currency bonds, managed futures, etc.).
- Consider trimming allocations to traditional stocks and bonds in favor of **alternative investments**. Given the starting point of low yields (high prices) of domestic bonds, fixed income may provide less support through price appreciation in the next equity bear market. Looking out the windshield, long-term fixed rate bonds may be a source of higher volatility and negative returns when yields move appreciably higher rather than the provider of lower volatility and positive returns that we have grown accustomed to over the last 30 years.
- Rebalance to target allocations—by adhering to this long-term discipline, we expect to increase returns while reducing risk.

**NEW WEBSITE** | Please visit our redesigned website at [www.arborinvest.com](http://www.arborinvest.com) (same address). We welcome your feedback.

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