# ERB Strategies in Crisis Environments

Quantifying the importance of managing drawdown risk





Volatility can erupt at any time. Investors need a process to mitigate the risk of large loss in turbulent environments, starting with the diversification of not only asset types but also investment styles. Overreliance on a single style can constrain the investor's response to a market crisis.

Redwood's Engineered Risk-Budgeted (ERB) strategies incorporate both traditional buy-and-hold beta and tactical risk management. The ERB strategies seek to reduce "single investment style" risk, positioning investors for consistent, long-term investment success in markets good and bad.





# 2016 Rate Spike

In mid-2016, the Fed was signaling the intent to continue to raise rates. Within a six-month period, the U.S. 10-Year Treasury Yield rose from 1.35% to 2.60% – a **91.23% increase**. This spurred a selloff in treasuries and investment-grade bonds. During this same period, the standard investment-grade benchmark, the Bloomberg U.S. Aggregate Bond Index (AGG), was down 4.28%.



Sources: Redwood, Bloomberg. For illustration purposes only. For investment professionals only.

### Redwood ERB DT 5-8 Strategy Composite Drawdown: -1.85%



Sources: Redwood, Bloomberg. For illustration purposes only. For investment professionals only. Drawdown for Redwood's ERB performance in this illustration is from 9/7/2016 - 11/4/2016. This may be different in length from the drawdown period for the index. Redwood ERB performance shown is based on net of fee calculated daily. Net of these are reflective of the maximum fee charged during the period, shown net of an annualized fee of 1.55%. Individual results may vary and can be materially different from those presented herein. Past performance is not a guarantee of future results. Please see disclosures at the end for additional important information. Live composite performance where applicable available upon request. 60/40 is 60% S&P 500 total return index and 40% Bloomberg U.S. Aggregate Bond Index.



# 2018 Volmageddon

In February 2018, souring market sentiment and negative feedback loops in leveraged investment products tracking volatility indices drove a large spike in volatility that in two days sent the VIX (Cboe Volatility Index) from 13.47 to 37.32 – a **177% increase**. More than \$4 trillion left the stock market that week; several major volatility funds collapsed and investors in inverse volatility ETPs faced losses of more than 90%.



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## Redwood ERB DT 12-17 Strategy Composite Drawdown: -4.24%



Sources: Redwood, Bloomberg. For illustration purposes only. For investment professionals only. Drawdown for Redwood's ERB performance in this illustration is from 1/26/2018 - 2/8/2018. This may be different in length from the drawdown period for the index. Redwood ERB performance shown is based on net of fee calculated daily. Net of these are reflective of the maximum fee charged during the period, shown net of an annualized fee of 1.55%. Individual results may vary and can be materially different from those presented herein. Past performance is not a guarantee of future results. Please see disclosures at the end for additional important information. Live composite performance where applicable available upon request. 60/40 is 60% S&P 500 total return index and 40% Bloomberg U.S. Aggregate Bond Index.



# **2018 Market Correction**

In late 2018, markets faced a perfect storm from uncertainty around Federal Reserve policy, dampened global trade, and soft earnings. Across a four-month period, the S&P 500 **declined 19.37%** – a market correction that nearly spiraled into a bear market.



Sources: Redwood, Bloomberg. For illustration purposes only. For investment professionals only.

## Redwood ERB DT 12-17 Strategy Composite Drawdown: -5.76%



Sources: Redwood, Bloomberg. For illustration purposes only. For investment professionals only. Drawdown for Redwood's ERB performance in this illustration is from 9/21/2018 - 12/27/2018. This may be different in length from the drawdown period for the index. Redwood ERB performance shown is based on net of fee calculated daily. Net of these are reflective of the maximum fee charged during the period, shown net of an annualized fee of 1.55%. Individual results may vary and can be materially different from those presented herein. Past performance is not a guarantee of future results. Please see disclosures at the end for additional important information. Live composite performance where applicable available upon request. 60/40 is 60% S&P 500 total return index and 40% Bloomberg U.S. Aggregate Bond Index.

# 2020 Pandemic Panic

In March 2020, the spread of COVID-19 caused global shutdowns that sent investors fleeing at a record pace, contributing to a **13-standard-deviation move** in markets. Both equity and bond markets were in sharp freefall, with low liquidity sinking risk assets at the fastest rate since 1987's "Black Monday" (down almost 20% in one day). ETFs tracking the Bloomberg U.S. Aggregate Bond Index took a steep turn; including intraday, AGG fell 11.49% with a 4% single-day loss. SPAB fell 16.44%, while the S&P 500 Index fell 35.17%.



## Redwood ERB DT 12-17 Strategy Composite Drawdown: -14.55%



Sources: Redwood, Bloomberg. For illustration purposes only. For investment professionals only. Drawdown for Redwood's ERB performance in this illustration is from 2/12/2020 - 3/18/2020. This may be different in length from the drawdown period for the index. Redwood ERB performance shown is based on net of fee calculated daily. Net of these are reflective of the maximum fee charged during the period, shown net of an annualized fee of 1.55%. Individual results may vary and can be materially different from those presented herein. Past performance is not a guarantee of future results. Please see disclosures at the end for additional important information. Live composite performance where applicable available upon request. 60/40 is 60% S&P 500 total return index and 40% Bloomberg U.S. Aggregate Bond Index.



Redwood's Engineered Risk-Budgeted strategies seek to minimize portfolio drawdowns to specific targets. Our focus on mitigating drawdown risk in adverse markets helps advisors and managers set clear, achievable expectations that position clients for long-term investment success.

**Ready to manage portfolio drawdown risk?** Contact a Redwood Advisor Analyst today.

#### Engineered Risk-Budgeted Annual Disclosure Presentation

ERB-D1-5-8*								
	Year End	Total Firm Assets (USD)	Composite Assets (USD)	Number of Accounts	Annual Performance Composite (Gross)	Annual Performance Composite (Net)	Composite Dispersion <sup>3</sup>	Composite 3 Yr. St Dev <sup>4</sup>
	2021	1,590,000,000	2,000,000	14	5.61%	3.99%	0.26%	5.65%
	2020	1,137,000,000	5,000,000	31	1.13%	-0.42%	0.15%	5.72%
	2019	1,162,000,000	3,000,000	15	10.96%	9.27%	0.07%	2.95%
	2018	929,000,000	32,000,000	148	-1.71%	-3.24%	0.08%	N.A.
	2017	943,000,000	45,000,000	200	8.74%	6.58%	0.23%	N.A.
	2016 <sup>2</sup>	558,000,000	36,000,000	166	6.75%	4.98%	N.A.	N.A.

#### ERB-DT-8-12<sup>1</sup>

Year End	Total Firm Assets (USD)	Composite Assets (USD)	Number of Accounts	Annual Performance Composite (Gross)	Annual Performance Composite (Net)	Composite Dispersion <sup>3</sup>	Composite 3 Yr. St Dev <sup>4</sup>
2021	1,590,000,000	9,000,000	39	7.43%	5.78%	0.30%	6.66%
2020	1,137,000,000	10,000,000	44	2.65%	1.06%	0.28%	6.76%
2019	1,162,000,000	10,000,000	42	11.46%	9.73%	0.14%	3.65%
2018	929,000,000	7,000,000	39	-2.44%	-3.93%	0.13%	N.A.
2017	943,000,000	7,000,000	39	9.79%	7.63%	0.16%	N.A.
2016 <sup>2</sup>	558,000,000	5,000,000	28	3.58%	2.37%	N.A.	N.A.

#### ERB-DT-12-17<sup>1</sup>

Year End	Total Firm Assets (USD)	Composite Assets (USD)	Number of Accounts	Annual Performance Composite (Gross)	Annual Performance Composite (Net)	Composite Dispersion <sup>3</sup>	Composite 3 Yr. St Dev <sup>4</sup>
2021	1,590,000,000	33,000,000	103	9.90%	8.22%	0.25%	8.13%
2020	1,137,000,000	26,000,000	81	3.79%	2.20%	0.26%	8.13%
2019	1,162,000,000	21,000,000	66	12.13%	10.41%	0.11%	4.69%
2018	929,000,000	12,000,000	59	-2.87%	-4.37%	0.07%	N.A.
2017	943,000,000	2,000,000	15	10.41%	8.23%	0.13%	N.A.
2016 <sup>2</sup>	558,000,000	1,000,000	7	3.54%	2.50%	N.A.	N.A.

#### ERB-DT-17-25<sup>1, 5</sup>

Year End	Total Firm Assets (USD)	Composite Assets (USD)	Number of Accounts	Annual Performance Composite (Gross)	Annual Performance Composite (Net)	Composite Dispersion <sup>3</sup>	Composite 3 Yr. St Dev <sup>4</sup>
2021	1,590,000,000	45,000,000	233	12.93%	11.20%	0.47%	10.91%
2020	1,137,000,000	41,000,000	245	5.27%	3.66%	0.40%	11.08%
2019	1,162,000,000	44,000,000	251	13.51%	11.75%	0.09%	6.58%
2018	929,000,000	3,000,000	18	-3.92%	-5.39%	0.06%	N.A.
2017	943,000,000	600,000	2	12.79%	10.57%	N.A.	N.A.
2016 <sup>2</sup>	558,000,000	50,000	1	3.59%	3.25%	N.A.	N.A.

ERB-DT-25-35<sup>1, 6</sup>

Year End	Total Firm Assets (USD)	Composite Assets (USD)	Number of Accounts	Annual Performance Composite (Gross)	Annual Performance Composite (Net)	Composite Dispersion <sup>3</sup>	Composite 3 Yr. St Dev <sup>4</sup>
2021	1,590,000,000	35,000,000	198	15.18%	13.41%	0.35%	12.88%
2020	1,137,000,000	10,000,000	53	6.60%	4.95%	0.27%	13.08%
2019	1,162,000,000	3,000,000	12	14.35%	12.59%	0.10%	7.89%
2018	929,000,000	330,000	3	-4.72%	-6.20%	N.A.	N.A.
2017	943,000,000	60,000	1	14.34%	12.08%	N.A.	N.A.
2016 <sup>2</sup>	558,000,000	50,000	1	4.64%	4.29%	N.A.	N.A.

Sources: Redwood, Black Diamond, Zephyr.

Net Composite Returns (Nov. 2016-June 2022)	1-Year	5-Year	10-Year	Since Inception
Redwood 100 Comp (1.55%)	-12.39%	-0.36%	-	1.32%
Redwood 200 Comp (1.55%)	-12.70%	0.24%	-	1.41%
Redwood 300 Comp (1.55%)	-13.67%	0.64%	-	1.78%
Redwood 400 Comp (1.55%)	-13.93%	1.70%	-	2.93%
Redwood 500 Comp (1.55%)	-14.40%	2.30%	-	3.73%

1. Please see below for composite descriptions. Assets rounded to the nearest one hundred thousand. If under \$100,000 it is rounded to the nearest ten thousand.

 Start dates for each composite differ. ERB-DT-5-8 first full composite month was March of 2016; ERB-DT-8-12 first full composite month was June of 2016; ERB-DT-12-17 first full composite month was July of 2016. ERB-DT-17-25 and ERB-DT-25-35 first full composite month was November of 2016. Initial period was for less than a full year and the returns are not annualized.

3. The annual composite dispersion presented is an asset-weighted standard, using gross of fees, returns, calculated for the accounts in the composite the entire year. N.A. in which the composite does not have an entire annual year of performance or is not statistically meaningful due to an insufficient number of portfolios in the composite for the entire year.

4. The three-year annualized standard deviation measures the variability of the composite gross returns over the preceding 36-month period. The standard deviation is not presented due to less than 36 months of composite.

5. The source of funds invested in this strategy in 2016 is a non-fee paying Redwood proprietary account. The Redwood proprietary account is included in the 2017 and 2018 composite, is approximately 10% and 1.8%, respectively, of the composite assets as of year end and is solely from Redwood; no client funds are invested in this account and proprietary account trading is not representative of any actual trading in client funds.

6. The source of funds invested in this strategy is a non-fee paying Redwood proprietary account and represents 100% of the composite assets as of each year end. The Redwood proprietary account is solely from Redwood; no client funds are invested in this account and proprietary account trading is not representative of any actual trading in client funds.

#### **General Disclosure**

The strategy selected and used as a comparison against the historical event was selected at the discretion of Redwood. Redwood believes that the selected strategy most relevantly reflects the time period in review. No statement is being made as to any other strategies performance having similar results for a particular time period.

#### Strategy and Composite Descriptions

The composites were created January 1, 2018. Results are based on fully discretionary accounts under management, including those accounts no longer with the firm. The minimum account size for composite inclusion for all strategies is \$50,000. For accounts under \$50,000 exact securities and strategies included in a client's portfolio described within will differ due to insufficient liquidity and trading; given the inability to purchase securities or implementation of sub-strategies, holdings and returns will differ. The investment management agreement will govern Redwood's management of any client account. Performance returns within this material are presented in U.S. dollars and include the reinvestment of dividends and other account earnings. Net composite performance shown for each composite shown is reflective of the maximum fee that could be charged of 2% annual management fee until December 31, 2017, 1.55% annual management fee since January 1, 2018 (deducted monthly for performance reporting purposes) and net of any separate fees assessed directly by any unaffiliated mutual fund and/or exchange-traded funds ("ETF") holding within a client portfolio. The performance is not net of any custodial fees, if applicable, and does not reflect the impact of taxes. Redwood utilizes its proprietary mutual funds for some of the listed strategy allocations. Information, fees, and risks, pertaining to any mutual fund/ETF are set forth in each respective mutual fund/ ETF prospectus, copies of which are available from Redwood or directly from the mutual fund/ETF company. The data and calculations contained within this material are not guaranteed as to their accuracy or completeness and no warranties are made with respect to results obtained in any calculations. Different types of investments involve different degrees of risk and there can be no assurance that any specific investment will be profitable and no guarantee that any of the described objectives can be achieved or be similar to those shown herein. The price of any investment may rise or fall due to changes in the broad markets or changes in a company's financial condition and may do so unpredictably. Information provided herein from third parties is obtained from sources believed to be reliable, but no reservation or warranty is made as to its accuracy or completeness. Individual returns may vary substantially due to differences in the timing of contributions and withdrawals, account start dates, actual fees paid, and specific investment instruments utilized. Holdings and allocations are subject to change and may differ among individual accounts. Information is provided for illustrative purposes only and is intended to illustrate our investment process.

Individual results may vary and can be materially different from those presented herein. There can be no guarantee that any objectives can be met, including target risk objectives and target asset allocations listed within this piece. This material does not constitute an offer to sell, or a solicitation of any offer to buy or sell any securities. Redwood's investment recommendations are subject to various markets, currency, economic, political and business risks, and such investment decisions may not always be profitable. Clients should be aware that there may be a loss or depreciation to the value of the client's account, which the client should be prepared to bear. Redwood does not represent, guarantee or imply that the services or methods of analysis employed can or will predict future results, successfully identify market tops or bottoms, or insulate clients from losses due to market corrections or declines. Information provided by Redwood is our opinion and should not be construed as facts. There can be no guarantee that any target or objective mentioned will be achieved. In addition, there is no assurance that a mutual fund, an ETF, or any security will achieve its investment objective. Diversification does not ensure a profit and may not indicative of future results. A list of composite descriptions, policies for valuing investments, calculating performance, and preparing GIPS Reports are available upon request. Redwood Investment Management, LLC ("Redwood") is a registered adviser with the United States Securities and Exchange Commission in accordance with the Investment Advisers Act of 1940. Such registration does not imply a certain level of skill or training and no inference to the contrary should be made. Because the Redwood Strategies' objectives are driven by each strategy's risk tolerance objective, no benchmark is presented as we believe no benchmark that reflects this strategy exists.

The ERB-DT-5-8 strategy seeks to generate total return with capital preservation. The strategy seeks to hold primarily fixed-income securities with the ability to invest up to a target of 20-30% in equity securities. The ERB-DT-8-12 strategy seeks to generate total return with capital preservation. The strategy seeks to hold primarily fixed-income securities with the ability to invest up to a target of 30-40% in equity securities. The ERB-DT-12-17 strategy seeks to generate income and capital appreciation. The strategy seeks to hold fixed-income securities with the ability to invest up to a target of 40-65% in equity securities. The ERB-DT-17-25 strategy seeks to generate income and capital appreciation. The strategy seeks to generate income and capital appreciation. The strategy seeks to generate income and capital appreciation. The strategy seeks to generate income and capital appreciation. The strategy seeks to generate income and capital appreciation. The strategy seeks to generate income and capital appreciation. The strategy seeks to generate income and capital appreciation. The strategy seeks to hold a mix of fixed-income and equity securities with the ability to invest up to a target of 70-80% in equity securities. The ERB-DT-25-35 strategy seeks capital appreciation. Fixed-income securities are utilized for defensive and diversification purposes. The strategy has the ability to invest up to a target 100% in equity securities.

Redwood claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Redwood has been independently verified for the periods January 1, 2013 to December 31, 2021. A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. The ERB-DT-5-8 composite has been examined for the periods March 1, 2016 to December 31, 2021. The ERB-DT-8-12 composite has been examined for the periods June 1, 2016 to December 31, 2021. The ERB-DT-12-17 composite has been examined for the periods July 1, 2016 to December 31, 2021. The ERB-DT-725and ERB-DT-25-35 composites have been examined for the periods November 1, 2016 to December 31, 2021. The verification and performance examination reports are available upon request. Prior to November 19, 2020, the Engineered Risk-Budgeted (ERB) DT-5-8, DT- 8-12, DT-12-17, DT-17-25, and DT-25-35 composites were and still are also known as The Dynamic Risk-Budgeted (DRB) 100, 200, 300, 400, and 500 composites, respectively. GIPS® is a registered trademark of CFA Institute. CFA Institute does not endorse or promote this organization, nor does it warrant the accuracy or quality of the content contained herein.



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