The **PACER PERSPECTIVE**
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The Investment Case of Effective Risk Management

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Risk management is critical for any investment strategy. Whether investors are navigating short-term opportunities or charting a course for long-term growth, the inherent uncertainties and volatility in market conditions may expose investors' wealth to substantial fluctuations. In this complicated environment, effective risk management becomes pivotal, offering investors the means to preserve capital and minimize the likelihood of significant losses.

Key Takeaways

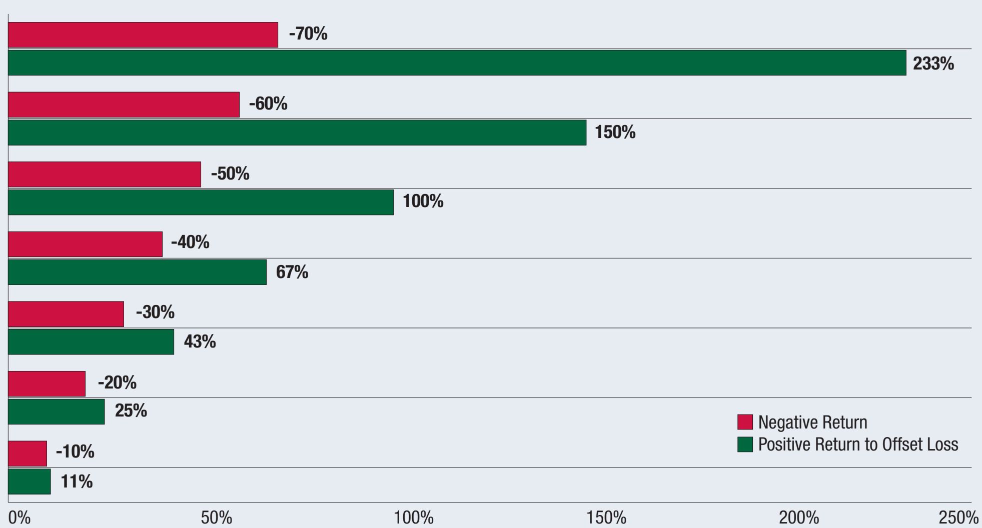
1. The cost of drawdowns, both in terms of the substantial returns required for recovery and the time it takes for investments to rebound, highlights the critical need for preserving capital.
2. Traditional diversification, while a primary tool for risk management, may falter when asset class correlations rise, emphasizing the necessity for more sophisticated strategies.
3. The Pacer Trendpilot Series, employing a systematic trend-following approach, and the Pacer Swan SOS (Structure Outcome Strategies) ETF Series, employing a buffer strategy, offer distinctive solutions.

Cost of Drawdown

In the context of investing and trading, the drawdown refers to the peak-to-trough decline observed during a specific investment period, representing the percentage drop from an investment's highest point to its lowest point.

Drawdowns can be particularly costly for investors, as the magnitude of the decline determines the subsequent returns needed to recover initial losses. For example, a 50% loss would require a 100% return to break even. Thus, preserving the investment principle is important to achieve long-term investment success.

Offsetting a Loss



Source: Pacer Advisors

PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS. YOU CANNOT INVEST IN AN INDEX.

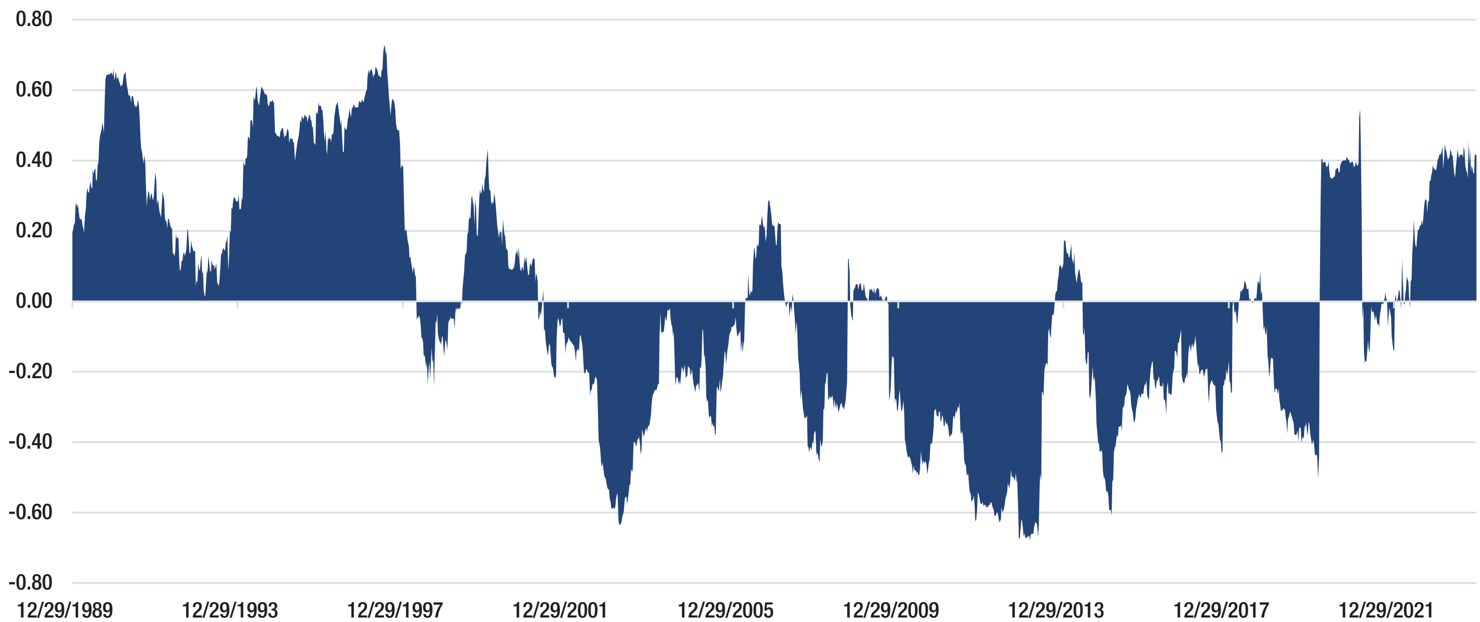
The costliness of drawdowns is further accentuated by time, as the duration for an investment to recover may result in missed opportunities for potential gains in other investments. The recovery time varies across different scenarios; for instance, after reaching the bottom on 3/9/2009, the S&P 500 Index took until 2013 to get back to its previous peak level, while the rapid 26% market crash in 2020 saw a swift recovery in just five months. On all occasions with more than 10% drawdown since the 1950s, it takes, on average, almost a year and a half for the S&P 500 Index to return to its original levels.

Diversification

To mitigate the impact of drawdowns, investors often diversify their portfolios by allocating to uncorrelated asset classes. The widely utilized 60/40 portfolio, featuring a 60% equity and 40% bond allocation, has been a cornerstone strategy, backed by the traditional view that equities and bonds exhibit a negative correlation, especially over the past two decades.

However, diversification may potentially fail when the correlation between asset classes increases. For example, periods of higher inflation may trigger a shift to positive correlation between stocks and bonds. In 2022, the S&P 500 Index experienced a 24% drawdown while a more than 16% drawdown was observed from the Bloomberg U.S. Aggregate Bond Index. Consequently, the 60/40 allocation between equities and bonds incurred a loss exceeding 20% from peak to trough. Moreover, during episodes of heightened market volatility, assets with low correlations may move in tandem, emphasizing the need for a more efficient risk management strategy beyond simply owning multiple assets.

52-week Correlation between the S&P 500 Index and the Bloomberg U.S. Aggregate Bond Index
12/29/1989 to 12/31/2023



Source: Pacer Advisors, Bloomberg

Potential Solutions: Trend-following Strategy

A trend-following strategy employs a systematic approach to identify price trends in markets, upward or downward. The 200-day simple moving average (SMA) is considered a key indicator by traders and market analysts for determining overall long-term market trends. In our study, we assess the market's position relative to its 200-day simple moving average (SMA), incorporating a five-day confirmation to generate risk-on signals (resulting in 100% equity exposure) or risk-off signals (leading to 100% Treasury allocation).

Specifically, when the market is below its 200-day SMA, indicating a negative trend, the strategy signals removing market exposure by switching to short term treasuries. This proactive approach aims to effectively mitigate potential extended market downside, particularly during bearish conditions.

The table below shows the historical S&P 500 Index (price return) bearish periods with more than 20% drawdowns. It includes the maximum drawdowns observed, along with the downside before the trend turned negative (when the market is below its 200-day SMA for five consecutive days).

On average, the trend-following strategy captures 11% downside before the risk-off signals trigger. However, the initial downside varies across different instances, ranging from less than 6% in 1966 to over 26% in 2020.

Performance of the S&P 500 (price return) Index in Selected Periods

Market Drawdown Period	Peak to when trend turns negative (when risk-off)	Max Drawdown (Peak to Trough)
08/02/1956 - 10/22/1957	-7.88%	-21.63%
12/12/1961 - 06/26/1962	-6.94%	-27.97%
02/09/1966 - 10/07/1966	-5.42%	-22.18%
11/29/1968 - 05/26/1970	-9.44%	-36.08%
01/11/1973 - 10/03/1974	-8.65%	-48.20%
11/28/1980 - 08/12/1982	-8.74%	-27.11%
08/25/1987 - 12/04/1987	-26.29%	-33.51%
03/24/2000 - 10/09/2002	-7.76%	-49.15%
10/09/2007 - 03/09/2009	-6.04%	-56.78%
02/19/2020 - 03/23/2020	-26.74%	-33.92%
01/03/2022 - 10/12/2022	-7.60%	-25.43%
Average	***-11.05%***	***-34.72%***

Source: Pacer Advisors, Bloomberg

In essence, the downside risk management of a trend-following strategy is comparable to owning a put option on the market, with the strike prices varying based on the prevailing market conditions. Such variability is reflected in the diverse initial downside percentages captured during different historical bear markets, due to the uncertainty associated with the timing of the trend.

Nevertheless, upon comparing these initial downside figures with the maximum drawdown of the respective period, it becomes evident that the trend-following strategy does contribute to mitigating downside risk during periods of deteriorating market conditions.

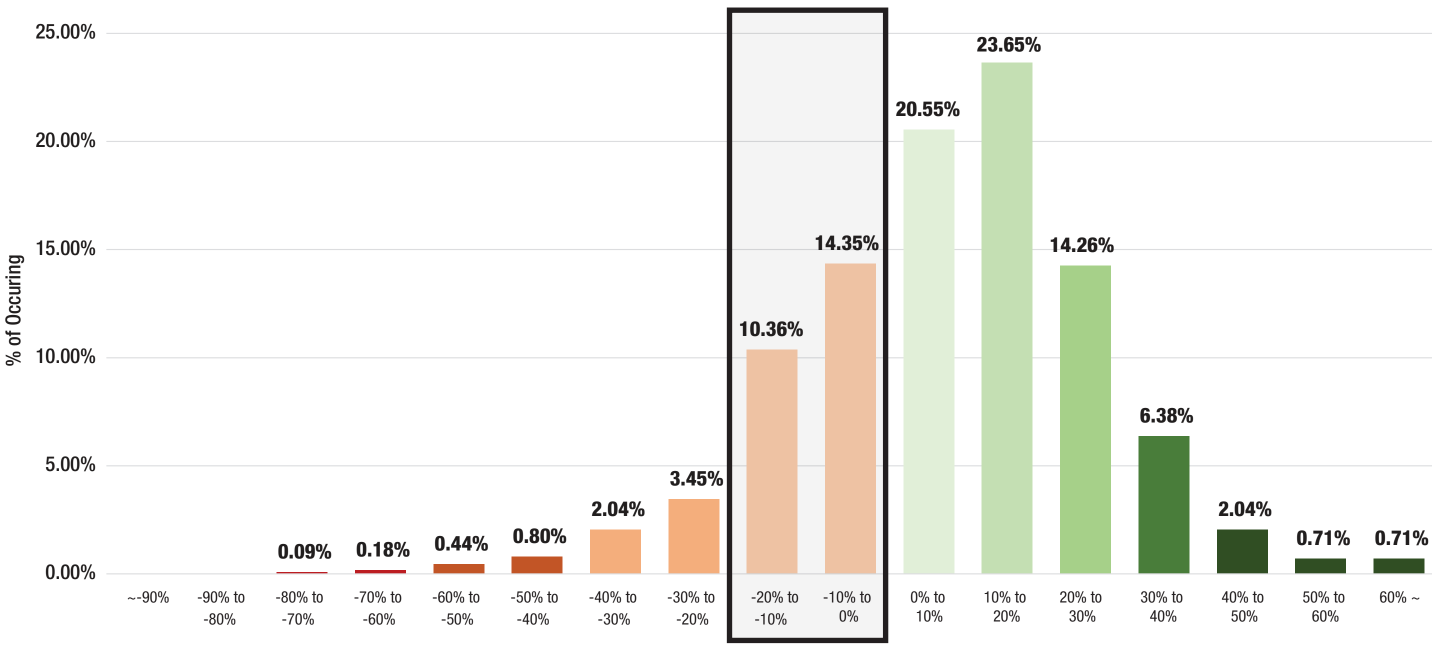
Potential Solutions: Buffer Strategy

A buffer strategy, on the other hand, approaches the downside risk management through providing a pre-determined level of risk management against market losses over a one-year period (typically characterized by a predetermined upside cap and a downside risk mitigation buffer). For instance, with a set buffer level ranging from 0% to -20%, the strategy effectively shields investors against the first 20% of losses on the downside. This provides investors with known levels of downside protection, enabling them to navigate market uncertainty and customize their investments to specific needs.

Analyzing the S&P 500 Index's 12-month rolling returns dating back to 1927 reveals that approximately 32% of the returns are negative, with 25% falling within the range of 0 to -20%. Placing the buffer in the 0% to -20% range has the potential to reduce investment risk more effectively than diversification in traditional asset classes.

For example, in the one-year period from 3/29/2019 to 3/31/2020, the S&P 500 Price Return Index was down 8.81%, while the S&P 500 Low Volatility Index (price return) which is designed to minimize large drawdowns fell 10.88%, worse than the market. Concurrently, the Cboe S&P 500 15% Buffer Protect Index (April Series, with the buffer targeting the same period) remained flat as the 0 to -15% buffer offset the market's negative return.

Monthly Rolling 1-Year Return Ranges For the S&P 500 (price return) Index
12/31/1927 – 12/31/2023



Source: Pacer Advisors, Bloomberg

Using the Cboe S&P 500 15% Buffer Protect Index (January Series) as the proxy for the buffer strategy, we calculated the calendar year max drawdown along with the S&P 500 Index. The buffer strategy reduced the average max drawdown from 15.85% to 8.35%. In addition to reducing drawdowns, the buffer strategy may also reduce volatility, exhibiting an average yearly volatility of 10.05% compared to the S&P 500 Index's 18.08%.

Calendar Year Max Drawdown and Volatility

	Calendar Year Max Drawdown		Calendar Year Volatility	
	Cboe S&P 500 15% Buffer Protect Index (January Series)	**S&P 500 Index (Price Return)**	**Cboe S&P 500 15% Buffer Protect Index (January Series)**	**S&P 500 Index (Price Return)**
2006	-4.02%	-7.70%	10.46%	10.04%
2007	-6.23%	-10.09%	9.80%	15.99%
2008	-34.32%	-48.76%	29.20%	40.97%
2009	-17.14%	-27.62%	17.46%	27.28%
2010	-8.00%	-15.99%	10.30%	18.05%
2011	-9.56%	-19.39%	11.97%	23.27%
2012	-4.48%	-9.94%	6.66%	12.77%
2013	-1.30%	-5.76%	3.25%	11.07%
2014	-2.36%	-7.40%	3.87%	11.37%
2015	-5.73%	-12.35%	7.23%	15.49%
2016	-5.27%	-10.51%	7.05%	13.09%
2017	-0.72%	-2.80%	2.36%	6.69%
2018	-6.12%	-19.78%	7.07%	17.05%
2019	-2.50%	-6.84%	5.44%	12.46%
2020	-20.00%	-33.92%	18.79%	34.43%
2021	-3.03%	-5.21%	6.48%	13.10%
2022	-11.21%	-25.43%	13.25%	24.17%
2023	-5.62%	-10.28%	7.44%	13.09%
Average	***-8.20%***	***-15.54%***	***9.90%***	***17.80%***

Source: Pacer Advisors, Bloomberg

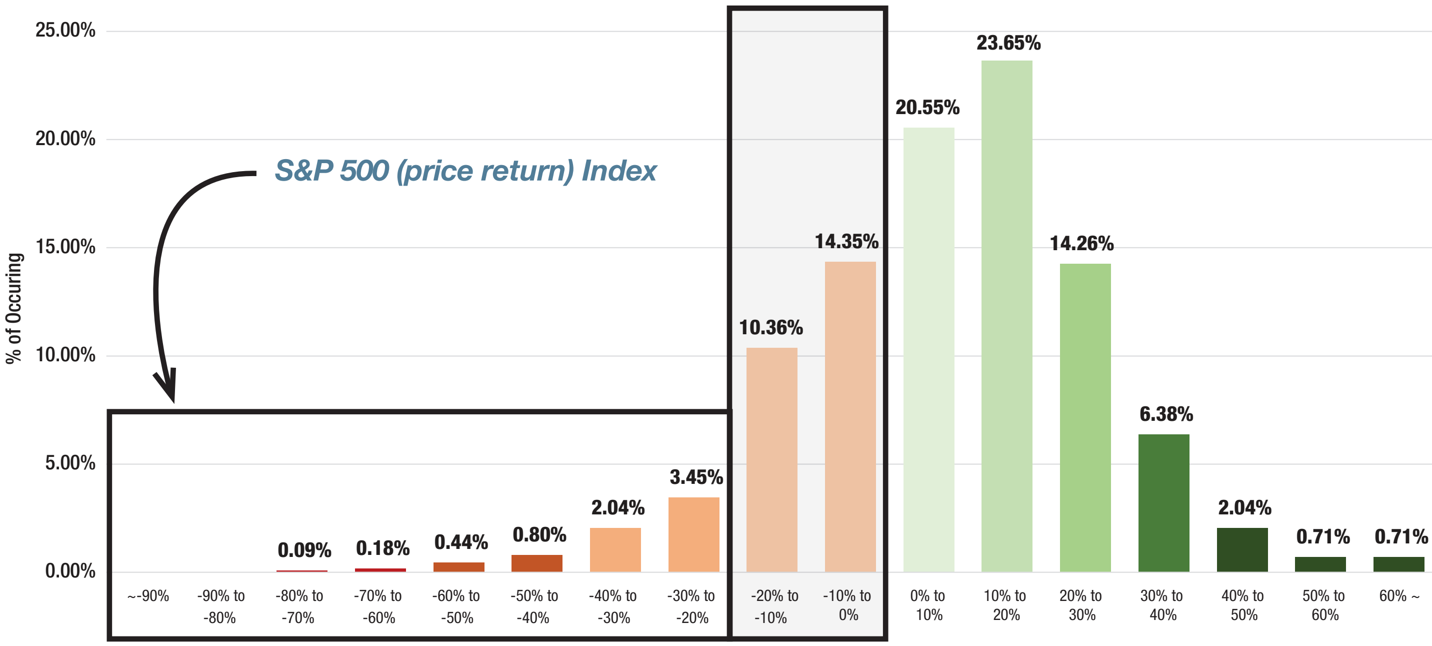
The Investment Case

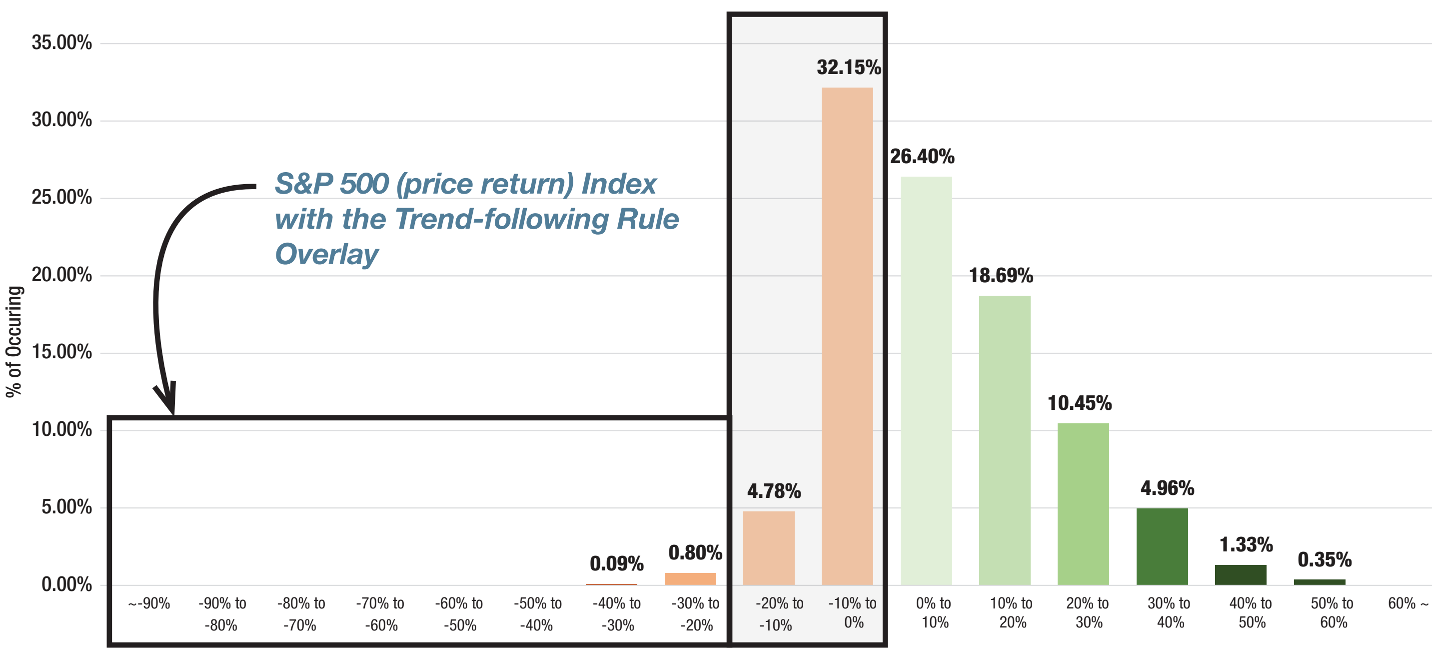
Many investors appreciate the risk management features offered in the trend-following and buffer strategies, but are unsure of where to allocate in clients' portfolios. The comparison of investment scenarios between these two strategies reveals distinct characteristics.

The buffer strategy offers downside risk management in scenarios where the drawdown is relatively modest, such as -20%. However, in the event of a more significant market decline, dropping beyond the established buffer zone, investors become fully exposed to the downside. For example, if the market experiences a -50% return and the buffer is set at 0 to -20%, investors could encounter an additional 30% downside. As shown in the next chart, about 7% of the historical 12-month periods dropped beyond -20%.

Monthly Rolling 1-Year Return Ranges for the S&P 500 (price return) Index and with the Trend-following Rule Overlay

12/31/1927 – 12/31/2023





Source: Pacer Advisors, Bloomberg

Conversely, the extended downside is where a trend-following strategy may add value. When applying a five-day confirmation signal to the S&P 500 Price Return Index from 1927 onward, the trend-following strategy demonstrates effectiveness in limiting drawdown risk. Approximately 37.89% of the 12-month rolling returns are negative, with 37% falling within the range of 0 to -20%. Notably, less than 1% of the periods declined beyond 20%, suggesting the trend-following strategy indeed may effectively limit drawdown risk. However, the highlighted clustering of 0 to -20% return periods presents a downside risk with the trend-following strategy, and that is where the buffer strategies could help.

With the above backdrop, an investment case emerges. Owning a buffer strategy and trend-following strategy at the same time may help investors smooth out the bumpy ride with the market.

The Pacer Trendpilot Series employs a systematic trend-following approach, and the Pacer Swan SOS (Structure Outcome Strategies) ETF Series utilizes a buffer strategy.

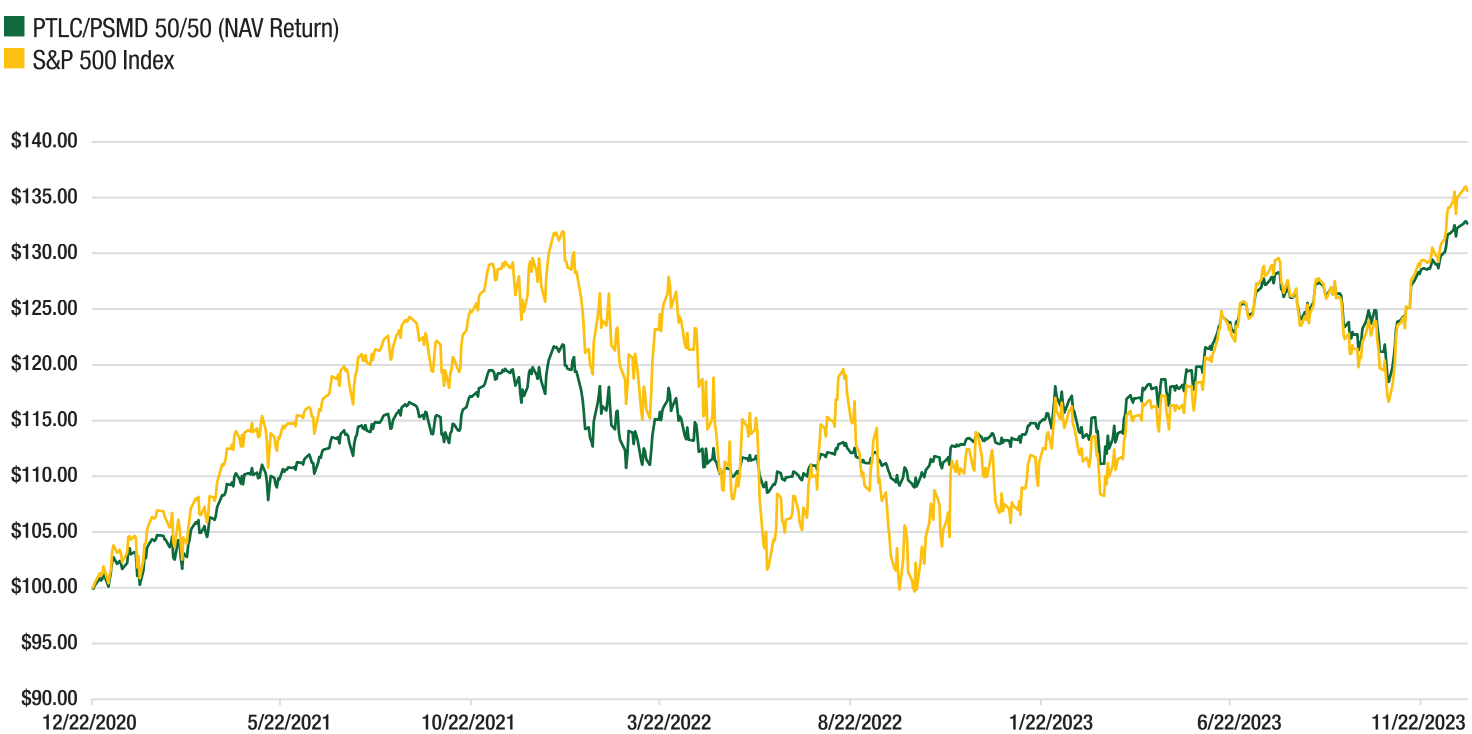
For example, the Pacer Trendpilot US Large Cap ETF (PTLC) uses trend-following on the S&P 500 Index to alternate exposure between equities and T-Bills, while the Pacer Swan SOS Moderate (January) ETF (PSMD) seeks to match returns, before fees and expenses, of the SPDR S&P 500 ETF Trust (SPY) up to a predetermined upside cap, while also providing a downside risk mitigation buffer from 0 to -15% over an approximate one-year period.

As of 12/31/2023, a portfolio of 50% PTLC and 50% PSMD (50/50 portfolio) achieved an annualized return of 9.82% since the end of 2020. During the same period, the S&P 500 Total Return Index only marginally outperformed by approximately 0.8%. Notably, the 50/50 portfolio displayed a significantly lower level of volatility compared to the S&P 500 Index. Moreover, the maximum drawdown for the 50/50 portfolio proved substantially less severe than that of the S&P 500 Index, suggesting a potential advantage in risk management associated with the combined allocation of PTLC and PSMD.

Performance of 50% PTLC and 50% PSMD

12/22/2020 to 12/31/2023

	PTLC/PSMD 50/50 (NAV Return)	S&P 500 Index
Return (%)	9.82	10.62
Volatility (%)	9.57	17.55
Max Drawdown (%)	-10.91	-24.49



Source: Pacer Advisors, Bloomberg

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In summary, amidst the unpredictable currents of market dynamics, the integration of a trend-following strategy and a buffer strategy into investors' portfolios emerges as an ideal risk management solution. With the potential to reduce the negative impact of market uncertainties, investors may be better equipped to navigate the complexities of the financial landscape.

Related Pacer Funds:

Pacer Trendpilot ETF Series

- **PTLC:** Pacer Trendpilot US Large Cap ETF

Pacer Swan SOS ETF Series

- **PSMD:** Pacer Swan SOS Moderate (January) ETF

Performance (%) as of 12/31/23

	Ticker	Total Expenses	Fund Inception		Total Returns (%) as of 12/31/23: 1 Month	3 Month	YTD	Total Returns (%) as of 12/31/23: 1 Year	3 Year	5 Year	Since Fund Inception
Pacer Trendpilot® US Large Cap ETF	PTLC	0.60%	6/11/15	NAV	4.46	9.69	16.75	16.75	10.93	9.68	7.72
				Market Price	4.45	9.58	16.80	16.80	10.93	9.67	7.72
Pacer Trendpilot® US Large Cap Index					4.51	9.76	16.89	16.89	11.20	9.90	8.05
S&P 500 Index					4.54	11.69	26.29	26.29	10.00	15.69	12.06

	Ticker	Total Expenses	Fund Inception		1 Month	3 Month	YTD	1 Year	3 Year	5 Year	Since Fund Inception
Pacer Swan SOS Moderate (January) ETF	PSMD	0.75%	12/22/20	NAV	1.26	6.45	17.40	17.40	7.83	N/A	8.03
				Market Price	1.36	6.35	17.46	17.46	7.67	N/A	8.00
S&P 500 Price Return Index					4.42	11.24	24.23	24.23	8.29	13.73	8.91

Returns less than 1 year are cumulative. Returns greater than 1 year are annualized.
Performance quoted represents past performance and does not guarantee future results. Investment return and principal value will fluctuate, so shares may be worth more or less when redeemed or sold. Current performance may be lower or higher than the performance quoted. Visit http://www.paceretfs.com for the most recent month-end performance. Index returns are for illustrative purposes only. Index performance does not reflect any management fees, transaction costs, or expenses. You cannot invest directly in an index. The 3-Month US T-Bill rate on 12/31/23 is 5.3323%.
On 11/1/2017, the equity index component of the Pacer Trendpilot® US Large Cap strategy changed to the S&P 500® Index.
NAV (net asset value) is the value of one share of the Fund calculated daily. The NAV return is based on the NAV of the Fund. It may not reflect the actual return for the investor.
Market Price is the price investors can buy and sell ETF shares for in the stock market and is used to calculate market return. It is based on the price at the listed exchange market close. This is when NAV is determined for most ETFs. If shares trade at another time, the return may differ. Market and NAV returns assume that dividends and capital gain distributions have been reinvested in the Fund at Market Price and NAV respectively.
(1)This is made up of 0.18% management fee and 0.75% acquired fund fees and expenses. Acquired Fund Fees and Expenses are estimated for the current fiscal year and reflect the Fund's pro rata share of the indirect fees and expenses incurred by investing in one or more acquired funds, such as mutual funds, business development companies, or other pooled investment vehicles. AFFE are reflected in the prices of the acquired funds and thus included in the total returns of the Fund.

Put Option: A put option is a contract giving the option buyer the right, but not the obligation, to sell—or sell short—a specified amount of an underlying security at a predetermined price within a specified time frame.
Strike Price: For put options, the strike price is the price at which the security can be sold.
Simple Moving Average: A simple moving average (SMA) calculates the average of a selected range of prices, usually closing prices, by the number of periods in that range.
Correlation: Correlation (or correlation coefficient) is a statistical measure of the strength of a linear relationship between two variables.
Bloomberg US Aggregate Bond Index: The Bloomberg Aggregate Bond Index broadly tracks the performance of the U.S. investment-grade bond market.
S&P 500 Index: The S&P 500 Index (Standard & Poor's 500 Index) is a market-capitalization-weighted index of the 500 leading publicly traded companies in the U.S..
S&P 500 Price Return Index: Is a broad measure of U.S. large cap stocks, and does not include the reinvestment of dividends.

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Fund shareholders are subject to an upside return cap that represents the maximum percentage return an investor can achieve from an investment in a Fund for an Investment Period. Therefore, even though the Funds' returns are based upon the Underlying ETF, if the Underlying ETF experiences returns for an Investment Period in excess of the Cap, an investor will not experience those excess gains. The Cap is set on the first day of a Funds' Investment Period and does not take into account any management fees, transaction costs or expenses charged to shareholders. The Cap will be reduced by these when taken into account.

The Fund only seeks to provide shareholders that hold shares for an entire Investment Period with a buffer against a pre-determined percentage of Underlying ETF losses (based upon the value of the Underlying ETF at the time the Fund entered into the FLEX Options on the first day of its Investment Period) during an Investment Period. You will bear all Underlying ETF losses beyond that pre-determined percentage. The buffer is provided prior to taking into account annual Fund management fees, operating expenses, transaction fees, and any extraordinary expenses incurred by a Fund. A shareholder that purchases shares at the beginning of an Investment Period may lose their entire investment. While each Fund seeks to limit losses for shareholders who hold shares for the entire Investment Period, there is no guarantee it will successfully do so.

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