FERI®

US EquityFlex - Systematic outperformance of the US equity market
Oktober 2024

Deeper insights. Greater rewards.

Content

FERI – The Multi Asset Investmentmanager in the German-speaking area

Tailor-made solutions for institutional investors, family wealth and foundations

Competence

Successful since 1987

approx. € 60 bn. AuM | **Global Investments** | **7** Locations*
> 260 Employees

Engagement

Investment Management, Consulting & Research

Global Multi-Asset DNA |
€ 18 bn. Alternative Investments

Innovation

FERI Cognitive Finance Institute (2016)

Creative Think Tank &
Strategic Research Center

Responsibility

FERI SDG Office (2019)

Center of Excellence for **Sustainability** | **> 10% of AuM** managed sustainably

Deeper insights.
Greater rewards.

017_17_E

As of June, 30th 2024
*Bad Homburg, Hamburg, Dusseldorf, Munich, Luxembourg, Vienna, Zurich

Content

The investment concept of the US EquityFlex

Systematic outperformance against the S&P 500

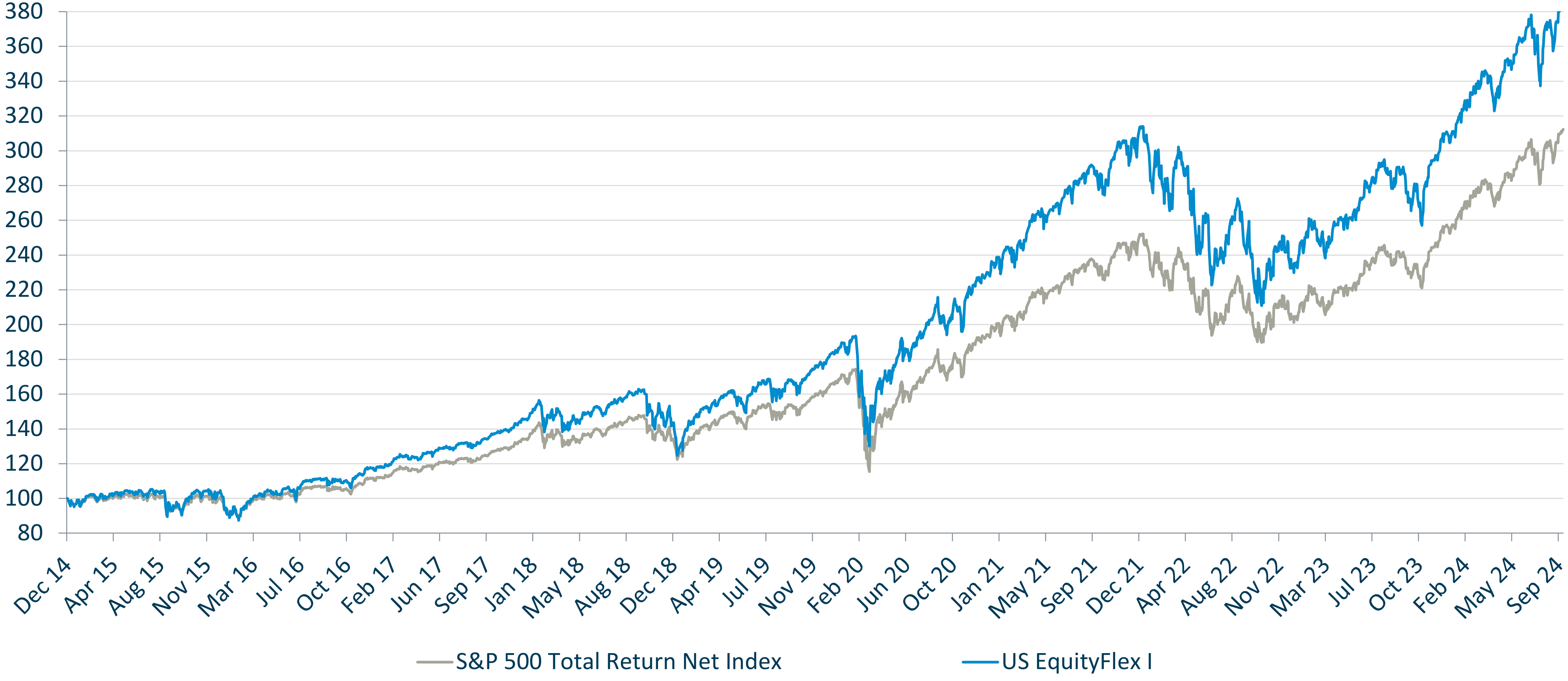
US EquityFlex Development

Generates systematic outperformance by capturing the **volatility premium** in the **U.S. equity index market** using **exchange-traded** options

017_17_E

Concept: US EquityFlex Track Record

Performance, net of fees, since inception (12-30-2014)

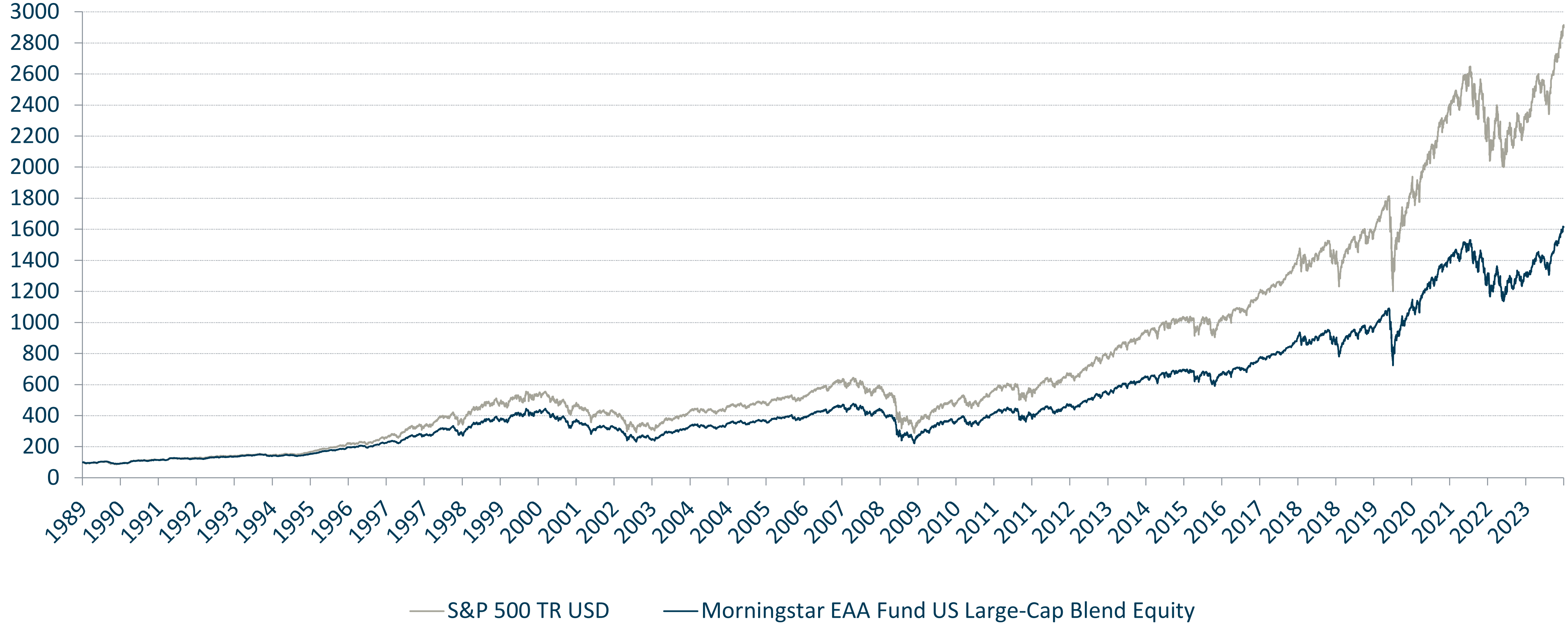


017_17_E

Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

Concept: Starting Point – Outperformance vs. S&P 500

Challenge of high information efficiency in the US equity market



017_17_E

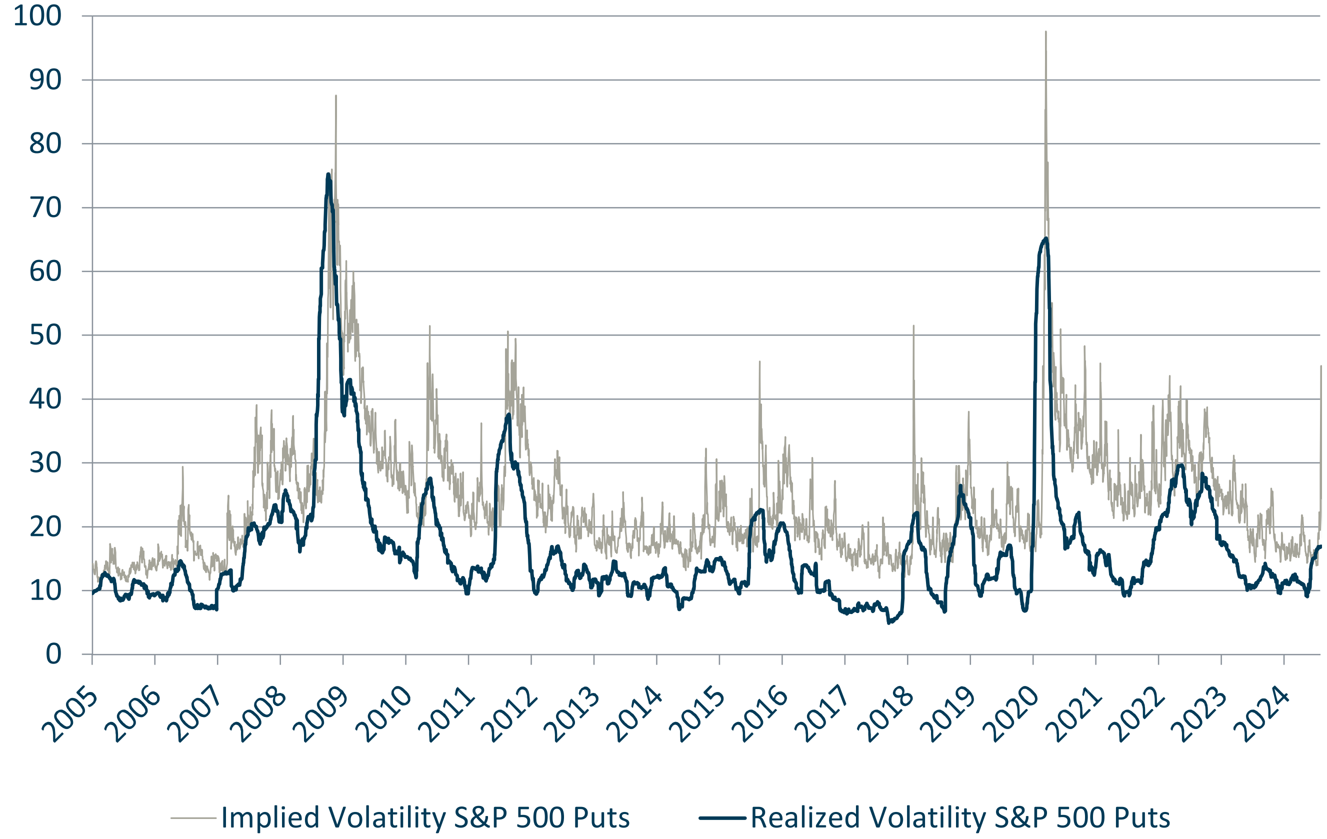
Source: FERI/Bloomberg; As of: 29.02.2024
Past performance is not a reliable indicator of future performance.

Concept: Identifying an attractive risk premium

Comparison of Implied Volatility to Realized Volatility

- Implied volatility almost always higher than realized volatility
- Realized volatility exceeds implied volatility only in exceptional circumstances, i.e. market turbulence

→There is potential to earn the volatility risk premium



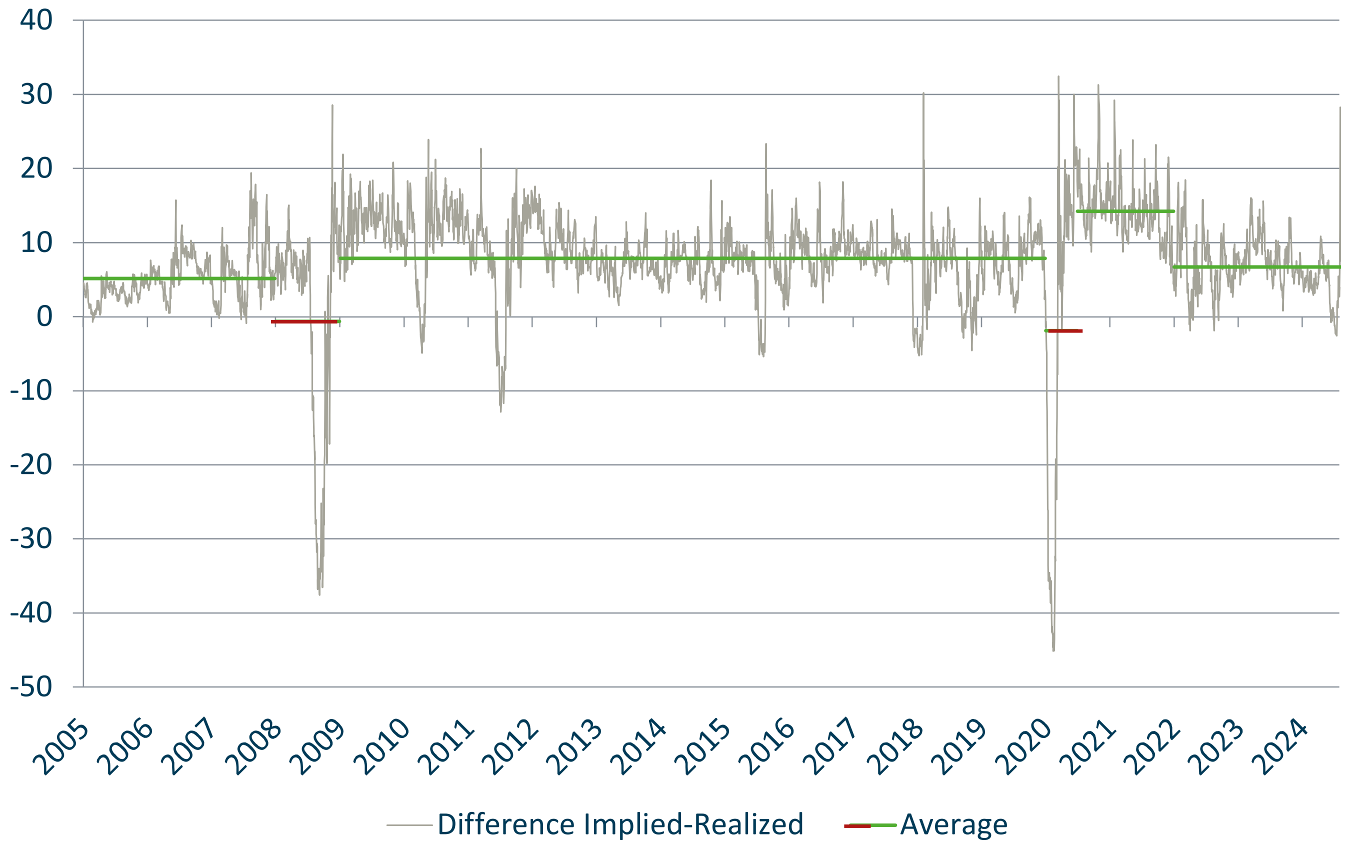
017_17_E

Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

Concept: Identifying an attractive risk premium

Difference between Implied and Realized Volatility of S&P 500 Put Options

- On average, implied volatility significantly higher than realized volatility
- Only during extreme market declines, such as in 2008 or the first half of 2020, did the difference turn negative
- Since the financial crisis, the difference between implied and realized volatility has been higher than before
- After extreme drawdowns, the spread increases significantly in the short term and tends to remain elevated
- After extreme drawdowns the difference increases significantly in the short term and mostly remains at elevated levels



017_17_E

Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

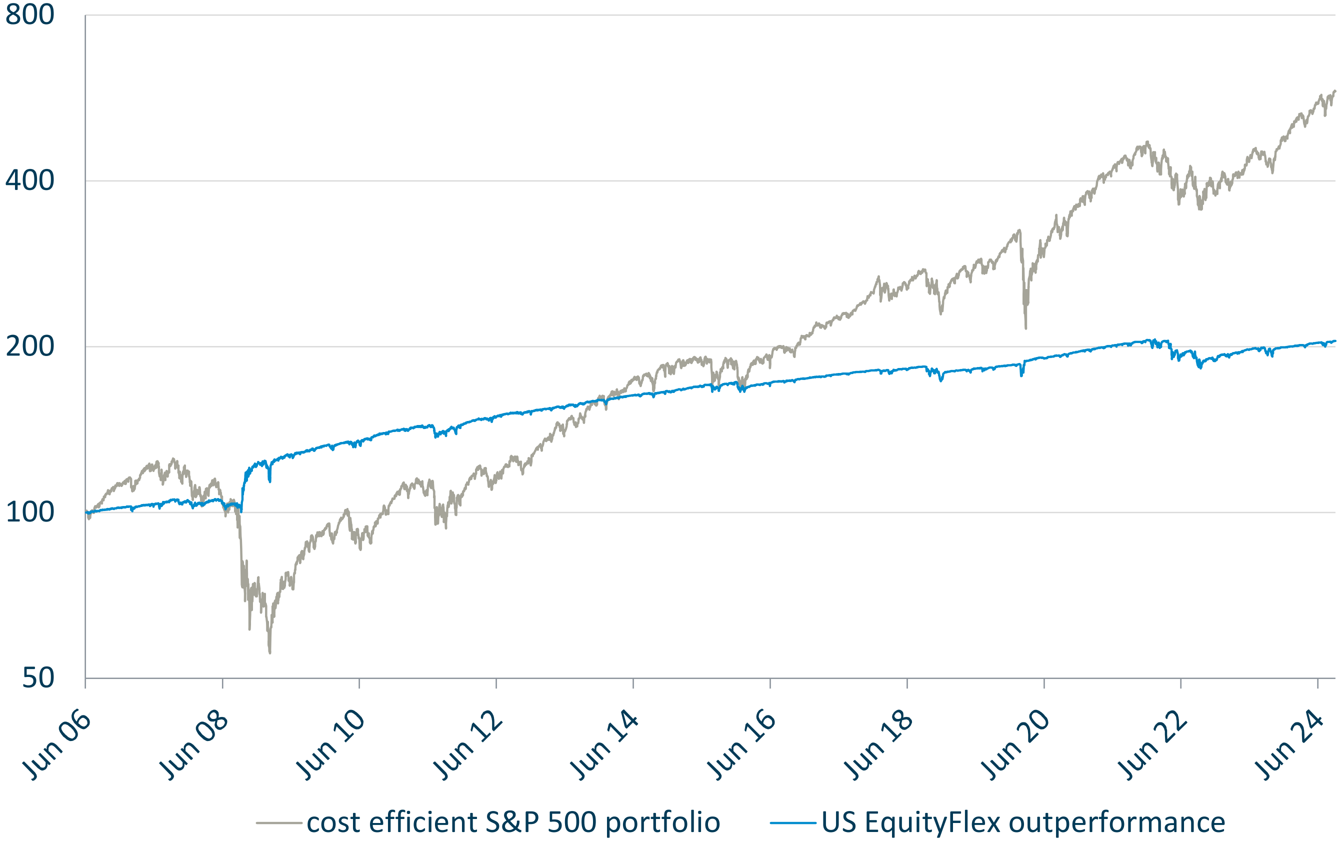
Content

Investment Process: The Solution

Effective and efficient investment in the US equity market (beta = 1)

S&P 500 + Volatility Risk Premium

- Active stock picking to generate outperformance is difficult due to the high information efficiency of the US stock market
- Effective replication of the US stock market index
- S&P 500 futures are standardized, virtually free of counterparty-risk and highly liquid
- No active management of S&P 500 exposure
- Requires development and management of additional volatility risk premiums to generate outperformance



017_17_E

Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

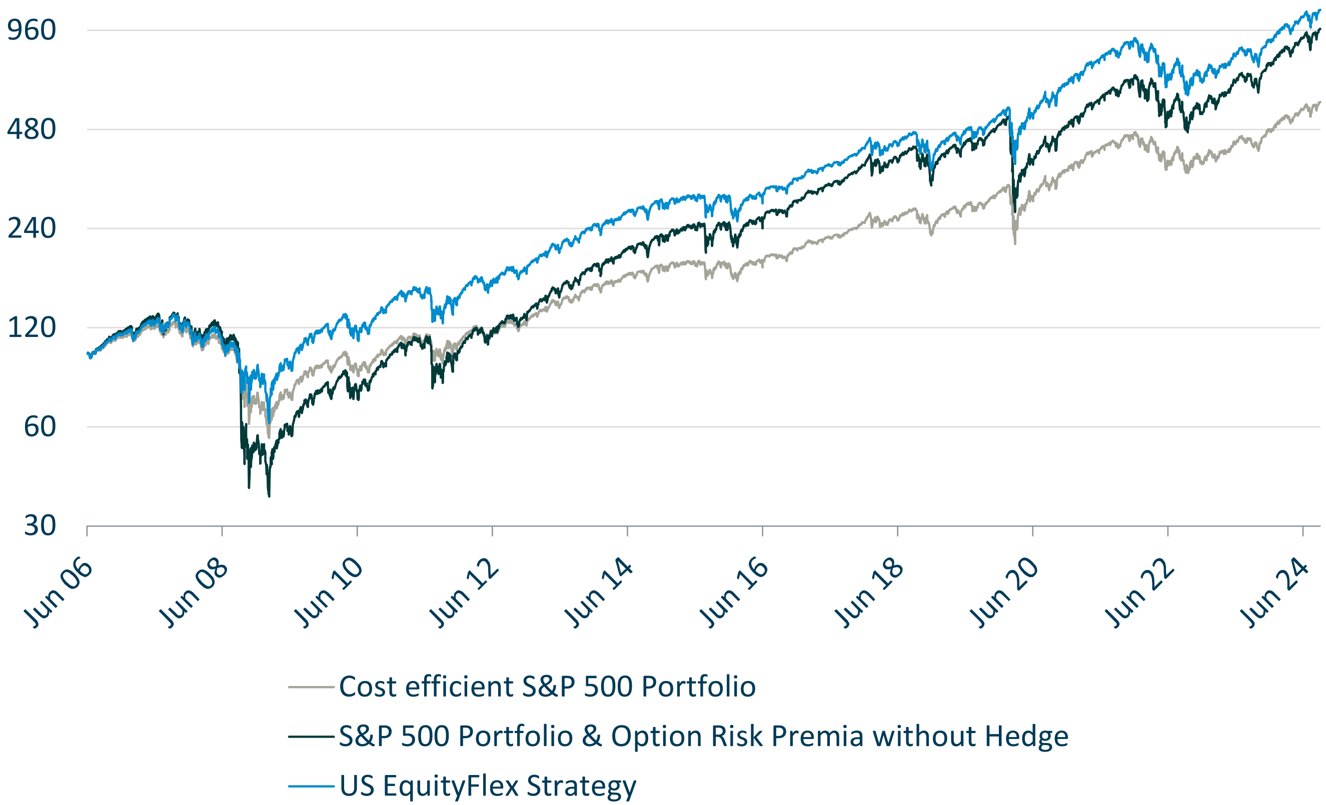
Investment Process: Generating Outperformance

Stable outperformance through volatility risk premium

= US EquityFlex

- Combination of highly liquid derivatives:
- S&P 500 Replication (light grey)
  - \+ Short S&P 500 put (grey)
  - \+ Long S&P 500 put
  - \+ Long VIX calls (blue)

→ Consistent outperformance versus the S&P 500 TR net through systematic use of the volatility risk premium, which has a low correlation to other premiums



017_17_E

Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

Investment Process: Positioning Example and Conclusion

Buy S&P 500 futures max. 49%

For static replication of the US stock market

Buy S&P 500 stocks min. 51%

For static replication of the US stock market

Sell S&P 500 put

Collected Option Premium

1 Option
Strike: 5000
Premium: +$19.20

Buy S&P 500 put
1 Option
Strike: 4300
Premium: -$4.75

Buy VIX call
14 Options
Strike: 50.0
Premium: -$4.90

Outperformance

Remaining Premium: $9.55

017_17_E

Illustrated is the option position at opening without any other gain or losses from changes in market value of portfolio securities and without any fees. There are fund costs resulting from management fee, administration fee, custody fee as well as transaction and audit cost. There is no guarantee for capital preservation. Forecasts are not reliable indicators of future performance.

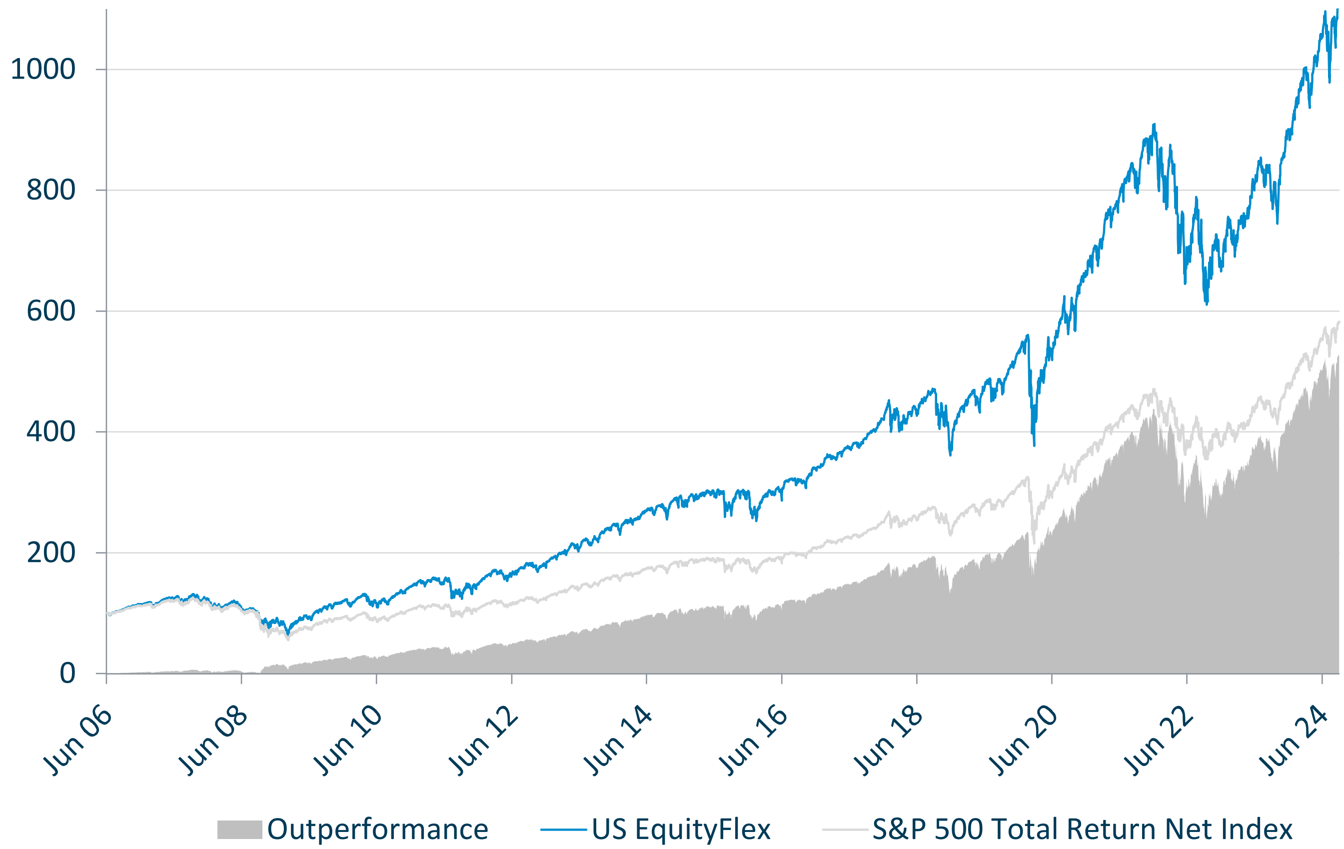
Content

Performance Analysis: Long-Term Simulation

FERI®

Simulated performance, net of fees, vs. S&P 500

- Steady collection of risk premiums leads to continuous outperformance
- Significant net-of-fees outperformance of the S&P 500 over the simulation period
- Volatility risk premium as a source of outperformance is relatively independent of equity market risk over the medium term



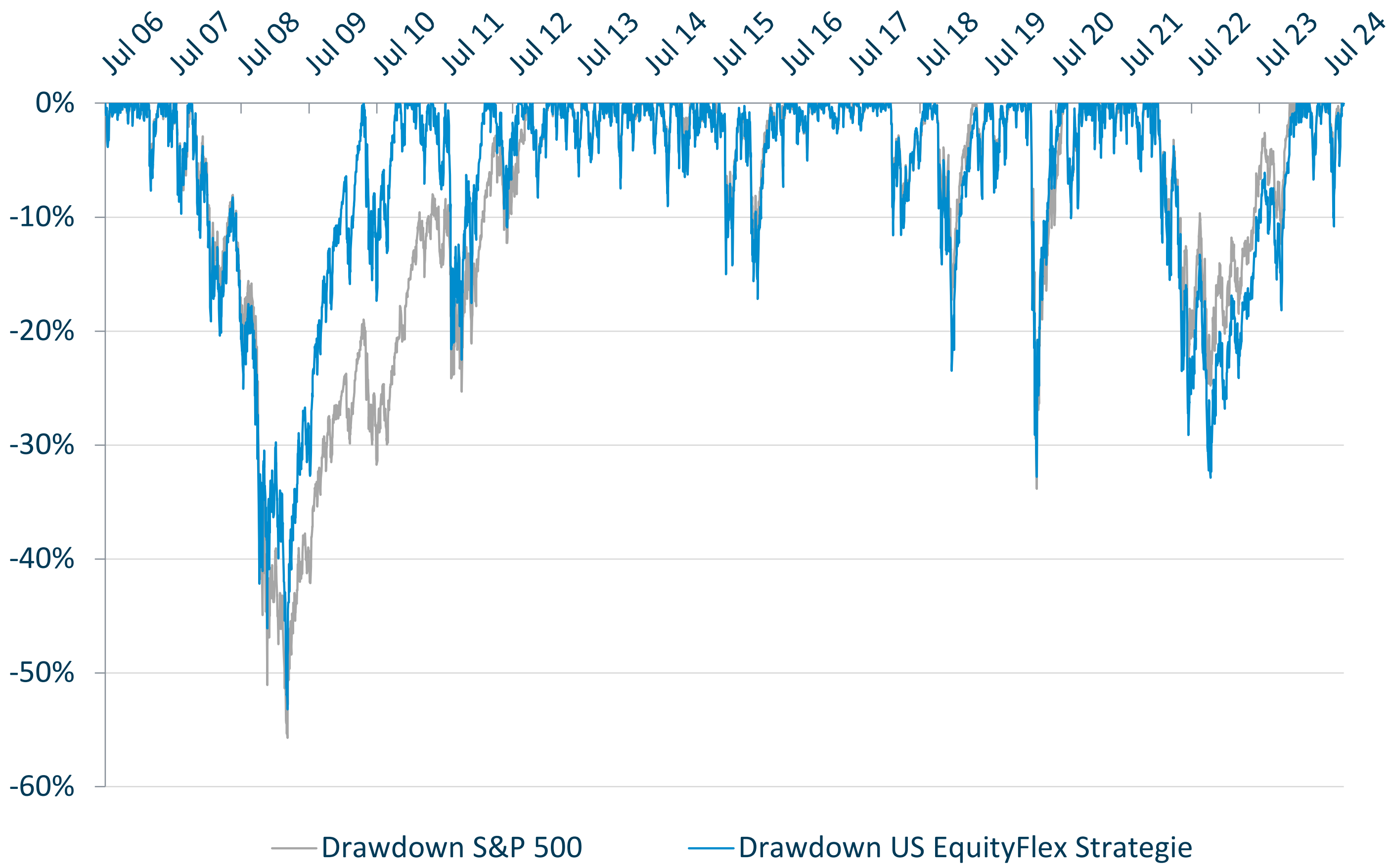
017_17_E

Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

Performance Analysis: Drawdown vs. S&P 500

Potentially fast recovery from drawdowns

- US EquityFlex has a tendency to recover from absolute drawdowns faster than the S&P 500
- Relative underperformance recovers quickly by avoiding trend-following risk measures



017_17_E

Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

Performance Analysis: Monthly Returns

Monthly returns, net of fees, of US EquityFlex and S&P 500 TR Net

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ytd
2015	**USEF**	**-4.62%**	**6.90%**	**-1.54%**	**1.45%**	**1.63%**	**-2.08%**	**2.78%**	**-7.21%**	**-3.71%**	**11.16%**	**0.50%**	**-0.33%**	**3.62%**
	S&P	-4.03%	5.67%	-1.63%	0.93%	1.21%	-1.99%	2.06%	-6.10%	-2.53%	8.39%	0.22%	-0.70%	0.65%
2016	**USEF**	**-8.18%**	**-0.46%**	**7.84%**	**0.71%**	**2.52%**	**0.42%**	**4.36%**	**0.13%**	**0.23%**	**-1.89%**	**4.52%**	**2.07%**	**12.05%**
	S&P	-5.89%	-0.22%	6.73%	0.35%	1.72%	0.21%	3.65%	0.06%	-0.02%	-1.86%	3.62%	1.93%	10.18%
2017	**USEF**	**2.19%**	**4.23%**	**0.25%**	**1.36%**	**1.60%**	**0.72%**	**2.34%**	**0.42%**	**2.38%**	**2.45%**	**3.36%**	**1.25%**	**24.93%**
	S&P	1.86%	3.90%	0.07%	0.99%	1.33%	0.58%	2.02%	0.23%	2.02%	2.30%	2.99%	1.07%	21.10%
2018	**USEF**	**5.90%**	**-4.15%**	**-3.53%**	**1.47%**	**2.85%**	**0.36%**	**4.46%**	**3.50%**	**0.62%**	**-9.38%**	**2.87%**	**-13.80%**	**-10.34%**
	S&P	5.69%	-3.75%	-2.59%	0.35%	2.33%	0.58%	3.69%	3.19%	0.53%	-6.87%	1.96%	-9.85%	-5.75%
2019	**USEF**	**12.79%**	**3.56%**	**2.24%**	**4.42%**	**-7.65%**	**9.04%**	**1.65%**	**-1.98%**	**2.29%**	**2.83%**	**3.90%**	**2.87%**	**40.68%**
	S&P	8.90%	3.14%	1.90%	4.01%	-6.42%	7.00%	1.40%	-1.65%	1.83%	2.13%	3.56%	2.66%	31.43%
2020	**USEF**	**-0.10%**	**-13.32%**	**-4.74%**	**13.74%**	**5.56%**	**1.64%**	**6.35%**	**7.62%**	**-3.77%**	**-3.45%**	**13.33%**	**3.58%**	**25.66%**
	S&P	0.22%	-8.29%	-12.40%	12.78%	4.69%	1.94%	5.60%	7.13%	-3.84%	-2.69%	10.89%	3.14%	17.34%
2021	**USEF**	**-0.32%**	**2.98%**	**5.51%**	**5.73%**	**1.10%**	**2.80%**	**2.64%**	**3.54%**	**-5.46%**	**8.67%**	**-0.95%**	**5.75%**	**36.11%**
	S&P	-0.40%	2.71%	4.34%	5.31%	0.65%	2.30%	2.35%	3.00%	-4.68%	6.98%	-0.74%	4.72%	29.33%
2022	**USEF**	**-6.32%**	**-3.65%**	**4.69%**	**-11.06%**	**-0.78%**	**-10.38%**	**11.39%**	**-5.83%**	**-13.25%**	**10.92%**	**6.38%**	**-6.70%**	**-25.14%**
	S&P	-5.45%	-3.04%	3.67%	-8.74%	0.13%	-8.30%	9.19%	-4.13%	-9.25%	8.06%	5.52%	-5.80%	-18.72%
2023	**USEF**	**8.50%**	**-2.89%**	**4.53%**	**1.97%**	**0.98%**	**7.08%**	**3.67%**	**-1.63%**	**-6.26%**	**-2.54%**	**11.54%**	**4.87%**	**32.35%**
	S&P	6.25%	-2.49%	3.62%	1.53%	0.38%	6.57%	3.18%	-1.65%	-4.80%	-2.13%	9.07%	4.51	25.67%
2024	**USEF**	**2.00%**	**5.67%**	**3.57%**	**-4.52%**	**5.83%**	**3.89%**	**0.85%**	**2.33%**	**2.41%**				**23.85%**
	S&P	1.65%	5.29%	3.18%	-4.11%	4.91%	3.55%	1.19%	2.38%	2.10%				21.70%

Source: FERI/Bloomberg

Past performance is not a reliable indicator of future performance.

Performance Analysis: Monthly Relative Returns

Monthly outperformance, net of fees, vs. S&P 500 TR Net

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ytd
2015	-0.59%	1.23%	0.09%	0.52%	0.42%	-0.09%	0.72%	-1.11%	-1.18%	2.76%	0.28%	0.37%	2.97%
2016	-2.29%	-0.24%	1.11%	0.36%	0.80%	0.21%	0.71%	0.07%	0.26%	-0.03%	0.90%	0.14%	1.87%
2017	0.33%	0.33%	0.18%	0.37%	0.26%	0.13%	0.32%	0.19%	0.36%	0.15%	0.37%	0.18%	3.83%
2018	0.20%	-0.40%	-0.94%	1.12%	0.51%	-0.21%	0.78%	0.32%	0.10%	-2.51%	0.90%	-3.96%	-4.59%
2019	3.89%	0.42%	0.35%	0.41%	-1.23%	2.04%	0.25%	-0.33%	0.47%	0.70%	0.34%	0.21%	9.25%
2020	-0.33%	-5.03%	7.66%	0.96%	0.87%	-0.30%	0.75%	0.49%	0.07%	-0.76%	2.44%	0.44%	8.32%
2021	0.08%	0.27%	1.17%	0.42%	0.45%	0.50%	0.29%	0.54%	-0.78%	1.69%	-0.22%	1.04%	6.78%
2022	-0.88%	-0.61%	1.02%	-2.31%	-0.91%	-2.08%	2.20%	-1.70%	-4.00%	2.86%	0.85%	-0.90%	-6.41%
2023	2.25%	-0.40%	0.91%	0.44%	0.61%	0.51%	0.48%	0.02%	-1.46%	-0.41%	2.47%	0.36%	6.69%
2024	0.34%	0.38%	0.39%	-0.41%	0.92%	0.34%	-0.34%	-0.05%	0.31%				2.15%

- Drawdowns are usually recovered within the next month or two
- Negative performing months are often followed by strong performing months

017_17_E

Performance Analysis: Performance Statistics as of September 30th ,2024

Risk and return profile*

Key figures	Track Record
Return p.a.	14.79%
Benchmark p.a.	12.44%
Outperformance p.a.	2.35%
Volatility p.a.	21.70%
Tracking Error	5.25%
Information Ratio	0.52
Outperf. month	70.94%

- Track Record in line with expected results
- Since inception, the fund has consistently outperformed the S&P 500

017_17_E

*Risk statistics are calculated based on daily returns.
Past performance is not a reliable indicator of future performance.

Content

Conclusion: Summary

What makes US EquityFlex different?

- Long-term track record with an attractive outperformance profile through several stressed market environments
- Transparent and clear strategy without unnecessary complexity
- Predict-free approach without the need for timing, emotional intervention or exposure management
- Permanent and static hedges significantly stabilize the strategy's return profile
- Efficient and cost-effective setup with high liquidity in the underlying markets

Conclusion: USPs

1	Use of highly liquid exchange-traded options and futures – Virtually no counter party risk – Continuously tradable
2	Systematic process – Clear exposure at all times, no unpredictable discretionary intervention – No under- or over-hedging through trend-following exposure management
3	Attractive returns despite the implementation of a hedging strategy – Use approximately half of the premium to finance low-cost, efficient hedges – Efficient insurance makes it possible to sell expensive out-of-the-money puts

Conclusion: Fund Information as of September 30, 2024

US EquityFlex I	
ISIN	LU1138397838
WKN	A12E0R
Investment Manager	FERI AG
Inception Date	December 30th. 2014
Assets under Management	USD 1.652 billion
Structure	UCITS V Fund. Daily Liquidity
Fund Administrator	LRI Invest S.A.
Custodian Bank	Hauck Aufhäuser Lampe Privatbank AG (Luxembourg)
Investment Universe	Stocks. Money Market. Listed Derivatives
Currency	USD
Share Category	Distributing
Fiscal Year End	December 31st
Administration Fee	0.022% p.a.
Custody Fee	0.029% p.a.
Management Fee	0.4% p.a.
Performance Fee	15% above S&P 500 Total Return Net

017_17_E

Selected Risks

Risks

- Assets used may be subject to wide price fluctuations
- The Portfolio may suffer losses as a result of human error, system and/or process error, inadequate procedures or controls
- The tradability of the instruments used may be limited
- If a bond issuer defaults, this will have a negative impact on the value of the fund.
- Low interest rate sensitivity of invested bonds
- Exchange rate fluctuations may adversely affect foreign currency positions in the portfolio
- Derivatives can be volatile
- No guarantee of capital preservation

For detailed information on opportunities and risks. please refer to the sales prospectus.

Content

Appendix: Background

1. Due to the high information efficiency of the US stock market, outperformance through stock picking or timing strategies is almost impossible.
2. The volatility risk premium of the US equity market generates attractive and stable returns
3. The volatility risk premium can be collected by selling highly liquid S&P 500 put options
4. Using the risk reduced volatility risk premium, it is possible to generate consistent outperformance versus the U.S. equity market.

017_17_E

Appendix: Risk Premium due to the Behavior of Market Participants

- Out-of-the-money put options are primarily used for hedging purposes.
- Hedgers often have to buy puts, ignoring their fair value
- Hedgers must buy puts at almost any price if they need to buy securities
- Puts are trading significantly above the fundamental expectation value
- In particular, equity index puts are significantly overpriced
- There is a systematic overestimation of market volatility in S&P 500 puts by market participants.
- Systematic selling of S&P 500 puts generates more returns on option premiums than fundamentally justified

	Loss of S&P 500 > 10% during 2-Month Period*	
	Priced-in probability (puts)	Historical Probability
since 1990	12%	4%
2008-2011	18%	10%

017_17_E

*Monthly rolling time frame

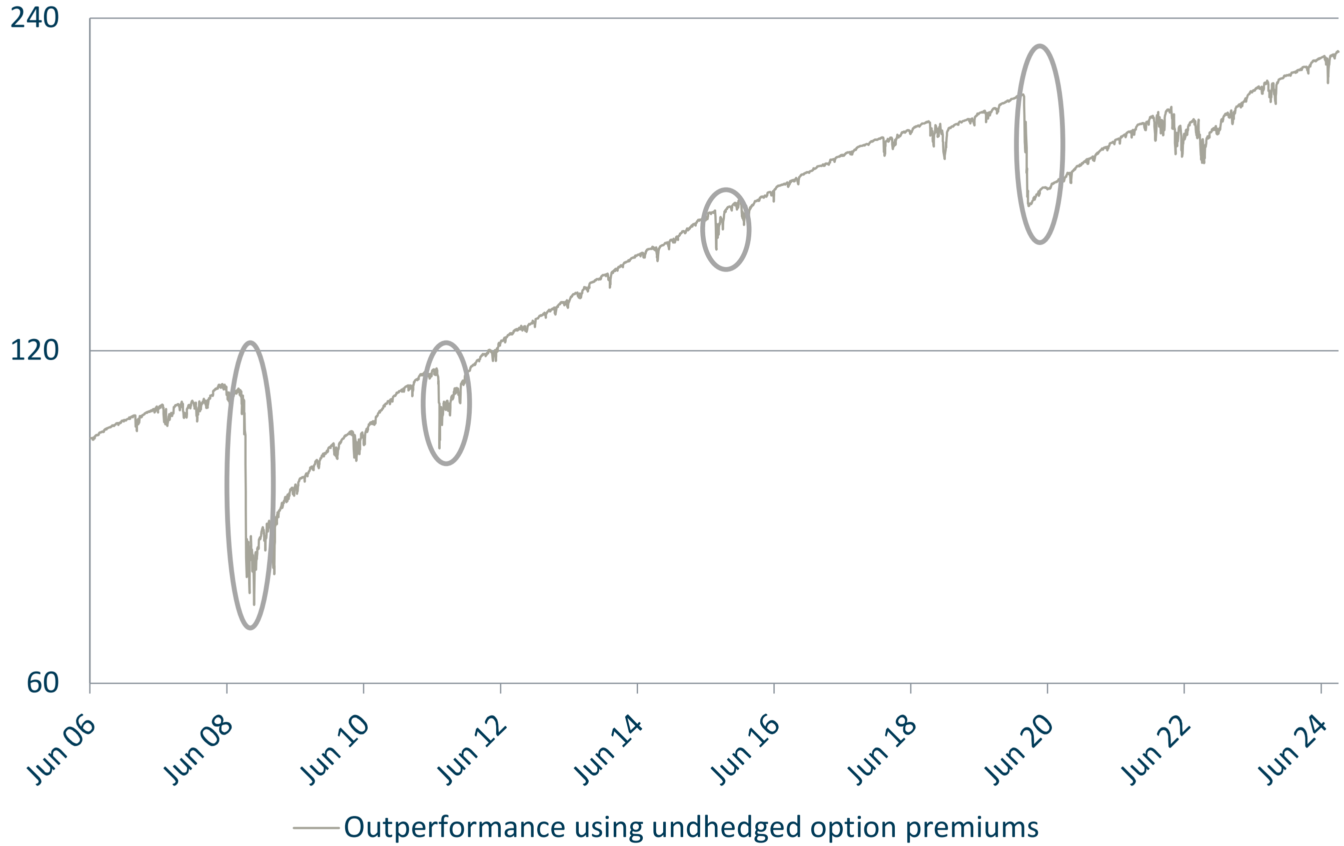
Appendix: Premium Collection Using Unhedged Short Put Positions

Without protection, significant relative underperformance in crashes is imminent

1 Harvesting Premium by Selling Puts

- Sell S&P 500 puts to gain insurance risk premium (volatility, stock, convexity risk)
- The S&P 500 derivatives market is the largest and most liquid in the world.
- Systematic investment process
- Significant relative losses may occur in the event of a stock market crash.

→Focus on downside management



017_17_E

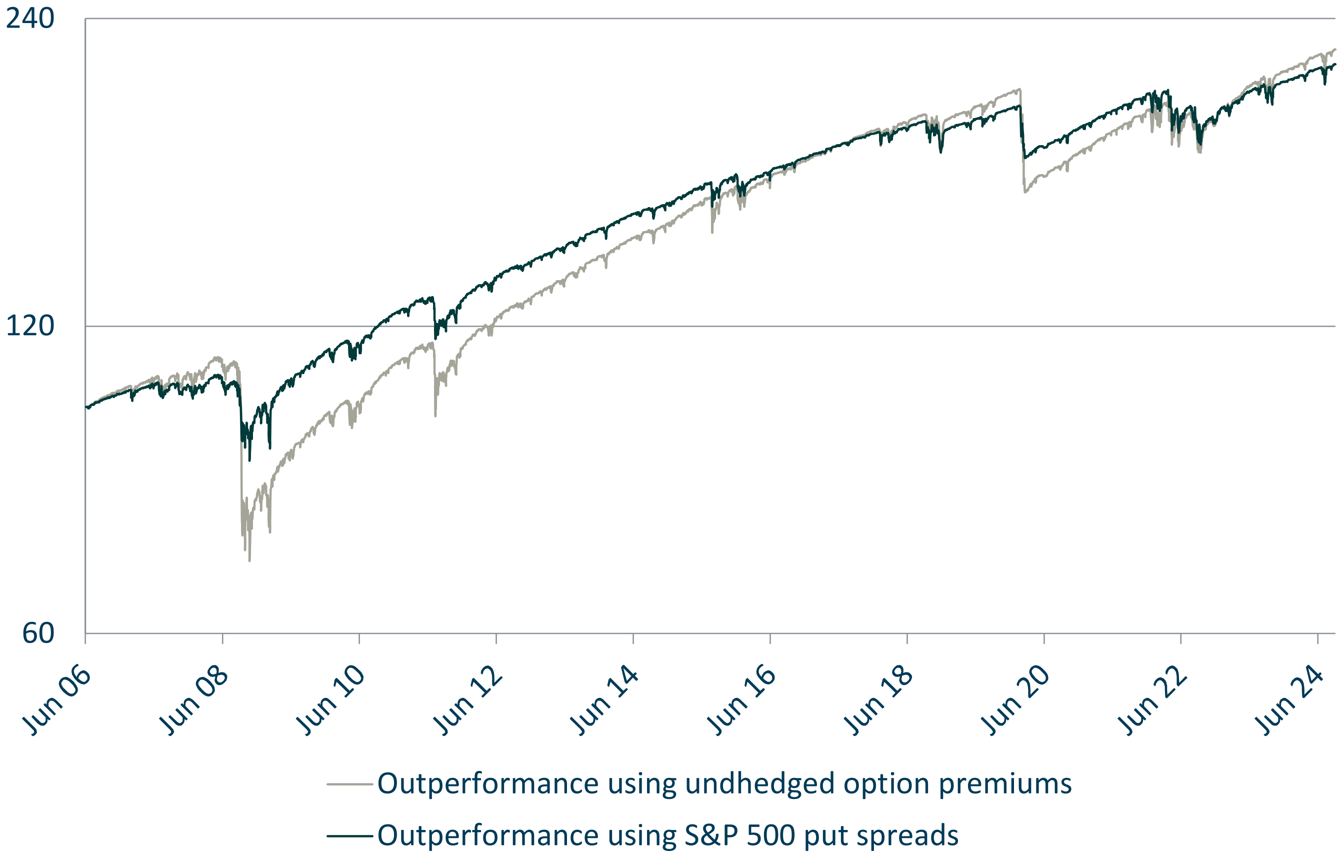
Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

Appendix: The Solution

Implement a hedging strategy that eliminates relative downside risk

2.1 + Hedge through Long S&P 500-Puts

- Approximately one-quarter of the option premium earned is invested in far-out-of-the-money S&P 500 put options of the same maturity
- The quantity of contracts bought is equal to the quantity of contracts sold
- Negative correlation between long and short puts in bear markets
- Maximum relative drawdown can be calculated and UCITS guidelines are always met



017_17_E

Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

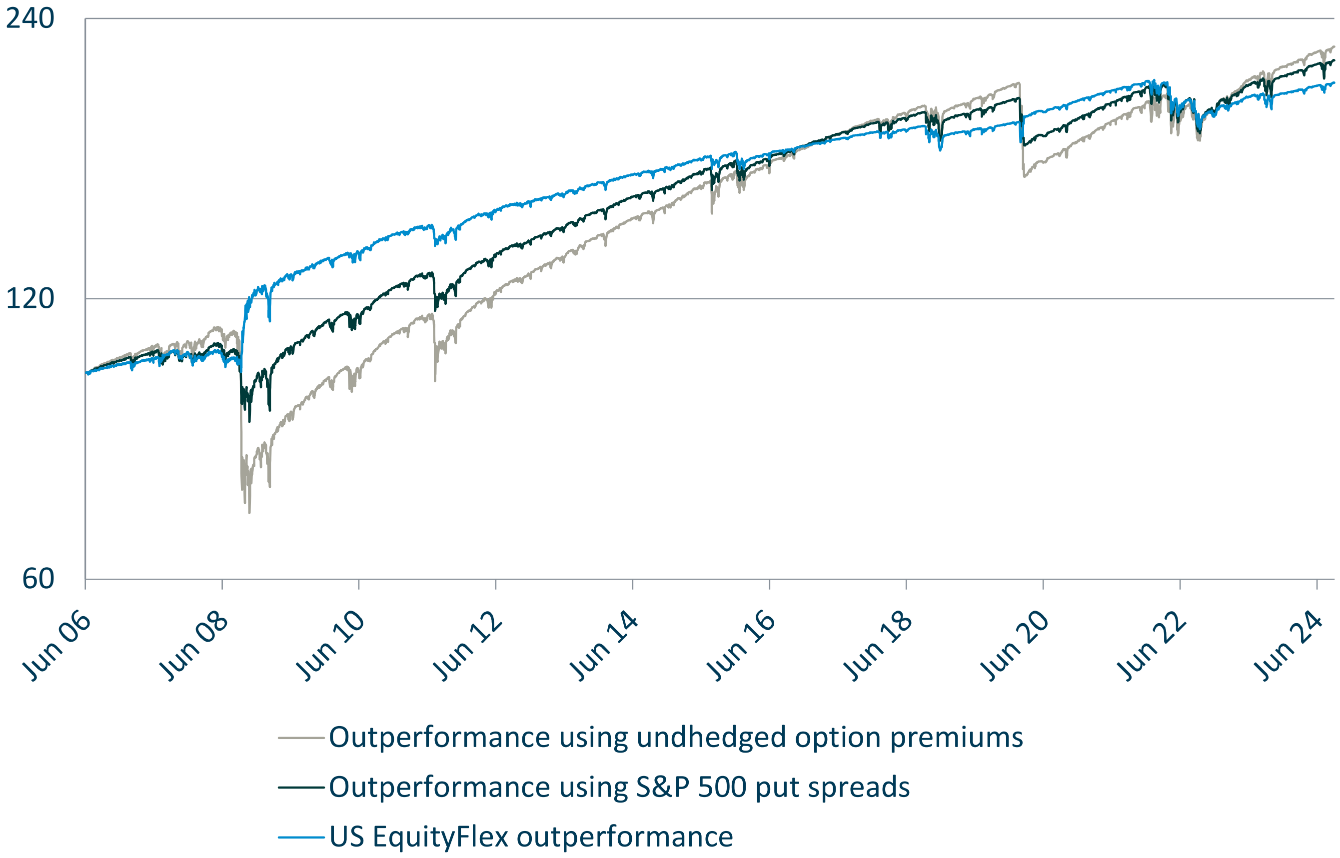
Appendix: The Solution

Adding tail risk hedge with VIX call options

2.2 + Hedge through VIX-calls and long S&P 500-puts

- Approximately a quarter of the option premiums earned are spent on VIX call options
- Rising risk aversion and fear of risk among investors leads to an increase in volatility and therefore profits on VIX positions
- Therefore, the VIX calls significantly reduce relative drawdowns and can even lead to outperformance in extreme market crashes (2008)

→Optimize the outperformance profile by using deep out-of-the-money S&P 500 puts and primarily **VIX call options**



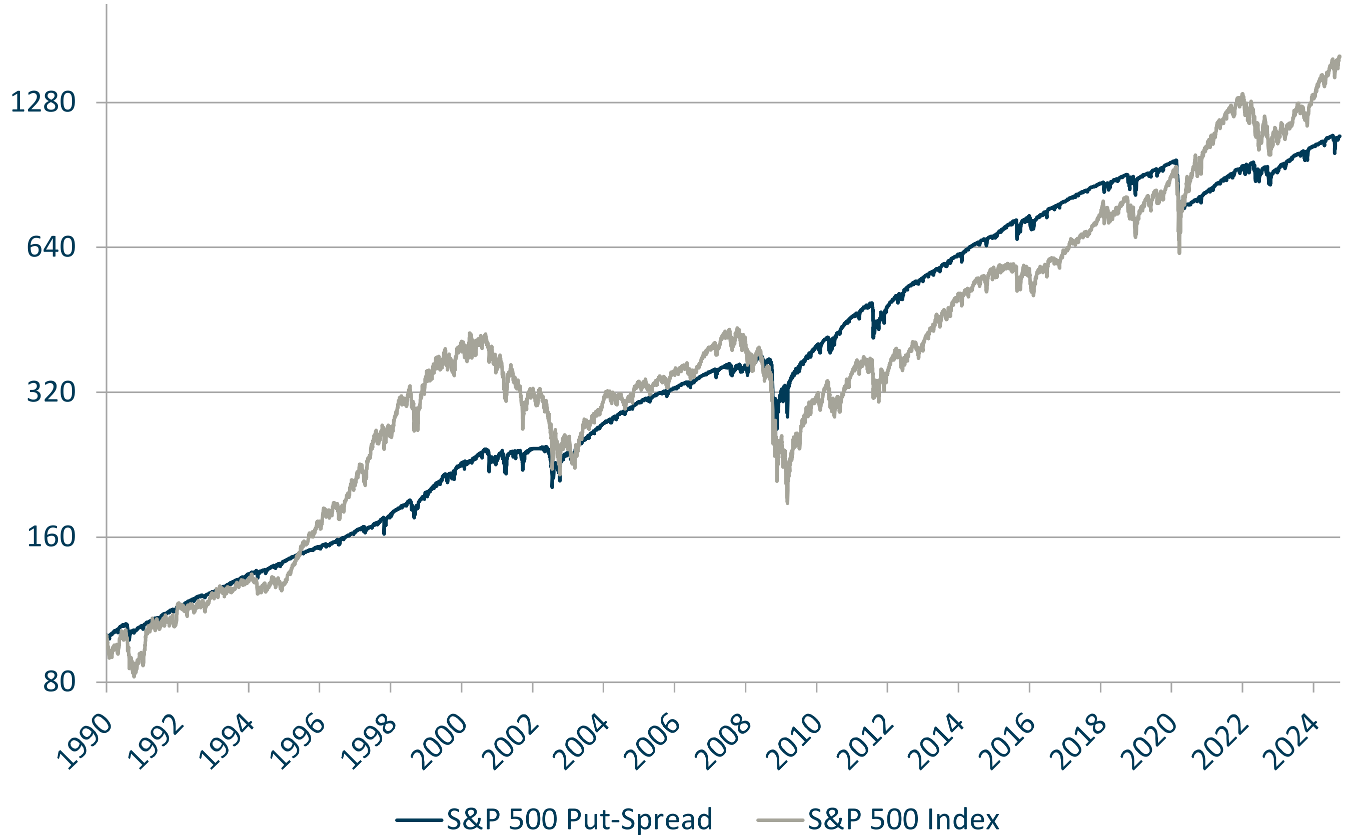
017_17_E

Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

Appendix: Long S&P 500 Puts Used for Hedging

Long-term performance of short puts and bull spread

- Harvesting the volatility premium leads to positive results even in difficult market environments, but shows temporary setbacks as in 2000-2003
- Very short recovery time compared to the S&P 500 after the 2008 financial crisis



017_17_E

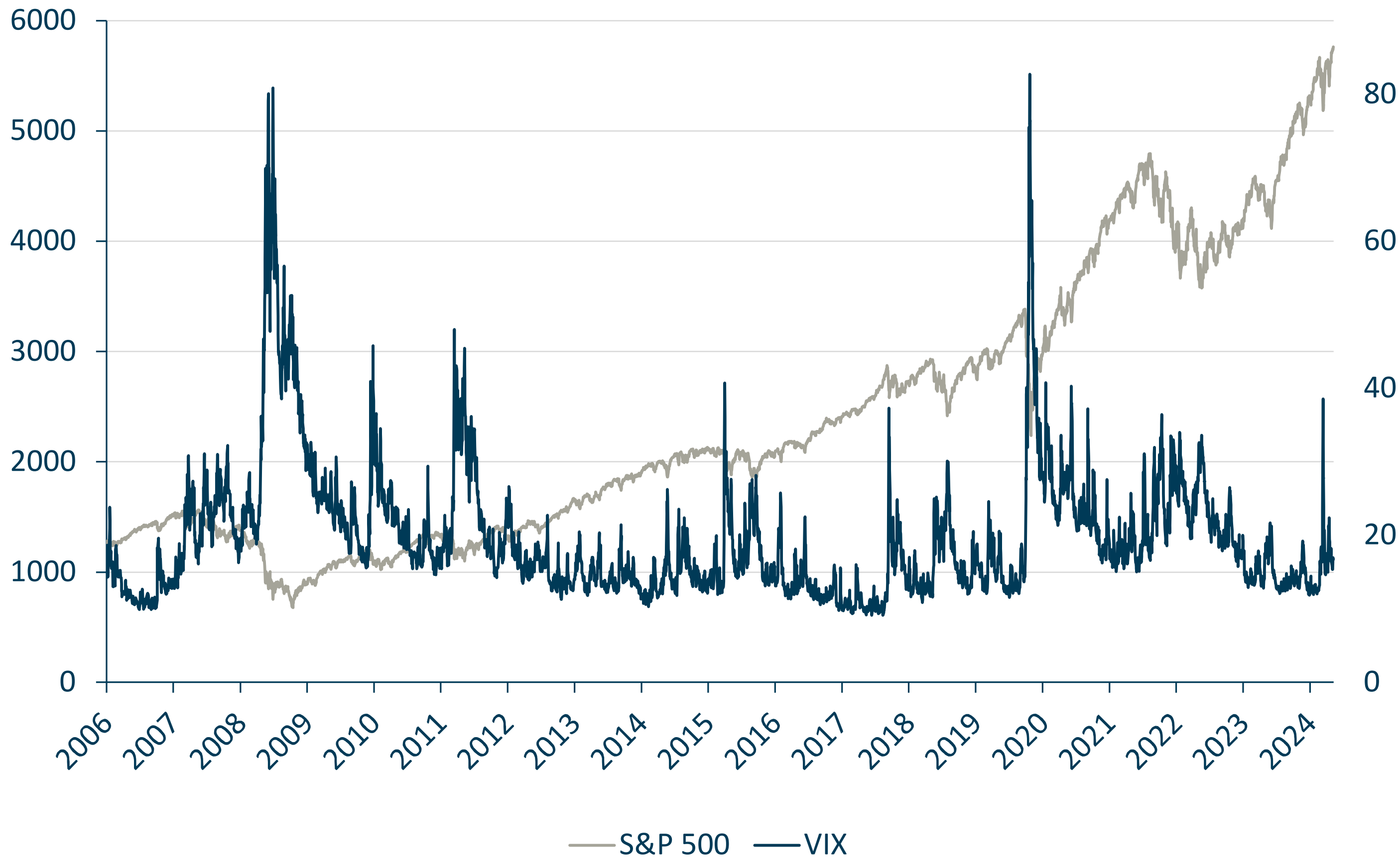
Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

Appendix: Qualification of VIX Calls as a Hedging Instrument

Comparison of S&P 500 and VIX Index

- The VIX index represents the expected volatility of the S&P 500 as reflected in option prices - the implied volatility
- When the market deteriorates, panic among market participants is expected to increase
- The VIX has historically risen significantly during periods of severe market drawdowns

→Stable negative correlation between stock market and volatility (VIX) movements



017_17_E

Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

Appendix: Monthly Performances S&P 500 vs. VIX Index

FERI®

Worst S&P 500 monthly performance since 1990

Month	S&P 500	VIX
March 2020	-28.5%	+41.0
October 2008	-22.1%	+36.5
November 2008	-18.8%	+19.7
September 2001	-17.6%	+19.8
July 2002	-14.6%	+11.2
August 2011	-13.9%	+22.1
May 2022	-12.6%	+8.1
January 2008	-11.4%	+8.6
September 2002	-11.1%	+10.4
December 2018	-10.2%	+10.0
March 2001	-10.0%	+5.2
June 2002	-9.4%	+8.0
May 2010	-9.2%	+22.8
August 1998	-8.7%	+15.8

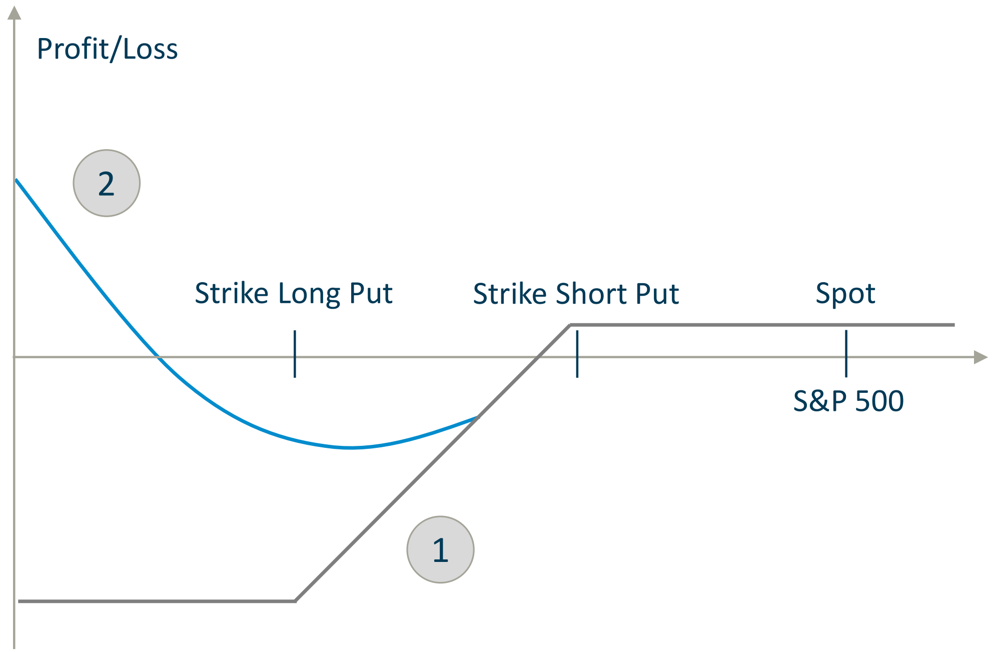
Source: FERI/Bloomberg

Appendix: Hedging Effect

Option Strategy Payoff Profile

1. Typical Payoff Profile of a Put Spread Position
2. Payoff based on implementation of VIX hedges

→Hedging with long VIX calls is particularly effective in extreme events (tail risk hedge). In the event of smaller market declines, the strategy recovers quickly due to its characteristics



017_17_E

Appendix: VIX Call Options as a Hedging Instrument

Are VIX calls as overvalued as S&P 500 puts?

- VIX calls were implemented much less frequently by long-only portfolio managers than S&P puts
- The VIX options market is much more driven by professional market participants who care about fair pricing and arbitrage opportunities.
- The supply/demand balance for VIX calls is much more balanced than for S&P 500 puts

- Selling the S&P 500 puts and investing the entire premium received in VIX calls should result in the following:
- **No gain/loss** in "regular" months (all premium is spent and both options expire worthless)
- Profit in the event of a stock market crash (S&P 500 puts lose less than VIX calls gain because S&P 500 puts are more overvalued)
- If VIX calls are as overvalued as S&P 500 puts, gains and losses should occur incidentally during a crash.

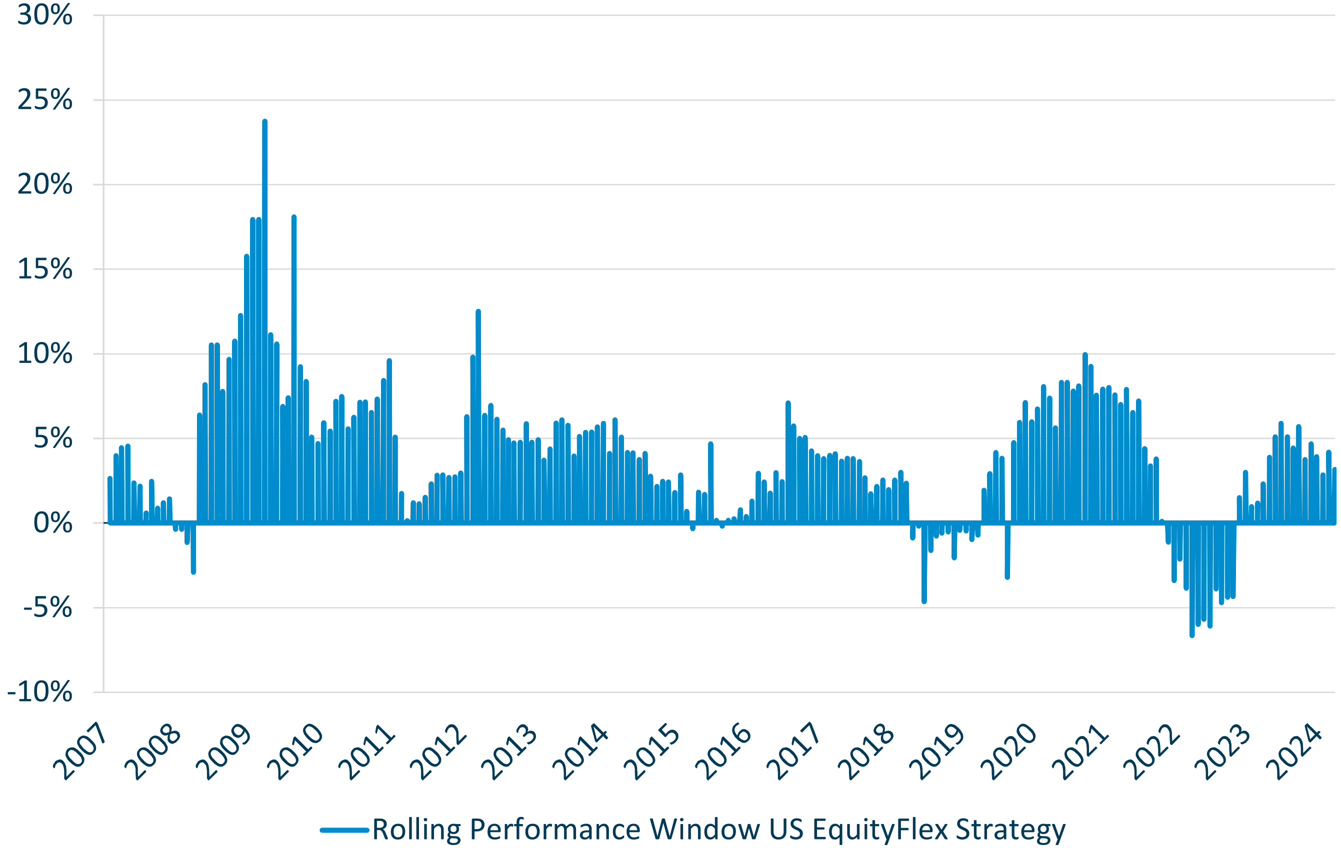
The simulation confirms that VIX calls are less overvalued than S&P 500 puts.

017_17_E

Appendix: Strategy Performance

Continuous relative annualized returns of the simulated performance

- Nearly all of the monthly investment cycles over 12 months closed with an outperformance vs. the S&P 500
- Only in a few observation periods would the US EquityFlex have achieved a negative relative return compared to the US equity market



017_17_E

Source: FERI/Bloomberg; As of: 30.08.2024
Past performance is not a reliable indicator of future performance.

FERI AG

Haus am Park

Rathausplatz 8-10

61348 Bad Homburg

For more information
please visit our website:
www.feri.de