

NEUBERGER BERMAN

Small Cap Index Constitution and Use Cases

CBOE Risk Management Conference – September 11, 2019

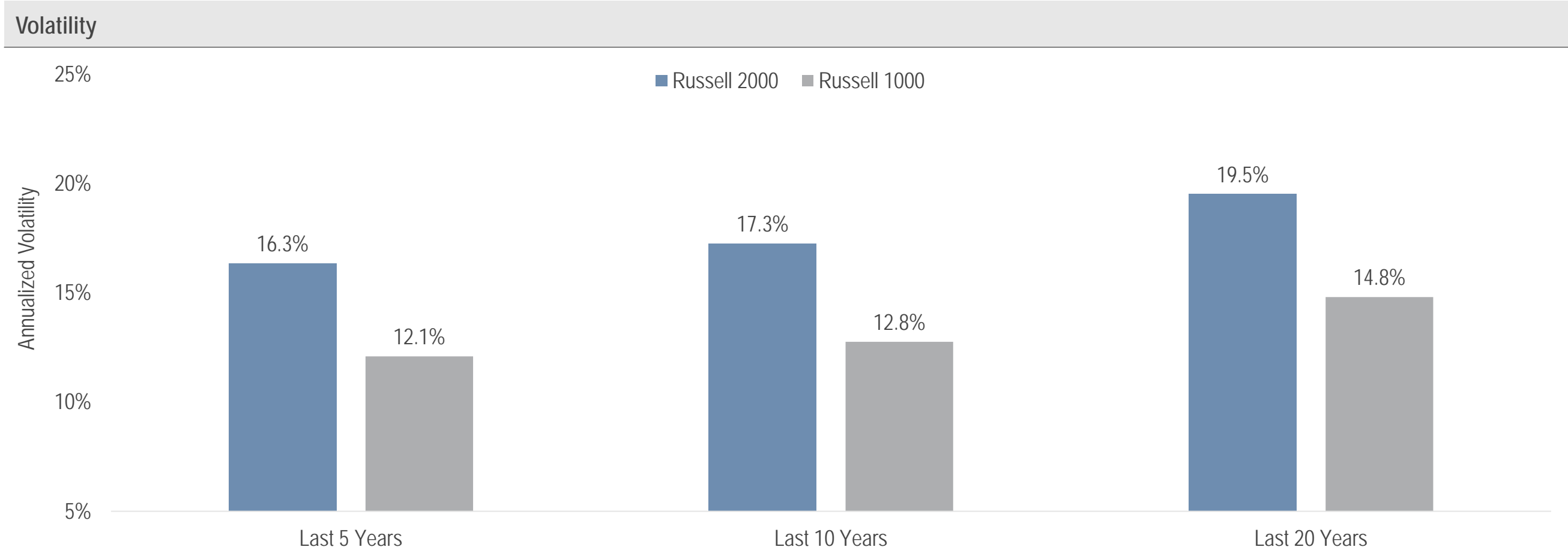
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Co-Head of Quantitative & Multi-Asset Class Investments

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Small Cap vs. Large Cap Index Volatility

Higher volatility provides excellent monetization opportunities



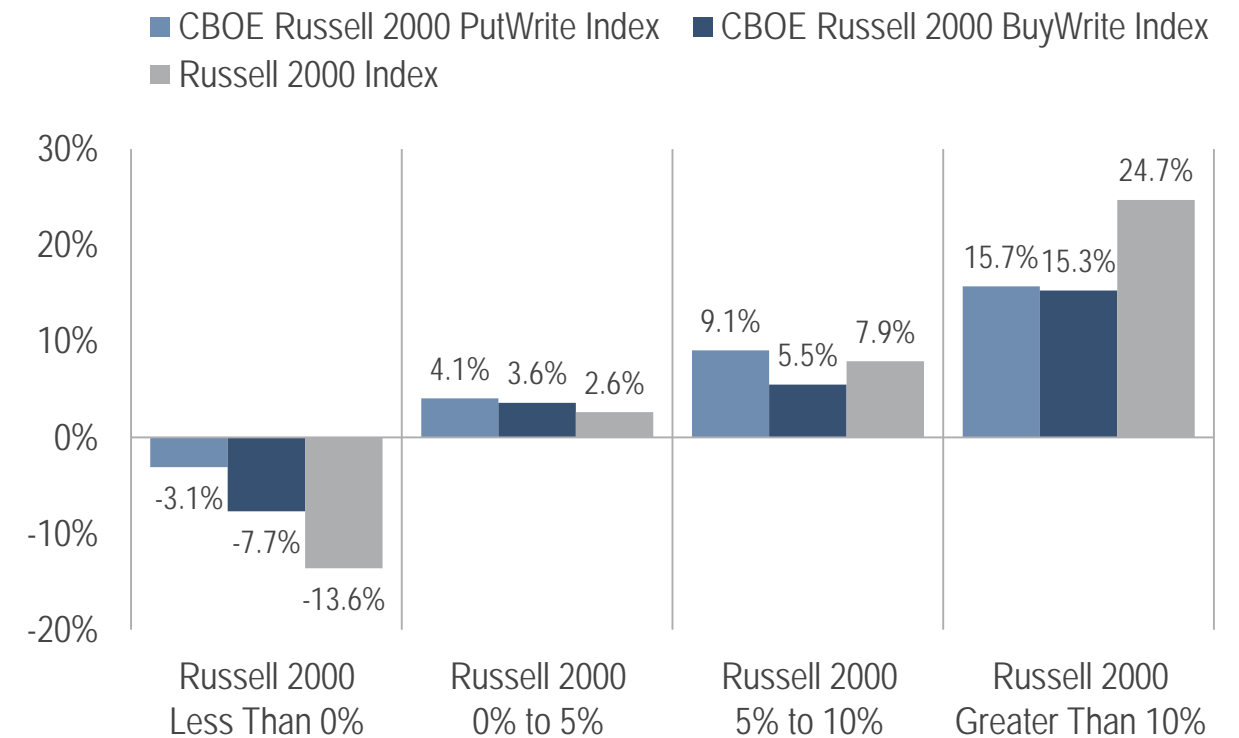
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Lower Volatility and Improved Drawdowns

Russell 2000 PutWrite & BuyWrite Indexes vs. Russell 2000 Index: January 2001 – July 2019

Summary Statistics			
	CBOE Russell 2000 PutWrite (PUTR)	CBOE Russell 2000 BuyWrite (BXR)	Russell 2000 Index (RUT)
Annual Return (%)	7.7	5.5	7.7
Volatility (%)	13.5	14.2	19.0
Risk-Adj. Ret.	0.57	0.38	0.41
Beta (Russell 2000)	0.58	0.65	1.00
Max DrawDown (%)	-38.1	-45.4	-52.9
Up-Mkt. Cap. (%)	60	63	100
Down-Mkt. Cap (%)	46	60	100

Average 1-Year Rolling Returns by Russell 2000 Return Scenario



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Option Sellers Can Benefit from Investor Behavioral Biases

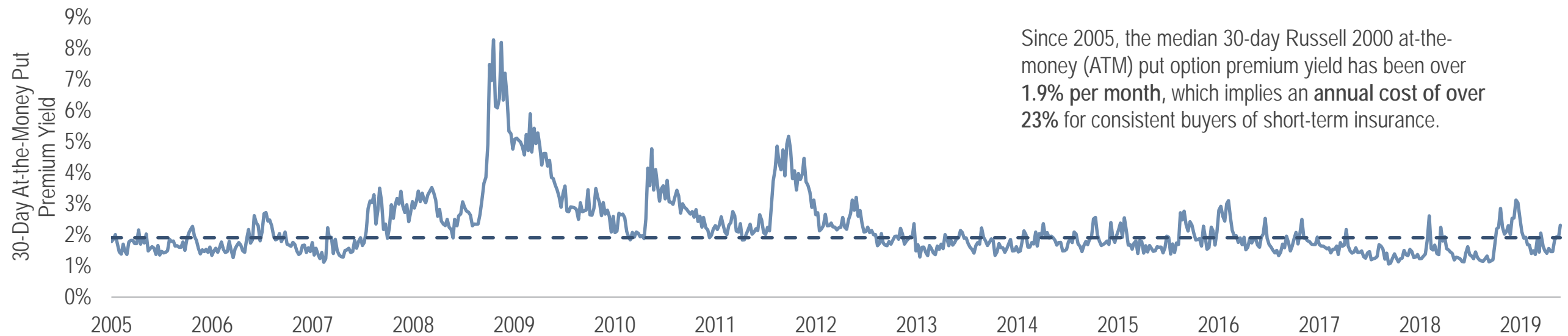
Underwriting equity market risk

Option markets charge investors substantial premiums to help portfolios mitigate risk. **Long-term investors can earn attractive rates of return by underwriting equity market risk.**

- **Who pays these premiums?**
Hedgers, Speculators, Arbitrageurs
- **Who earns these premiums?**
Sellers: Wall Street Derivatives Desks, Independent Brokers Dealers, Individuals

We believe investor **fear and greed contribute to behavioral biases in financial markets** and they ultimately 'overpay' for protection.

Russell 2000 30-Day At-The-Money Put Option Premiums (January 2005 – July 2019)



Source: CBOE and Bloomberg

Put option premiums are based on the underlying option data used in the calculation of the CBOE Russell 2000 PutWrite ("PUTR") Index, which inceptioned in January 2005. Premium yields are calculated as the option premium divided by the option strike price.

Russell 2000 Index Option Markets Demand a Higher Profit Margin

Implied volatility premium

Equity index option market participants must be adequately compensated for equity risk. Small cap index option exposures can offer compensation for:

Higher Volatility

Less Liquidity

Greater Economic Sensitivity

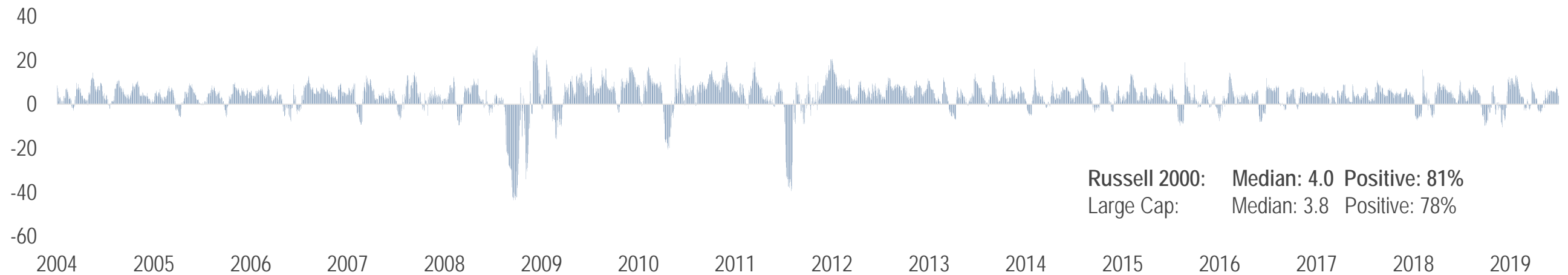
More Earnings Volatility

Increased Speculation

Higher Growth Rates

Sector Concentrations

Russell 2000 30-Day Implied Volatility Premium (January 2004 – July 2019)



Source: CBOE and Bloomberg

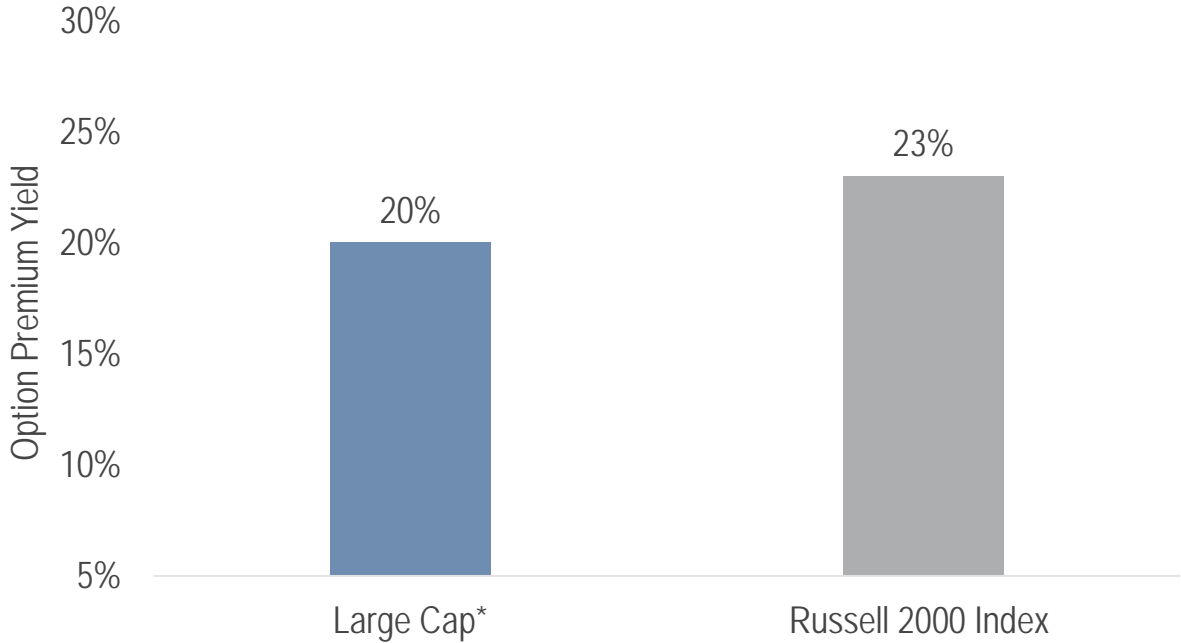
Implied volatility premium is derived from the CBOE Russell 2000 Volatility Index ("RVX") Index and the Russell 2000 Index. Indexes are unmanaged and are not available for direct investment. Investing entails risks, including possible loss of principal. **Past performance is no guarantee of future results.**

An Opportunity in Small Cap

Small cap equity put option premium yields and implied volatility premiums: January 2005 – July 2019

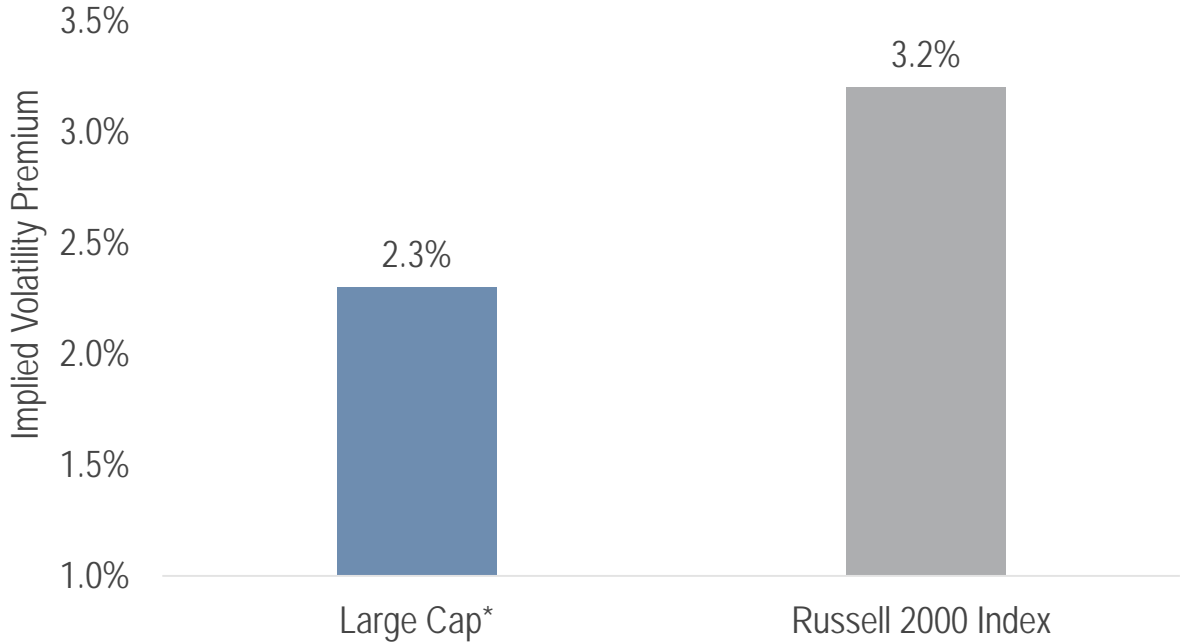
Revenue

Median Annual Option Premium Yield¹ (30D, ATM Put Option)



Profit

Median Implied Volatility Premium (30D, ATM Put Option)



¹ Put option premiums are estimated based on option implied volatility data sourced from Bloomberg and standard option price calculations. Premium yields are calculated as the option premium divided by the option strike price.

* Large Cap is represented by the S&P 500 Index.

Sources: CBOE, Bloomberg LP. This material is intended as a broad overview of the Portfolio Managers' style, philosophy and process and is subject to change without notice. The use of tools cannot guarantee performance. Unless otherwise indicated, returns shown reflect reinvestment of dividends and distributions. Indexes are unmanaged and are not available for direct investment. Investing entails risks, including possible loss of principal. Past performance is no guarantee of future results.

Russell 2000 Index Option Marketplace

Open Interest*	\$83 Billion
Average Daily Trading Volume (YTD)*	\$5 Billion
Contract Size	~\$150,000
Put/Call Ratio*	2.2

*Data as of August 31, 2019. This material is intended as a broad overview of the Portfolio Managers' style, philosophy and process and is subject to change without notice. The use of tools cannot guarantee performance. Unless otherwise indicated, returns shown reflect reinvestment of dividends and distributions. Indexes are unmanaged and are not available for direct investment. Investing entails risks, including possible loss of principal. Past performance is no guarantee of future results.

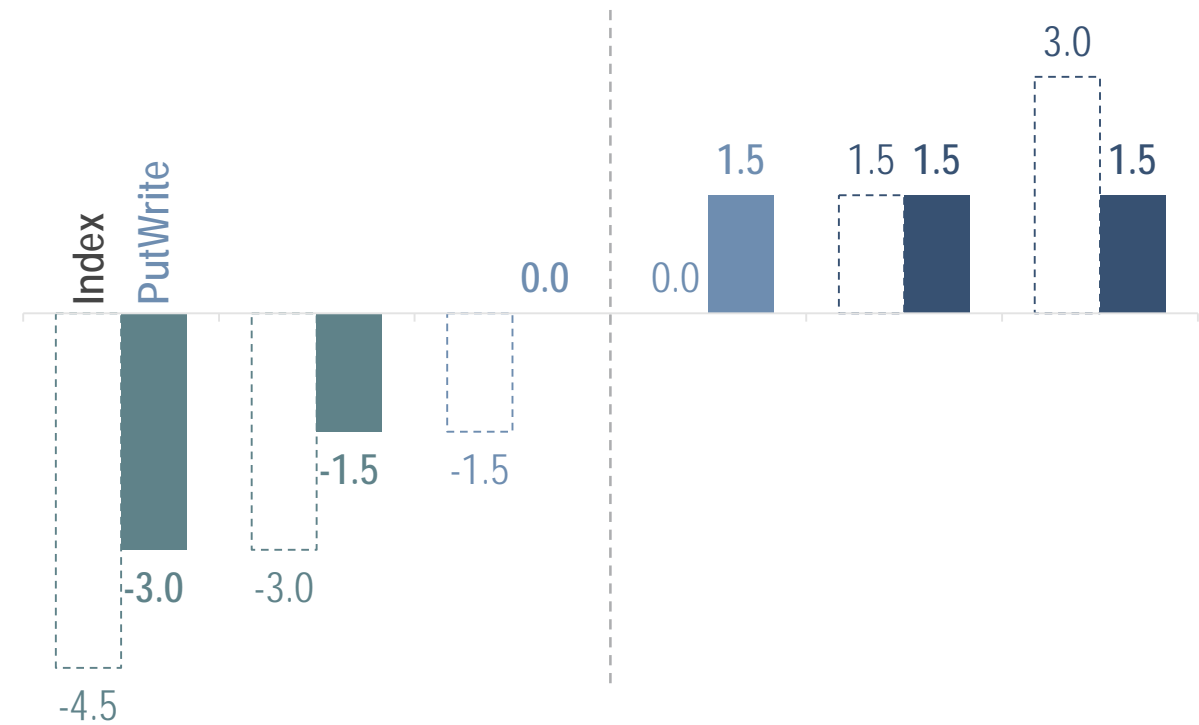
PutWrite Strategy Payoff

Defensive Equity Exposure

Selling Fully Collateralized Index Put Options

Down Markets	Put option seller risks a decline in value similar to the underlying index, but those declines may be partially offset by the premium collected
Flat Markets	Put option seller keeps premium
Up Markets	Put option seller keeps premium, but does not participate in full gain of underlying index above premium collected

PutWrite Option Pay-Off Diagram (Illustration)



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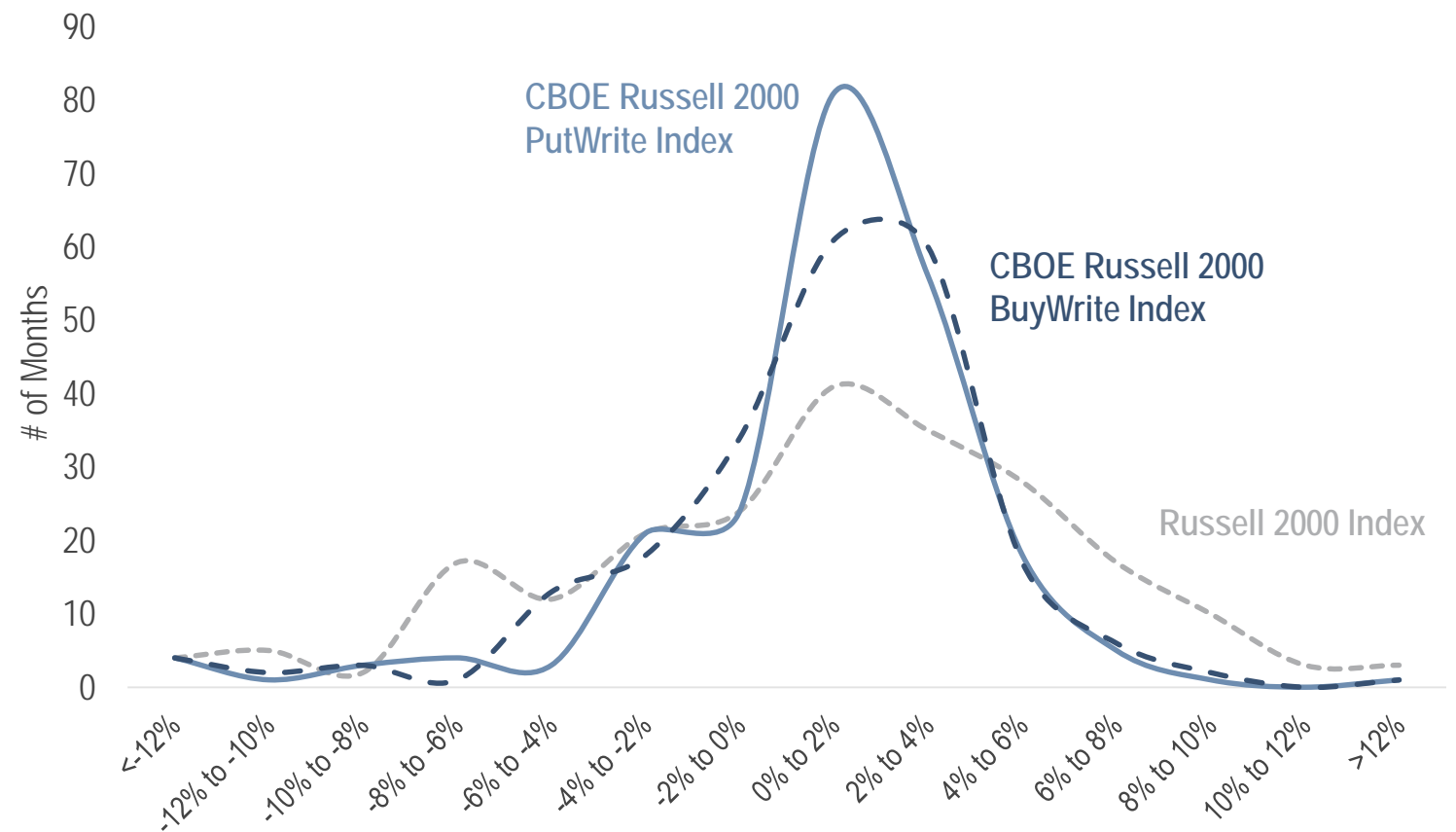
PutWrite Strategy Return Distribution

Defensive Equity Exposure

Reshaping a Return Distribution

Put writing makes an explicit trade-off between up-market participation and down-market participation, while still seeking reasonable returns in flat markets

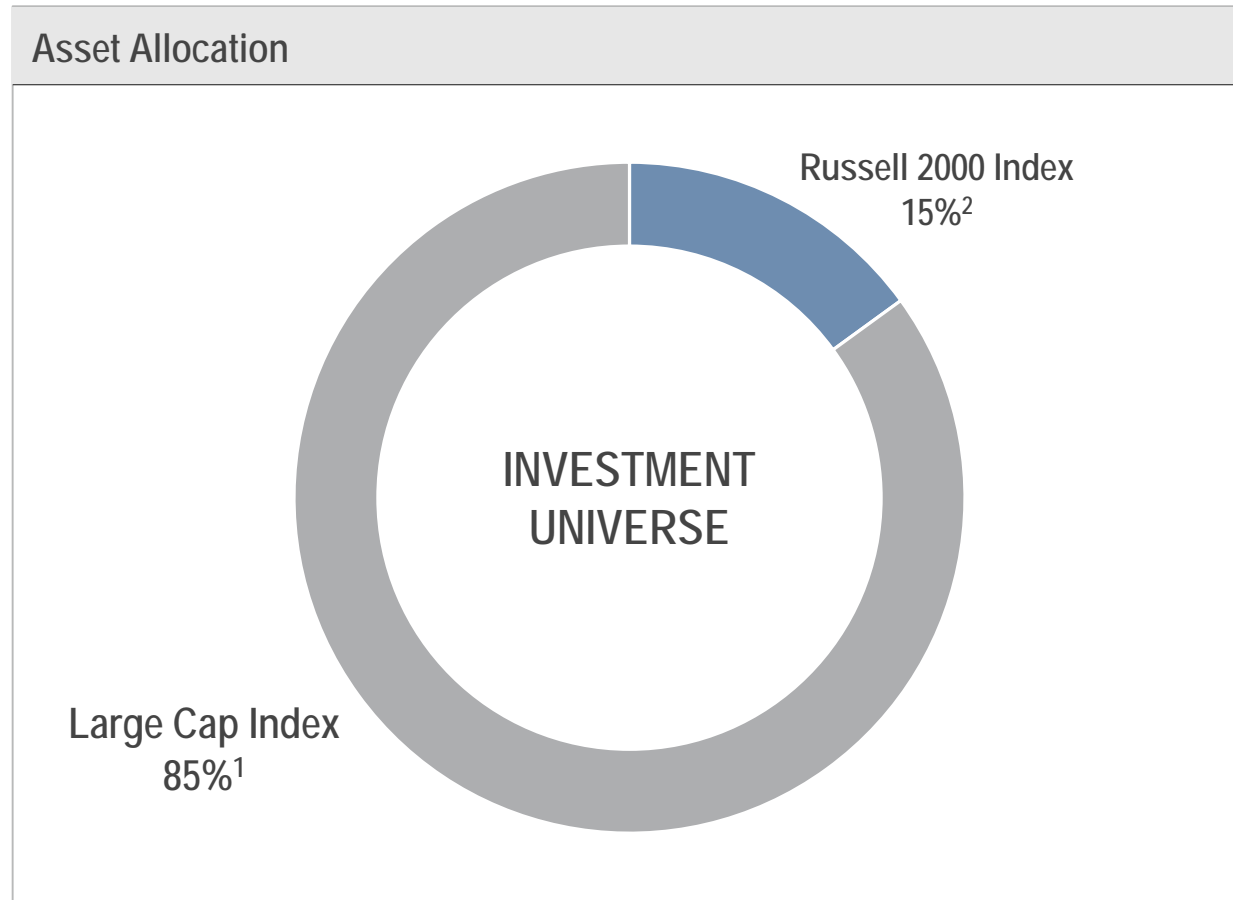
Monthly Return Distributions (Jan 2001 – July 2019)¹



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Neuberger Berman U.S. Equity Index PutWrite Fund

Russell 2000 Index Exposure provides higher premiums and enhanced monetization opportunity



UCITS

- ISIN: IE00BDDWG831
- AUM: \$515 million

¹ The allocation is achieved by writing put options on the S&P 500 Index
² The allocation is achieved by writing put options on the Russell 2000 Index
Source: Bloomberg LP and Neuberger Berman as at 31 July 2019.

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Risk Considerations

Market Risk: The risk of a change in the value of a position as a result of underlying market factors, including among other things, the overall performance of companies and the market perception of the global economy.

Liquidity Risk: The risk that the portfolio may be unable to sell an investment readily at its fair market value.

Derivatives Risk: The strategy may use certain types of financial derivative instruments (including certain complex instruments). This may increase the portfolio's leverage significantly which may cause large variations in the value of investments. Investors should note that the strategy may achieve its investment objective by investing principally in Financial Derivative Instruments (FDI). There are certain investment risks that apply in relation to the use of FDI.

Interest Rate Risk: The risk of interest rate movements affecting the value of fixed-rate bonds.

Emerging Markets Risk: Emerging markets are likely to bear higher risk due to a possible lack of adequate financial, legal, social, political and economic structures, protection and stability as well as uncertain tax positions which may lead to lower liquidity. The value of a portfolio may experience medium to high volatility due to lower liquidity and the availability of reliable information, as well as due to the strategy's investment policies or portfolio management techniques.

Counterparty Risk: The risk that a counterparty will not fulfil its payment obligation for a trade, contract or other transaction, on the due date.

Operational Risk: The risk of direct or indirect loss resulting from inadequate or failed processes, people and systems including those relating to the safekeeping of assets or from external events. **Currency Risk:** Investments in a currency other than the base currency of the portfolio are exposed to currency risk. Fluctuations in exchange rates may affect the return on investment. If the currency of the portfolio is different from your local currency, then you should be aware that due to exchange rate fluctuations the performance may increase or decrease if converted into your local currency.

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