Risk Management for All Markets

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Investors need to invest differently in bull markets than they do in bear markets.
– Ned Davis

Summary

- An introduction to the importance of market breadth measurements
- The construction behind the Ned Davis Research CMG US Large Cap Long/Flat Index (NDRCMGLF)
- Risk management during bull and bear markets and navigating secular trends - only 54% of time spent in bull markets historically
- The merciless mathematics of loss; negative performance requires a larger percentage of returns than what was lost to break even
- 70% of time spent in a bear market or recovering from one

Insight into market breadth

"Market breadth" refers to market activity, such as advances and declines, new highs and new lows, advancing and declining volume, and price momentum based upon the number of stocks in uptrends and downtrends. Technicians like breadth measurements for two main reasons:

1. Breadth thrusts[1] are often present at the start of major bull markets.
2. Breadth nearly always weakens before prices do at a major peak.

A model that gives a market breadth composite reading on the technical health of the broad equity market has been developed by Ned Davis Research, Inc. (NDR), a leader in institutional financial market research and model development, and CMG Capital Management Group, Inc. (CMG), a specialist in trade strategy management and execution. The model's systematic process analyzes multiple trend and countertrend (i.e., mean reversion) indicators across market cap-weighted sub-industry groups of the S&P 500® Index.

Trend indicators, which are based on the direction of a sub-industry's moving average, are the model's primary indicators. An example of a trend measure is momentum. Momentum indicators are based on the rate of change of the sub-industry's price index.

Countertrend, or mean-reversion[2] indicators, are secondary indicators, such as measures of the degree to which the market may be oversold or overbought. These countertrend indicators complement, or help support, the primary trend indicators, which are used to reveal the direction and magnitude of the various industries' price momentum.

[1]Source: Ned Davis Research. Breadth thrust is a technical indicator used to ascertain market momentum and signals the start of a potential new bull market after what may have been an oversold market.

[2]Mean reversion is the theory suggesting that prices and returns eventually move back toward the mean or average.

A total of seven price trends and countertrends are measured against each industry within the composite and computed daily to reveal a composite-level score that measures overall market health (strength in market breadth as measured across 22 S&P 500 GICS industries). This composite score is referred to as the model score.

The model's investment objective is to be fully invested when the overall health of the market is strong and rising and to reduce exposure when the trend is weakening and declining. When the model score has been high and rising, the market returns have historically tended to be best. When the model score is low and falling, returns have tended to be weakest.

The specific signal-generation calculations for the model's indicators were determined based on historical testing, and the model provides a summary reading of the U.S. stock market's technical health based on a historical analysis of market breadth.

The Ned Davis Research CMG US Large Cap Long/Flat Index

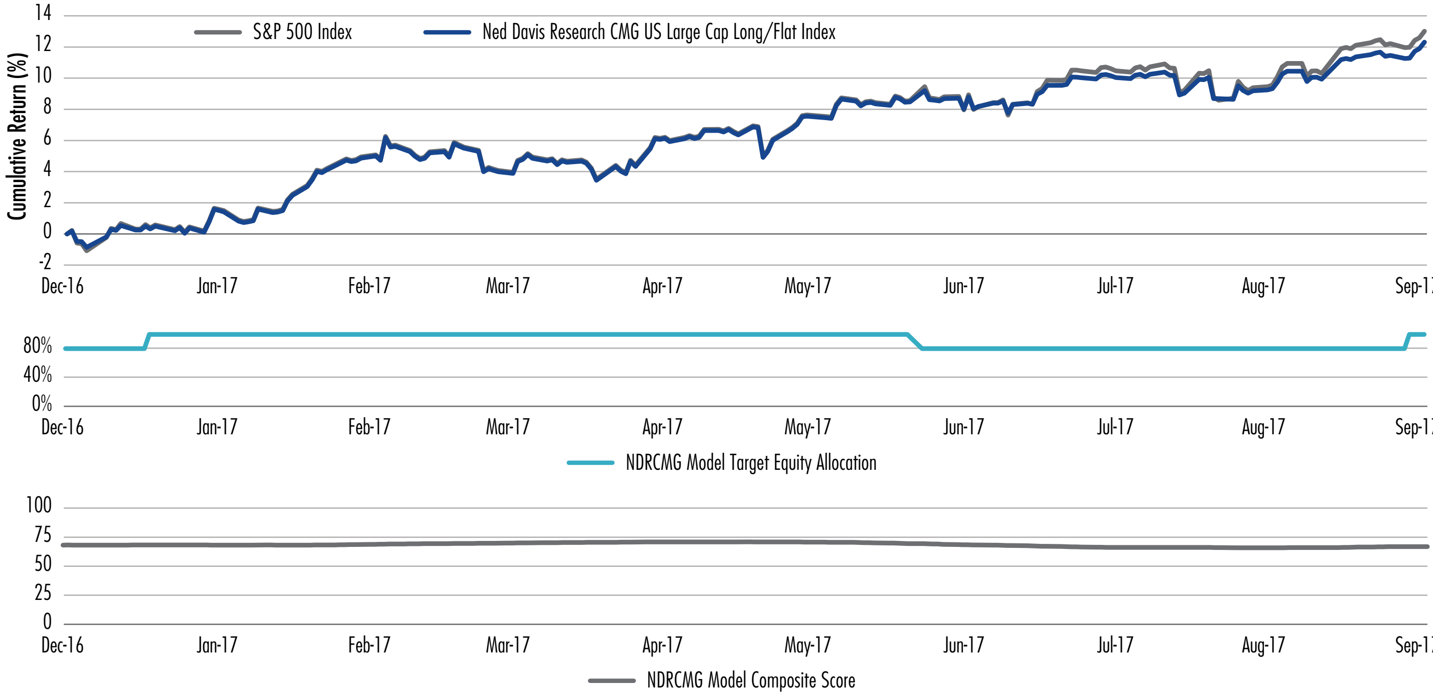
The NDRCMGLF Index is designed to follow the proprietary model developed by NDR and CMG. The model produces tactical U.S. equity allocations to help perform with less risk than being fully invested 100% of the time, as is standard with buy-and-hold strategies. Tactical strategies that trade into and out of the market may help improve an investor's overall risk/return profile.

Here is how the NDRCMGLF Index works:

- The NDRCMGLF Index follows the model to allocate either 100%, 80%, 40%, or 0% to equity. It is comprised of the S&P 500 Index or Solactive 13-week U.S. T-bill Index, or both.
- The model readings occur daily, but new trades may only happen when the model allocation changes.
- The model's process measures the underlying strength of the S&P 500 Index by evaluating the trend across 22 industries that make up the index and plots the results daily. See the model composite score in the center of Chart 1 (on next page).

  In simple terms, a bullish market environment will take many, if not most, stocks and sectors higher. The reverse is true in bear market environments.

Chart 1. Tactical Allocation in Response to Overall Market Health – 12/27/2016-9/30/2017



Sources: Ned Davis Research and FactSet. Data as of September 30, 2017. Index returns are not illustrative of Fund returns. To view Fund returns current to the most recent month end, visit vaneck.com.

- Seven price-based trend and countertrend indicators are applied daily to each industry to produce a composite score. These indicators measure short-, medium-, and long-term trends, factoring in both direction and magnitude.
  - o Primary indicators: four trend following measures, such as momentum, assess market direction
  - o Secondary indicators: three mean-reversion measures, such as z-score,[3] help support primary indicator trend readings
- The market breadth composite is scaled and scored (0 - 100) to indicate the level of bearishness or bullishness, and the equity allocation is determined by both the composite's score and directional trend.
- **Composite's score** is assessed over four zones [below 50 (weak market breadth), 50-60, 60-70, above 70 (strong market breadth)].
- **Composite's directional trend** is assessed by the difference between the current composite score and what it was 42 days prior.
  - o Buy signal: when directional trend is positive (bullish), model allocates 100% to equity regardless of the composite's score.
  - o Sell signal: when directional trend is negative (bearish), model allocates either 80%, 40%, or 0% to equity. Think of it as a systematic way to de-risk (raise cash) or re-risk (invest in large cap stocks).

[3]Z-score metric produces the number of standard deviations that the market is above/below a rolling average. The higher the z-score, the higher the perceived risk and vice versa.

For example, when the model score is

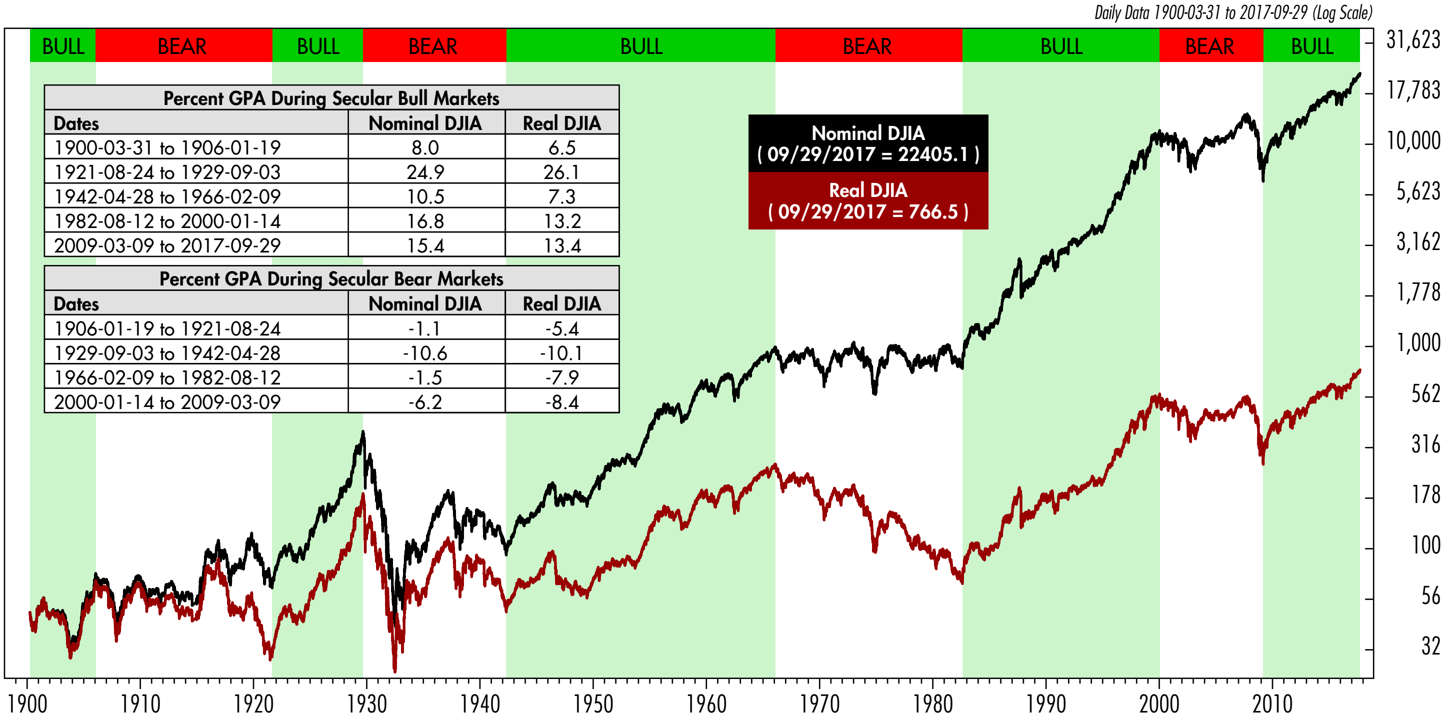
- ▶ Above 70 (an environment where most stocks/industries are doing well; i.e., broad-based positive sector participation), then the signal is always a buy signal, remaining 100% invested. A strong equity market trend environment is given the benefit of the doubt, even if the composite score is lower than 42 days ago.
- ▶ Between 60 and 70 and the trend is lower than it was 42 days ago, then the process steps from 100% invested to 80% invested.
- ▶ Between 50 and 60 and the trend is lower than it was 42 days ago, then the process steps from 80% invested to 40% invested.
- ▶ Below 50 and the trend is lower than it was 42 days ago, then the process steps from 40% invested to 0% invested.

  Historical research has shown that most of the bearish markets have tended to occur when the majority of stocks are in decline; therefore, the model moves to 100% cash (U.S. T-bills) if the model score is below 50 and the trend is down.

- The NDRCMGLF Index will rebalance to a new allocation percentage intra-month if the trade signal changes.

Based on historical research dating back to 1995, this trade strategy would have incurred 48 trades with 125 days, on average, between trades.

Chart 2. Bear Markets Have Occurred Nearly as Much as Bull Markets



Sources: Ned Davis Research, S&P Dow Jones Indices, and the Department of Commerce. Data as of September 30, 2017. Past performance is not indicative of future results.

The need for risk management during bull and bear markets

Understanding the nature of business cycles and the fact that markets and economies move through periods of expansion and contraction is important for investors. Unfortunately bull and bear market cycles tend to occur over multiple years.

Academic research has consistently pointed out that perma-bulls and perma-bears make far less profit than those who are cautiously optimistic. But that proves hard for many investors, as bull markets tend to lull investors into a state of complacency while the fear created in bear markets tends to push weak hands out of equities and keep them sidelined for far too long.

Chart 2 illustrates the secular bull and bear markets[4] since 1900 reflecting both nominal and real (after inflation or deflation) returns.

There have been five secular bull market cycles since 1900. Secular trends tend to be long-term periods lasting anywhere from five to 25 years. Gains varied with the best performing period gaining 24.9% annualized per year. The period occurred from 1921 and peaked in September 1929. The lowest annualized gains, 8.0% annualized, were at the turn of the twentieth century, March 1900 to January 1906.

Most of us recall the great bull market, the nearly 18-year period from 1982 to 2000, which produced annualized returns of 16.8%, and the current bull market from the great financial crisis' low to present, producing 15.4% annualized gains.

The longest secular bull market lasted nearly 24 years (1942-1966). The shortest lasted six years (1900-1906). There have been four secular bear market cycles since 1900. All secular bears produced negative annualized returns with the worst period, 1929 to 1942, returning a negative 10.6% annualized return. Compound your money at -10.6% per year for thirteen years and your $100,000 turns into $20,832.

1966 to 1982 was a different secular bear experience. While the decline over the sixteen-year period was -1.5% annualized per year, it was a period that experienced high inflation. Therefore, while $100,000 declined to $78,520, after factoring in a real after inflation return of -7.9%, $100,000 declined in spending value to just $26,801.

The average cumulative bear market decline is -38%. The last two bear markets, 2002 and 2008, each saw the S&P 500 Index decline by approximately 50%. Such declines tend to come during recessions.

[4]A secular bull market is a period in which stock prices rise at an above-average rate for an extended period and suffer only relatively short intervening declines. Secular bull markets are also typically accompanied by a favorable economic backdrop of low inflation and strong real economic growth.

A secular bear market is an extended period of flat or declining stock prices, often accompanied by high or rising inflation and weaker real economic growth.

The market has been in a bull market 54% of the time since 1900

For a historical perspective on the U.S. equity market, Chart 3 summarizes the annualized returns, and importantly, the percentage of time since 1900 spent in each regime (secular bull and secular bear). The average S&P 500 gain per annum during secular bull periods was 13.8% vs. -4.0% annualized during secular bear periods.

The S&P 500 spent 54% of the time in "super-cycle" periods we call secular bull and 46% of the time in secular bear. Viewed from this perspective, where we are in the secular cycle relative to when an investor may retire and begin to need investment income, becomes an important financial planning consideration. Historically, the equity market has spent 70% of its time either in a bear market or recovering from one.[6]

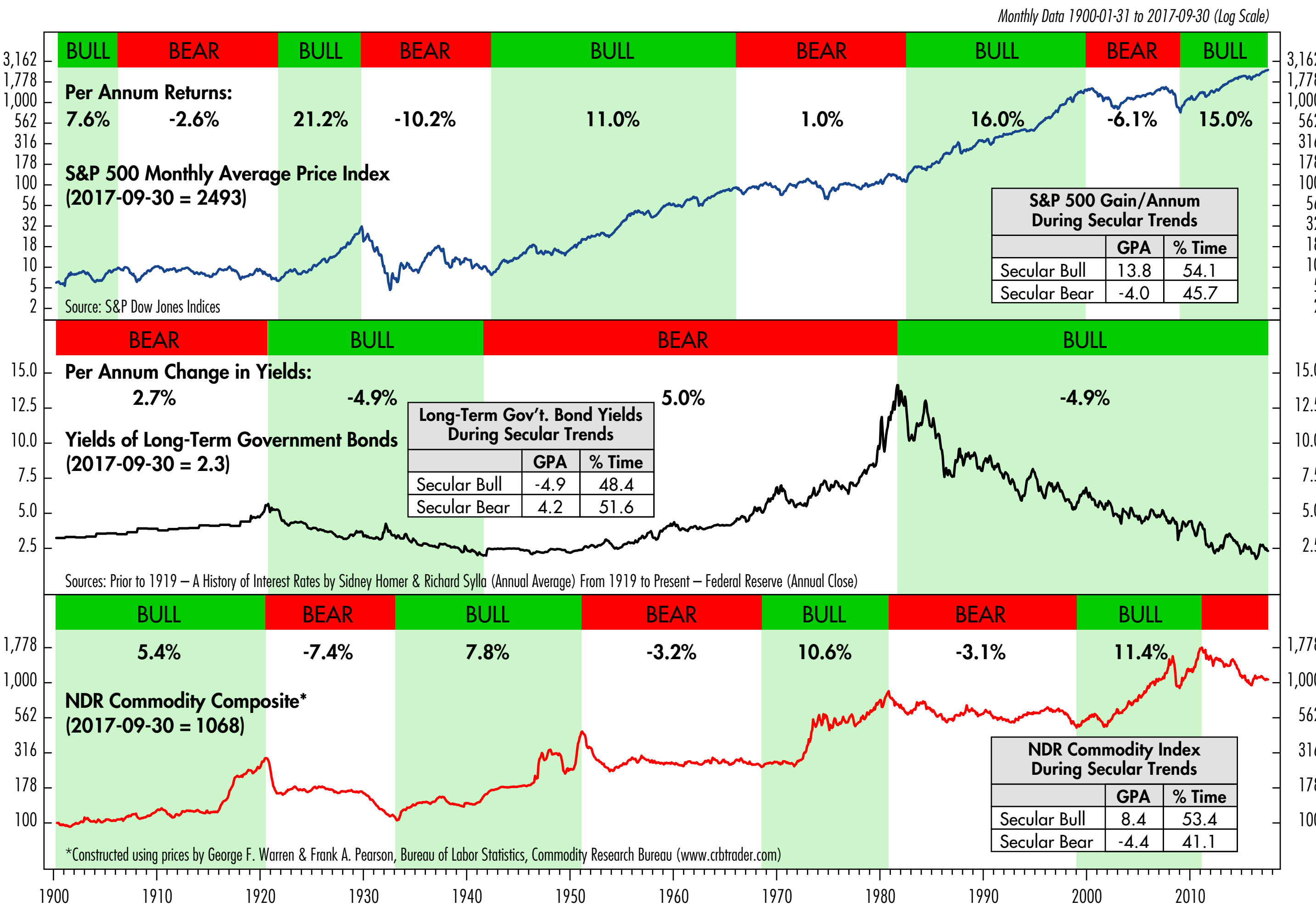
The same is true across all asset classes, as shown with Chart 3. Here is how you read this chart:

- The top section looks at the S&P 500 from 1900 through September 30, 2017;
- The shaded green areas are the bull markets. Also shown are the annualized returns over the period;
- The white areas are the bear markets with annualized return numbers;
- The data box (red arrow) shows the GPA, or gain per annum, for secular bull and secular bear periods. Also shown is the percentage of time in each secular period over the length of the study;
- The middle section looks at yields of long-term U.S. government bonds, while the lower section looks at the commodities market as measured by the NDR Commodity Composite.

The conclusion is evident – markets move through long-term secular bull and bear market periods. And, it is important to invest differently depending on which secular period you are in.

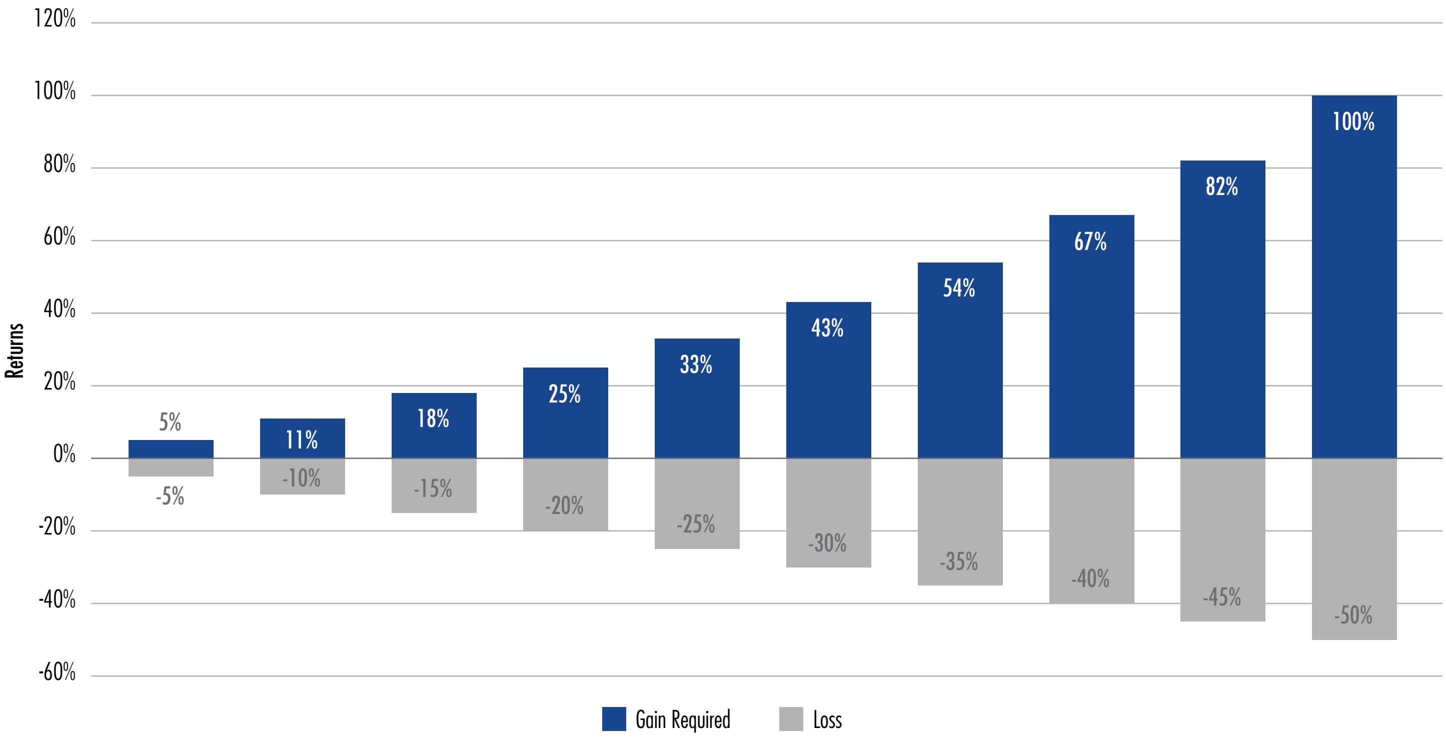
[6]Source: Ned Davis Research, S&P Dow Jones Indices. Based on price return, which excludes dividends. If calculated on a total return basis the figure would be 59%. Data as of 9/30/2017. Past performance is not indicative of future correlation or results.

Chart 3. Need for Navigating Secular Trends Is Apparent



Source: Ned Davis Research. Data as of September 30, 2017. Past performance is not indicative of future results. © Copyright 2017 Ned Davis Research, Inc. Further distribution prohibited without prior permission. All Rights Reserved. See NDR Disclaimer at www.ndr.com/copyright.html. For data vendor disclaimers, refer to www.ndr.com/vendorinfo.

Chart 4. Gains Required to Recover from Losses



Source: VanEck. For illustrative purposes only. The figures shown above were achieved by means of a mathematical formula and do not reflect results of any one investment. They help illustrate how, for example, a 50% loss requires a 100% gain to recover that loss.

The merciless mathematics of loss

When you buy a stock, you are really buying its future earnings. Each share's price can be viewed as the discounted present value of its expected future earnings. Prices change when expectations change, which happens for many reasons.

However, the market's overall health may be derived by measuring the trend and magnitude of industry-level price changes. Trend and countertrend indicators may be applied to assess market health to help dictate prudent equity allocations, as described above.

The objective of NDRCMGLF Index strategy is to be fully invested when the overall health of the market, as measured across 22 sectors, is strong and rising and, importantly, to reduce exposure to the market when the trend is weakening and declining.

Chart 4 helps illustrate why managing the risk of loss is critical for long-term investment success and peace of mind. Negative performance requires a larger percentage of returns than what was lost to break even. Therefore, employing a trade strategy to help limit losses to begin with could help increase performance potential by reducing the amount needed to recuperate.

Investment Opportunity

Trend following strategies may be used to minimize downside market risk by effectively signaling when to fully weight and underweight U.S. large cap equity market exposure. The Ned Davis Research CMG US Large Cap Long/Flat Index was developed to follow a proprietary model to measure market health and tactically allocate to U.S. equity to help perform with less risk than being fully invested 100% of the time. A guided allocation process is designed to participate and protect. Investors may complement their equity holdings with this systematic trade strategy available in a tax-efficient ETF.

VanEck Vectors® NDR CMG Long/Flat Allocation ETF (LFEQ) seeks to track the Ned Davis Research CMG US Large Cap Long/Flat Index (NDRCMGLF). The NDRCMGLF Index is maintained by NDR, whose technical research experts have been developing trade strategies for institutional asset managers globally for more than 35 years. NDR's expertise in its quantitative model building application to the financial markets spans over multiple market cycles. The co-indexer, CMG, is a registered investment advisor specializing in managing and executing trend following trading strategies since 1992. CMG has been a client of NDR for more than two decades.

Ned Davis Research CMG US Large Cap Long/Flat Index (the "Index") is a rules-based index that follows a proprietary model developed by Ned Davis Research, Inc. in conjunction with CMG Capital Management Group, Inc. ("CMG"). The model produces daily trade signals to determine the Index's equity allocation percentage (100%, 80%, 40%, or 0%). When allocated to a percentage of equities (long), that portion of the Index will comprise the S&P 500 Index. When allocated to a percentage of cash (flat), that portion of the Index will be allocated to the Solactive13-week U.S. T-bill Index. Solactive 13-week U.S. T-bill Index is a rules-based index mirroring the performance of the current U.S. 13-week T-bill. S&P 500® Index consists of 500 widely held U.S. common stocks.

Indices are unmanaged and are not securities in which an investment can be made. Index returns are not representative of fund returns. For fund returns current to the most recent month-end, visit vaneck.com or call 800.826.2333.

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