Navigating Market Selloffs: A Sector Playbook

Ned Davis Research | Special Report

ROB ANDERSON, CFA, U.S. SECTOR STRATEGIST
DANIEL CHIN, PhD, SENIOR ANALYST, CUSTOM RESEARCH SOLUTIONS
STEPHANIE O'BRIEN, SENIOR ANALYST, CUSTOM RESEARCH SOLUTIONS

NDR
NED DAVIS RESEARCH

MAY 21, 2025

Navigating Market Selloffs: A Sector Playbook

Special Report

Table of Contents

Executive summary

Market declines are an unavoidable part of investing. While catalysts have varied, including economic shocks, monetary and fiscal policy decisions, geopolitics, and run-of-the-mill business and market cycles, many characteristics of equity drawdowns, including the topping process, leadership trends, and the bottoming and recovery phases, have tended to follow recognizable patterns.

Often, a market top is not marked by a single event. A gradual rise in valuations, long-term technical divergences, and weakening fundamental and macro conditions can all signal heightened risk. As weakness broadens, leadership often shifts to more defensive sectors, reflecting rising caution among investors even before the broader market begins to fall sharply.

As selling intensifies, investor psychology becomes a major factor. Fear and uncertainty drive correlations higher, with no sector usually left unscathed. However, low-beta sectors have consistently proven relative havens. The economic environment can influence the magnitude of declines.

Bear markets often flip leadership on its head. Bull market winners are often among the biggest losers during the subsequent bear, while sectors that have trailed most during the bull have frequently been the top performer during the ensuing bear.

Like market tops, bottoming is often a process. Rallies and retests can repeat several times. Breadth thrusts and cyclical sector rotation can help signal the "all clear." Recovery times have varied, with deeper selloffs usually taking longer to recover. Recovery times have also varied across sectors. While cyclical sectors have seen more 20%+ declines than defensive sectors, they have also typically recovered faster.

While unsettling in the moment, market selloffs and recoveries tend to follow a playbook. Understanding the dynamics can help investors navigate volatility more effectively and contribute to better outcomes.

Toplines

Topping process and the anatomy of declines

- Elevated valuations across a broad range of sectors can signal heightened bear market risk.
- Defensive rotation has been consistent with lower S&P 500 returns and has been common around major tops.
- Cyclical sectors have seen far more 20%+ declines than defensive sectors.
- Buying corrections have been more profitable when the economy has not fallen into recession.
- The leading sector during a bull market has usually significantly trailed during the subsequent bear.
- Low beta has been among the best performing factors during bear markets.

Bottoming process and the anatomy of recoveries

- After a steep selloff, the market often follows a four-step bottoming process: oversold, rally, retest, and breadth thrusts.
- A decisive cyclical shift in leadership after large declines has helped to identify bottoms.
- The relationship between loss and recovery in terms of both return and duration is not linear.
- Cyclical Value sectors have tended to recover losses fastest, while defensive sectors have taken longest.

Contributors

Rob Anderson, CFA,
U.S. Sector Strategist

Daniel Chin, PhD,
Senior Analyst,
Custom Research Solutions

Stephanie O'Brien,
Senior Analyst,
Custom Research Solutions

Defining selloffs

The Wall Street rules of thumb for market corrections and bear markets are declines of 10% and 20%, respectively. At NDR, we adhere with the standard definition for corrections, but apply a more nuanced approach to bear market, factoring in the **depth of the decline as well as its duration**.

A cyclical bear market requires a 30% drop in the DJIA after 50 calendar days or a 13% decline after 145 calendar days. Reversals of 30% in the Value Line Geometric Index – which equally weights its constituents to reduce the outsized influence of mega-cap stocks – also qualify if they occur after more than 50 calendar days.

The quantitative approach helps filter out the noise that often accompanies volatile markets, where sharp reversals, sometimes exceeding 20%, can occur frequently. For example, between the October 2007 bull market peak and the March 2009 bear market low, the S&P 500 rallied 24.2% (11/20/2008 – 1/6/2009) before plunging another 27.6% to the ultimate bottom. Despite the surge, few classify the rally as a true bull market.

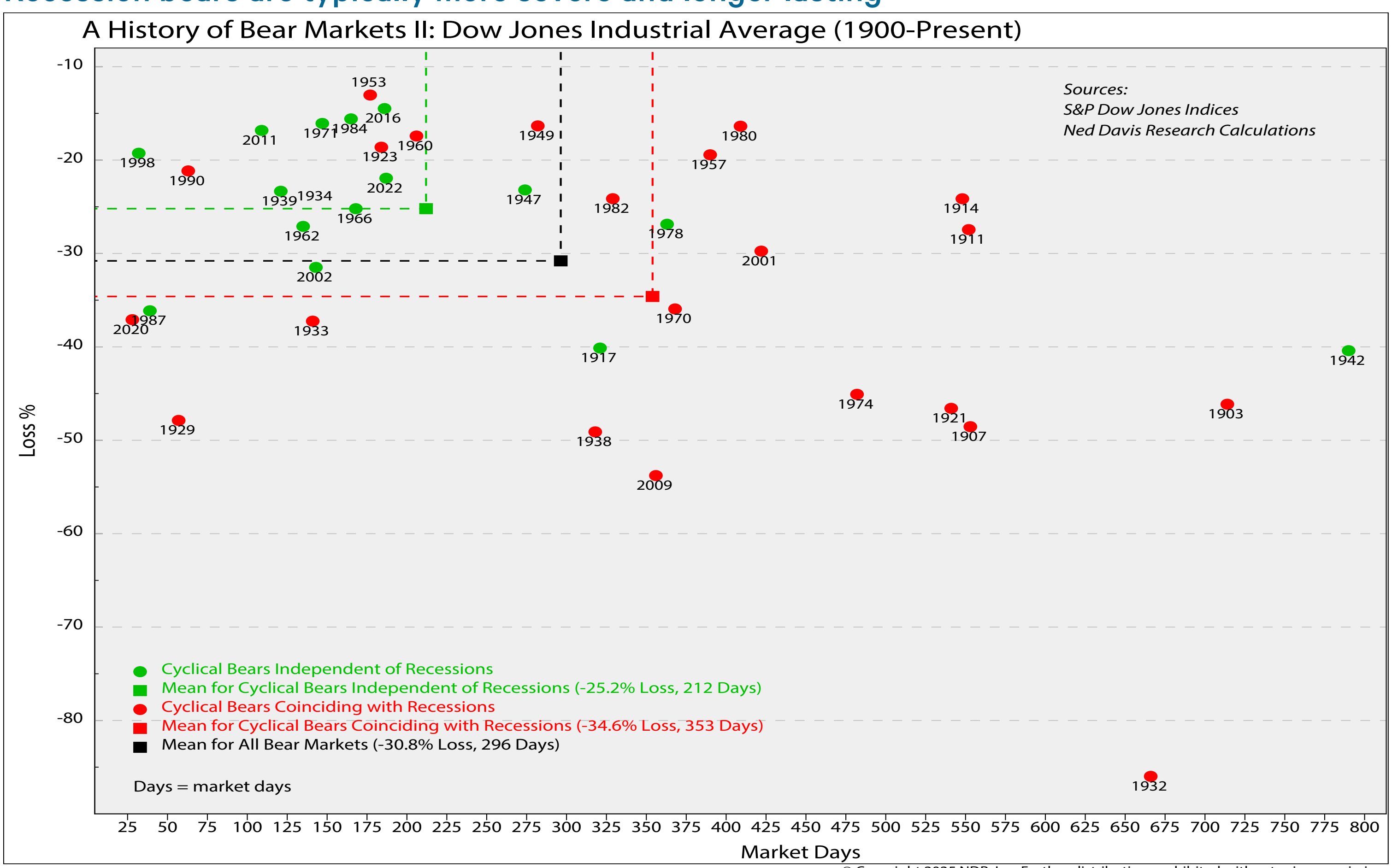
Similarly, during the dot-com bust, the S&P 500 experienced a 21% rally in July and August of 2002, before reversing and making a new low. The objective approach negates the need for selectively skipping cycles.

A history of bear markets

Not all bear markets are created equal. As shown in the chart below, **recessionary bears have historically been deeper and longer lasting**, averaging a 34.6% decline over 353 days compared to a 25.2% drop over 212 days for the non-recessionary variety. For much of the analysis in this report, we break out recession and non-recession cases.

Note that we use the DJIA for bull and bear market criteria because it has more daily history than the S&P 500. Despite the methodological and constituent differences, the two indices are highly correlated.

Recession bears are typically more severe and longer lasting

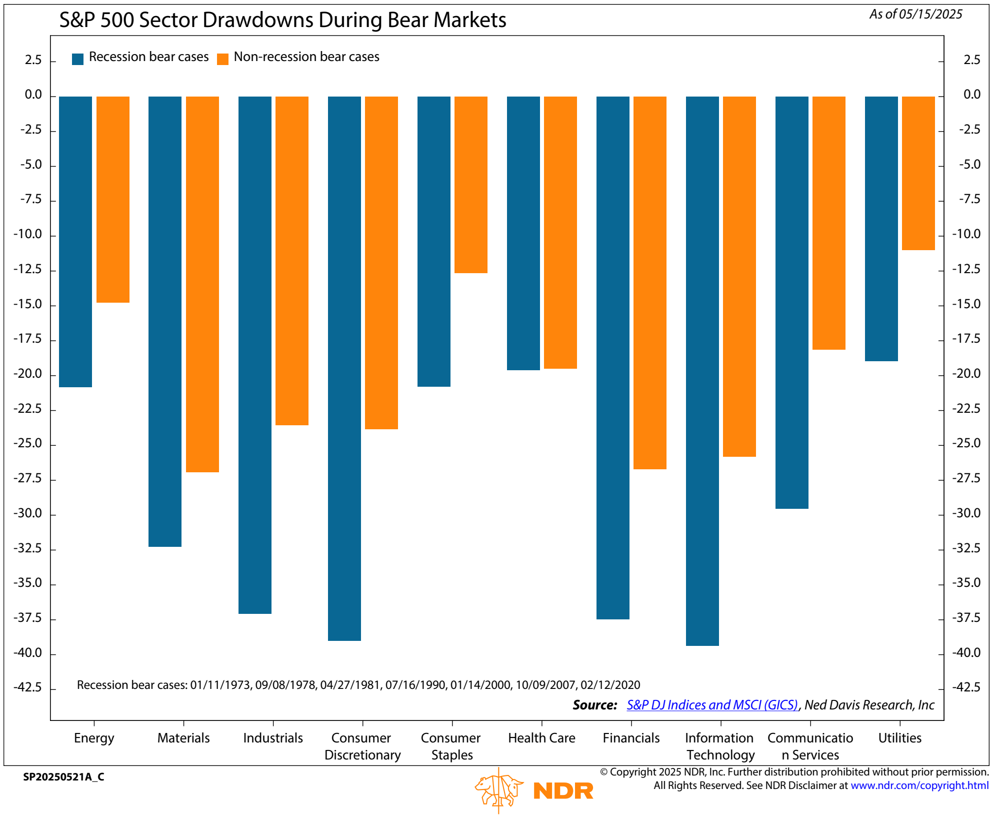


S0202D

A common trait of bear markets is **widespread sector participation**. Ten of the past 15 bears saw **all sectors** end up with losses. In two of the exception cases, Energy was the lone sector with a gain (1983-84 and 2022).

The chart at right shows average bear market drawdowns for each sector during both recession (dark blue bars) and non-recession (orange bars) bears. A mix of cyclical Growth and cyclical Value sectors have seen the largest declines, with Technology, Consumer Discretionary, Financials, Industrials, and Materials registering the lowest returns. The chart emphasizes the importance of the economy, with **more severe drawdowns across the board occurring during recessions**.

Recession bears are more painful across sectors



Valuations have trended higher in recent decades

Average Sector P/E Ratios at Bull Market Tops

Sector	Pre-2000	Post-2000	Change % Pt.
Information Technology	27.2	34.3	7.1
Communication Services	20.4	26.7	6.3
Financials	16.1	21.5	5.4
Utilities	16.5	20.8	4.3
Health Care	26.8	30.7	3.9
Industrials	21.2	24.4	3.2
Consumer Discretionary	22.2	24.6	2.4
Materials	23.9	26.2	2.3
Consumer Staples	22.1	23.4	1.3
Energy	29.2	26.2	-3.0

Sources: S&P Dow Jones Indices.

Ned Davis Research T_SP20250521.1

Looking for a top

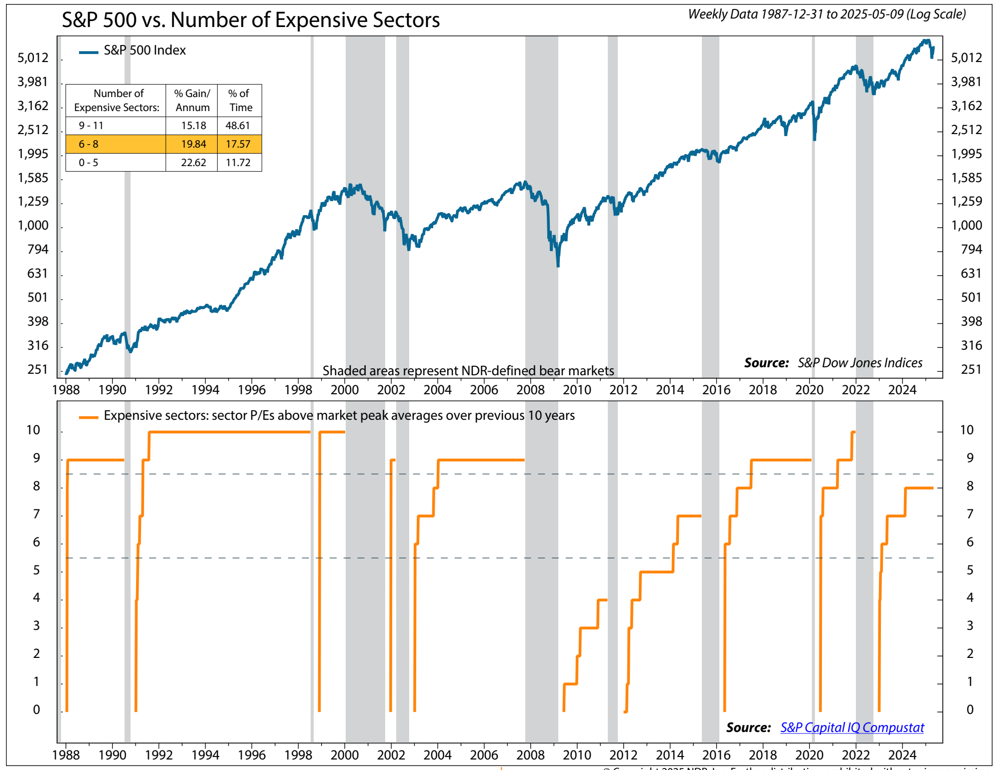
Elevated valuations are a common characteristic around stock market tops. While we have found that valuations have proven a poor timing tool, they can nevertheless signal heightened risk for stocks.

Valuations have generally trended higher over time as the makeup of the U.S. economy has shifted from manufacturing to services, leading to more consistent earnings growth and higher profit margins for businesses. The table at left looks at average P/E ratios for each sector around bull market peaks pre- and post-2000. **Multiples have risen across nearly all sectors**, with the exception of Energy. Technology, Communication Services, and Financials have seen the most significant expansion, while Consumer Staples has remained relatively stable.

The chart at right looks to signal when the risk of a bear market is elevated based on how many sectors have cumulatively seen their P/E ratios move above their average ratios at cyclical bull market tops. To account for the tendency of valuations to peak at higher levels in recent cycles, a 10-year lookback period is used to calculate the average P/E ratio.

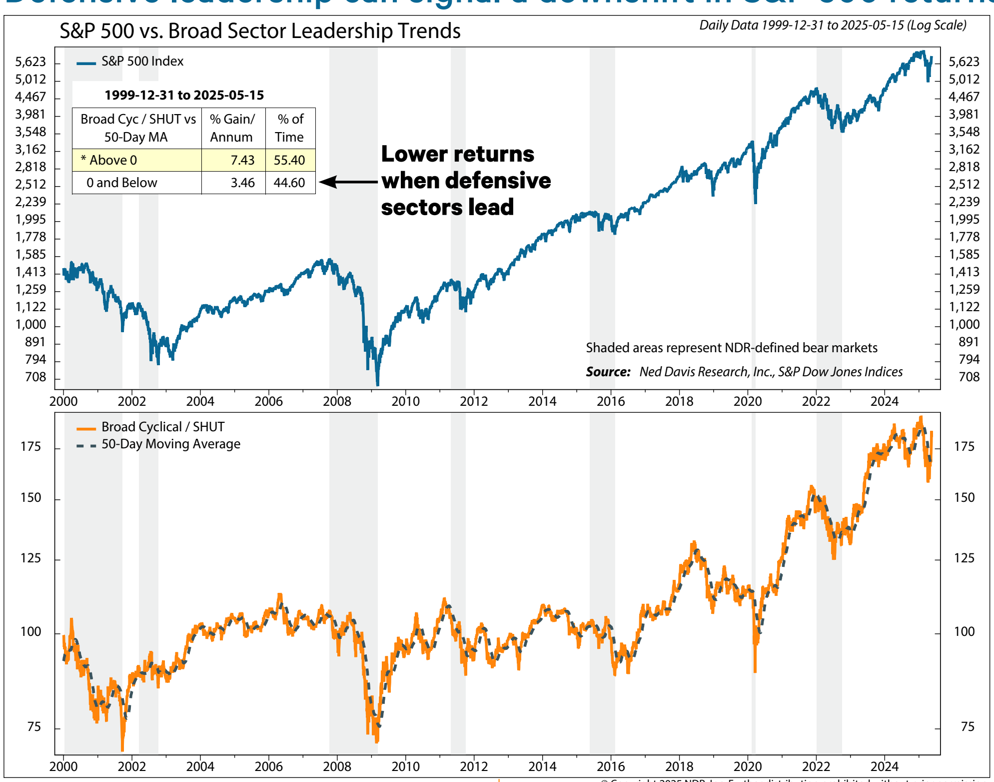
While the indicator can be very early, it can **help identify periods when valuations could become a threat to bull markets**. Seven of the nine bull markets since 1987 saw nine or more sectors reach expensive territory before the top. The statistics in the mode box show that bull market gains have been stronger early in the cycle, when the number of sectors showing elevated multiples are low. Eight sectors have registered elevated valuations so far in the current cycle.

Nine sectors reaching expensive territory can signal late cycle



SP20250521B_C

Defensive leadership can signal a downshift in S&P 500 returns



SP20250521C_C

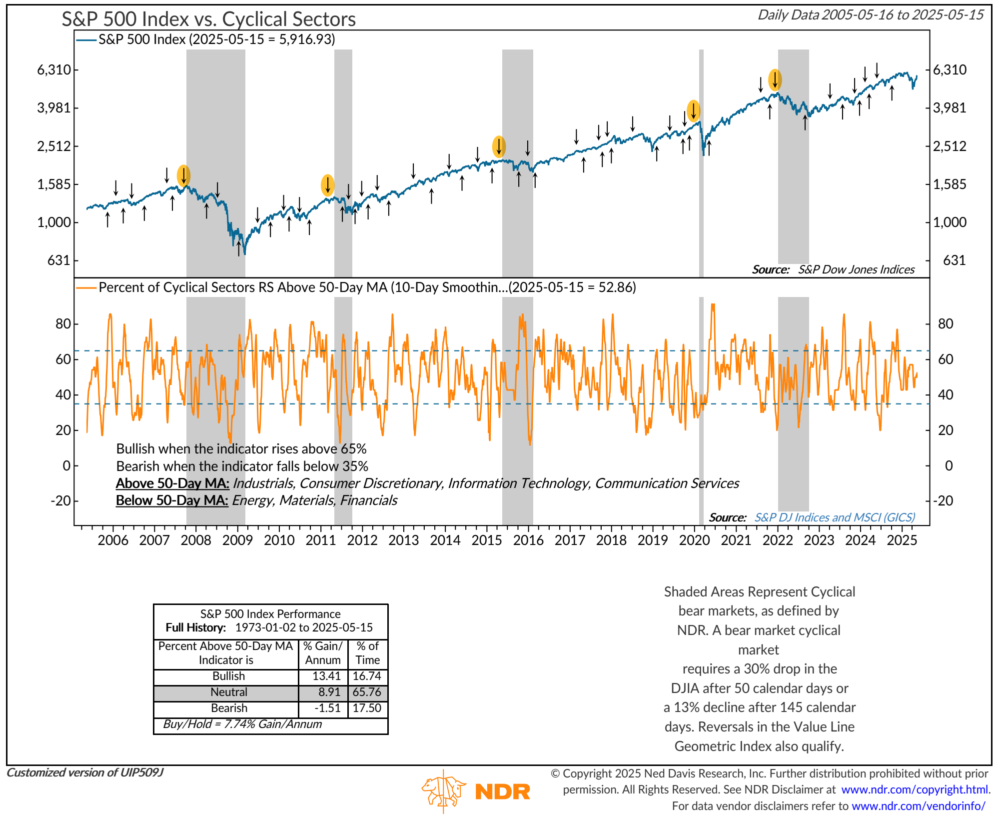
Broad sector leadership trends are another tool that can help gauge the vital signs of the stock market. The chart at left shows that since 1999, **stocks have risen more than twice as fast when cyclical sectors have been in an uptrend versus defensive sectors**, as determined by the 50-day moving average (second clip).

The shaded areas on the chart show that in recent cycles, defensive sectors have usually outperformed cyclical sectors during bear markets, while cyclical sectors have generally performed better during bull markets. That dynamic has not always been the case, with defensive sectors decisively leading during several past bull markets, most notably in the 80s (84 - 87 and 87 - 90).

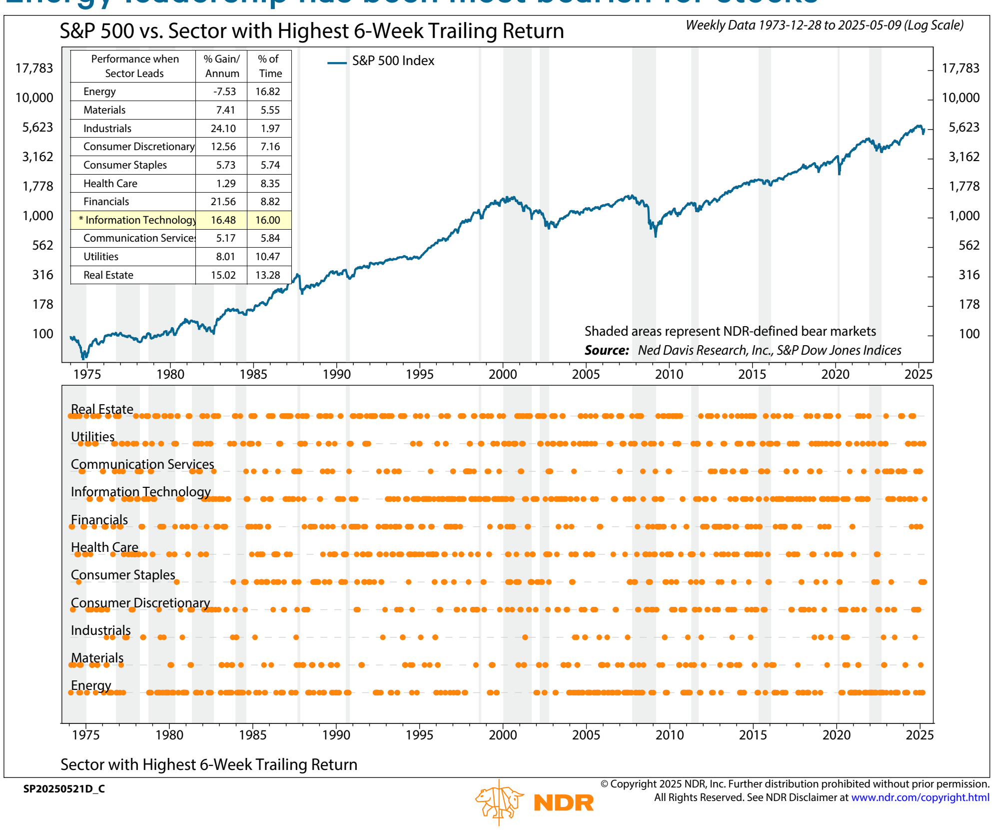
Another leadership indicator that has proven useful at helping to spot market tops is shown at right. When fewer than 35% of cyclical sectors have been above their 50-day relative moving averages, it has often **signaled an unhealthy technical condition for the stock market** and has been consistent with negative returns.

While most of the indicator's signals have occurred outside of market peaks and troughs, it has also produced good signals around those major inflection points as well. Note that the indicator has not yet given a sell signal this cycle, **suggesting the cyclical sector selloff this year was not as broad as typically seen during major market declines**.

A lack of cyclical leadership can signal problem for stocks



Energy leadership has been most bearish for stocks



The chart at left drills a level deeper, showing how the S&P 500 has historically performed based on individual sector leadership over trailing six-week periods. Overall, **returns have been positive regardless of which sector has led – with Energy the lone exception**. This likely reflects Energy's tendency to rally alongside rising commodity prices, which can stoke inflation concerns, lead to a more hawkish Fed, and pressure corporate margins.

The strongest S&P 500 returns have occurred when Industrials or Financials led, with the index advancing at annualized rates of 24% and 22%, respectively. Technology, the current leader, has led 16% of the time and has also been bullish for the index, with average annualized returns above 16%. While cyclical leadership has generally supported strong market performance, **leadership from defensive**

and commodity-related sectors has often been consistent with a downshift in S&P 500 returns.

Anatomy of declines

Compared to other asset classes, stocks offer investors the potential for superior long-term returns, but comes at the cost of higher volatility. In other words, drawdowns are a feature and not a bug of equity markets. The table at right illustrates just how volatile the stock market has been by showing the total number and yearly averages of drawdowns of various magnitudes.

Since 1928, the S&P 500 has declined 5% or more 333 times, or 3.4 times per year, on average. About 31% of 5% dips turn into a moderate correction (10% or greater drop). **The market has averaged one correction a year.** From there, there has been a 45% chance of the drawdown turning into a severe correction (15% or more) and a 57% chance the severe correction turns into a bear market (20% drop or greater). On average, **a bear market has occurred about once every three years**.

Volatility is a feature of equity markets

The Anatomy of Stock Market (S&P 500) Declines From 1928

	Dips (5% or more)	Mild Corrections (10% or more)	Severe Corrections (15% or more)	Bear Markets (20% or more)
Number of Occurrences	333	104	47	27
Mean Number of Occurrences Per Year	3.4	1.1	0.5	0.3
Mean Decline (%)	10.8	19.4	27.8	35.2
Chances of Decline Moving to Next Stage (%)*	31	45	57	N/A

* = e.g. The chance of a 10% decline turning into a 15% decline, etc.
N/A = Not Applicable. Report T_250A.
Sources: Ned Davis Research, S&P Dow Jones Indices.

Ned Davis Research T_SP20250521.2

Cyclical sectors more likely to see 20%+ drawdowns

Bear Market Statistics by Sector Since 1972

Sector	Number of Occurrences	Mean Number of Occurrences per Year	Mean Number of Days	Mean Decline (%)	Last Occurrence End Date
Information Technology	29	0.5	199.9	30.4	4/8/25
Financial	27	0.5	195.8	33.3	10/12/22
Materials	23	0.4	218.6	30.2	Ongoing
Energy	21	0.4	168.7	31.8	Ongoing
Consumer Discretionary	20	0.4	237.9	32.4	4/8/25
Industrials	16	0.3	242.1	33.1	9/30/22
Communication Services	15	0.3	231.0	31.5	Ongoing
Health Care	11	0.2	341.3	32.5	3/23/20
Utilities	10	0.2	395.7	36.2	10/2/23
Consumer Staples	7	0.1	363.4	34.1	2/14/20

Real Estate become a GICS sector in 2006 and ws exluded due to lack of real time history.
Bear markets based on 20% reversals for each sector.
Source: Ned Davis Research, Inc., S&P Dow Jones Indices.

Ned Davis Research T_SP20250521.3

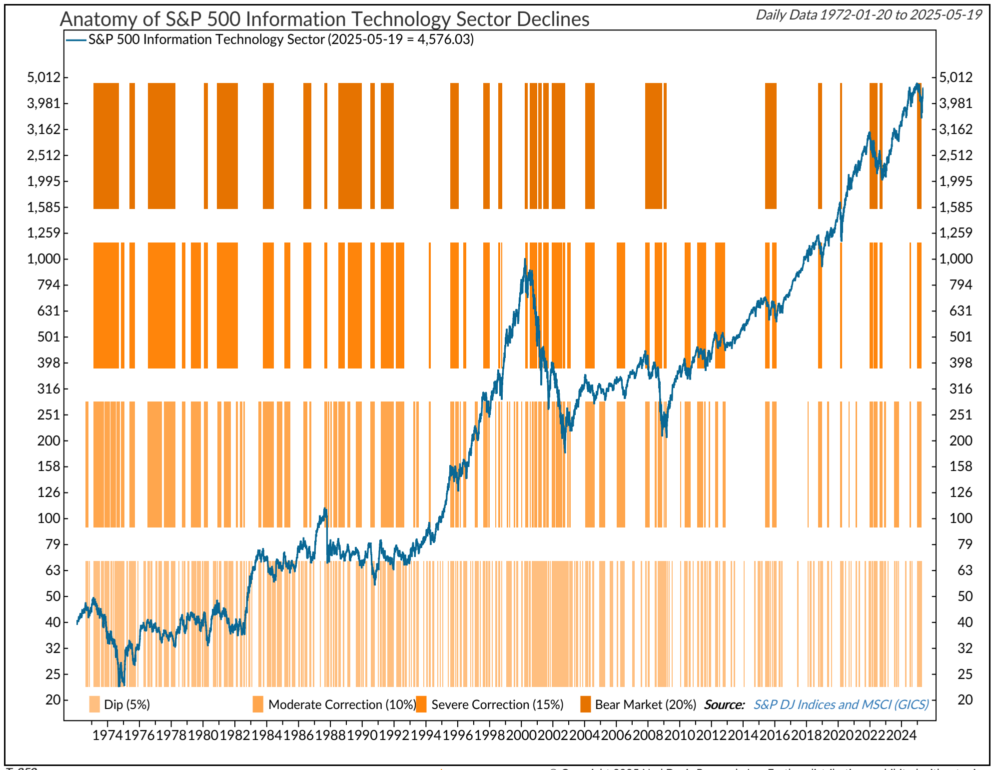
While bear markets are usually determined at the market level, they can be identified for individual sectors as well. The table at left applies the standard 20% drawdown threshold to look at bear market statistics for individual sectors.

Cyclical sectors have seen far more 20% or greater drawdowns than defensive sectors. Since 1972, Technology, Financials, Materials, Energy, and Consumer Discretionary have experienced 20 or more 20% drawdowns, while Consumer Staples, Utilities, and Health Care have all seen less than 11. While the number of occurrences has varied, the average bear market decline has been similar among sectors. The table also shows **bears have tended to last longer for defensive sectors compared to cyclical sectors**.

The previous table is excerpted from report T_250, which provides a comprehensive breakdown of bear market frequency, magnitude, and duration across major indices, styles, and sectors. In addition to detailed tables, the report offers dynamic charting capabilities to better visualize the data.

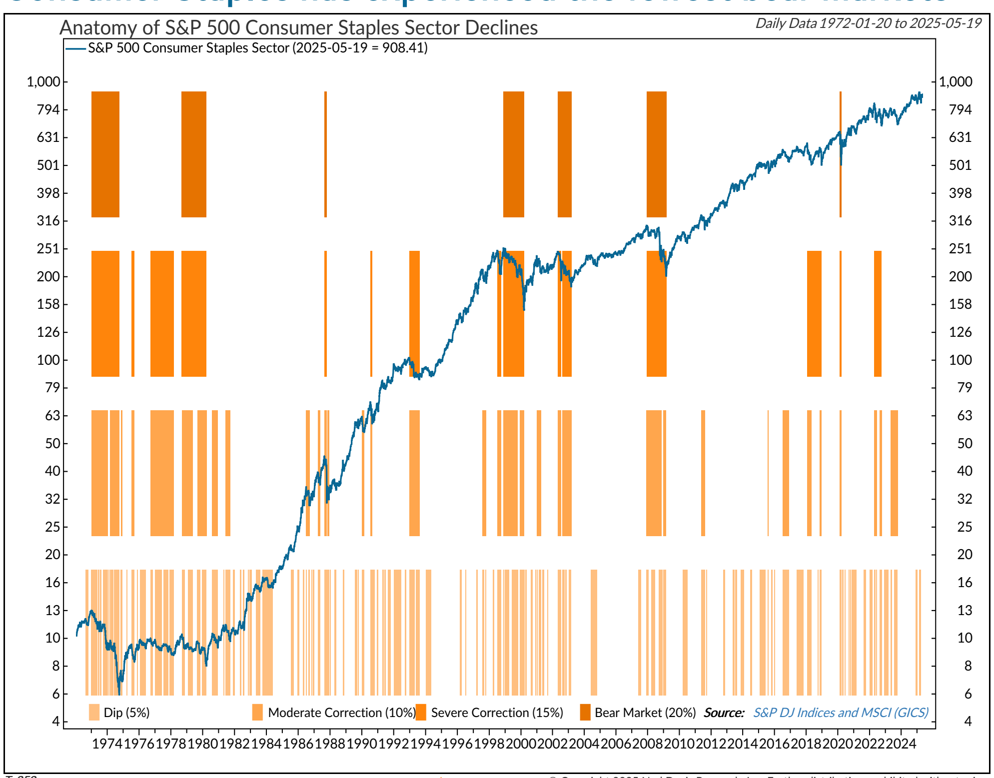
For Technology, the chart at right shows the selloff this year was enough to thrust the sector into bear territory for the first time since October 2022. The chart underscores the **elevated volatility tech investors endure in pursuit of superior earning growth and market-beating returns**.

Technology has seen the highest number of bear markets



T_250

Consumer Staples has experienced the fewest bear markets



T_250

Technology has experienced more than **four times** as many 20% drawdowns than Consumer Staples, which has seen the fewest among all sectors. As the previous chart showed, many of Technology's bear markets have occurred independent of broader equity downturns.

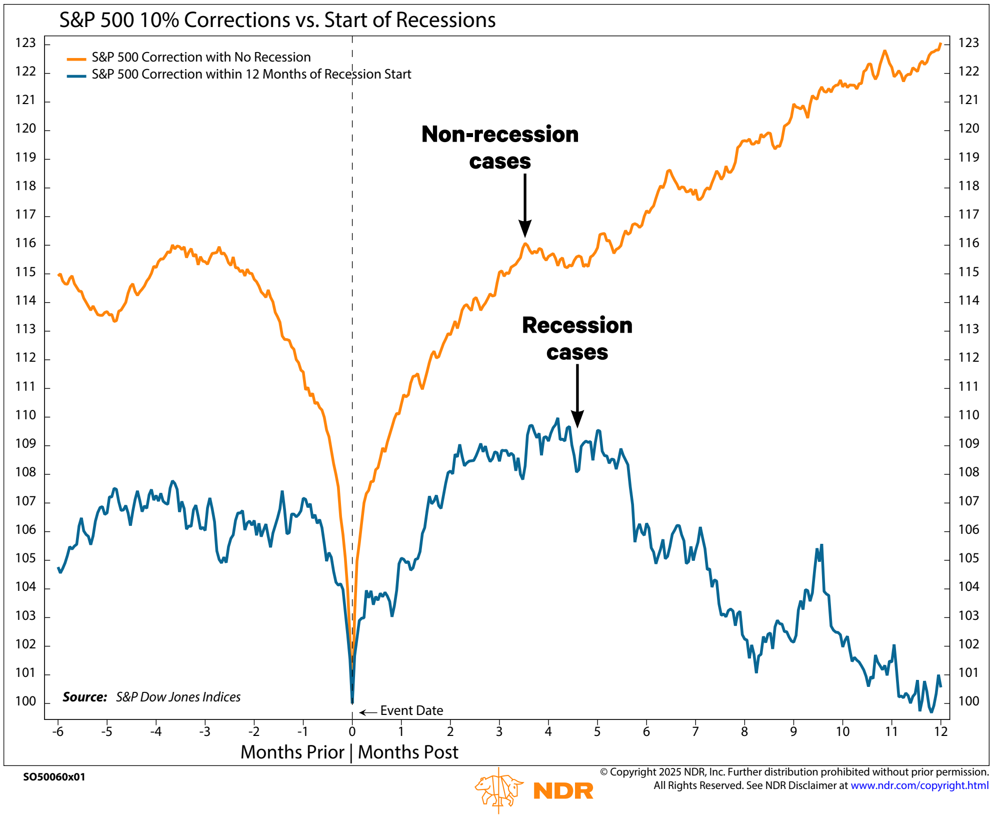
In contrast, every 20% decline in Consumer Staples has coincided with a broad market bear. The sector has also seen far fewer bears than the overall market, suffering just seven since 1972, less than half the number recorded by the S&P 500 (15). The performance **underscores Consumer Staples' resilience in periods of heightened volatility**.

Buying the dip

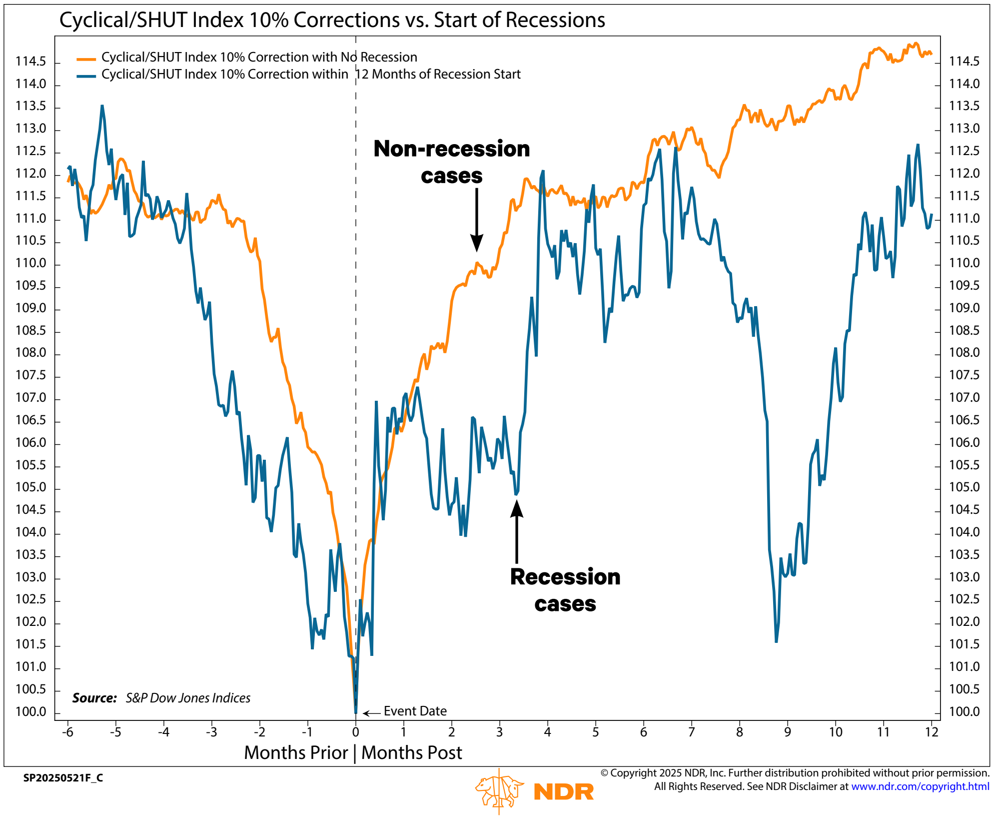
Corrections give investors the opportunity to buy stocks at a discount, also known as "buying the dip," but whether the purchase turns out to be profitable in the near term often depends on the broader economic cycle.

The chart at right shows that buying the S&P 500 following 10% declines has **quickly proven profitable, on average, when the economy has not gone into a recession** within the next year. In contrast, cases that have been associated with recessions have seen the **S&P 500 go on to make lower lows, with stocks roughly flat up to one-year later, on average**.

Better to buy the dip when the economy is on solid footing



Cyclical leadership more persistent in non-recession cases



The chart at left applies the same framework to broad sector leadership trends. Across both recessionary and non-recessionary correction cases, defensive sectors have outperformed their cyclical counterparts during market downturns, on average.

However, **cyclical sectors have typically rebounded more quickly following corrections that were not tied to recessions, with the recovery being more sustainable. Recessionary corrections have seen cyclical sectors give up leadership after the initial bounce, on average.**

Secular bull markets, like economic expansions, have historically been good periods to buy the dip. As shown in the table at right, returns following 10% corrections have been significantly stronger six and 12 months later during secular bull markets compared to secular bear markets.

Our Global team's Secular Bear Watch Report, which is designed to identify major bearish inflection points, is not currently flashing a warning, with only six of twenty indicators at levels that have been consistent with secular bear markets. Historically, when more than ten of the indicators have reached their bear threshold, the stock market has been in a secular bear market nearly 60% of the time. While not there yet, the secular trend warrants monitoring.

Returns higher following dips during secular bull markets

S&P 500 Returns after Buying the Dip (10% Corrections) vs. Secular Trend

Scenario	3 Months Later	6 Months Later	12 Months Later	Occurences
Correction during Secular Bull	14.8	19.5	26.1	39
Correction during Secular Bear	14.6	14.9	19.3	66
All Buy the Dip	14.7	16.6	21.8	105
All Period Return	1.5	3.0	6.1	N/A

Source: S&P Dow Jones Indices.

Ned Davis Research T_SP20250521.4

Bull market winners often underperform during ensuing bear

How Best Performing Bull Market Sector Ranks during the Following Bear Market

Bull Market	Best Performer	Bear Market	Rank of Best Performer during Bear
12/6/1974 to 9/21/1976	Consumer Discretionary	9/21/1976 to 2/28/1978	9
2/28/1978 to 9/8/1978	Real Estate	9/8/1978 to 4/21/1980	5
4/21/1980 to 4/27/1981	Industrials	4/27/1981 to 8/12/1982	9
8/12/1982 to 11/29/1983	Technology	11/29/1983 to 7/24/1984	7
7/24/1984 to 8/25/1987	Health Care	8/25/1987 to 10/19/1987	8
10/19/1987 to 7/16/1990	Consumer Staples	7/16/1990 to 10/11/1990	5
10/11/1990 to 7/17/1998	Financials	7/17/1998 to 8/31/1998	11
8/31/1998 to 1/14/2000	Technology	1/14/2000 to 9/21/2001	11
9/21/2001 to 3/19/2002	Consumer Discretionary	3/19/2002 to 10/9/2002	4
10/9/2002 to 10/9/2007	Energy	10/9/2007 to 3/9/2009	4
3/9/2009 to 4/29/2011	Real Estate	4/29/2011 to 10/3/2011	7
10/3/2011 to 5/19/2015	Health Care	5/19/2015 to 2/11/2016	7
2/11/2016 to 2/12/2020	Technology	2/12/2020 to 3/23/2020	4
3/23/2020 to 1/4/2022	Technology	1/4/2022 to 9/30/2022	10
9/30/2022 to 5/8/2025	Technology	N/A	N/A
Average			**7.2**
Median			**7.0**

Source: S&P Dow Jones Indices.

Ned Davis Research T_SP20250521.5

Winners and losers

During the 15 bull markets since 1974, a wide range of sectors has taken the leadership title, but Technology has led more often than any other, **topping the leaderboard in five cycles** (table left). The sector has also led in the **three most recent bull markets**.

The table highlights how the top-performing sector during each cycle has fared in the bear markets that followed. While results have varied, the typical pattern has been for the **leading bull market sector to underperform during the subsequent bear**, with an average and median sector rank of seventh. Technology, the current bull leader, has followed the pattern. Excluding the COVID-era bear market, the sector has ranked seventh or lower after being the bull market leader.

The table at right is similar to the previous one but focuses on how the worst-performing sector during a bull market has fared in the subsequent bear market. In **13 of the past 15 bull markets, a defensive sector ended up as the weakest performer. Remarkably, Utilities held that distinction in 10 of those instances.**

The last place sector during a bull market often rebounds strongly during the next bear, with an average performance rank of 3.9 and a median of 1.5. **In seven of the past 15 bull markets, the weakest performer went on to lead during the following bear market.** If the pattern holds, Health Care, the current cycle's worst-performing sector, should be a good bet during the next bear market downturn.

Bull laggards often lead during ensuing bear

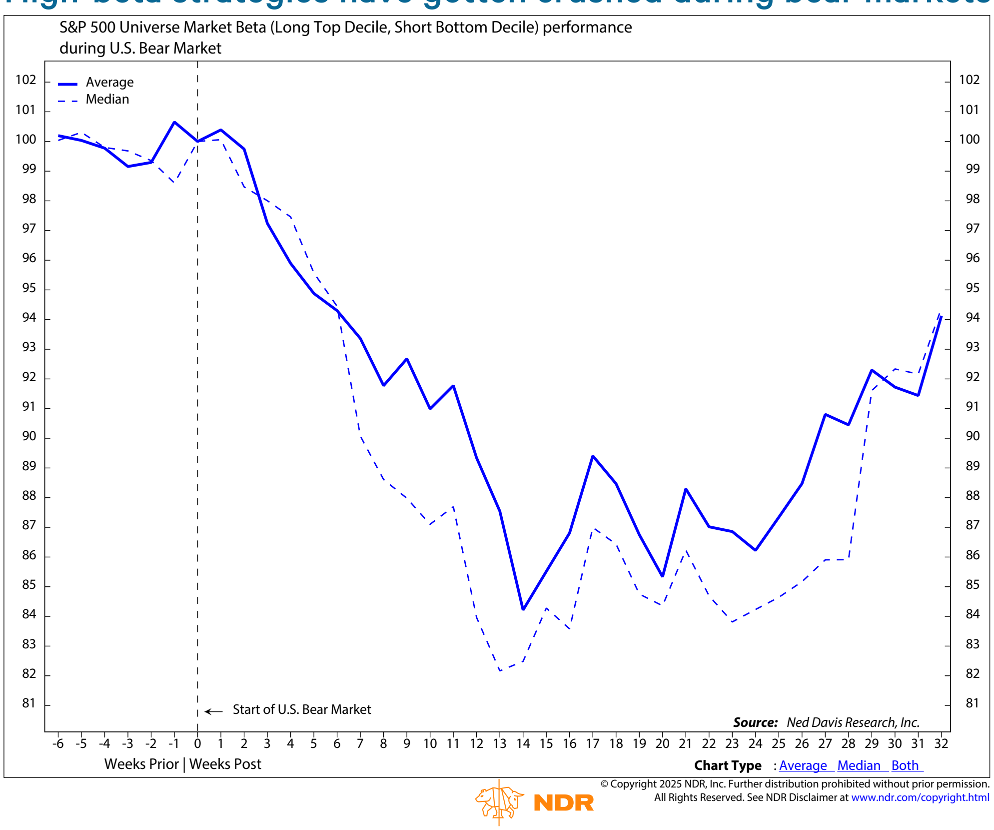
How Worst Performing Bull Market Sector Ranks during the Following Bear Market

Bull market	Worst Performer	Bear Market	Rank of Best Performer
12/6/1974 to 9/21/1976	Health Care	9/21/1976 to 2/28/1978	8
2/28/1978 to 9/8/1978	Utilities	9/8/1978 to 4/21/1980	3
4/21/1980 to 4/27/1981	Utilities	4/27/1981 to 8/12/1982	1
8/12/1982 to 11/29/1983	Utilities	11/29/1983 to 7/24/1984	4
7/24/1984 to 8/25/1987	Utilities	8/25/1987 to 10/19/1987	1
10/19/1987 to 7/16/1990	Technology	7/16/1990 to 10/11/1990	9
10/11/1990 to 7/17/1998	Utilities	7/17/1998 to 8/31/1998	1
8/31/1998 to 1/14/2000	Utilities	1/14/2000 to 9/21/2001	1
9/21/2001 to 3/19/2002	Utilities	3/19/2002 to 10/9/2002	10
10/9/2002 to 10/9/2007	Consumer Staples	10/9/2007 to 3/9/2009	1
3/9/2009 to 4/29/2011	Utilities	4/29/2011 to 10/3/2011	1
10/3/2011 to 5/19/2015	Utilities	5/19/2015 to 2/11/2016	1
2/11/2016 to 2/12/2020	Energy	2/12/2020 to 3/23/2020	11
3/23/2020 to 1/4/2022	Utilities	1/4/2022 to 9/30/2022	2
9/30/2022 to 5/8/2025	Health Care	N/A	N/A
Average			**3.9**
Median			**1.5**

Source: S&P Dow Jones Indices.

Ned Davis Research T_SP20250521.6

High-beta strategies have gotten crushed during bear markets



Factors and bear markets

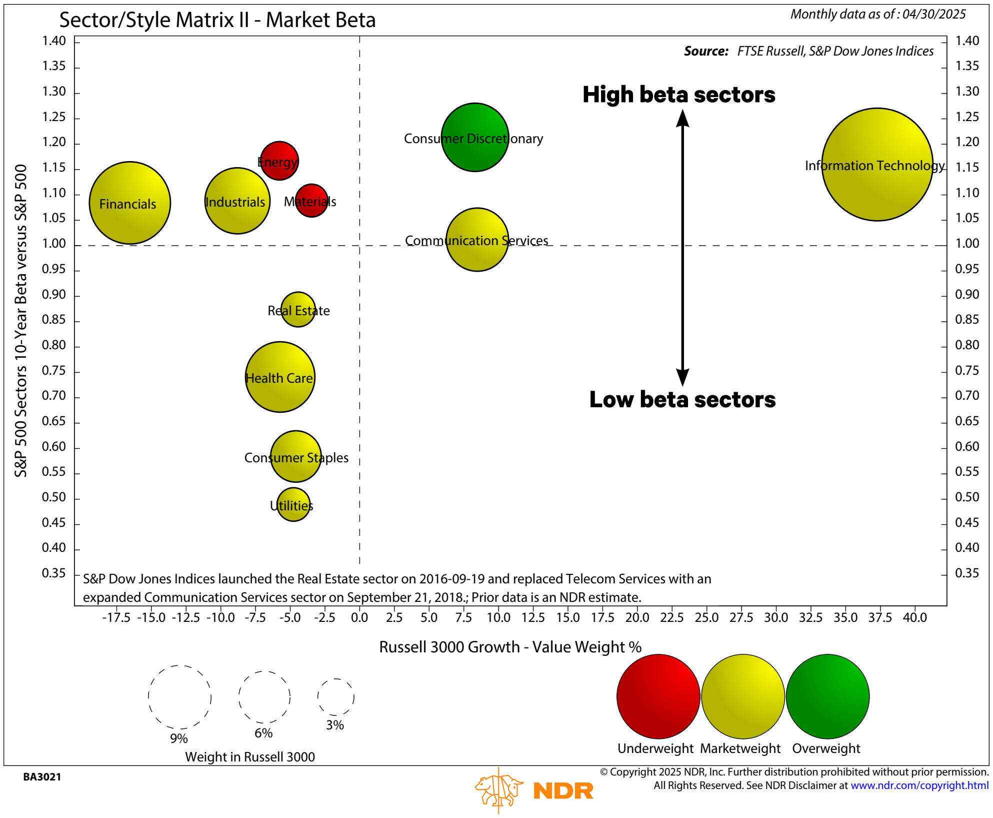
Our Factor Regime Report analyzes the performance of nearly 200 equity market factors across a wide range of market environments. When it comes to bear markets, factors tied to valuations and earnings estimate revisions have consistently stood out as top performers. For instance, a strategy that goes long the decile of stocks with the highest upward earnings revisions and shorts the decile with the weakest revisions has outperformed in nearly 65% of the bear markets.

Among all factor strategies we track, **market beta has the lowest average return** when going long the highest beta decile and short the lowest beta decile (chart, left). The results highlight the vulnerability of high-beta exposure during periods of elevated market volatility.

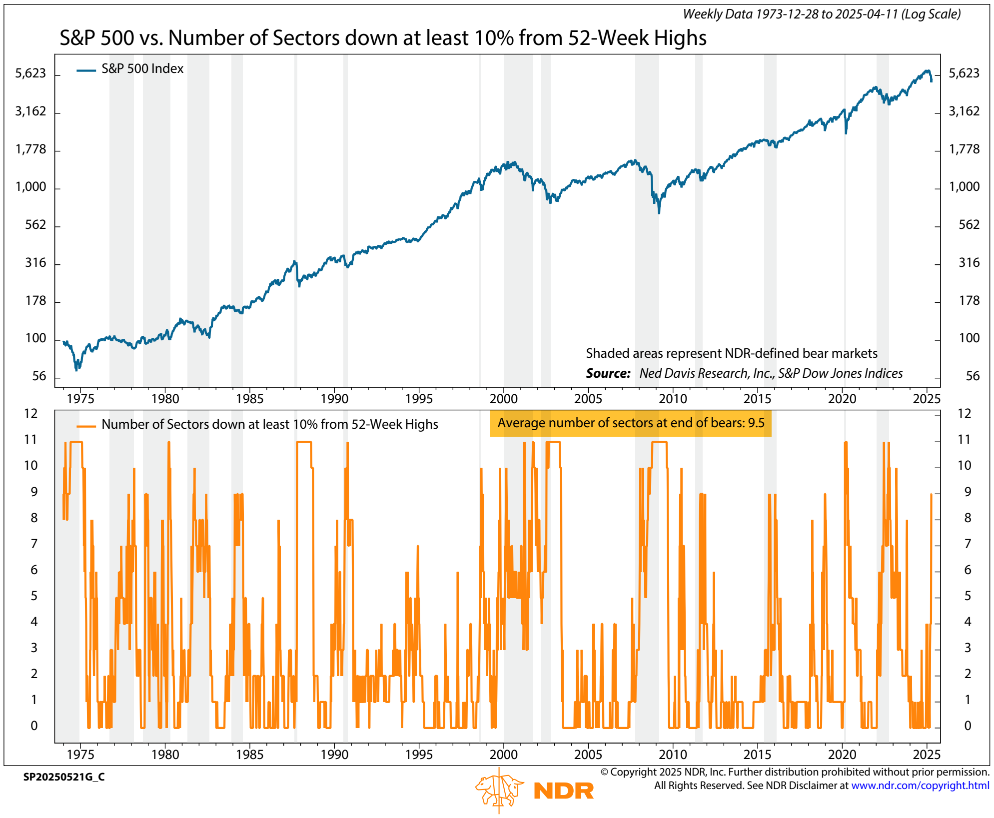
Market beta measures a stock's volatility relative to the overall market. A beta of 1.0 indicates that the stock tends to move in line with the market, while a beta above 1.0 suggests higher volatility than the overall market and below 1.0 indicates lower volatility.

Utilities, Consumer Staples, and Health Care have shown the lowest market betas over the past decade (chart right). Real Estate has also maintained a beta meaningfully below 1.0, while cyclical sectors of Consumer Discretionary, Energy, and Technology have had the highest betas.

Utilities, Staples, and Health Care have lowest betas



Broad sector weakness can help identify bottoms



Bottoming process

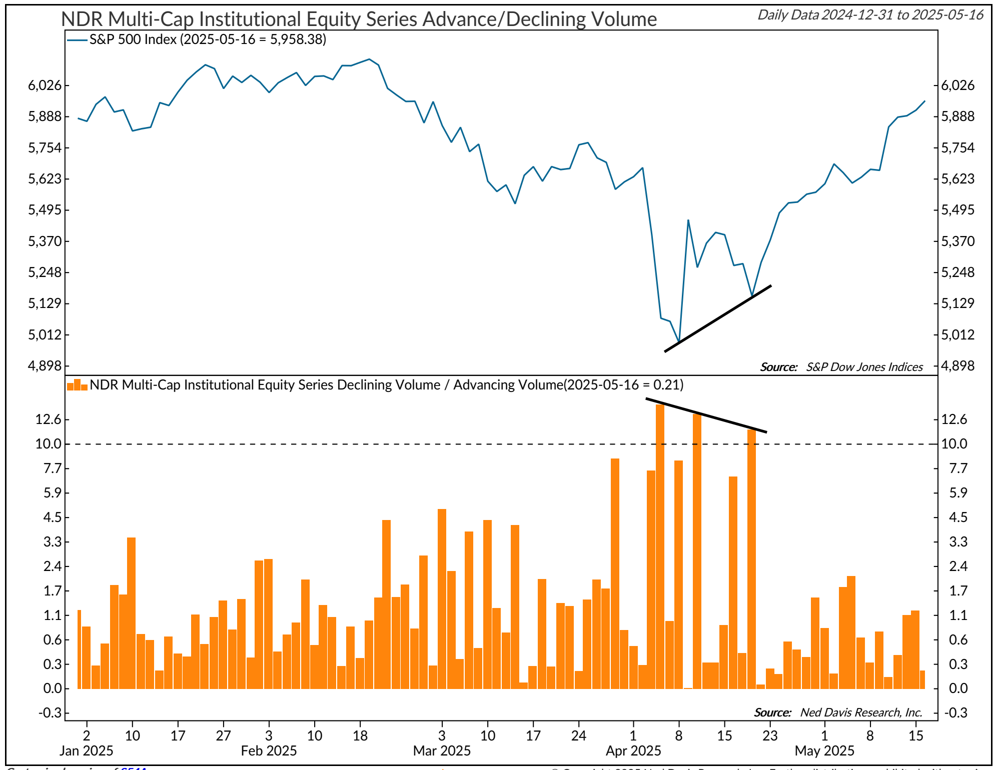
NDR offers a comprehensive suite of reports and indicators designed to help identify market bottoms following bear markets, including our Bottom Watch Report and Breadth Thrust Watch Report. Sector price action and leadership trends have proven to be valuable complements.

After a steep selloff, the market often follows a four-step bottoming process: **oversold, rally, retest, and breadth thrusts**. Several indicators can help signal oversold conditions, including the relative strength index (RSI) and stochastics. Selling climaxes have also seen broad participation, with no sector usually spared. On average, **9.5 out of the 11 sectors decline by at least 10% from their 52-week highs at bear lows** (chart, left). Elevated readings can help confirm oversold conditions and extreme negative investor sentiment.

Rallies (step 2) and retests (step 3) can occur multiple times during a bottoming process. A retest can still be considered successful even if the major indexes briefly breach their step 1 lows. What matters more is the behavior beneath the surface, specifically, signs of reduced selling pressure. Successful retests often feature fewer stocks or sectors making new lows, a higher percentage of stocks trading above their moving averages, lower total volume, and less downside volume versus upside volume – all of which were present during the April retest.

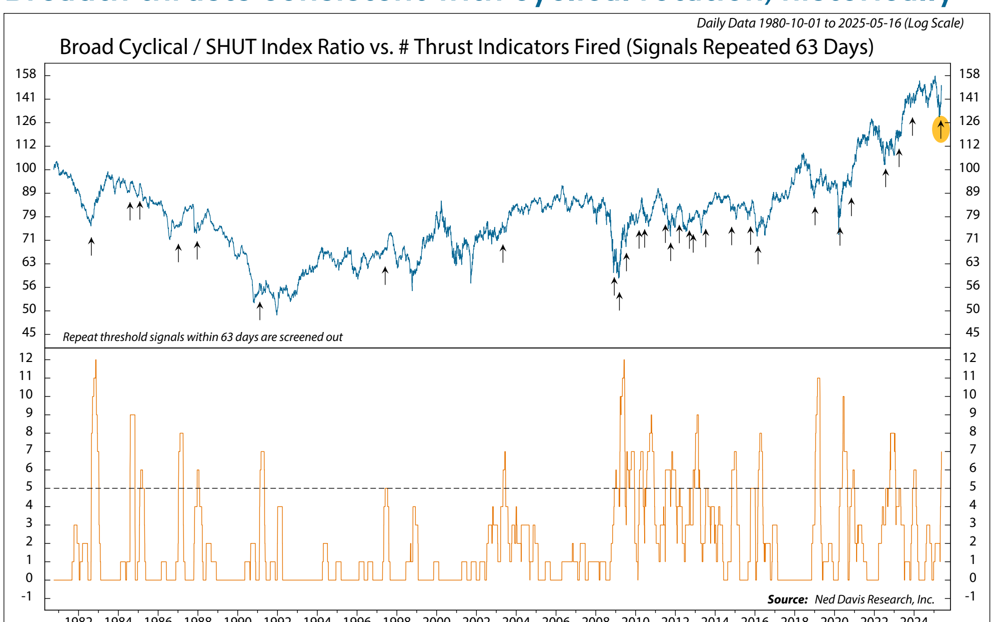
Unsuccessful retests are defined by material breaches of previous lows by the popular averages, expanding new lows, and more declining volume than advancing volume. If the retest fails, the bottoming process restarts at step 1.

Less declining volume helped identify April's successful retest



Customized version of S54A

Breadth thrusts consistent with cyclical rotation, historically



Full History Dates: 10/01/1980 - 05/16/2025

Summary Item	10 Days	21 Days	42 Days	63 Days	84 Days	126 Days	252 Days
Mean	0.60	1.54	2.42	3.00	3.56	5.82	8.61
Median	0.63	1.01	1.76	3.17	3.26	5.42	5.43
Number Up	18	17	17	17	19	20	19
Number Down	10	11	11	11	9	8	9
All Periods Mean	0.06	0.12	0.23	0.35	0.48	0.75	1.50

IF25_19A_C

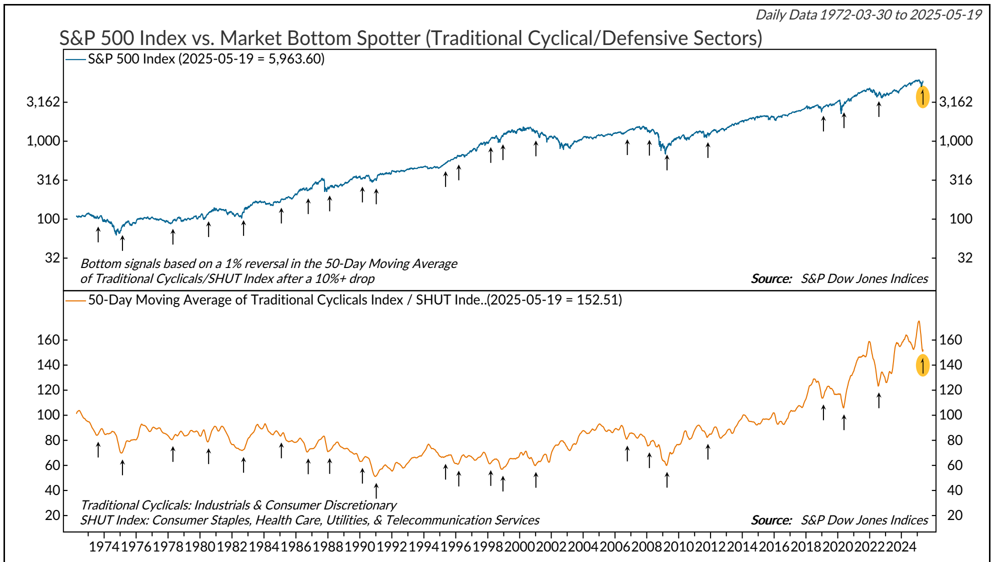
After a successful retest, multiple breadth thrust signals, which are triggered when a high percentage of stocks rally together, can serve as a confirmation that the bottoming process is complete. Historically, when five or more signals have triggered, it has been a bullish sign for equities.

In the current cycle, the market's advance was strong enough to trigger seven buy signals in our Breadth Thrust Watch Report. As shown in the chart at left, a cluster of five or more thrusts has historically **tilted the odds in favor of cyclical sectors over defensive sectors**. Following prior signals, our Broad Cyclical Sector Index has been more than twice as likely to outperform the Defensive SHUT Index over the subsequent four-, six-, and 12-month periods.

Another sector-specific tool that can help identify market troughs is our Sector Bottom Spotter indicator shown at right. The Bottom Spotter uses leadership trends of the cyclical and defensive (SHUT) sectors to help determine when bottoms may have occurred.

As shown on page 11, cyclical sectors are higher beta, and will decline faster than the market, but also rebound more quickly. After at least a 10% drop of the cyclical/SHUT relative strength line's 50-day average, a buy signal is generated following a reversal of at least 1%, meaning that cyclical sectors are once again outperforming defensive sectors. **A buy signal was generated on May 19** for the first time since August 2022. The statistics on the chart indicate **prior signals have been consistent with above-average returns for the S&P 500**.

Sector leadership can help identify market bottoms



Full History Dates: 03/30/1972 - 05/19/2025

Last Signal: 2025-05-19

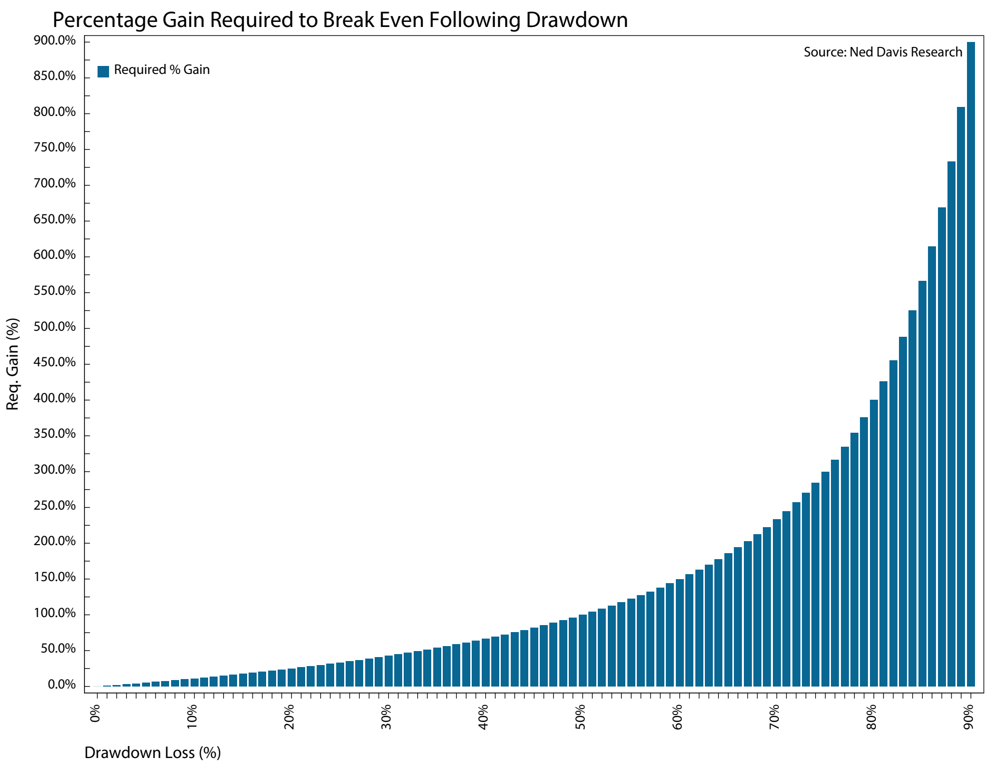
Full History Trading Stats

Summary Item	10 Days	21 Days	63 Days	126 Days	252 Days
Mean	2.69	3.70	5.93	7.68	15.49
Median	2.28	2.76	5.80	7.49	20.39
Number Up	19	20	19	17	19
Number Down	3	2	3	5	3
All Periods Mean	0.35	0.73	2.18	4.48	9.17

UIP802A

NDR

Relationship between loss and recovery is not linear



SP202505211H_C

NDR

Anatomy of recoveries

A common misconception in drawdown analysis is assuming a loss and its recovery require the same percentage gain. For example, a 20% drop from $100 to $80 needs a **25% gain**, not 20%, to return to $100—because the gain is calculated off a smaller base. This asymmetric relationship between losses and gains can be expressed as:

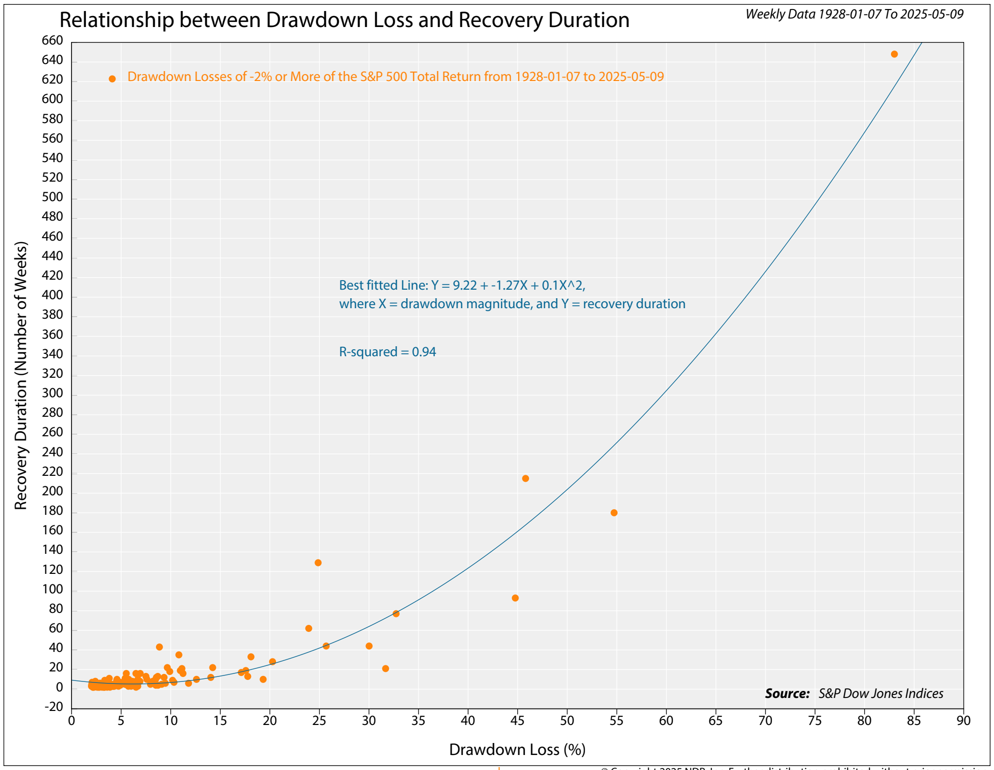
Recovery Gain (%) = Drawdown Loss (%) / [100% - Drawdown Loss (%)]

Using this equation, we created the chart at left to illustrate the relationship between drawdown loss and recovery gain. As drawdowns deepen, the recovery burden grows exponentially. A 1% loss increase from 5% to 6% raises the recovery need by 1.1%, but an increase from 50% to 51% raises it by 4.1%.

Equally important as the size of gains needed to offset losses is the time it takes to recover them. The chart at right shows the relationship, with drawdown losses plotted on the x-axis and the weeks needed to recover plotted on the y-axis. For the analysis, drawdowns must be fully recovered before new cases can be considered.

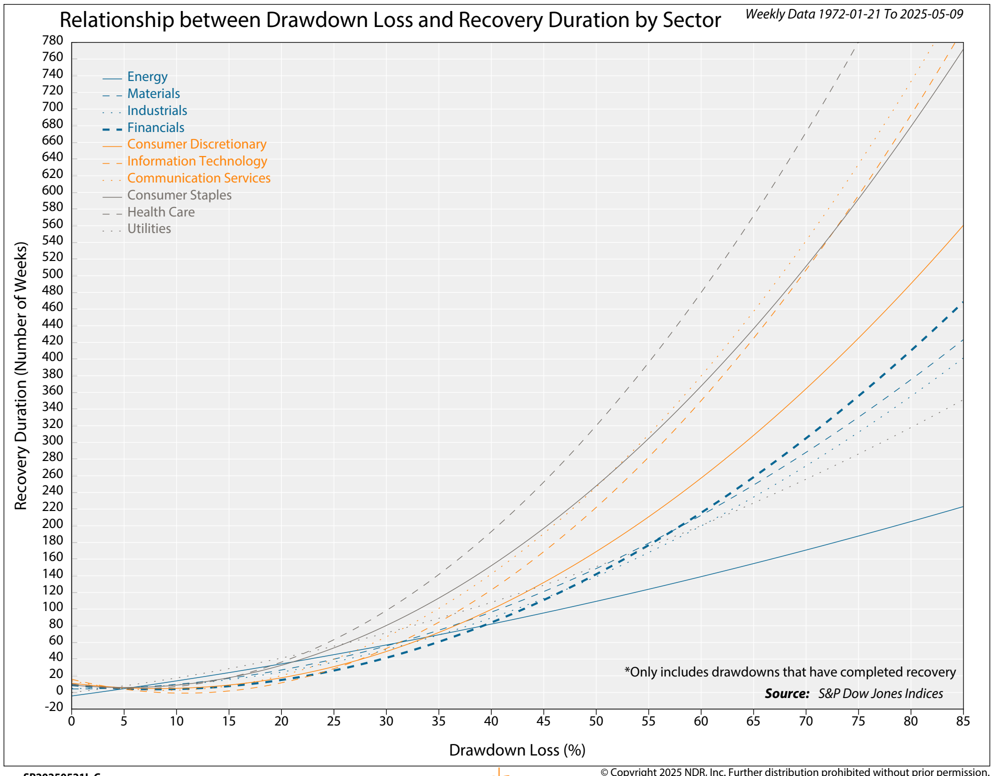
The regression curve confirms the intuitive relationship that larger drawdowns typically take longer to recover. This curve mirrors the drawdown vs. recovery gain relationship shown on the prior chart, with **both recovery time and required gains rising at an accelerating pace as losses deepen**. Together, the patterns highlight the **key role of drawdown mitigation in active portfolio management**.

Recovery time rises at accelerating rate for bigger losses



SO50060xDrawdownRecoverySP500

Cyclical Value sectors have recouped losses fastest



SP20250521I_C

While the percentage gain needed to recover a loss is the same across sectors, the **time required for recovery varies significantly**. The chart at left shows this by plotting recovery curves for each sector, color-coded by type: blue for cyclical Value sectors, orange for cyclical Growth, and grey for defensive sectors.

In general, cyclical Value sectors show the flattest curves, indicating they **tend to recoup losses more quickly**. Energy (solid blue line), which we have shown has frequently seen 20%+ drawdowns, has historically recovered faster than any other sector. In contrast, while large drawdowns have been less common for defensive sectors, **recovery has tended to take longer**, particularly for Health Care, which shows the steepest recovery curve among all sectors.

NED DAVIS RESEARCH
NDRsales@ndr.com
www.ndr.com
(800) 241-0621

SARASOTA

3665 Bee Ridge Road Suite 306

Sarasota, FL 34233

United States

800 241 0621 (U.S. & Canada)

941 412 2300

NEW YORK

1270 Avenue of the Americas

11th Floor

New York, NY 10020

(800) 241-0621

LONDON

4 Bouverie Street

Temple, London

EC4Y 8AX

+44 20 7779 8454

NDR
NED DAVIS RESEARCH

Disclaimer

The data and analysis contained herein are provided "as is" and without warranty of any kind, either expressed or implied. Ned Davis Research, Inc. (NDR), d.b.a. Ned Davis Research (NDR), any NDR affiliates or employees, or any third-party data provider, shall not have any liability for any loss sustained by anyone who has relied on the information contained in any NDR publication. NDR disclaims any and all express or implied warranties, including, but not limited to, any warranties of merchantability, suitability or fitness for a particular purpose or use.

NDR's past recommendations and model results are not a guarantee of future results. This communication reflects our analysts' opinions as of the date of this communication and will not necessarily be updated as views or information change. All opinions expressed herein are subject to change without notice. NDR or its affiliated companies or their respective shareholders, directors, officers and/or **employees, may have long or short positions in the securities discussed herein and may purchase or sell such securities without notice.**

Using any graph, chart, formula or other device to assist in deciding which securities to trade or when to trade them presents many difficulties and their effectiveness has significant limitations, including that prior patterns may not repeat themselves continuously or on any particular occasion. In addition, market participants using such devices can impact the market in a way that changes the effectiveness of such device.

Further distribution prohibited without prior permission.

Recommendations

NDR's sector team uses a quantitative sector model as the primary guide to deriving our recommendations. The model is designed to identify sectors and industries with the strongest fundamental (macro, economic, valuation, profitability) and technical price trends. Our team uses the model as the framework for our tactical shifts around longer-term fundamental themes. As a discipline, our recommendations are put on a "short leash" if they rank opposite the model's top and bottom quintiles, unless industry-specific influences can be shown to dominate.

Some sectors receive "over-," "market-," or "under-" weight recommendations, which means that the research firm recommends that more, the same, or less of the sector should be held in your portfolio than is held in the market.

ALPS Portfolio Solutions Distributor, Inc., a registered broker-dealer, is distributor for the Select Sector SPDR Trust

See the signals.™

Founded in 1980, Ned Davis Research Group is a leading independent research firm with clients around the globe. With a range of products and services utilizing a 360° methodology, we deliver award-winning solutions to the world's leading investment management companies. Our clients include professionals from global investment firms, banks, insurance companies, mutual funds, hedge funds, pension and endowment funds, and registered investment advisors.