



DUAL MOMENTUM SYSTEMS

**Process driven investment decisions
driving better long term results with more
shallow drawdowns and better risk
adjusted performance.**

Disclosure

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What is Dual Momentum Investing?



- Dual Momentum strategies are evidence based, rules based, objective, tactical investment methodologies with the goal of maximizing participation in upside market momentum and sidestepping long market downturns by going into Treasuries until the markets are again in an upward trending.



- Dual Momentum investing has two primary components. The first is absolute momentum: is there positive return over your look back period? The second momentum is relative momentum: which investment option has the highest return over the look back period. If there is positive momentum then we invest in the highest relative momentum option, otherwise we stay out of harm's way in Treasuries which tend to perform well when the markets are underperforming.



- Smart Leverage is now a part of these strategies in order to take advantage after outsized losses in the markets. These strategies are in leveraged equities about 10% to 15% of the time on average which is about 4 months every 3 years.



- Why use Dual Momentum Strategies? Most professional managers fail to beat the market indices over time and retail investors do even worse. Buy and Hold investors can match the indices performance but have to suffer tremendous drawdowns along the way. For these reasons I use these Dual Momentum strategies for my investing. You will rarely get out of equities at the very top, and back in at the very bottom, but there are incredible improvements, as the pages that follow will illustrate.



- Is Dual Momentum easy to invest in? Investing in Dual Momentum strategies can take some getting used to, you will experience whipsaw in choppy markets, there may be a change of investment at the end of any given month, the strategy may dictate you be fully invested at a time when you may otherwise not be, it can be hard to reconcile when your investments are performing different than the overall market, there will be periods of a year or longer when you underperform the overall market. However, you are paid off with less drawdowns and far better overall returns over the long run.

Investment Strategies

Investments for the month of August 31, 2022

Strategy Components Invested:

←Conservative

Aggressive →

Month	GPMv	Triad	Triad+	Triad++	The Russell	Global Navigator+	LT Gain+	LT Gain++
Aug 2021	28% QQQ 28% PDBC 28% IYR 17% VGIT	1/6 PDBC 2/6 IWB 2/6 IWS 1/6 VGIT	1/6 PDBC 2/6 IWB 2/6 IWS 1/6 VGIT	1/6 PDBC 2/6 IWB 2/6 IWS 1/6 VGIT	IWB	IWB	IWB	IWB
Sep 2021	33% QQQ 33% PDBC 33% IYR	1/6 PDBC 2/6 IWB 2/6 IWS 1/6 VGIT	1/6 PDBC 2/6 IWB 2/6 IWS 1/6 VGIT	1/6 PDBC 2/6 IWB 2/6 IWS 1/6 VGIT	IWB	IWB	IWB	IWB
Oct 2021	22% PDBC 22% QQQ 22% IYR 33% BIL	1/6 PDBC 2/6 IWB 3/6 VCSH	1/6 PDBC 2/6 IWB 3/6 VCSH	1/6 PDBC 2/6 IWB 3/6 VCSH	IWP	IWB	IWB	IWB
Nov 2021	28% PDBC 28% QQQ 28% IYR 17% BIL	1/6 PDBC 2/6 IWB 2/6 IWS 1/6 VGSH	1/6 PDBC 2/6 IWB 2/6 IWS 1/6 VGSH	1/6 PDBC 2/6 IWB 2/6 IWS 1/6 VGSH	IWP	IWB	IWB	IWB
Dec 2021	22% PDBC 22% QQQ 22% TLT 33% BIL	2/6 IWB 4/6 VGSH	2/6 IWB 4/6 VGSH	2/6 IWB 4/6 VGSH	IWB	IWB	IWB	IWB
Jan 2022	22% PDBC 22% QQQ 22% IYR 33% BIL	1/6 PDBC 2/6 IWB 2/6 IWS 1/6 VGSH	1/6 PDBC 2/6 IWB 2/6 IWS 1/6 VGSH	1/6 PDBC 2/6 IWB 2/6 IWS 1/6 VGSH	IWB	IWB	IWB	IWB
Feb 2022	6% PDBC 6% IYR 6% IWB 83% BIL	1/6 PDBC 2/6 IWS 3/6 VGSH	1/6 PDBC 2/6 IWS 3/6 VGSH	1/6 PDBC 2/6 IWS 3/6 VGSH	VGSH	VGSH	VGSH	VGSH
Mar 2022	100% BIL	1/6 PDBC 5/6 VGSH	1/6 PDBC 5/6 VGSH	1/6 PDBC 5/6 VGSH	VGSH	VGSH	VGSH	VGSH
Apr 2022	11% PDBC 11% SGOL 11% QQQ 67% BIL	1/6 PDBC 2/6 IWS 3/6 VGSH	1/6 PDBC 2/6 IWS 3/6 VGSH	1/6 PDBC 2/6 IWS 3/6 VGSH	IWS	IWB	IWB	IWB
May 2022	100% BIL	1/6 PDBC 5/6 VGSH	1/6 PDBC 5/6 VGSH	1/6 PDBC 5/6 VGSH	VGSH	VGSH	VGSH	VGSH
Jun 2022	100% BIL	1/6 PDBC 5/6 VGSH	1/6 PDBC 5/6 VGSH	1/6 PDBC 5/6 VGSH	VGSH	VGSH	VGSH	VGSH
Jul 2022	100% BIL	1/6 PDBC 5/6 VGSH	1/6 PDBC 5/6 VGSH	1/6 PDBC 5/6 VGSH	VGSH	VGSH	VGSH	VGSH
Aug 2022	100% BIL	1/6 PDBC 5/6 VCSH	1/6 PDBC 5/6 VCSH	1/6 PDBC 5/6 VCSH	VGSH	VGSH	VGSH	VGSH

For August, here are the investments by strategy:

GPMv

Scales into and out of it's Risk On universe of ETF's and Safety ETF's. See Fact Sheet for more information.

For the month of August 2022 invest In: 100% BIL

Triad

May invest 2/6 Russell 1000, 2/6 into best of Russell MidCap Value or Foreign, 1/6th into Gold or Commodities. Otherwise into the best of: Short Term Investment Grade Bonds, Short Term Treasuries, or Intermediate Term Treasuries.

For the month of August 2022 invest In: 1/6 PDBC 5/6 VCSH

Triad+

May invest 2/6 Russell 1000, 2/6 into best of Russell MidCap Value or Foreign, 1/6th into Gold or Commodities. Otherwise into best of: Short Term Invst Grade Bonds, Short Term Treas., or Intm Term Treas. Plus 2X Smart Leverage on IWB portion.

For the month of August 2022 invest In: 1/6 PDBC 5/6 VCSH

Triad++

May invest 2/6 Russell 1000, 2/6 into best of Russell MidCap Value or Foreign, 1/6th into Gold or Commodities. Otherwise into best of: Short Term Invst Grade Bonds, Short Term Treas., or Intm Term Treas. Plus 3X Smart Leverage on IWB portion.

For the month of August 2022 invest In: 1/6 PDBC 5/6 VCSH

The Russell

Goes into either Russell: 1000, MidCap Growth, or Russell MidCap Value, Long Term Treasuries when markets are going down, Treasury Duration Limiter may limit treasuries to Short Term.

For the month of August 2022 invest In: [VGSH] Short Term Treasuries

Global Navigator+

Invests in US or Foreign, with limited Smart Leverage in USA only, Long Term Treasuries when markets are going down, Treasury Duration Limiter may limit treasuries to Short Term.

For the month of August 2022 invest in: [VGSH] Short Term Treasuries

LT Gain+

Invests into the Russell: 1000 with positive momentum, with Smart Leverage into 2X S&P 500, Long Term Treasuries when markets are going down

For the month of August 2022 invest In: [VGSH] Short Term Treasuries

LT Gain++

Invests into the Russell: 1000 with positive momentum, with Smart Leverage into 3X S&P 500, Extended Duration Treasuries when markets are going down, Treasury Duration Limiter may limit treasuries to Short Term.

For the month of August 2022 invest In: [VGSH] Short Term Treasuries

Investment Strategies

Rolling 12 Month Returns Through July 30, 2022

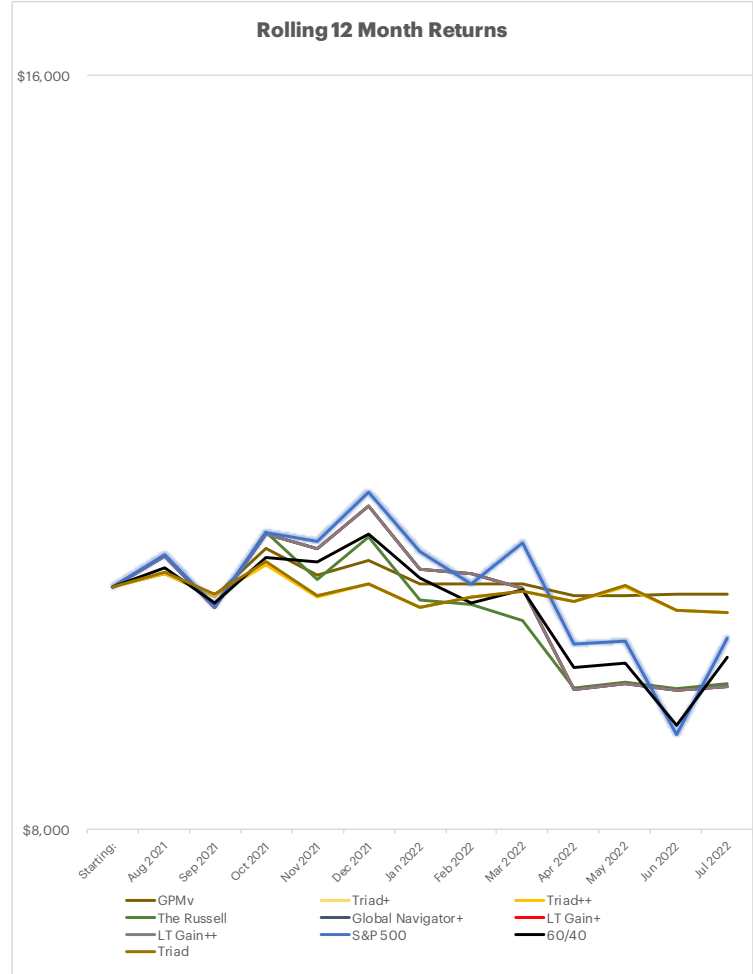
Returns and Maximum Drawdown:

Month	← Conservative			Aggressive →							
	US Market S&P 500	Balanced 60/40	Nasdaq 100 QQQ	GPMv	Triad	Triad+	Triad++	The Russell	Global Navigator+	LT Gain+	LT Gain++
Aug 2021	2.98%	1.71%	4.22%	1.20%	1.35%	1.30%	1.25%	2.86%	2.86%	2.86%	2.86%
Sep 2021	-4.66%	-3.20%	-5.68%	-2.07%	-2.05%	-2.06%	-2.07%	-4.60%	-4.60%	-4.60%	-4.60%
Oct 2021	7.02%	4.24%	7.86%	4.50%	3.07%	2.97%	2.87%	7.14%	6.90%	6.90%	6.90%
Nov 2021	-0.80%	-0.40%	2.00%	-2.45%	-3.15%	-3.00%	-2.85%	-4.30%	-1.27%	-1.27%	-1.27%
Dec 2021	4.63%	2.65%	1.15%	1.32%	1.20%	1.20%	1.20%	3.97%	3.97%	3.97%	3.97%
Jan 2022	-5.27%	-3.99%	-8.75%	-2.04%	-2.16%	-2.16%	-2.16%	-5.63%	-5.63%	-5.63%	-5.63%
Feb 2022	-2.95%	-2.23%	-4.48%	-0.05%	0.89%	0.89%	0.89%	-0.40%	-0.40%	-0.40%	-0.40%
Mar 2022	3.76%	1.16%	4.67%	0.05%	0.61%	0.61%	0.61%	-1.42%	-1.42%	-1.42%	-1.42%
Apr 2022	-8.78%	-6.85%	-13.60%	-1.12%	-1.03%	-1.03%	-1.03%	-6.04%	-8.86%	-8.86%	-8.86%
May 2022	0.23%	0.47%	-1.59%	0.03%	1.47%	1.47%	1.47%	0.56%	0.56%	0.56%	0.56%
Jun 2022	-8.25%	-5.61%	-8.91%	0.08%	-2.20%	-2.20%	-2.20%	-0.59%	-0.59%	-0.59%	-0.59%
Jul 2022	9.21%	6.48%	12.55%	0.04%	-0.21%	-0.21%	-0.21%	0.39%	0.39%	0.39%	0.39%
12 Mo Rtrn:	-4.69%	-6.28%	-13.00%	-0.70%	-2.37%	-2.38%	-2.38%	-8.60%	-8.74%	-8.74%	-8.74%
Max DD:	-19.98%	-16.12%	-29.33%	-4.26%	-4.59%	-4.44%	-4.30%	-13.41%	-15.58%	-15.58%	-15.58%

b/(w) S&P 500: 0.0% -1.6% -8.3% 4.0% 2.3% 2.3% 2.3% -3.9% -4.1% -4.1% -4.1%

\$10,000 turns into:

Month	← Conservative			Aggressive →							
	US Market S&P 500	Balanced 60/40	Nasdaq 100 QQQ	GPMv	Triad	Triad+	Triad++	The Russell	Global Navigator+	LT Gain+	LT Gain++
Starting:	\$ 10,000	\$ 10,000	\$ 10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000
Aug 2021	\$ 10,298	\$ 10,171	\$ 10,422	\$ 10,120	\$ 10,135	\$ 10,130	\$ 10,125	\$ 10,286	\$ 10,286	\$ 10,286	\$ 10,286
Sep 2021	\$ 9,818	\$ 9,846	\$ 9,830	\$ 9,910	\$ 9,928	\$ 9,922	\$ 9,915	\$ 9,813	\$ 9,813	\$ 9,813	\$ 9,813
Oct 2021	\$ 10,507	\$ 10,263	\$ 10,603	\$10,356	\$ 10,232	\$ 10,217	\$10,200	\$ 10,513	\$ 10,490	\$ 10,490	\$ 10,490
Nov 2021	\$ 10,423	\$ 10,222	\$ 10,815	\$ 10,103	\$ 9,911	\$ 9,910	\$ 9,909	\$ 10,061	\$ 10,357	\$ 10,357	\$ 10,357
Dec 2021	\$ 10,906	\$ 10,493	\$ 10,939	\$10,236	\$10,030	\$10,029	\$10,028	\$ 10,461	\$ 10,768	\$ 10,768	\$ 10,768
Jan 2022	\$ 10,331	\$ 10,075	\$ 9,982	\$ 10,027	\$ 9,813	\$ 9,812	\$ 9,811	\$ 9,872	\$ 10,162	\$ 10,162	\$ 10,162
Feb 2022	\$ 10,026	\$ 9,851	\$ 9,535	\$ 10,022	\$ 9,900	\$ 9,900	\$ 9,899	\$ 9,832	\$ 10,121	\$ 10,121	\$ 10,121
Mar 2022	\$ 10,403	\$ 9,965	\$ 9,980	\$ 10,027	\$ 9,961	\$ 9,960	\$ 9,959	\$ 9,693	\$ 9,977	\$ 9,977	\$ 9,977
Apr 2022	\$ 9,490	\$ 9,282	\$ 8,623	\$ 9,915	\$ 9,858	\$ 9,858	\$ 9,857	\$ 9,107	\$ 9,093	\$ 9,093	\$ 9,093
May 2022	\$ 9,512	\$ 9,325	\$ 8,486	\$ 9,918	\$10,003	\$10,003	\$10,002	\$ 9,158	\$ 9,144	\$ 9,144	\$ 9,144
Jun 2022	\$ 8,727	\$ 8,802	\$ 7,730	\$ 9,926	\$ 9,783	\$ 9,783	\$ 9,782	\$ 9,104	\$ 9,090	\$ 9,090	\$ 9,090
Jul 2022	\$ 9,531	\$ 9,372	\$ 8,700	\$ 9,930	\$ 9,763	\$ 9,762	\$ 9,762	\$ 9,140	\$ 9,126	\$ 9,126	\$ 9,126



Investment Strategies

1980 through July 30, 2022

Annual returns:

←Conservative

Aggressive →

Year End	Benchmarks			Dual Momentum							
	US Market S&P 500	Balanced 60/40	Nasdaq 100 QQQ	GPMv	Triad	Triad+	Triad++	The Russell	Global Navigator+	LT Gain+	LT Gain++
1980	32.49%	21.02%	33.38%	12.65%	15.31%	15.31%	15.31%	37.62%	10.46%	30.75%	30.75%
1981	-4.90%	0.07%	-0.63%	14.01%	8.01%	8.01%	8.01%	8.79%	5.88%	5.88%	5.88%
1982	21.55%	25.68%	18.20%	31.37%	25.52%	32.89%	41.26%	46.30%	58.83%	58.83%	85.40%
1983	22.55%	16.21%	19.58%	7.49%	20.34%	28.99%	40.64%	28.73%	37.20%	43.75%	68.57%
1984	6.25%	9.84%	-13.19%	18.76%	8.49%	8.49%	8.49%	6.35%	8.50%	8.50%	8.50%
1985	31.23%	27.65%	32.38%	30.22%	29.46%	29.46%	29.46%	24.32%	39.52%	30.44%	32.07%
1986	18.05%	17.65%	10.83%	46.84%	24.57%	24.57%	24.57%	15.91%	64.21%	16.54%	16.71%
1987	4.68%	4.81%	-11.38%	21.42%	5.18%	5.18%	5.18%	-6.94%	8.59%	-4.84%	-3.59%
1988	16.22%	12.64%	19.47%	9.15%	13.66%	14.67%	15.67%	9.84%	-5.63%	13.87%	19.27%
1989	31.38%	24.20%	19.49%	18.20%	23.27%	34.68%	49.68%	26.51%	19.41%	64.31%	107.68%
1990	-3.32%	1.56%	-17.55%	3.24%	-5.44%	-5.44%	-5.44%	-13.84%	-7.82%	-10.96%	-10.72%
1991	30.22%	24.30%	46.97%	13.22%	14.97%	20.97%	27.79%	27.22%	38.50%	34.64%	51.88%
1992	7.40%	7.35%	21.54%	11.06%	9.32%	9.32%	9.32%	15.78%	8.98%	8.98%	11.21%
1993	9.58%	9.66%	15.37%	14.43%	13.11%	13.11%	13.11%	12.00%	17.02%	10.18%	10.18%
1994	0.38%	-0.77%	-3.66%	-1.98%	-1.43%	-1.43%	-1.43%	-2.85%	3.85%	-3.35%	-3.35%
1995	38.05%	29.81%	42.46%	25.49%	30.61%	30.61%	30.61%	36.48%	37.77%	37.77%	37.77%
1996	22.51%	14.70%	23.41%	13.58%	17.42%	17.42%	17.42%	6.66%	10.21%	14.28%	14.28%
1997	33.49%	23.58%	21.27%	10.89%	19.75%	19.75%	19.75%	24.03%	32.85%	32.85%	32.85%
1998	28.69%	21.01%	32.17%	17.43%	3.77%	8.23%	13.11%	3.13%	12.47%	12.47%	19.90%
1999	20.39%	11.65%	80.58%	22.18%	17.32%	17.49%	17.18%	42.48%	31.50%	19.71%	24.16%
2000	-9.74%	-1.49%	-28.93%	16.41%	15.67%	15.68%	15.69%	13.76%	9.56%	13.85%	17.60%
2001	-11.75%	-3.81%	-25.59%	5.66%	2.82%	2.80%	2.77%	3.56%	3.56%	3.56%	3.07%
2002	-21.59%	-9.80%	-29.86%	15.38%	8.79%	4.95%	0.89%	9.12%	16.83%	2.44%	1.38%
2003	28.16%	18.19%	41.08%	11.64%	23.85%	32.41%	42.86%	43.24%	70.84%	74.69%	126.58%
2004	10.71%	8.00%	9.84%	9.76%	13.40%	16.58%	19.92%	23.22%	21.32%	25.59%	40.20%
2005	4.83%	3.87%	4.49%	11.39%	7.36%	7.17%	7.07%	5.95%	4.18%	-2.76%	-5.30%
2006	15.84%	10.95%	8.27%	13.97%	16.36%	16.97%	17.63%	17.37%	21.72%	14.25%	14.25%
2007	5.14%	5.94%	9.44%	9.72%	12.89%	12.89%	12.89%	9.31%	21.66%	6.43%	6.90%
2008	-36.81%	-21.86%	-42.67%	13.16%	-1.18%	-1.18%	-1.18%	3.16%	3.16%	3.16%	2.49%
2009	26.38%	18.66%	45.53%	7.42%	24.23%	34.73%	46.58%	31.19%	41.50%	63.01%	99.25%
2010	15.06%	12.04%	18.51%	16.20%	14.04%	20.81%	29.11%	16.24%	5.23%	18.12%	29.53%
2011	1.88%	4.38%	-1.14%	26.93%	8.52%	9.18%	9.86%	32.68%	28.96%	33.18%	57.58%
2012	16.00%	11.39%	15.46%	4.04%	7.19%	8.68%	9.92%	19.12%	36.13%	31.05%	46.82%
2013	32.31%	17.44%	35.69%	12.07%	16.74%	16.74%	16.74%	35.27%	21.76%	32.78%	32.78%
2014	13.48%	10.56%	16.11%	9.74%	7.59%	7.59%	7.59%	10.30%	9.91%	13.07%	13.07%
2015	1.26%	1.11%	6.50%	-3.17%	-2.46%	-2.46%	-2.46%	-2.85%	-9.14%	-3.96%	-3.96%
2016	12.00%	8.34%	7.39%	3.34%	9.49%	9.49%	9.49%	12.30%	9.65%	7.86%	8.78%
2017	21.71%	14.26%	27.28%	13.26%	14.18%	14.18%	14.18%	21.78%	20.03%	21.53%	21.53%
2018	-4.56%	-2.47%	-1.10%	3.19%	0.67%	0.67%	0.67%	6.48%	3.71%	3.71%	3.71%
2019	31.23%	21.98%	28.83%	10.15%	9.32%	9.32%	9.32%	8.37%	9.67%	9.67%	9.45%
2020	18.39%	14.93%	43.75%	10.91%	20.11%	28.01%	37.47%	26.71%	44.50%	46.54%	76.21%
2021	28.76%	15.74%	27.41%	12.06%	18.84%	23.96%	30.07%	25.38%	21.12%	41.12%	55.90%
2022	-12.61%	-10.69%	-20.46%	-2.98%	-2.66%	-2.66%	-2.66%	-12.63%	-15.25%	-15.25%	-15.25%
+/- S&P YTD:	0.0%	1.9%	-7.9%	9.6%	10.0%	10.0%	10.0%	0.0%	-2.6%	-2.6%	-2.6%
CAGR	11.6%	10.0%	11.0%	13.0%	12.3%	14.0%	15.9%	15.7%	18.1%	18.7%	24.7%

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Strategy Fact Sheets

Dual Momentum Strategies: Generalized Protective Momentum variant aka GPMv

A variation on Generalized Protective Momentum [GPM] by JW Keuning and Wouter Keller. Details: <https://tinyurl.com/28ukds2s>

Results through 07/30/2022

Investment selection for August 2022:

100% BIL

Tax friendliness:

GPMv is assumed to be mostly short term gains.

Months between change of holdings

GPMv has change of investments most months.

Portfolio size appropriateness:

Whale, **GPMv** can be used for any sized portfolio.

Characteristics:

Drawdowns: **GPMv** has far more conservative drawdowns than a 60/40.

Volatility: **GPMv** is much usually less volatile than a 60/40.

Returns: **GPMv** has superior historical returns compared to a 60/40.

Leverage: **GPMv** never uses any leverage.

Annualized Returns, actual YTD for current year.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
GPMv	-2.98%	-0.70%	7.93%	8.04%	6.68%	10.01%	13.00%
Balanced 60/40	-10.69%	-6.28%	8.12%	8.38%	9.00%	5.96%	9.98%
S&P 500	-12.61%	-4.69%	13.32%	12.75%	13.73%	6.62%	11.63%

Maximum Drawdown, single largest drawdown.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
GPMv	-3.13%	-4.26%	-5.11%	-5.11%	-6.33%	-6.65%	-8.25%
Balanced 60/40	-16.12%	-16.12%	-16.12%	-16.12%	-16.12%	-32.33%	-32.33%
S&P 500	-19.98%	-19.98%	-19.98%	-19.98%	-19.98%	-50.79%	-50.79%

Ulcer Index, higher the number the more painful downside volatility. Considers all downside not just maximum.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
GPMv	2.50	2.94	2.43	2.19	2.57	2.31	2.01
Balanced 60/40	9.42	7.44	4.99	4.19	3.09	7.69	5.99
S&P 500	11.20	8.89	6.66	5.88	4.43	16.68	12.89

Sortino Ratio, risk adjusted performance measure - bigger number is better.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
GPMv	(3.34)	(2.84)	(2.32)	(2.38)	(2.52)	1.81	2.57
Balanced 60/40	(2.43)	(2.14)	(1.59)	(1.73)	(1.99)	0.60	1.26
S&P 500	(2.07)	(1.60)	(0.87)	(0.98)	(1.16)	0.49	0.98

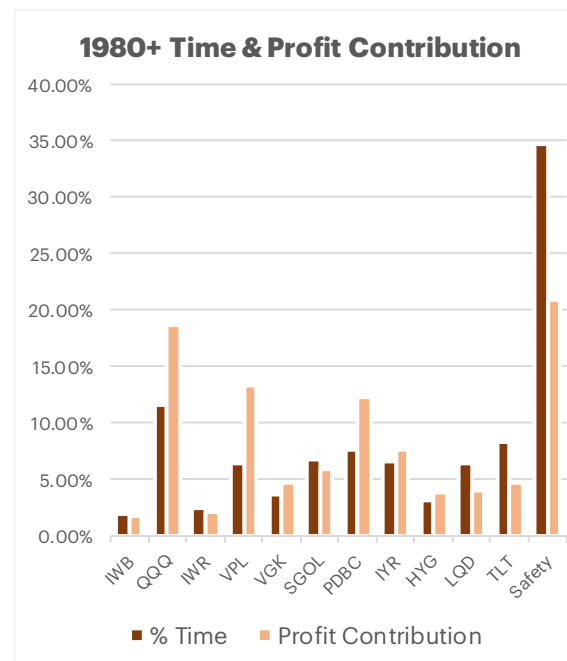
Strategy Description:

GPMv uses fast acting weighted lookbacks and ETF performance correlations to scale into and out of it's Risk Off (Safety) holdings (VGSH, VGIT, and BIL) and into a universe of 11 Risk On ETF's. This is a very protective strategy with very low maximum drawdowns, however, it is also a strategy which can provide market like returns over a full market cycle. It has extremely low volatility (UlcerIndex) and very high risk adjusted metrics.

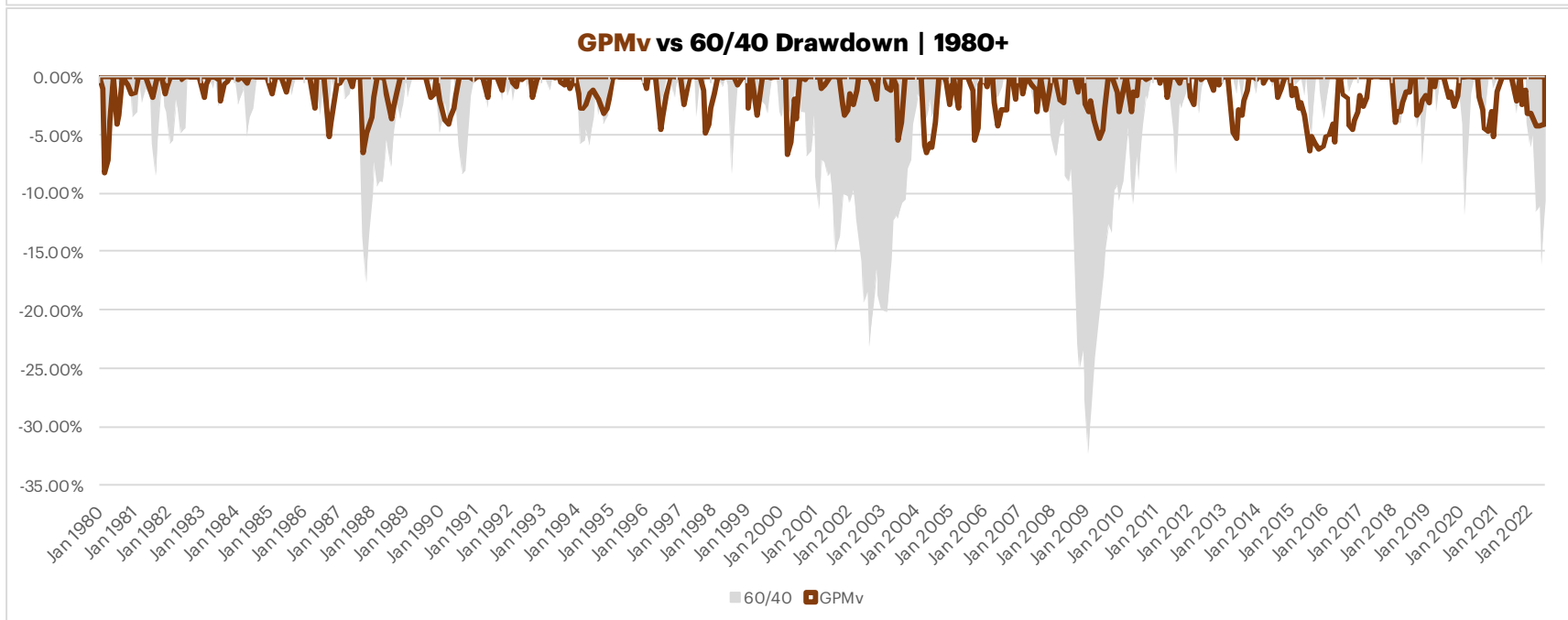
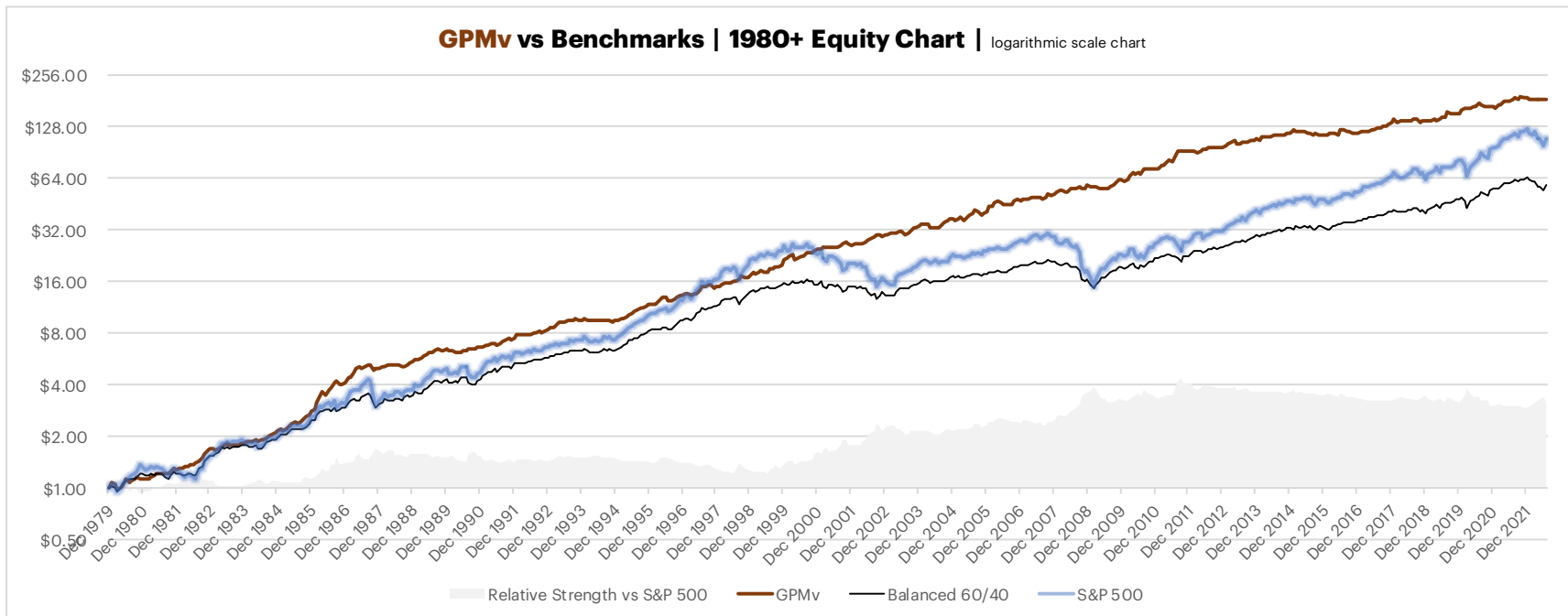
Strategy Components

Can be seen in the **1980+ Time & Profit Contribution** chart below.

Metric	2000+	1980+
Beta	0.05	0.13
Alpha	9.51%	11.37%



GPMv based on TrendXplorer's Generalized Protective Momentum



Generalized Protective Momentum [GPM] inception date June 30, 2016; GPMvariant aka GPMv inception date 05/15/2022

Dual Momentum Strategies: Triad

US Markets and Gold Rotational Strategy with multiple out of market options

Results through 07/30/2022

Investment selection for August 2022:

100% BIL

Tax friendliness:

Triad is tax friendly, mostly Long Term Cap Gains.

Months between change of holdings

Triad has a change to one of it's holdings every 1.67 months on average.

Portfolio size appropriateness:

Whale, **Triad** can be used for any sized portfolio.

Characteristics:

Drawdowns: **Triad** has more conservative drawdowns than a Balanced 60/40 strategy

Volatility: **Triad** is noticeably less volatile than a Balanced 60/40 approach

Returns: **Triad** has similar historical returns depending on the time frame, and should do better going forward.

Strategy Description:

Triad was created as a better option than a 60/40 portfolio for the future. Triad may invest: 1/6 into Gold or Commodities, 2/6 into the Russell 1000, 2/6 into the Russell Mid-Cap Value or International, a minimum of 1/6 (and any amounts not invested into the previous mentioned buckets) will be invested into the best performer of; Short Term Treasuries, Intermediate Term Treasuries, and Short Term Corporate Investment Grade Bonds. Triad has average leverage of 100%, and maximum leverage of 100%.

Strategy Components

IWB Russell 1000, IWS Rusell MidCap Value, SGOL Gold, PDBC Commodities
 VCSH Short Term Corporate Investment Grade Bonds
 VGSH Short Term Treasuries
 VGIT Intermediate Term Treasuries

Metric	2000+	1980+
Beta	0.25	0.36
Alpha	8.80%	8.03%

Annualized Returns actual YTD for current year.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Triad	-2.66%	-2.37%	13.29%	10.13%	9.54%	10.62%	12.29%
Balanced 60/40	-10.69%	-6.28%	8.12%	8.38%	9.00%	5.96%	9.98%
S&P 500	-12.61%	-4.69%	13.32%	12.75%	13.73%	6.62%	11.63%

Maximum Drawdown single largest drawdown.

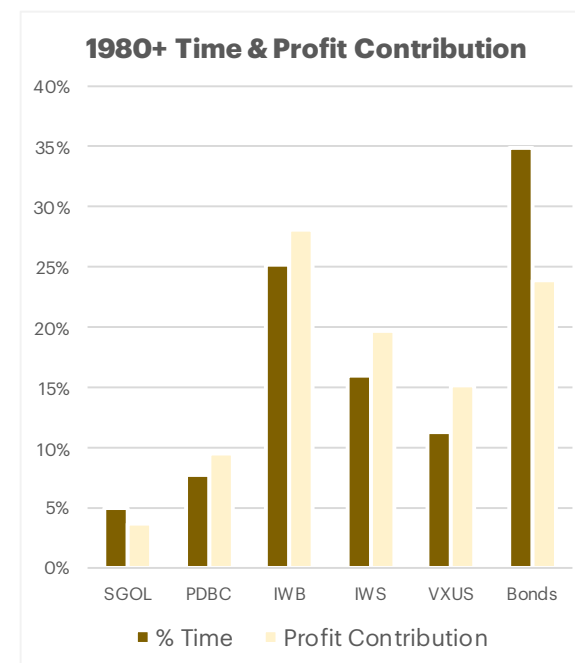
Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Triad	-2.66%	-4.59%	-5.90%	-5.90%	-5.90%	-7.68%	-15.47%
Balanced 60/40	-16.12%	-16.12%	-16.12%	-16.12%	-16.12%	-32.33%	-32.33%
S&P 500	-19.98%	-19.98%	-19.98%	-19.98%	-19.98%	-50.79%	-50.79%

Ulcer Index the higher the number the more painful downside volatility. Considers all downside not just maximum.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Triad	1.69	2.92	2.29	2.52	2.08	2.24	3.06
Balanced 60/40	9.42	7.44	4.99	4.19	3.09	7.69	5.99
S&P 500	11.20	8.89	6.66	5.88	4.43	16.68	12.89

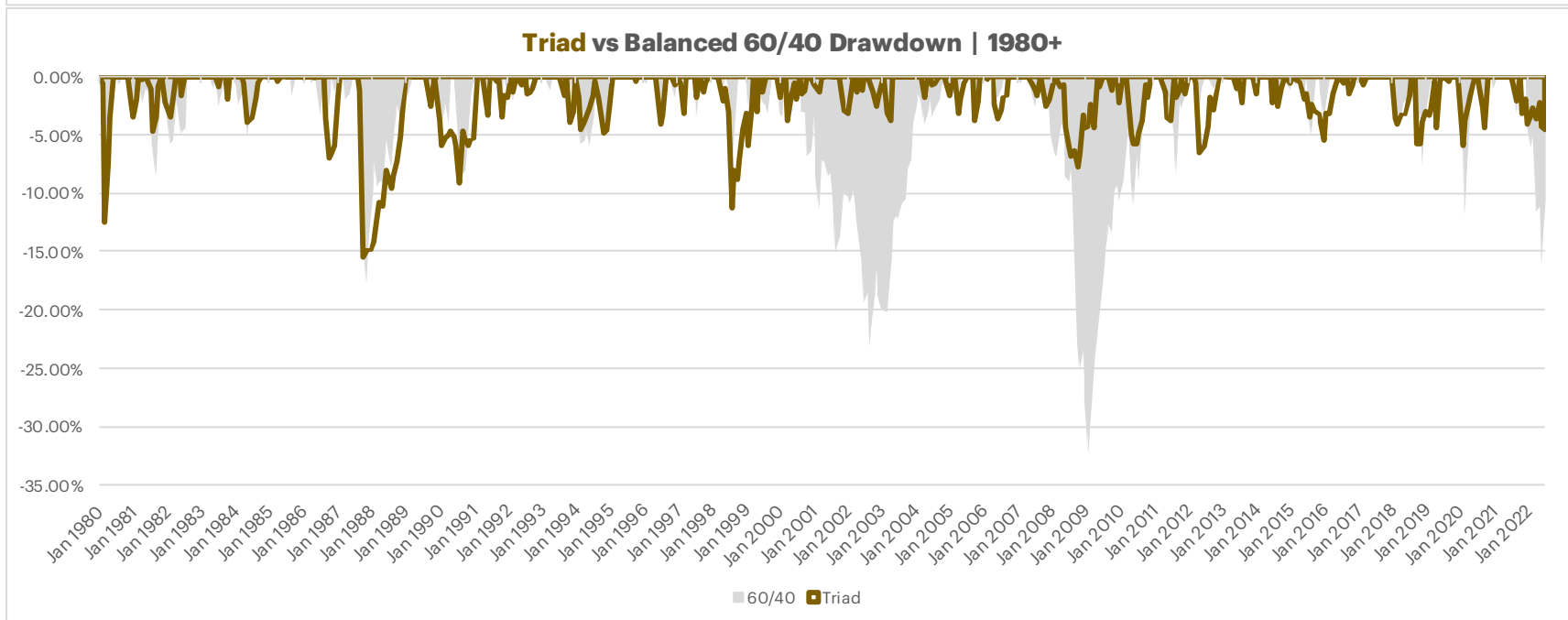
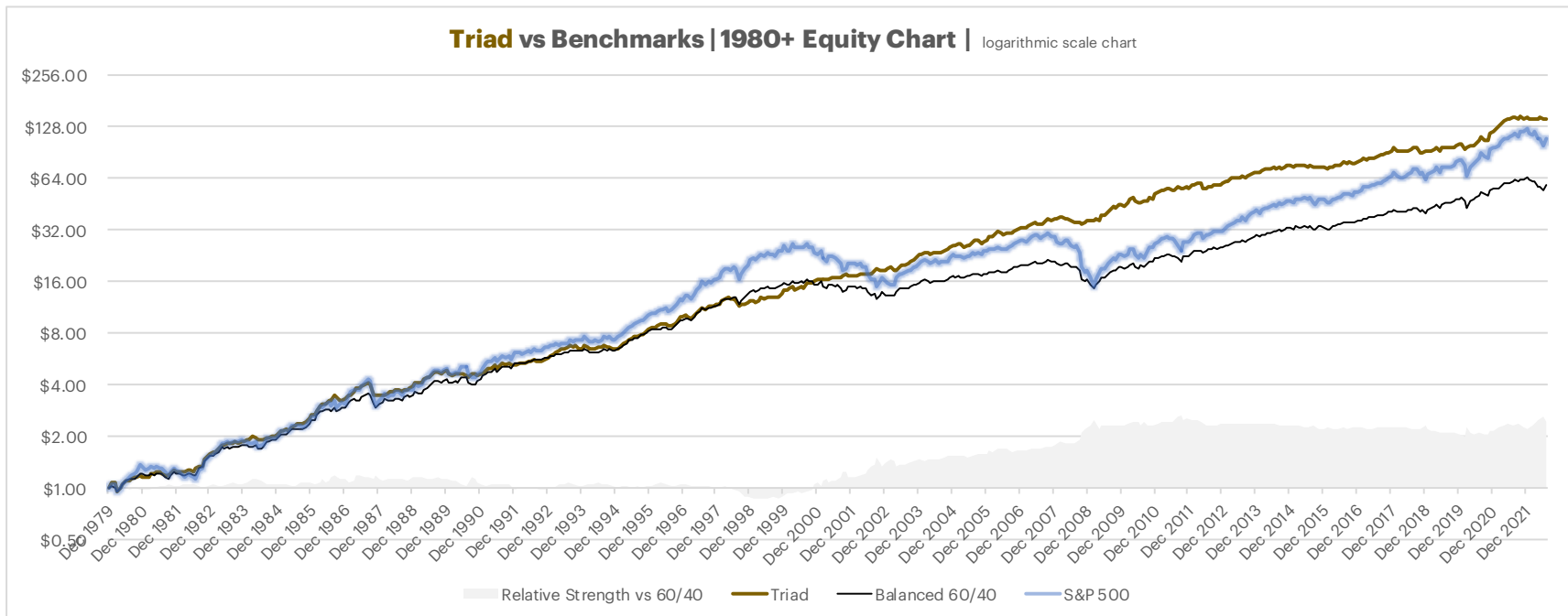
Sortino Ratio, risk adjusted performance measure - bigger number is better.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Triad	(3.11)	(2.83)	(1.66)	(1.93)	(2.20)	1.89	1.88
Balanced 60/40	(2.43)	(2.14)	(1.59)	(1.73)	(1.99)	0.60	1.26
S&P 500	(2.07)	(1.60)	(0.87)	(0.98)	(1.16)	0.49	0.98



Triad inception date April 2021, out of sample since then and before 2000.

Dual Momentum Systems: **Triad**



Triad inception date April 2021, out of sample since then and before 2000.

Dual Momentum Strategies: Triad+

US Markets and Gold Rotational Strategy with multiple out of market options

Results through 07/30/2022

Investment selection for August 2022:

1/6 PDBC 5/6 VCSH

Tax friendliness:

Triad+ is tax friendly, mostly Long Term Cap Gains.

Months between change of holdings:

Triad has a change to one of its holdings every 1.67 months on average.

Portfolio size appropriateness:

Whale, Triad can be used for any sized portfolio.

Characteristics:

Drawdowns: Triad+ has more conservative drawdowns than a Balanced 60/40 strategy

Volatility: Triad+ is noticeably less volatile than a Balanced 60/40 approach

Returns: Triad+ has similar historical returns depending on the time frame, and should do better going forward.

Leverage: Triad has average leverage of 108%, and maximum leverage of 133%.

Strategy Description:

Triad+ was created as a better option than a 60/40 portfolio for the future. Triad+ is more moderate by adding Smart Leverage to Triad, if there is a month end drawdown of 15% or greater, when going back into 2/6 position of Russell 1000 Triad+ will instead go into 2X S&P, SSO, until there is a natural change of investment up to 12 months. Triad has average leverage of 108%, and maximum leverage of 133%.

Strategy Components

IWB Russell 1000, SSO 2X Smart Leverage

IWS Russell MidCap Value, SGOL Gold, PDBC Commodities

VCSH Short Term Corporate Investment Grade Bonds

VGSH Short Term Treasuries

VGIT Intermediate Term Treasuries

Metric	2000+	1980+
Beta	0.32	0.42
Alpha	10.00%	9.02%

Annualized Returns actual YTD for current year.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Triad+	-2.66%	-2.38%	17.36%	12.49%	10.70%	12.23%	14.00%
Triad	-2.66%	-2.37%	13.29%	10.13%	9.54%	10.62%	12.29%
Balanced 60/40	-10.69%	-6.28%	8.12%	8.38%	9.00%	5.96%	9.98%

Maximum Drawdown single largest drawdown.

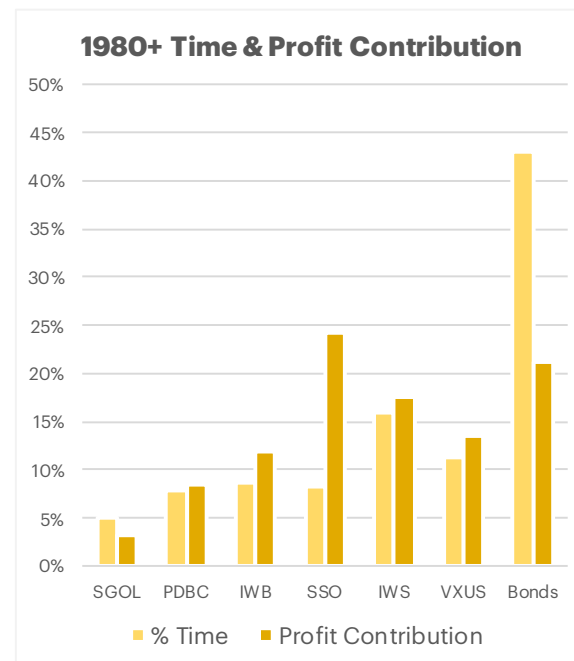
Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Triad+	-2.66%	-4.44%	-7.11%	-7.11%	-7.11%	-9.09%	-15.47%
Triad	-2.66%	-4.59%	-5.90%	-5.90%	-5.90%	-7.68%	-15.47%
Balanced 60/40	-16.12%	-16.12%	-16.12%	-16.12%	-16.12%	-32.33%	-32.33%

Ulcer Index the higher the number the more painful downside volatility. Considers all downside not just maximum.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Triad+	1.69	2.81	2.49	2.64	2.15	2.56	3.17
Triad	1.69	2.92	2.29	2.52	2.08	2.24	3.06
Balanced 60/40	9.42	7.44	4.99	4.19	3.09	7.69	5.99

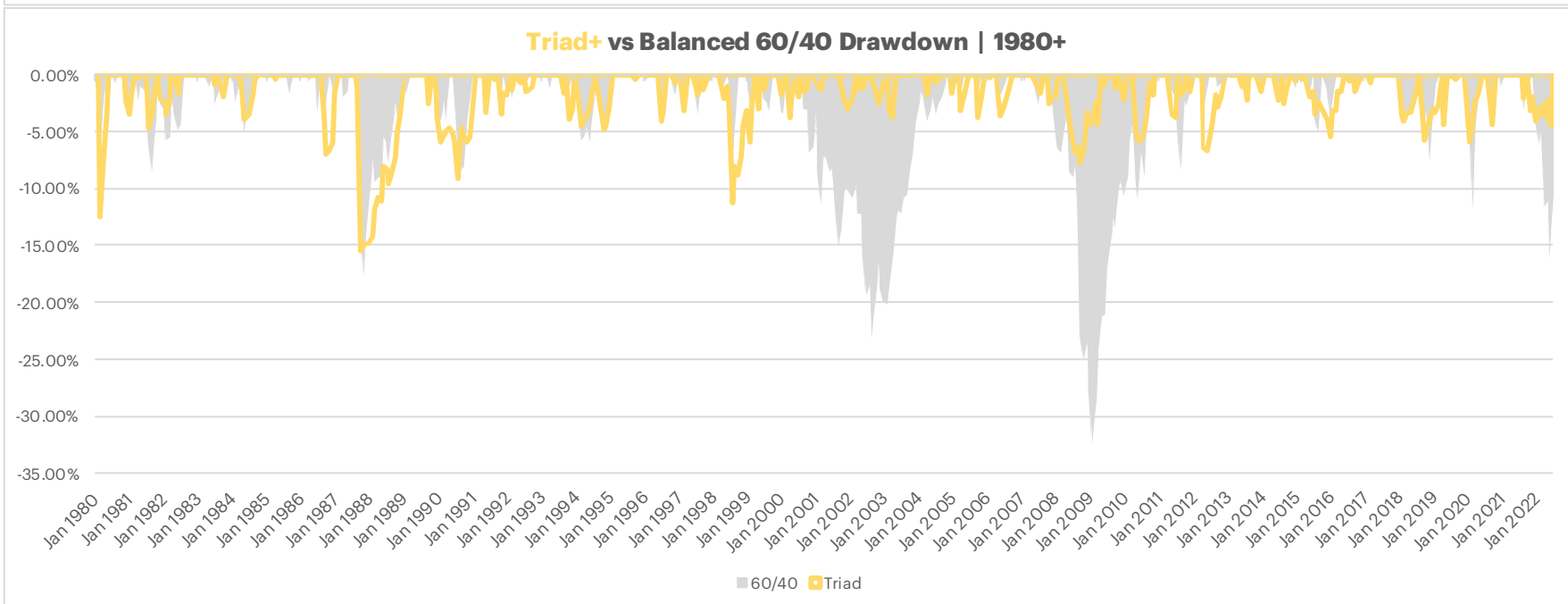
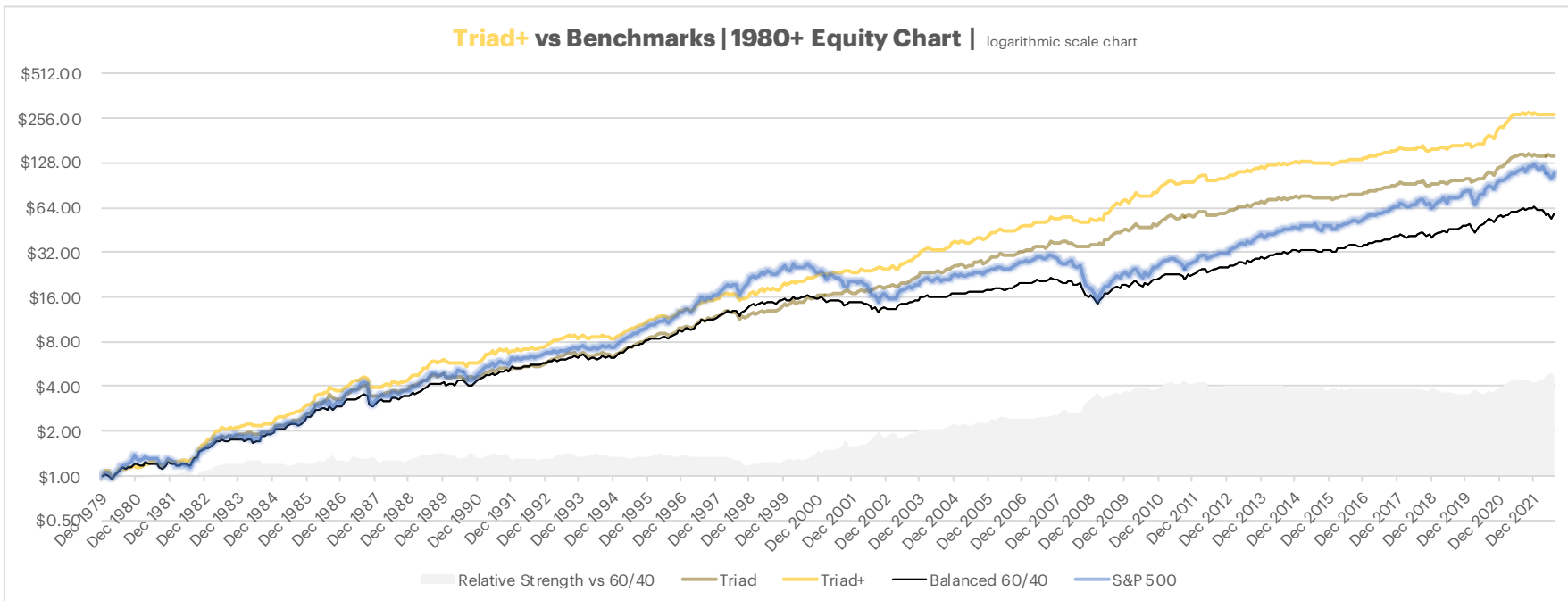
Sortino Ratio, risk adjusted performance measure - bigger number is better.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Triad+	(3.11)	(2.84)	(1.18)	(1.63)	(2.03)	2.01	2.04
Triad	(3.11)	(2.83)	(1.66)	(1.93)	(2.20)	1.89	1.88
Balanced 60/40	(2.43)	(2.14)	(1.59)	(1.73)	(1.99)	0.60	1.26



Triad+ inception date March 2022 [Triad inception date April 2021]

Dual Momentum Systems: **Triad+**



Triad+ inception date March 2022 [Triad inception date April 2021]

Dual Momentum Strategies: Triad++

US Markets and Gold Rotational Strategy with multiple out of market options

Results through 07/30/2022

Investment selection for August 2022:

1/6 PDBC 5/6 VCSH

Tax friendliness:

Triad++ is tax friendly, mostly Long Term Cap Gains.

Months between change of holdings:

Triad has a change to one of its holdings every 1.67 months on average.

Portfolio size appropriateness:

Whale, Triad can be used for any sized portfolio.

Characteristics:

Drawdowns: Triad++ has more conservative drawdowns than a Balanced 60/40 strategy

Volatility: Triad++ is noticeably less volatile than a Balanced 60/40 approach

Returns: Triad++ has similar historical returns depending on the time frame, and should do better going forward.

Leverage: Triad has average leverage of 117%, and maximum leverage of 167%.

Strategy Description:

Triad++ was created as a better option than a 60/40 portfolio for the future. Triad++ is more aggressive by adding Smart Leverage to Triad, if there is a month end drawdown of 15% or greater, when going back into 2/6 position of Russell 1000 Triad++ will instead go into 3X S&P, UPRO, until there is a natural change of investment up to 12 months. Triad has average leverage of 117%, and maximum leverage of 167%.

Strategy Components

IWB Russell 1000, UPRO 3X Smart Leverage

IWS Russell MidCap Value, SGOL Gold, PDBC Commodities

VCSH Short Term Corporate Investment Grade Bonds

VGSH Short Term Treasuries

VGIT Intermediate Term Treasuries

Metric	2000+	1980+
Beta	0.32	0.42
Alpha	10.00%	9.02%

Annualized Returns actual YTD for current year.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Triad++	-2.66%	-2.38%	22.12%	15.21%	12.03%	14.02%	15.92%
Triad+	-2.66%	-2.38%	17.36%	12.49%	10.70%	12.23%	14.00%
Balanced 60/40	-10.69%	-6.28%	8.12%	8.38%	9.00%	5.96%	9.98%

Maximum Drawdown single largest drawdown.

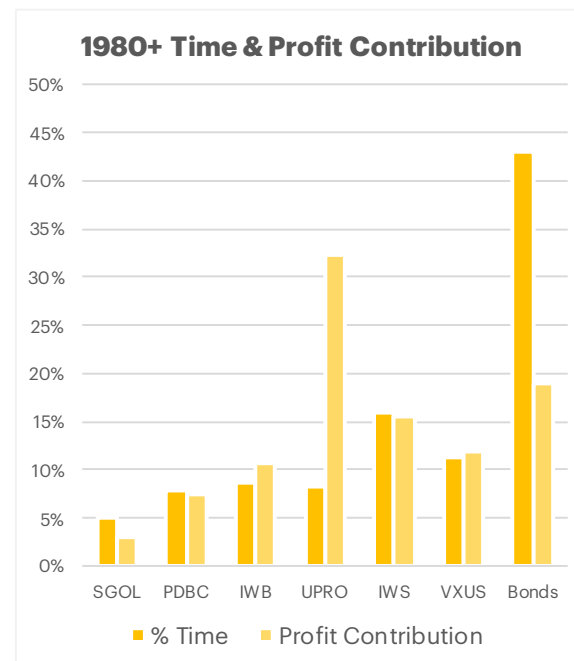
Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Triad++	-2.66%	-4.30%	-10.13%	-10.13%	-10.13%	-11.94%	-15.47%
Triad+	-2.66%	-4.44%	-7.11%	-7.11%	-7.11%	-9.09%	-15.47%
Balanced 60/40	-16.12%	-16.12%	-16.12%	-16.12%	-16.12%	-32.33%	-32.33%

Ulcer Index the higher the number the more painful downside volatility. Considers all downside not just maximum.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Triad++	1.69	2.70	2.83	2.83	2.28	3.13	3.50
Triad+	1.69	2.81	2.49	2.64	2.15	2.56	3.17
Balanced 60/40	9.42	7.44	4.99	4.19	3.09	7.69	5.99

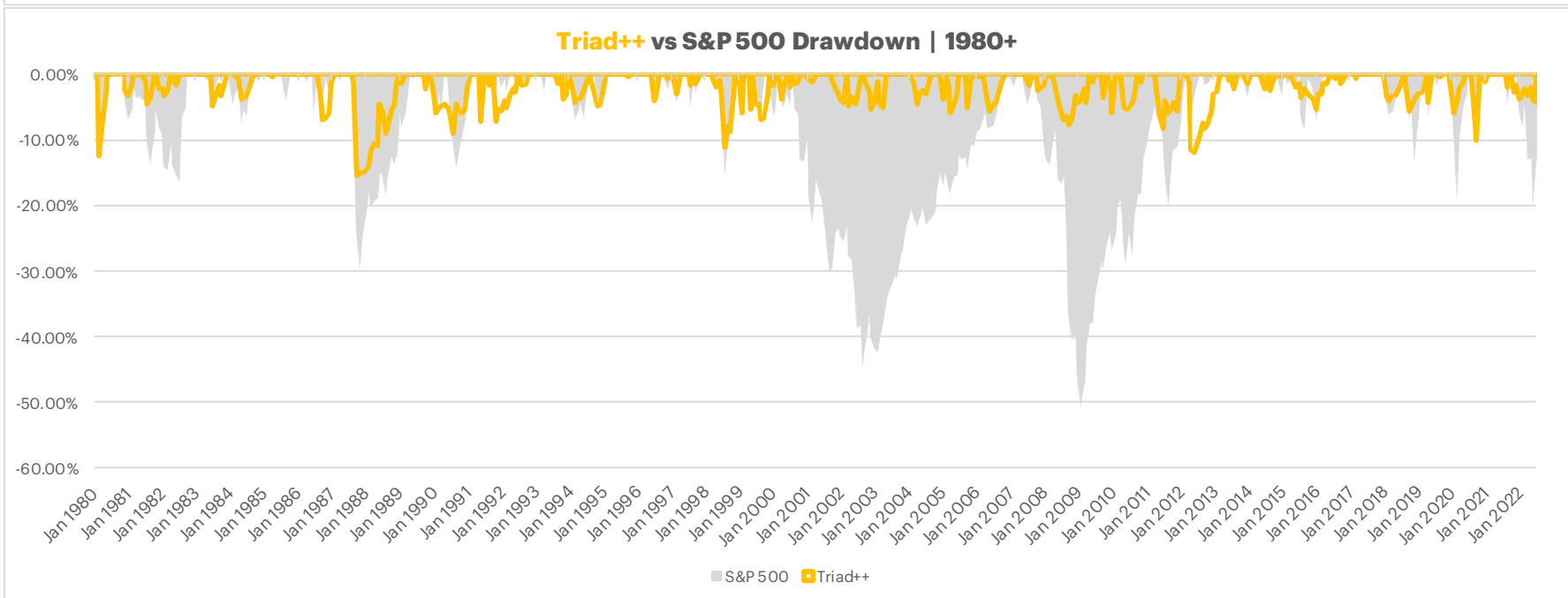
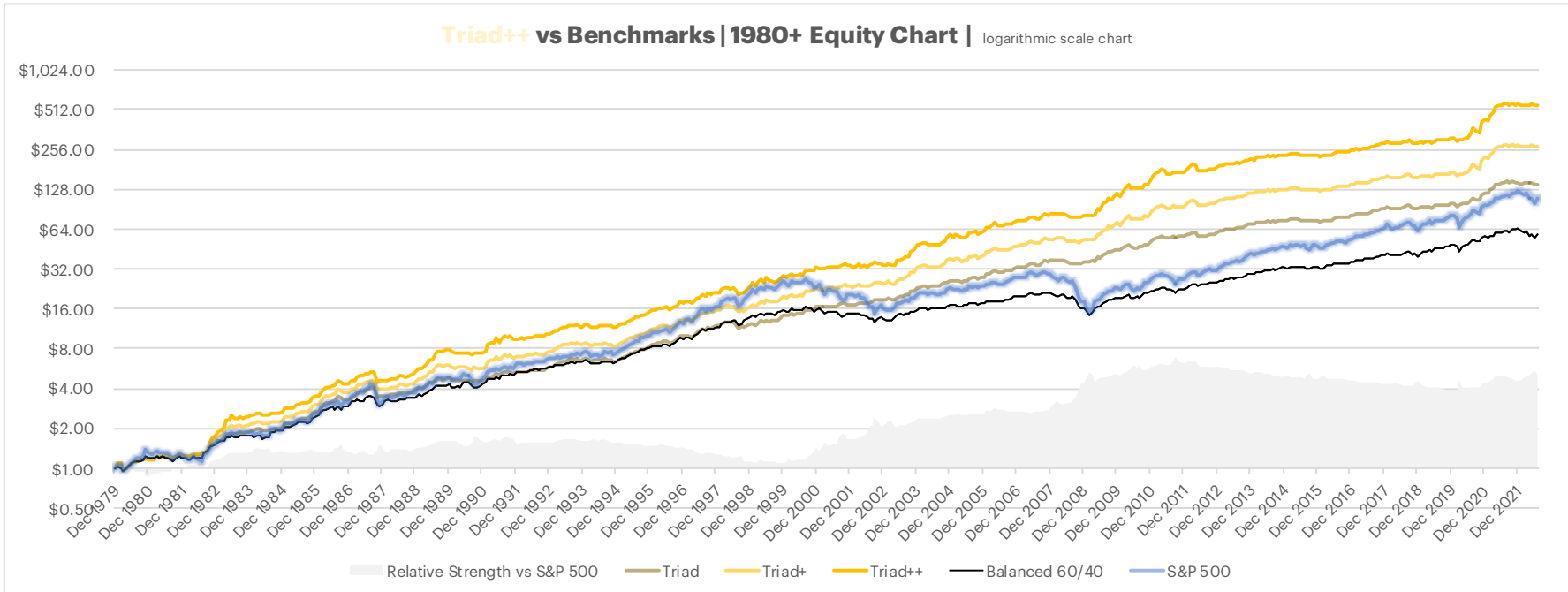
Sortino Ratio, risk adjusted performance measure - bigger number is better.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Triad++	(3.11)	(2.86)	(0.67)	(1.30)	(1.82)	2.05	2.14
Triad+	(3.11)	(2.84)	(1.18)	(1.63)	(2.03)	2.01	2.04
Balanced 60/40	(2.43)	(2.14)	(1.59)	(1.73)	(1.99)	0.60	1.26



Triad++ inception date March 2022 [Triad inception date April 2021]

Dual Momentum Systems: Triad++



Triad++ inception date March 2022 [Triad inception date April 2021]

Dual Momentum Strategies: The Russell

USA Momentum Rotational

Results through 07/30/2022

Investment selection for August 2022:

VGSH, Short Term Treasuries

Tax friendliness:

The Russell has mostly Short Term Cap Gains.

Months between change of holdings

The Russell changes its holdings every 3.2 months on average.

Portfolio size appropriateness:

Whale, The Russell can be used for any sized portfolio.

Characteristics:

Drawdowns: The Russell has more conservative drawdowns than the S&P.

Volatility: The Russell is usually less volatile than the S&P over time.

Returns: The Russell has much better historical returns compared to the S&P 500.

Leverage: The Russell never uses any leverage.

Strategy Description:

The Russell invests in the United States, going into the best performer of the Russell 1000, Russell MidCap Growth, or Russell MidCap Value. When these markets aren't experiencing positive momentum the strategy goes into Long Term Treasuries, or into Short Duration Treasuries if the Treasury Duration Limiter kicks in. The Russell has an average leverage of 100%, and a maximum leverage of 100% (meaning no leverage at all, 100% being the nominal position.)

Strategy Components

IWB Russell 1000

IWP Russell MidCap Growth

IWS Russell MidCap Value

TLT Long Term Treasuries, or VGSH with Treasury Duration Limiter

Metric	2000+	1980+
Beta	0.28	0.50
Alpha	13.18%	9.72%

Annualized Returns actual YTD for current year.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
The Russell	-12.63%	-8.60%	13.65%	12.10%	13.03%	15.18%	15.67%
Balanced 60/40	-10.69%	-6.28%	8.12%	8.38%	9.00%	5.96%	9.98%
S&P 500	-12.61%	-4.69%	13.32%	12.75%	13.73%	6.62%	11.63%

Maximum Drawdown single largest drawdown.

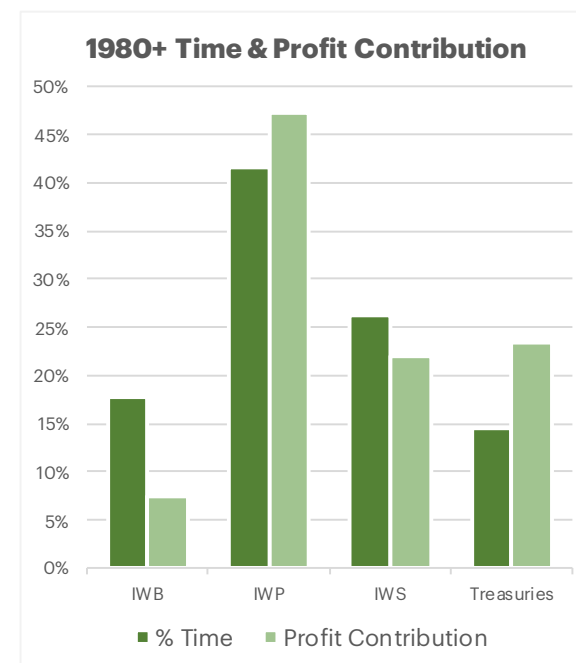
Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
The Russell	-12.97%	-13.41%	-13.41%	-13.41%	-13.41%	-19.41%	-23.41%
Balanced 60/40	-16.12%	-16.12%	-16.12%	-16.12%	-16.12%	-32.33%	-32.33%
S&P 500	-19.98%	-19.98%	-19.98%	-19.98%	-19.98%	-50.79%	-50.79%

Ulcer Index the higher the number the more painful downside volatility. Considers all downside not just maximum.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
The Russell	9.82	8.20	5.19	4.94	4.27	4.38	5.55
Balanced 60/40	9.42	7.44	4.99	4.19	3.09	7.69	5.99
S&P 500	11.20	8.89	6.66	5.88	4.43	16.68	12.89

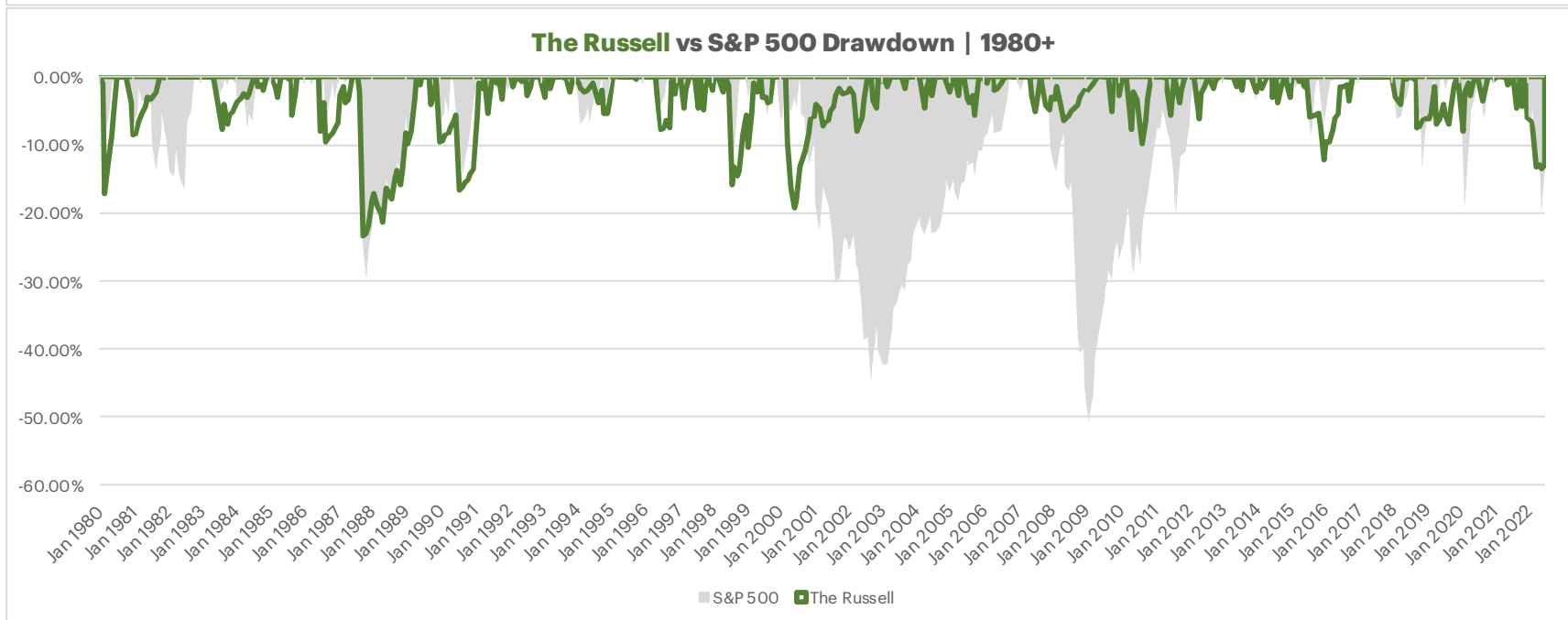
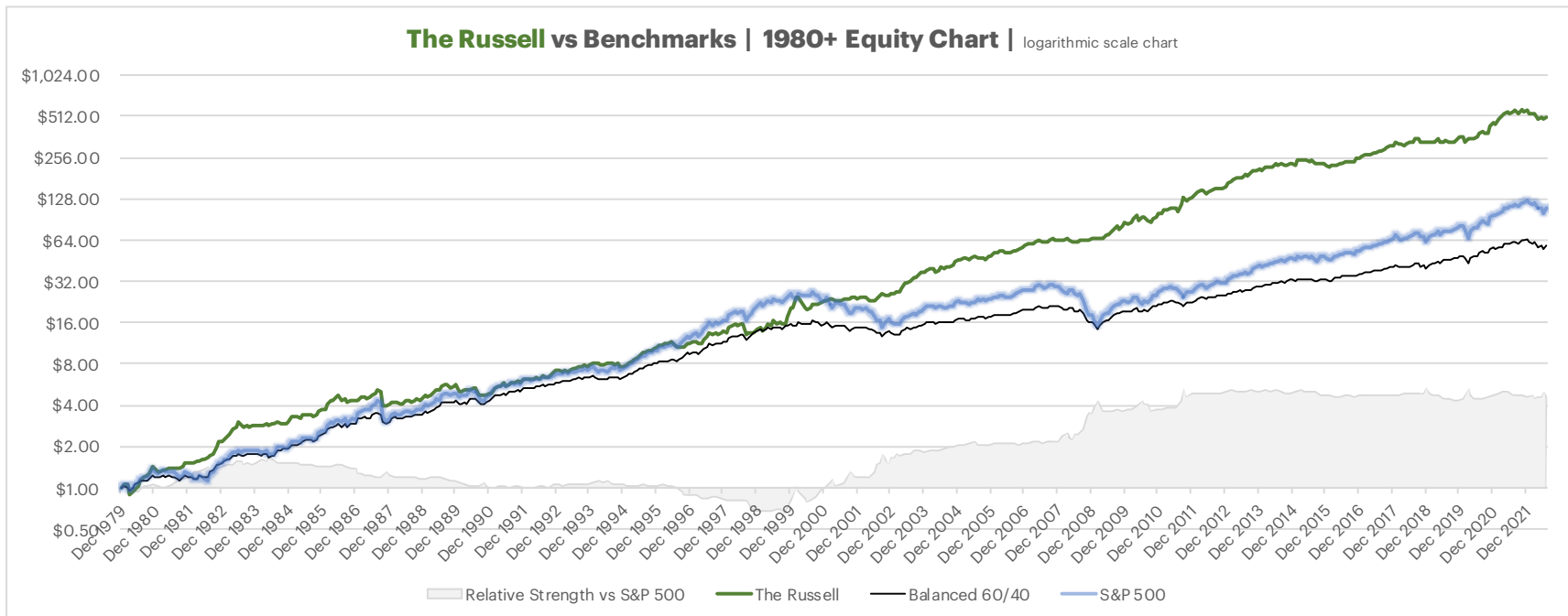
Sortino Ratio risk adjusted performance measure - bigger number is better.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
The Russell	(2.96)	(2.24)	(1.14)	(1.34)	(1.43)	1.87	1.62
Balanced 60/40	(2.43)	(2.14)	(1.59)	(1.73)	(1.99)	0.60	1.26
S&P 500	(2.07)	(1.60)	(0.87)	(0.98)	(1.16)	0.49	0.98



The Russell inception date May 2017, out of sample since and before 2000.

Dual Momentum Systems: The Russell



The Russell inception date May 2017, out of sample since and before 2000.

Dual Momentum Strategies: Global Navigator+

Global Momentum Rotational Strategy using Smart Leverage

Results through 07/30/2022

Investment selection for August 2022:

VGSH, Short Term Treasuries

Tax friendliness:

Global Navigator+ has mostly Short Term Cap Gains.

Months between change of holdings

Global Navigator+ changes it's holdings every 3.8 months on average.

Portfolio size appropriateness:

Whale, **Global Navigator+** can be used for any sized portfolio.

Characteristics:

Drawdowns: **Global Navigator+** has more conservative drawdowns than the S&P.

Volatility: **Global Navigator+** is usually less volatile than the S&P over time.

Returns: **Global Navigator+** has superior historical returns compared to the S&P 500.

Leverage: Global Navigator+ has a maximum leverage of 200% and average leverage of: 109%

Strategy Description:

Global Navigator+ is a global strategy, investing in the USA when it is outperforming, and in Foreign markets when they outperform. This strategy uses Smart Leverage, after an outsized drawdown in the markets, could go into 2X Leveraged equities if the USA Markets are the investment, not if going into Foreign Markets. When it goes into 2X leveraged position, it holds it until there is a natural change of investment by the strategy. The strategy holds long term treasuries when out of equities.

Strategy Components

IWB Russell 1000 → Smart Leverage: SSO 2X S&P 500

VXUS All World Country ex-USA

TLT Long Term Treasuries, or VGSH with Treasury Duration Limiter

Metric	2000+	1980+
Beta	0.37	0.50
Alpha	13.84%	12.17%

Annualized Returns actual YTD for current year.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Global Navigator+	-15.25%	-8.74%	17.31%	12.43%	11.76%	16.40%	18.13%
Balanced 60/40	-10.69%	-6.28%	8.12%	8.38%	9.00%	5.96%	9.98%
S&P 500	-12.61%	-4.69%	13.32%	12.75%	13.73%	6.62%	11.63%

Maximum Drawdown single largest drawdown.

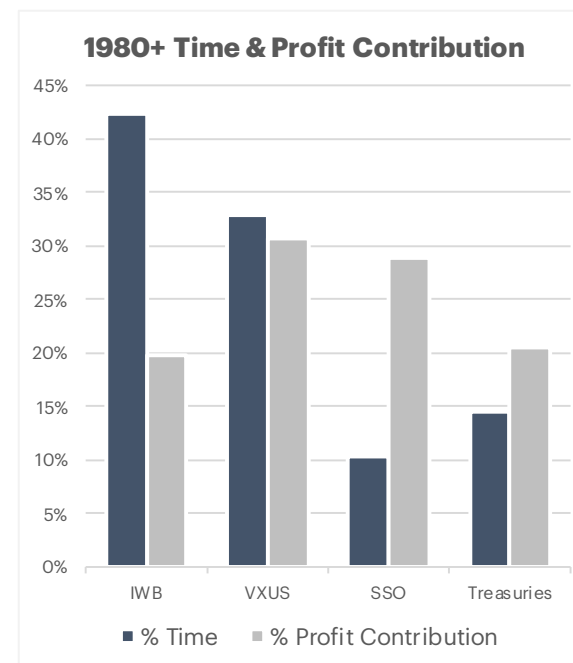
Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Global Navigator+	-15.58%	-15.58%	-15.58%	-15.58%	-16.44%	-16.44%	-22.80%
Balanced 60/40	-16.12%	-16.12%	-16.12%	-16.12%	-16.12%	-32.33%	-32.33%
S&P 500	-19.98%	-19.98%	-19.98%	-19.98%	-19.98%	-50.79%	-50.79%

Ulcer Index the higher the number the more painful downside volatility. Considers all downside not just maximum.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Global Navigator+	11.54	9.15	6.15	5.64	5.75	4.50	5.38
Balanced 60/40	9.42	7.44	4.99	4.19	3.09	7.69	5.99
S&P 500	11.20	8.89	6.66	5.88	4.43	16.68	12.89

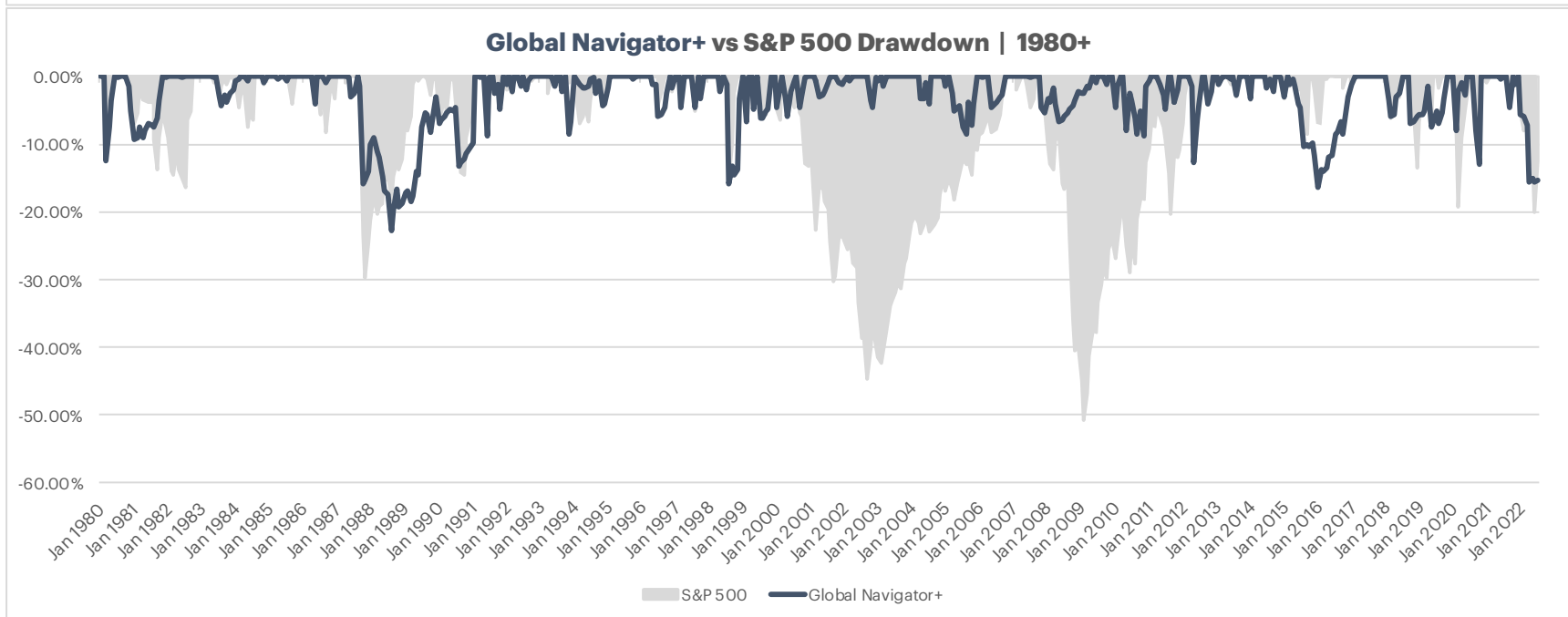
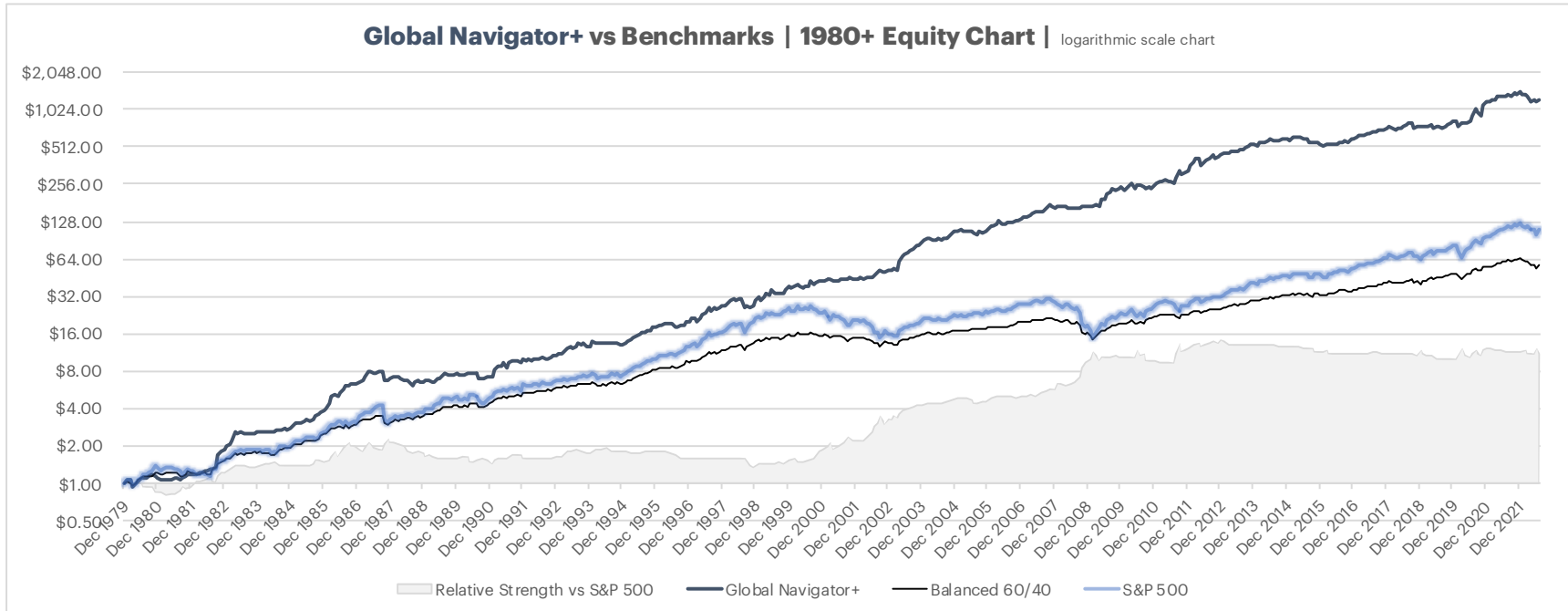
Sortino Ratio, risk adjusted performance measure - bigger number is better.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Global Navigator+	(2.82)	(2.15)	(0.73)	(1.15)	(1.41)	1.98	2.03
Balanced 60/40	(2.43)	(2.14)	(1.59)	(1.73)	(1.99)	0.60	1.26
S&P 500	(2.07)	(1.60)	(0.87)	(0.98)	(1.16)	0.49	0.98



Global Navigator inception date May 2017. Smart Leverage added in October 2020 aka Global Navigator++, out of sample then and before 2000.

Dual Momentum Systems: Global Navigator+



Global Navigator inception date May 2017. Smart Leverage added in October 2020 aka Global Navigator+, out of sample then and before 2000.

Dual Momentum Strategies: **LT Gain+**

Single Momentum Strategy using Smart Leverage

Results through 07/30/2022

Investment selection for August 2022:

VGSH, Short Term Treasuries

Tax friendliness:

LT Gain+ has mostly Long Term Cap Gains.

Months between change of holdings

LT Gain+ changes it's holdings every 5.9 months on average.

Portfolio size appropriateness:

Whale, **LT Gain+** can be used for any sized portfolio.

Characteristics:

Drawdowns: **LT Gain+** has more conservative drawdowns than the S&P.

Volatility: **LT Gain+** is usually less volatile than the S&P over time.

Returns: **LT Gain+** has superior historical returns compared to the S&P 500.

Leverage: LT Gain+ has a maximum leverage of 200% and average leverage of: 123%

Strategy Description:

LT Gain+ invests in the United States, when the Russell 1000 shows positive momentum it invests in it. When these markets aren't experiencing positive momentum the strategy goes into Long Term Treasuries. This strategy uses Smart Leverage and goes into 2X S&P 500 after an outsized drawdown in the markets and will hold that position for up to 1 full year at which point it would go back into the Russell 1000 with positive momentum.

Strategy Components

IWB Russell 1000 → Smart Leverage: SSO 2X S&P 500

TLT Long Term Treasuries, or VGSH with Treasury Duration Limiter

Metric	2000+	1980+
Beta	0.49	0.66
Alpha	14.54%	10.91%

Annualized Returns actual YTD for current year.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
LT Gain+	-15.25%	-8.74%	24.02%	16.84%	15.10%	17.86%	18.68%
Balanced 60/40	-10.69%	-6.28%	8.12%	8.38%	9.00%	5.96%	9.98%
S&P 500	-12.61%	-4.69%	13.32%	12.75%	13.73%	6.62%	11.63%

Maximum Drawdown single largest drawdown.

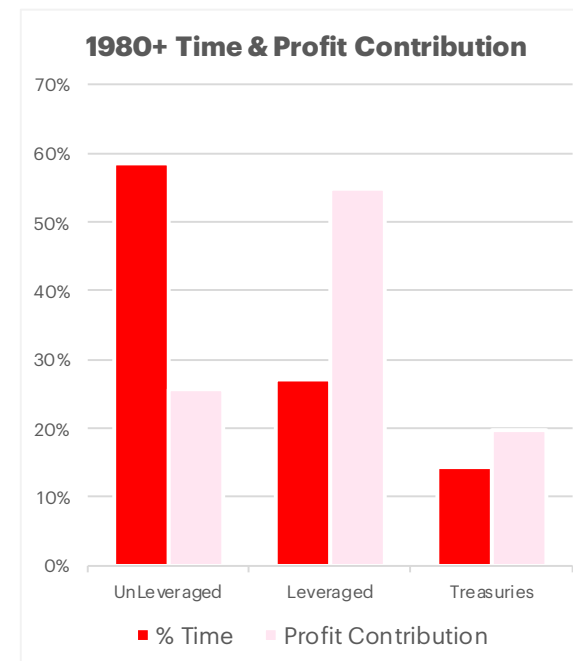
Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
LT Gain+	-15.58%	-15.58%	-15.58%	-15.58%	-15.58%	-15.58%	-23.41%
Balanced 60/40	-16.12%	-16.12%	-16.12%	-16.12%	-16.12%	-32.33%	-32.33%
S&P 500	-19.98%	-19.98%	-19.98%	-19.98%	-19.98%	-50.79%	-50.79%

Ulcer Index the higher the number the more painful downside volatility. Considers all downside not just maximum.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
LT Gain+	11.54	9.15	6.17	5.64	4.83	4.35	5.16
Balanced 60/40	9.42	7.44	4.99	4.19	3.09	7.69	5.99
S&P 500	11.20	8.89	6.66	5.88	4.43	16.68	12.89

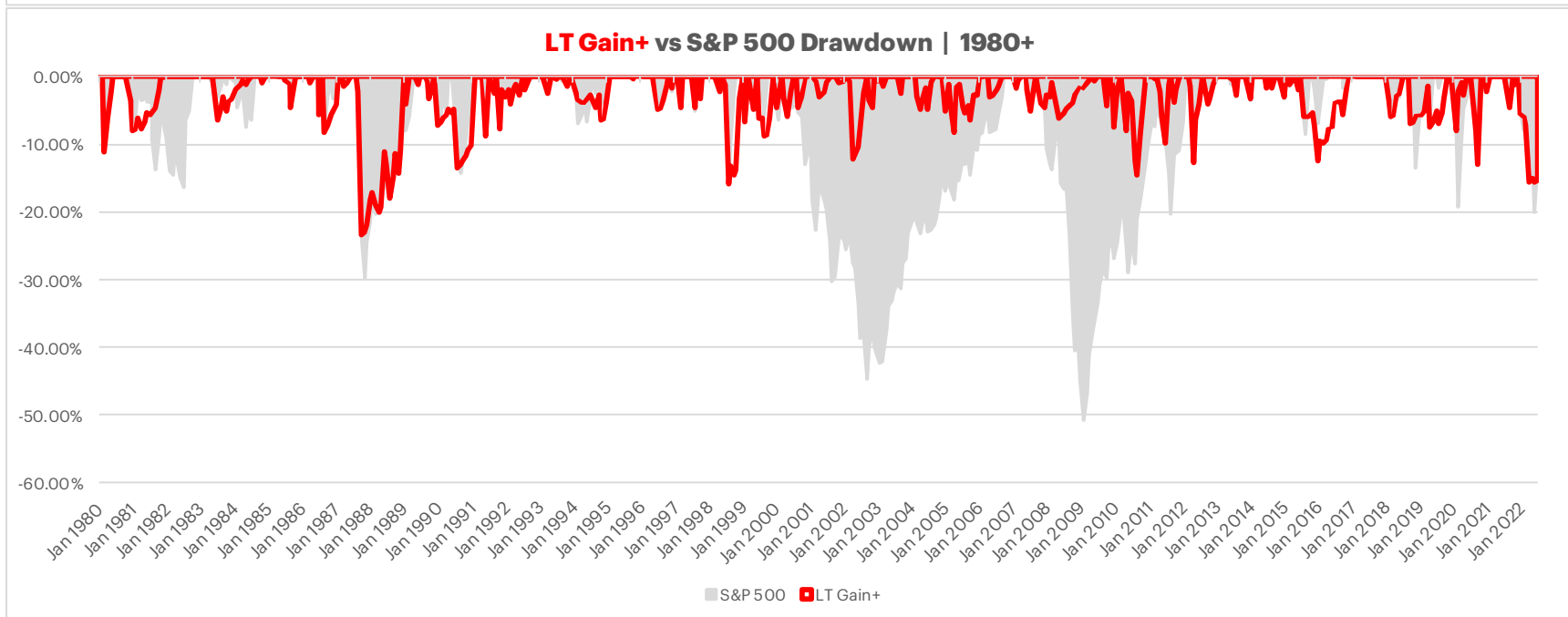
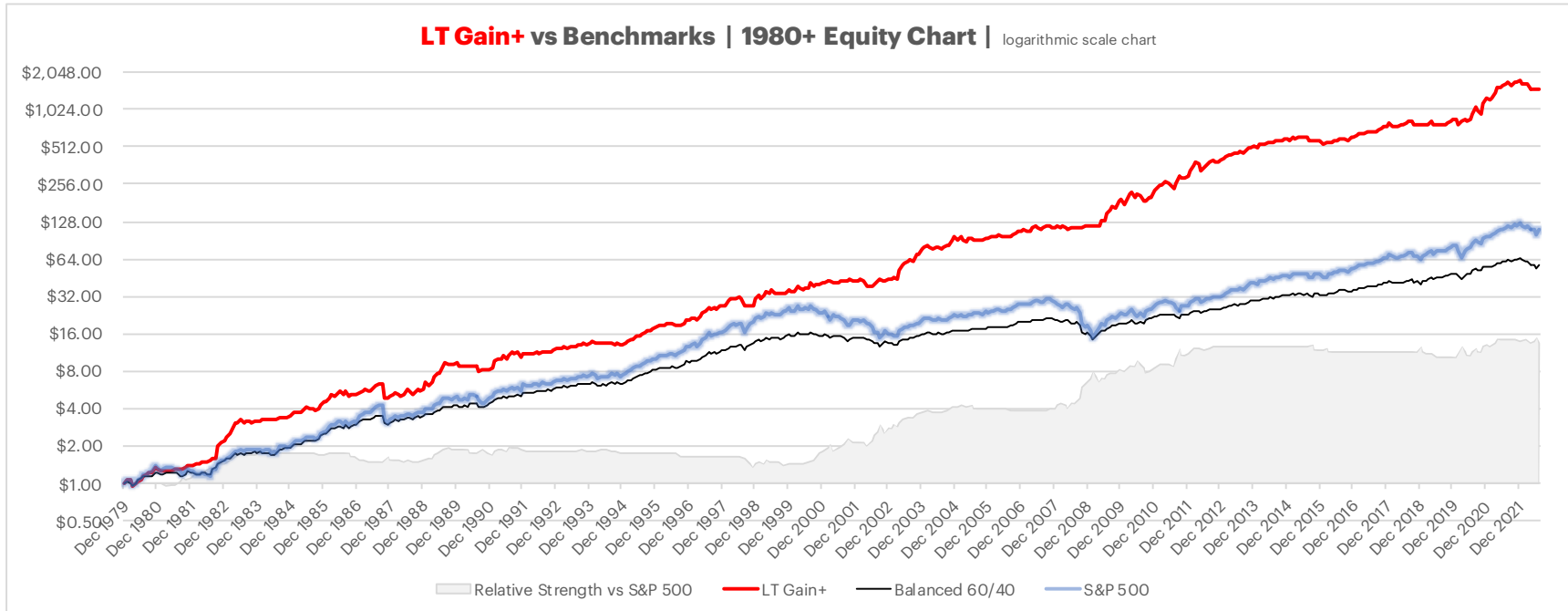
Sortino Ratio, risk adjusted performance measure - bigger number is better.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
LT Gain+	(2.82)	(2.15)	(0.32)	(0.85)	(1.16)	1.93	1.88
Balanced 60/40	(2.43)	(2.14)	(1.59)	(1.73)	(1.99)	0.60	1.26
S&P 500	(2.07)	(1.60)	(0.87)	(0.98)	(1.16)	0.49	0.98



LT Gain+ inception date January 2022.

Dual Momentum Systems: LT Gain+



LT Gain+ inception date January 2022.

Dual Momentum Strategies: LT Gain++

Single Momentum Strategy using Smart Leverage

Results through 07/30/2022

Investment selection for August 2022:

VGSH, Short Term Treasuries

Tax friendliness:

LT Gain++ has mostly Long Term Cap Gains.

Months between change of holdings

LT Gain++ changes it's holdings every 5.9 months on average.

Portfolio size appropriateness:

Whale, LT Gain++ can be used for any sized portfolio.

Characteristics:

Drawdowns: LT Gain++ has more conservative drawdowns than the S&P.

Volatility: LT Gain++ is usually less volatile than the S&P over time.

Returns: LT Gain++ has superior historical returns compared to the S&P 500.

Leverage: LT Gain++ has a maximum leverage of 300% and average leverage of: 145%

Strategy Description:

LT Gain++ invests in the United States, when the Russell 1000 shows positive momentum it invests in it. When these markets aren't experiencing positive momentum the strategy goes into Long Term Treasuries. This strategy uses Smart Leverage and goes into 3X S&P 500 after an outsized drawdown in the markets and will hold that position for up to 1 full year at which time it would go back into the Russell 1000 with positive momentum.

Strategy Components

VTI Total US Market → Smart Leverage: UPRO 3X S&P 500

TLT Long Term Treasuries, or VGSH with Treasury Duration Limiter

Metric	2000+	1980+
Beta	0.61	0.80
Alpha	15.30%	20.29%

Annualized Returns

actual YTD for current year.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
LT Gain++	-15.25%	-8.74%	36.33%	23.62%	18.88%	24.43%	24.69%
Balanced 60/40	-10.69%	-6.28%	8.12%	8.38%	9.00%	5.96%	9.98%
S&P 500	-12.61%	-4.69%	13.32%	12.75%	13.73%	6.62%	11.63%

Maximum Drawdown

single largest drawdown.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
LT Gain++	-15.58%	-15.58%	-19.70%	-19.70%	-19.70%	-19.70%	-23.41%
Balanced 60/40	-16.12%	-16.12%	-16.12%	-16.12%	-16.12%	-32.33%	-32.33%
S&P 500	-19.98%	-19.98%	-19.98%	-19.98%	-19.98%	-50.79%	-50.79%

Ulcer Index

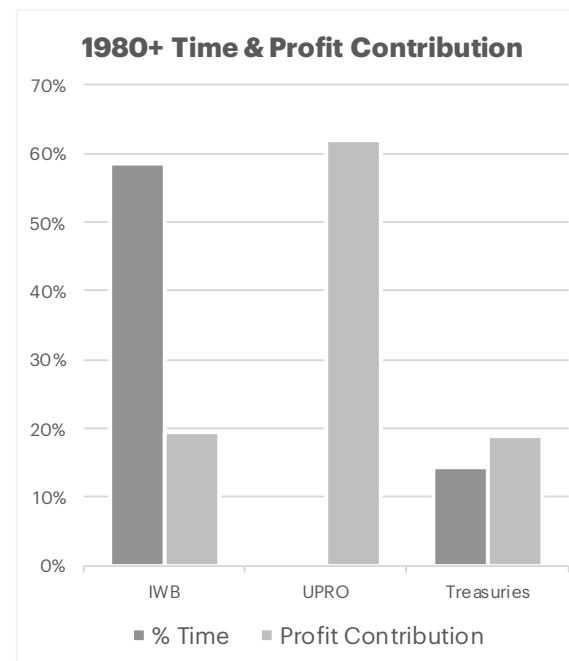
the higher the number the more painful downside volatility. Considers all downside not just maximum.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
LT Gain++	11.54	9.15	6.82	6.10	5.05	5.25	5.58
Balanced 60/40	9.42	7.44	4.99	4.19	3.09	7.69	5.99
S&P 500	11.20	8.89	6.66	5.88	4.43	16.68	12.89

Sortino Ratio

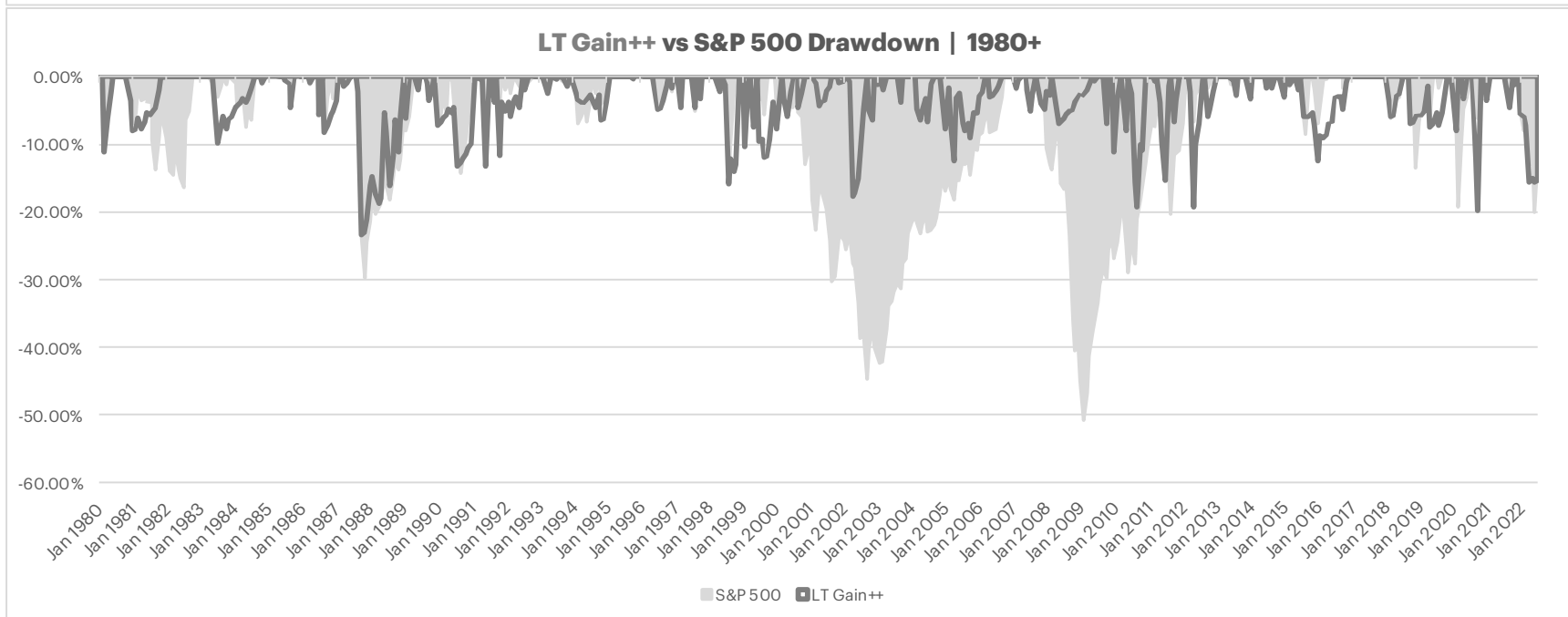
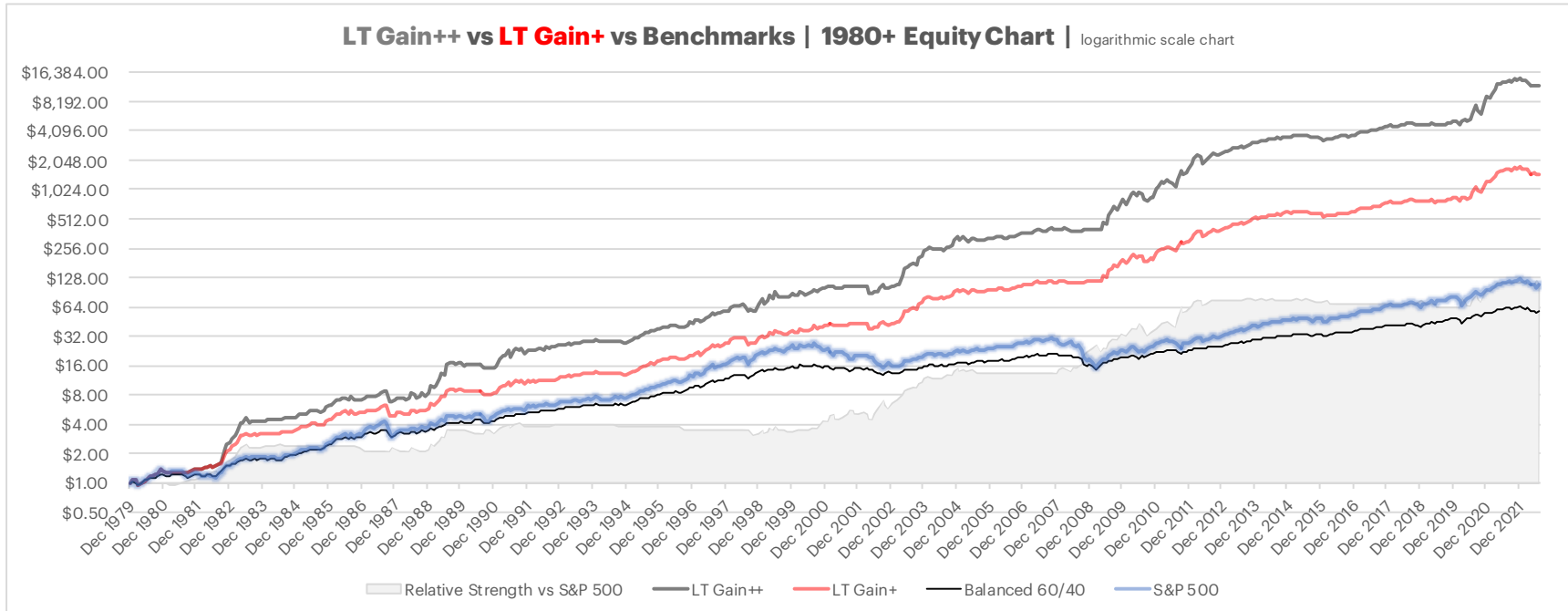
risk adjusted performance measure - bigger number is better.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
LT Gain++	(2.82)	(2.15)	0.44	(0.29)	(0.76)	2.14	2.13
Balanced 60/40	(2.43)	(2.14)	(1.59)	(1.73)	(1.99)	0.60	1.26
S&P 500	(2.07)	(1.60)	(0.87)	(0.98)	(1.16)	0.49	0.98



LT Gain++ inception date January 2022.

Dual Momentum Systems: LT Gain++



LT Gain++ inception date January 2022.

**DUAL
MOMENTUM
SYSTEMS**

Model Portfolios

Model Portfolios

1980 through July 30, 2022

Annual returns:

Year End	Benchmarks			Model Portfolios		
	US Market S&P 500	Balanced 60/40	Nasdaq 100 QQQ	Retire	Moderate	Aggressive
1980	32.49%	21.02%	33.38%	16.96%	16.12%	22.52%
1981	-4.90%	0.07%	-0.63%	9.27%	8.54%	6.53%
1982	21.55%	25.68%	18.20%	35.10%	39.11%	47.20%
1983	22.55%	16.21%	19.58%	26.51%	27.48%	40.09%
1984	6.25%	9.84%	-13.19%	11.03%	10.51%	7.44%
1985	31.23%	27.65%	32.38%	30.11%	32.08%	30.62%
1986	18.05%	17.65%	10.83%	31.41%	38.22%	21.26%
1987	4.68%	4.81%	-11.38%	10.12%	9.99%	1.80%
1988	16.22%	12.64%	19.47%	14.01%	10.07%	16.82%
1989	31.38%	24.20%	19.49%	35.15%	30.67%	55.32%
1990	-3.32%	1.56%	-17.55%	-3.31%	-4.22%	-7.93%
1991	30.22%	24.30%	46.97%	24.75%	27.62%	33.32%
1992	7.40%	7.35%	21.54%	10.98%	10.83%	10.94%
1993	9.58%	9.66%	15.37%	13.75%	14.47%	12.41%
1994	0.38%	-0.77%	-3.66%	-1.72%	-0.64%	-2.11%
1995	38.05%	29.81%	42.46%	29.39%	31.08%	33.33%
1996	22.51%	14.70%	23.41%	16.31%	15.06%	16.72%
1997	33.49%	23.58%	21.27%	18.04%	21.10%	25.07%
1998	28.69%	21.01%	32.17%	14.17%	13.82%	12.01%
1999	20.39%	11.65%	80.58%	19.09%	21.70%	19.60%
2000	-9.74%	-1.49%	-28.93%	14.83%	13.56%	15.14%
2001	-11.75%	-3.81%	-25.59%	2.68%	2.69%	1.78%
2002	-21.59%	-9.80%	-29.86%	3.33%	5.80%	0.64%
2003	28.16%	18.19%	41.08%	31.52%	38.68%	61.81%
2004	10.71%	8.00%	9.84%	16.32%	17.11%	24.12%
2005	4.83%	3.87%	4.49%	9.39%	8.60%	4.22%
2006	15.84%	10.95%	8.27%	15.98%	16.98%	15.88%
2007	5.14%	5.94%	9.44%	10.61%	12.52%	9.92%
2008	-36.81%	-21.86%	-42.67%	-2.19%	-2.04%	-6.11%
2009	26.38%	18.66%	45.53%	31.98%	32.93%	54.97%
2010	15.06%	12.04%	18.51%	24.03%	19.90%	24.11%
2011	1.88%	4.38%	-1.14%	14.09%	17.06%	22.06%
2012	16.00%	11.39%	15.46%	8.94%	14.47%	21.38%
2013	32.31%	17.44%	35.69%	17.77%	19.01%	24.22%
2014	13.48%	10.56%	16.11%	9.16%	9.52%	10.06%
2015	1.26%	1.11%	6.50%	-2.73%	-4.03%	-2.93%
2016	12.00%	8.34%	7.39%	7.97%	8.31%	9.91%
2017	21.71%	14.26%	27.28%	14.47%	15.69%	17.00%
2018	-4.56%	-2.47%	-1.10%	0.09%	0.57%	0.12%
2019	31.23%	21.98%	28.83%	12.75%	12.78%	12.50%
2020	18.39%	14.93%	43.75%	25.09%	27.82%	40.80%
2021	28.76%	15.74%	27.41%	22.62%	21.73%	33.31%
2022	-12.61%	-10.69%	-20.46%	-4.46%	-6.97%	-8.13%
+/- S&P YTD:	0.0%	1.9%	-7.9%	8.1%	5.6%	4.5%
CAGR	11.6%	10.0%	11.0%	14.6%	15.3%	17.4%

Dual Momentum Strategies: Model Retire Portfolio

Combination of Strategies

Results through 07/30/2022

Investment selection for August 2022:

Look at individual strategies for selections

Tax friendliness:

Undetermined

Months between change of holdings

Undetermined, look at the individual strategies for a better idea.

Portfolio size appropriateness:

Undetermined, look at the individual strategies for a better idea.

Characteristics:

Drawdowns: Far less than a Balanced 60/40 portfolio.

Volatility: Far less overall downside volatility over the long term.

Returns: Significantly higher returns than a 60/40.

Strategy Description:

This Model Retire Portfolio is based on the allocation: 35% GPMv 50% Triad++ 15% IWR [the Russell Mid-Cap ETF]. It has an average leverage of 108% and a maximum leverage of 133%. The goal of this strategy is a balance of: 1) Near market returns 2) with a very low long term Ulcer Index and 3) low Max DD and 4) low average and modestly low maximum leverage.

Metric	2000+	1980+
Beta	0.36	0.44
Alpha	9.62%	9.40%

Annualized Returns actual YTD for current year.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Model Retire	-4.46%	-2.96%	15.35%	12.04%	10.31%	12.14%	14.63%
Balanced 60/40	-10.69%	-6.28%	8.12%	8.38%	9.00%	5.96%	9.98%
S&P 500	-12.61%	-4.69%	13.32%	12.75%	13.73%	6.62%	11.63%

Maximum Drawdown single largest drawdown.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Model Retire	-5.53%	-6.68%	-6.68%	-6.68%	-6.68%	-8.13%	-13.96%
Balanced 60/40	-16.12%	-16.12%	-16.12%	-16.12%	-16.12%	-32.33%	-32.33%
S&P 500	-19.98%	-19.98%	-19.98%	-19.98%	-19.98%	-50.79%	-50.79%

Ulcer Index the higher the number the more painful downside volatility. Considers all downside not just maximum.

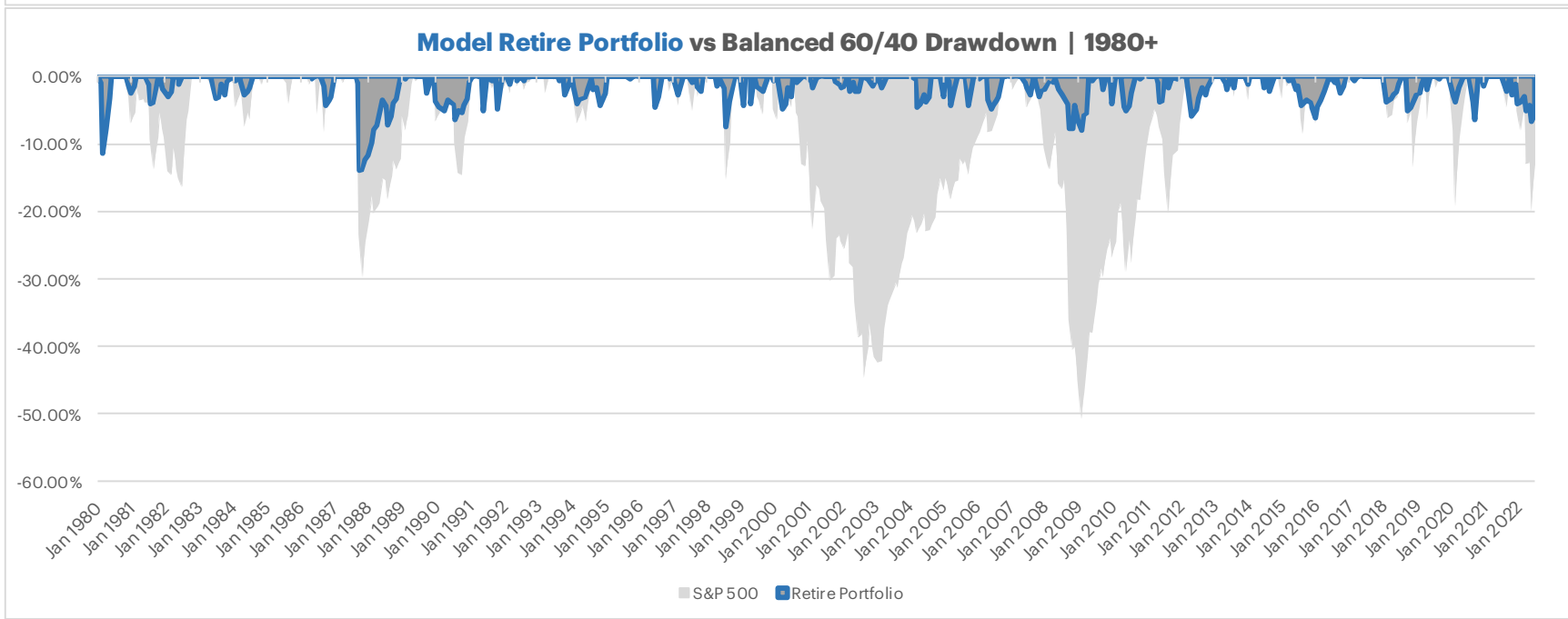
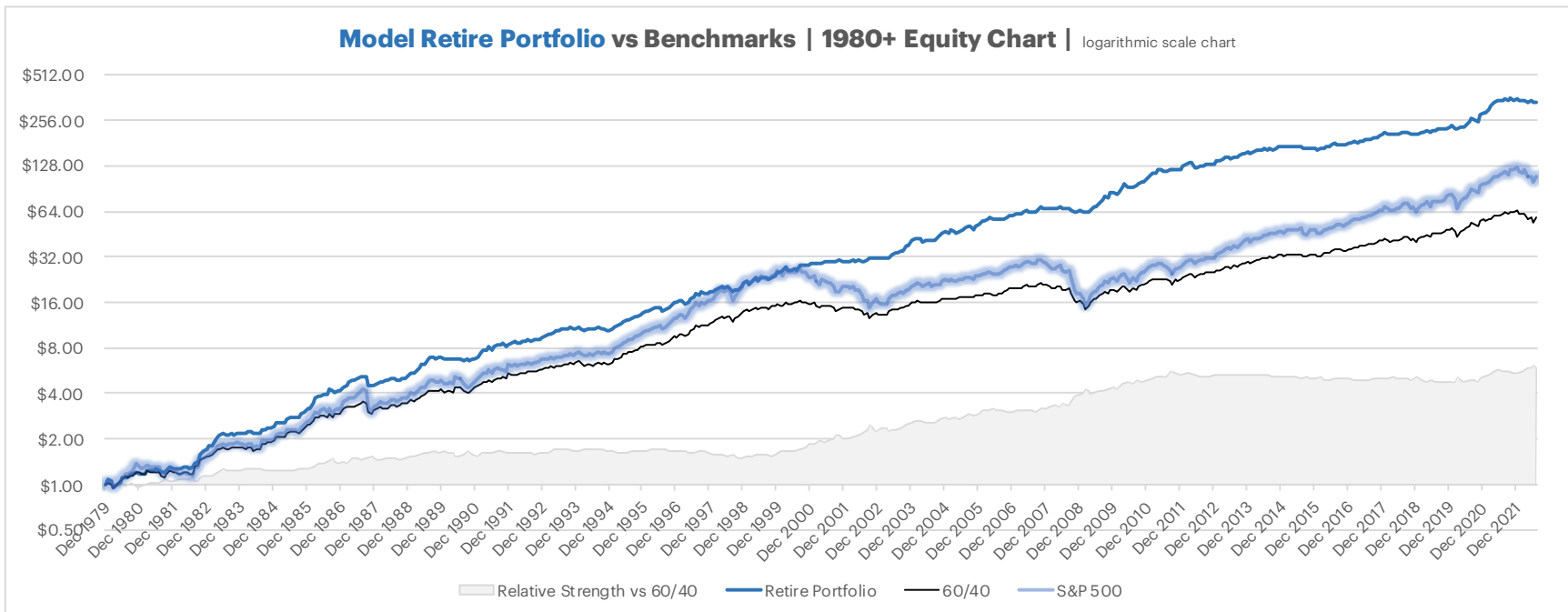
Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Model Retire	3.43	3.68	2.67	2.60	2.25	2.38	2.66
Balanced 60/40	9.42	7.44	4.99	4.19	3.09	7.69	5.99
S&P 500	11.20	8.89	6.66	5.88	4.43	16.68	12.89

Sortino Ratio, risk adjusted performance measure - bigger number is better.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Model Retire	(3.06)	(2.72)	(1.42)	(1.78)	(2.14)	2.11	2.36
Balanced 60/40	(2.43)	(2.14)	(1.59)	(1.73)	(1.99)	0.60	1.26
S&P 500	(2.07)	(1.60)	(0.87)	(0.98)	(1.16)	0.49	0.98

This is a combination of strategies, annually rebalanced.

Dual Momentum Systems: Model Retire Portfolio



This is a combination of strategies, annually rebalanced.

Dual Momentum Strategies: Model Moderate Portfolio

Combination of Strategies

Results through 07/30/2022

Investment selection for August 2022:

Look at individual strategies for selections

Tax friendliness:

Undetermined

Months between change of holdings

Undetermined, look at the individual strategies for a better idea.

Portfolio size appropriateness:

Undetermined, look at the individual strategies for a better idea.

Characteristics:

Drawdowns: Noticeably lower Max DD compared to S&P 500.

Volatility: More volatile than a 60/40 recently, much less over the long term.

Returns: Similar returns to S&P 500 over the past 1 to 10 years, and superior returns over the long run.

Strategy Description:

This Model Moderate Portfolio based on the allocation: 30% GPMv 35% Triad++ 20% Global Navigator+ 15% IWR [the Russell Mid-Cap ETF]. It has an average leverage of 108% and a maximum leverage of 143%. This strategy has an allocation for somebody who is willing to use modest leverage at times when the odds are in our favor, somebody who is looking for growth, but doesn't want S&P type maximum drawdowns and high

Metric	2000+	1980+
Beta	0.37	0.46
Alpha	10.28%	9.79%

Annualized Returns, actual YTD for current year.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Model Moderate	-6.97%	-4.26%	15.18%	11.89%	10.57%	12.88%	15.26%
Balanced 60/40	-10.69%	-6.28%	8.12%	8.38%	9.00%	5.96%	9.98%
S&P 500	-12.61%	-4.69%	13.32%	12.75%	13.73%	6.62%	11.63%

Maximum Drawdown, single largest drawdown.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Model Moderate	-8.13%	-8.49%	-8.49%	-8.49%	-8.49%	-8.49%	-14.49%
Balanced 60/40	-16.12%	-16.12%	-16.12%	-16.12%	-16.12%	-32.33%	-32.33%
S&P 500	-19.98%	-19.98%	-19.98%	-19.98%	-19.98%	-50.79%	-50.79%

Ulcer Index, the higher the number the more painful downside volatility. Considers all downside not just maximum.

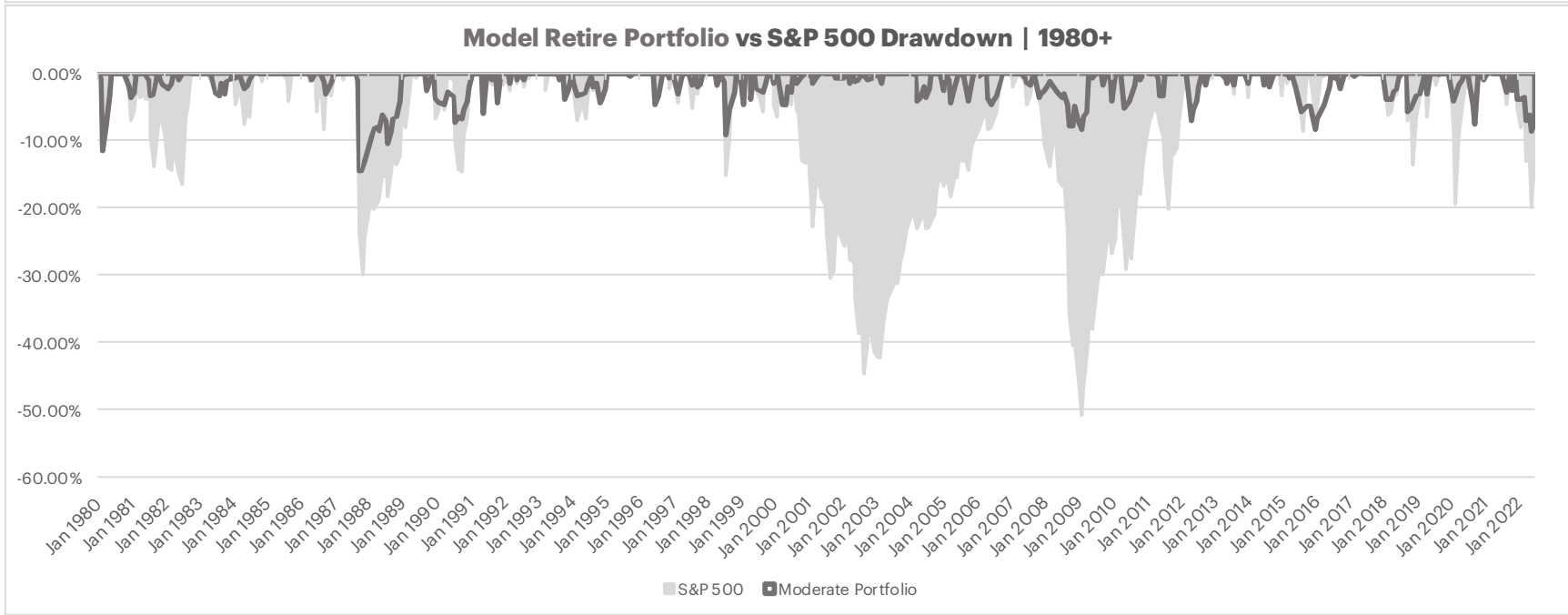
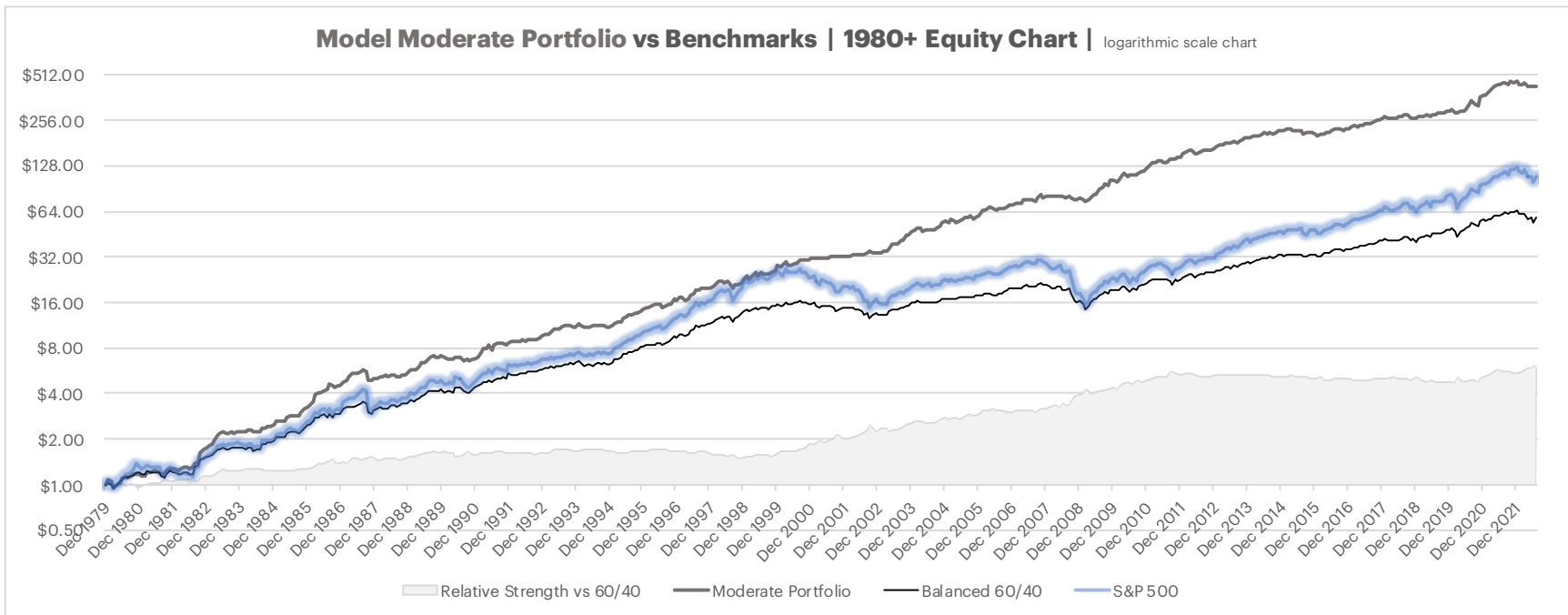
Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Model Moderate	5.35	4.59	3.24	3.05	2.79	2.62	2.91
Balanced 60/40	9.42	7.44	4.99	4.19	3.09	7.69	5.99
S&P 500	11.20	8.89	6.66	5.88	4.43	16.68	12.89

Sortino Ratio, risk adjusted performance measure - bigger number is better.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Model Moderate	(3.02)	(2.59)	(1.33)	(1.69)	(2.01)	2.17	2.35
Balanced 60/40	(2.43)	(2.14)	(1.59)	(1.73)	(1.99)	0.60	1.26
S&P 500	(2.07)	(1.60)	(0.87)	(0.98)	(1.16)	0.49	0.98

This is a combination of strategies, annually rebalanced.

Dual Momentum Systems: Model Moderate Portfolio



This is a combination of strategies, annually rebalanced.

Dual Momentum Strategies: Model Aggressive Portfolio

Combination of Strategies

Results through 07/30/2022

Investment selection for August 2022:

Look at individual strategies for selections

Tax friendliness:

Undetermined

Months between change of holdings

Undetermined, look at the individual strategies for a better idea.

Portfolio size appropriateness:

Undetermined, look at the individual strategies for a better idea.

Characteristics:

Drawdowns: Far less Max DD than the S&P 500.

Volatility: Slightly higher downside volatility than the S&P over the past 10 years, far lower over the long run.

Returns: Similar returns to the S&P over the past 10 years, significantly higher over the long run.

Metric	2000+	1980+
Beta	0.52	0.63
Alpha	12.37%	9.96%

Annualized Returns actual YTD for current year.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Model Aggressive	-8.13%	-5.03%	22.30%	15.82%	13.65%	15.88%	17.35%
Balanced 60/40	-10.69%	-6.28%	8.12%	8.38%	9.00%	5.96%	9.98%
S&P 500	-12.61%	-4.69%	13.32%	12.75%	13.73%	6.62%	11.63%

Maximum Drawdown single largest drawdown.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Model Aggressive	-9.27%	-9.27%	-10.94%	-10.94%	-10.94%	-12.31%	-19.74%
Balanced 60/40	-16.12%	-16.12%	-16.12%	-16.12%	-16.12%	-32.33%	-32.33%
S&P 500	-19.98%	-19.98%	-19.98%	-19.98%	-19.98%	-50.79%	-50.79%

Ulcer Index the higher the number the more painful downside volatility. Considers all downside not just maximum.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Model Aggressive	6.07	4.89	4.00	3.74	3.09	3.57	4.03
Balanced 60/40	9.42	7.44	4.99	4.19	3.09	7.69	5.99
S&P 500	11.20	8.89	6.66	5.88	4.43	16.68	12.89

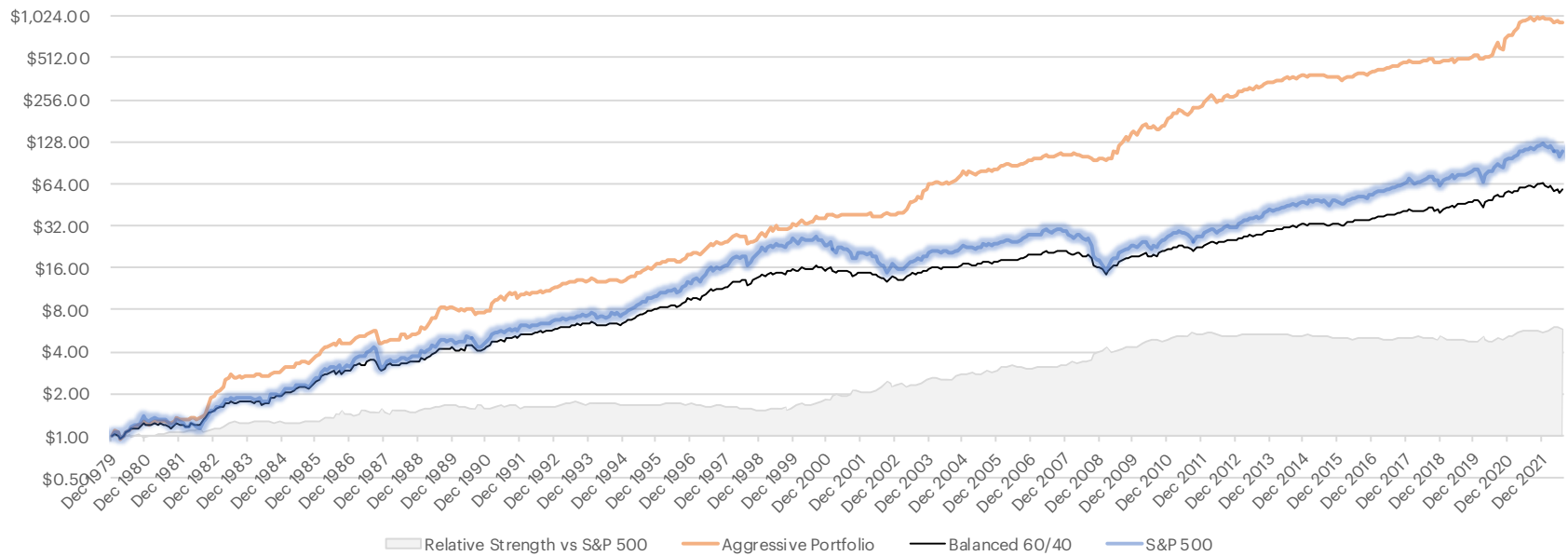
Sortino Ratio, risk adjusted performance measure - bigger number is better.

Investment	YTD	1 Year	3 Year	5 Year	10 Year	2000+	1980+
Model Aggressive	(2.93)	(2.49)	(0.55)	(1.10)	(1.50)	2.11	2.09
Balanced 60/40	(2.43)	(2.14)	(1.59)	(1.73)	(1.99)	0.60	1.26
S&P 500	(2.07)	(1.60)	(0.87)	(0.98)	(1.16)	0.49	0.98

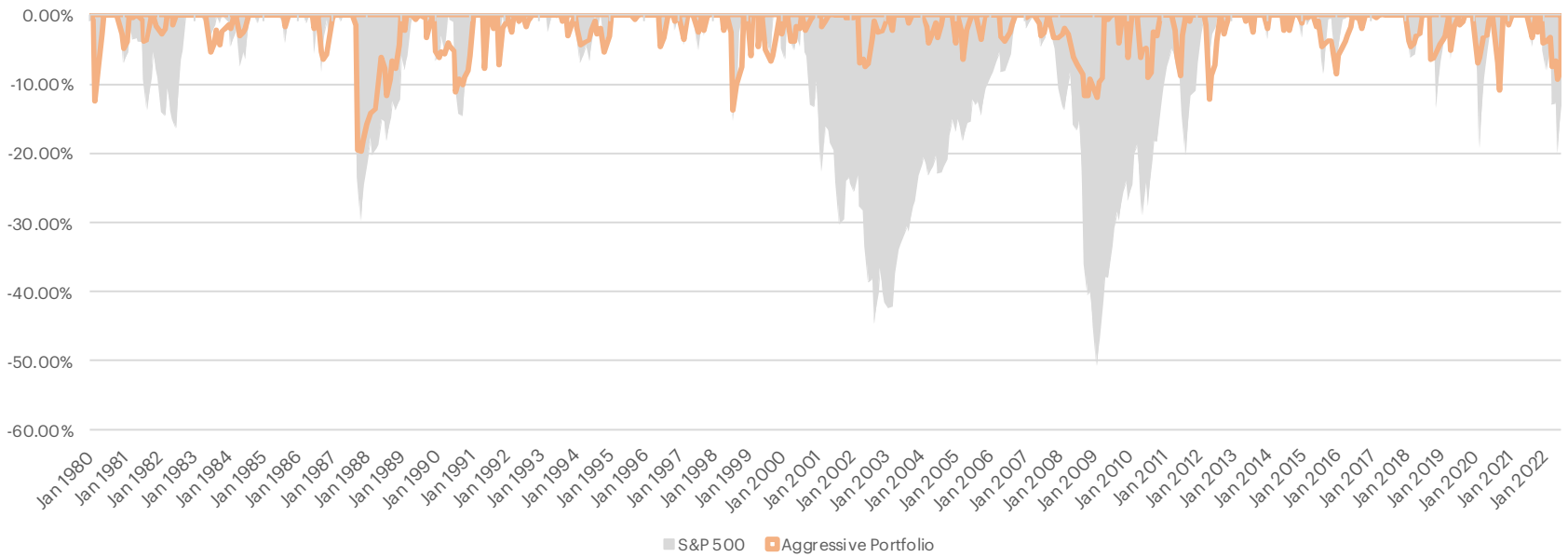
This is a combination of strategies, annually rebalanced.

Dual Momentum Systems: Model Aggressive Portfolio

Model Aggressive Portfolio vs Benchmarks | 1980+ Equity Chart | logarithmic scale chart



Model Aggressive Portfolio vs S&P 500 Drawdown | 1980+



This is a combination of strategies, annually rebalanced.

Investment Strategies

Rolling 12 Month Returns

Through July 30, 2022

Returns and Maximum Drawdown:

←Conservative Aggressive →

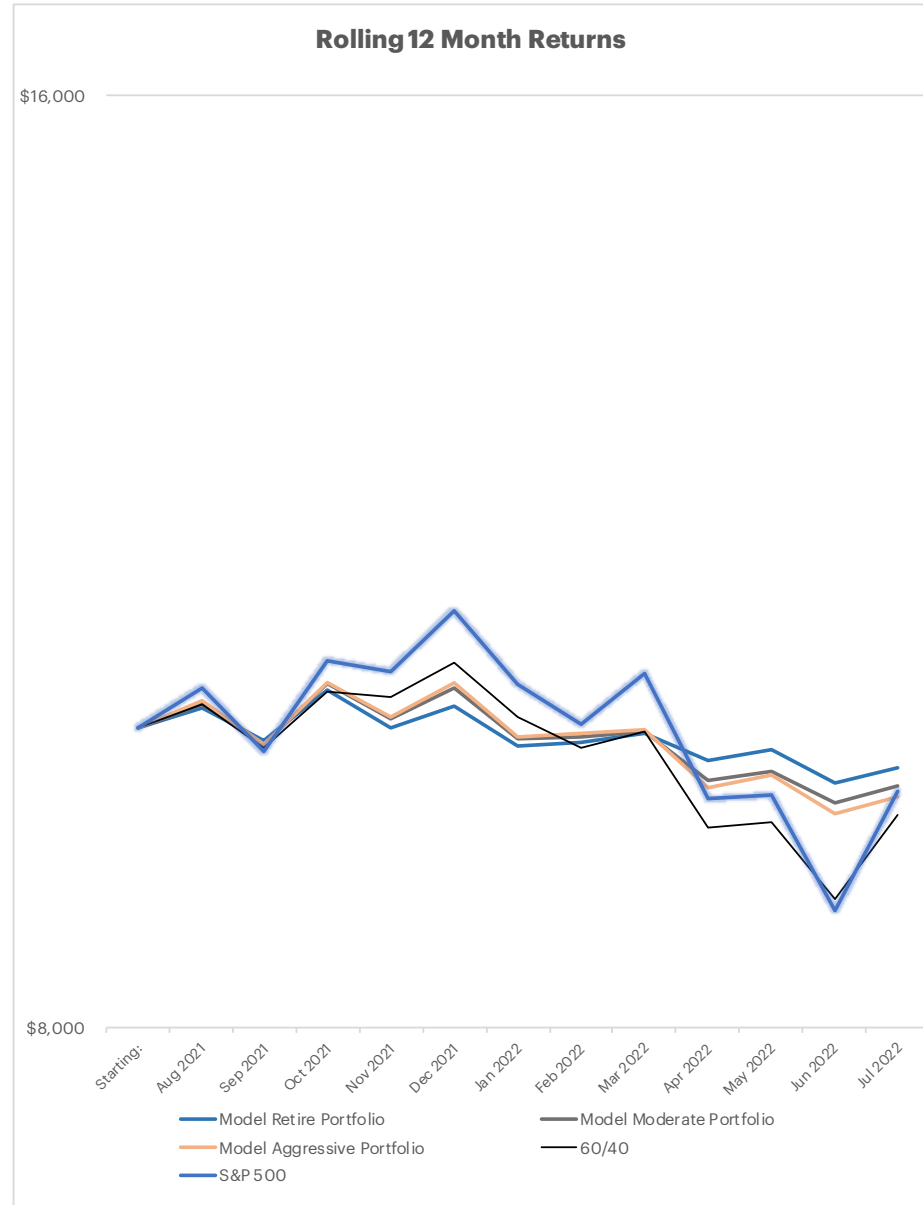
Month	US Market	Balanced	Nasdaq 100	←Conservative Aggressive →		
	S&P 500	60/40	QQQ	Retire	Moderate	Aggressive
Aug 2021	2.98%	1.71%	4.22%	1.42%	1.73%	1.99%
Sep 2021	-4.66%	-3.20%	-5.68%	-2.38%	-2.87%	-3.21%
Oct 2021	7.02%	4.24%	7.86%	3.85%	4.56%	4.70%
Nov 2021	-0.80%	-0.40%	2.00%	-2.83%	-2.54%	-2.48%
Dec 2021	4.63%	2.65%	1.15%	1.66%	2.20%	2.55%
Jan 2022	-5.27%	-3.99%	-8.75%	-2.90%	-3.60%	-3.98%
Feb 2022	-2.95%	-2.23%	-4.48%	0.32%	0.12%	0.27%
Mar 2022	3.76%	1.16%	4.67%	0.69%	0.32%	0.29%
Apr 2022	-8.78%	-6.85%	-13.60%	-2.03%	-3.54%	-4.27%
May 2022	0.23%	0.47%	-1.59%	0.77%	0.66%	1.02%
Jun 2022	-8.25%	-5.61%	-8.91%	-2.45%	-2.28%	-2.85%
Jul 2022	9.21%	6.48%	12.55%	1.13%	1.27%	1.26%
12 Mo Rtrn:	-4.69%	-6.28%	-13.00%	-2.96%	-4.26%	-5.03%
Max DD:	-19.98%	-16.12%	-29.33%	-6.68%	-8.49%	-9.27%

b/(w) S&P 500: 0.0% -1.6% -8.3% 1.7% 0.4% -0.3%

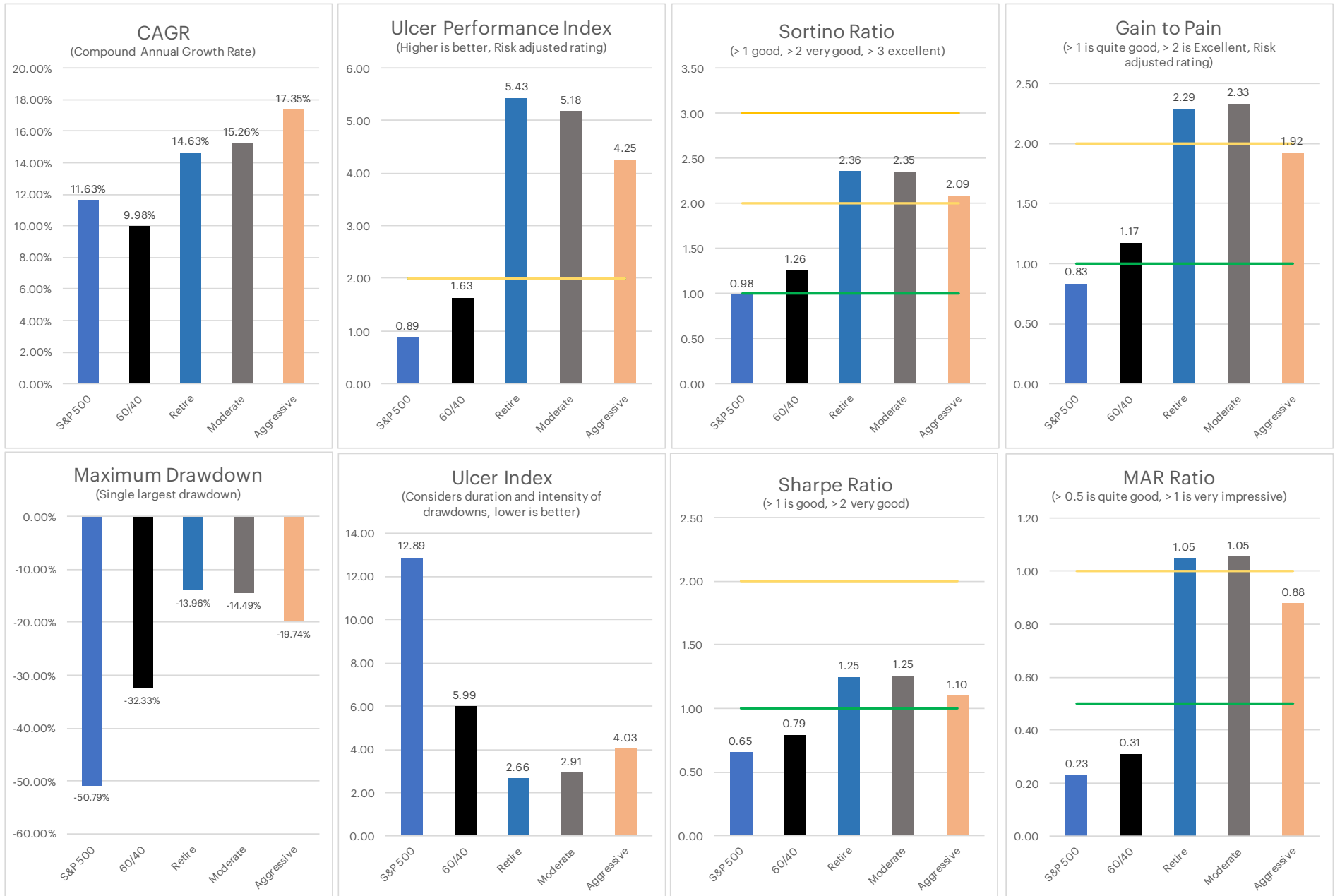
\$10,000 turns into:

←Conservative Aggressive →

Month	US Market	Balanced	Nasdaq 100	←Conservative Aggressive →		
	S&P 500	60/40	QQQ	Retire	Moderate	Aggressive
Starting:	\$ 10,000	\$ 10,000	\$ 10,000	\$10,000	\$10,000	\$ 10,000
Aug 2021	\$ 10,298	\$ 10,171	\$ 10,422	\$ 10,142	\$ 10,173	\$ 10,199
Sep 2021	\$ 9,818	\$ 9,846	\$ 9,830	\$ 9,901	\$ 9,881	\$ 9,872
Oct 2021	\$ 10,507	\$ 10,263	\$ 10,603	\$ 10,282	\$ 10,332	\$ 10,337
Nov 2021	\$ 10,423	\$ 10,222	\$ 10,815	\$ 9,991	\$ 10,069	\$ 10,080
Dec 2021	\$ 10,906	\$ 10,493	\$ 10,939	\$ 10,157	\$ 10,291	\$ 10,337
Jan 2022	\$ 10,331	\$ 10,075	\$ 9,982	\$ 9,863	\$ 9,921	\$ 9,925
Feb 2022	\$ 10,026	\$ 9,851	\$ 9,535	\$ 9,895	\$ 9,932	\$ 9,953
Mar 2022	\$ 10,403	\$ 9,965	\$ 9,980	\$ 9,963	\$ 9,964	\$ 9,982
Apr 2022	\$ 9,490	\$ 9,282	\$ 8,623	\$ 9,761	\$ 9,612	\$ 9,556
May 2022	\$ 9,512	\$ 9,325	\$ 8,486	\$ 9,836	\$ 9,675	\$ 9,653
Jun 2022	\$ 8,727	\$ 8,802	\$ 7,730	\$ 9,595	\$ 9,454	\$ 9,378
Jul 2022	\$ 9,531	\$ 9,372	\$ 8,700	\$ 9,704	\$ 9,574	\$ 9,497



"Long Term" Metrics Comparisons: Model Portfolios vs S&P 500 & 60/40 1980 to current



All Metrics are calculated from Monthly returns

"Modern Era" Metrics Comparisons: Strategies vs S&P 500 & 60/40 2000 to current



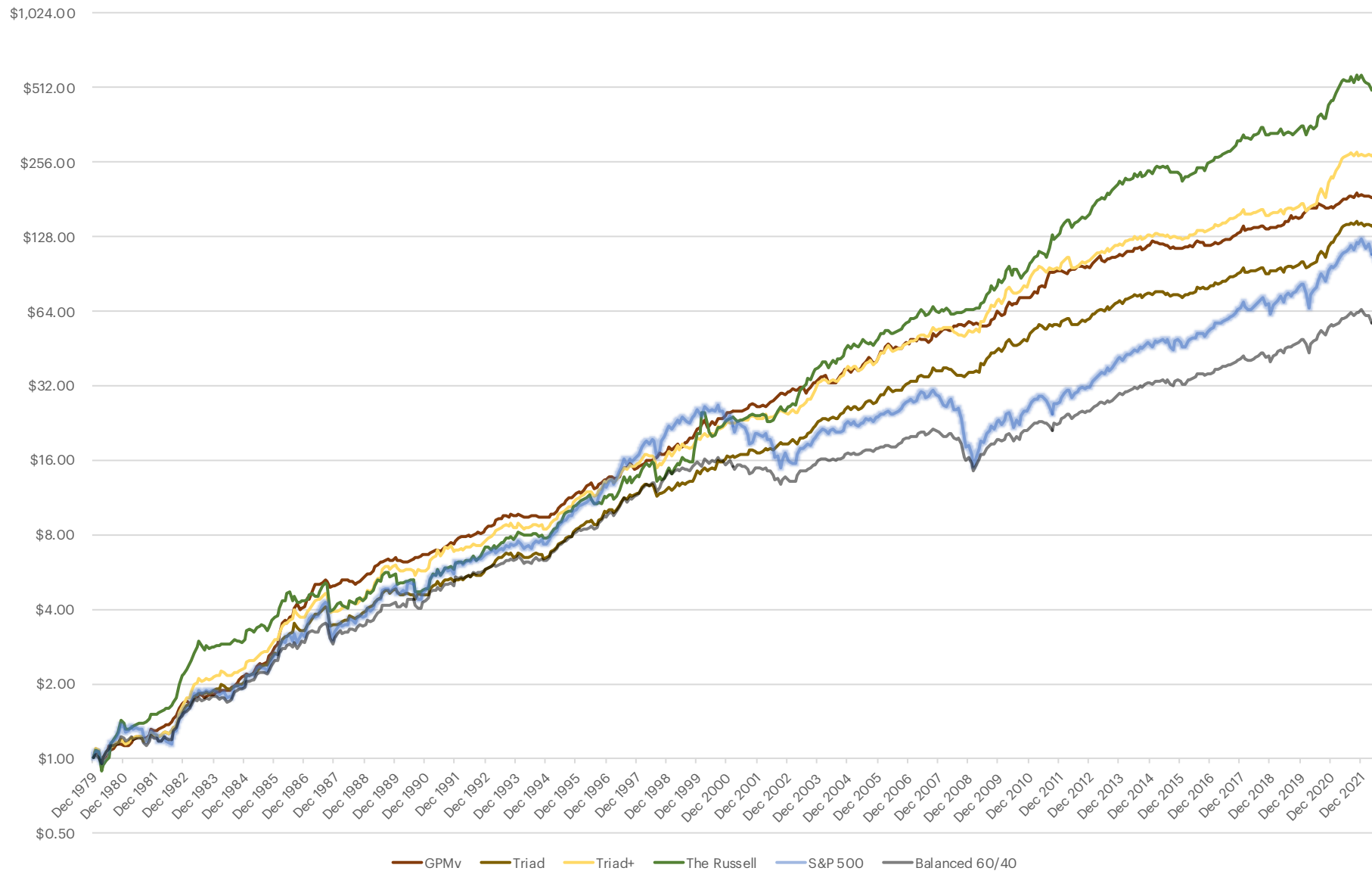
All Metrics are calculated from Monthly returns

DUAL MOMENTUM SYSTEMS

Equity Charts

GPMv vs Triad vs Triad+ vs The Russell OG vs Benchmarks 1980+ Equity Chart for Strategies with No or Low Leverage

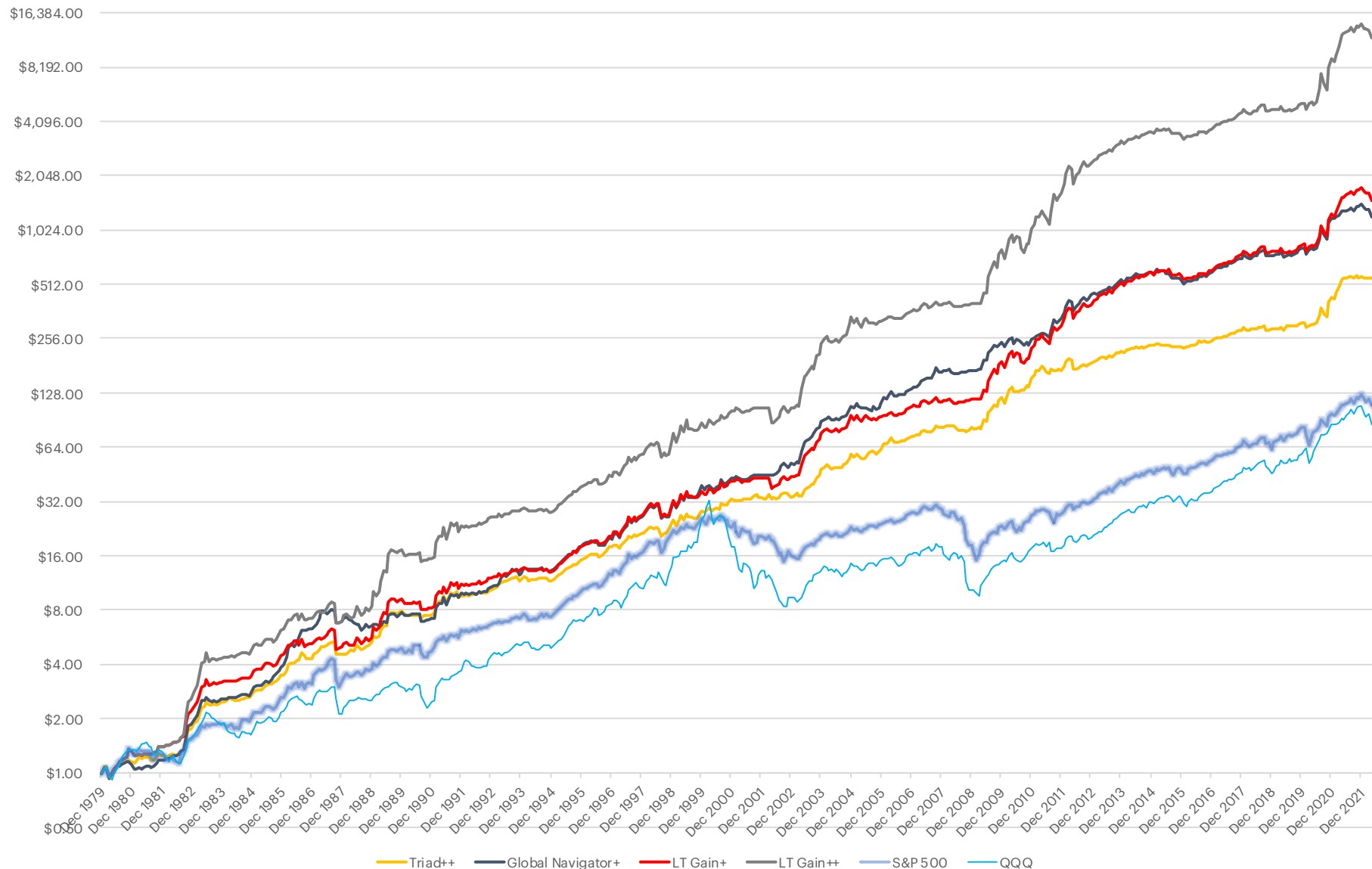
logarithmic scale chart



* Limited use of Leverage with Triad, but showing it with the other unleveraged strategies because it is still very conservative and belongs with this group.

Triad++ vs Global Navigator+ vs LT Gain+ vs LT Gain++ vs Benchmarks 1980+ Equity Chart for Strategies which use leverage

logarithmic scale chart



Metrics, Annual Returns and Correlations

CAGR: Compound Annual Growth Rate, on average how much the strategy has returned per year

Ulcer Performance Index: A risk adjusted performance ratio which uses the Ulcer Index in it's calculations

Sortino Ratio: A risk adjusted performance ratio commonly used

Gain to Pain: Used by the famous Jack Schwager, simply the total net gain divided by net loses along the way

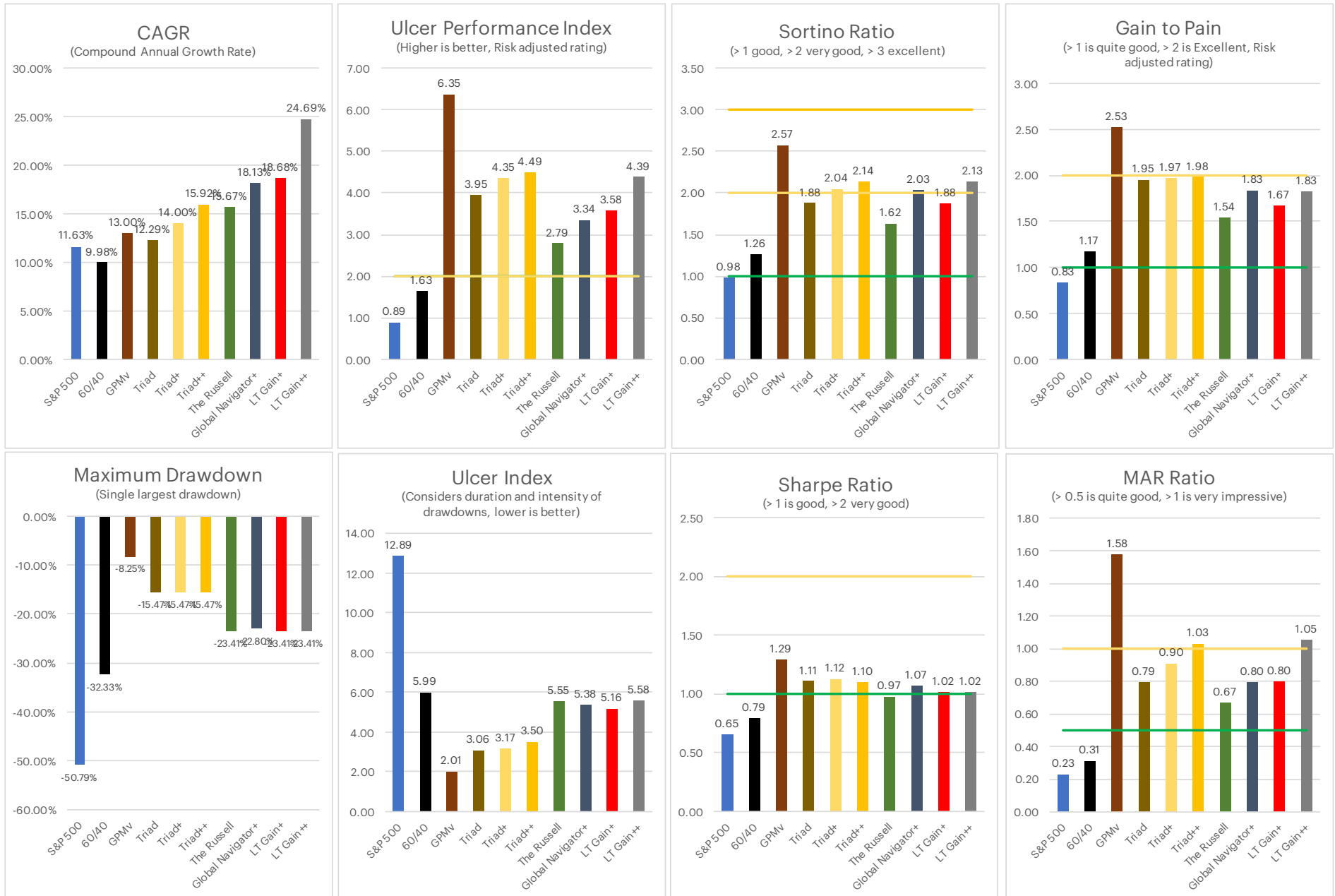
Maximum Drawdown: The largest negative drawdown for the strategy, on a month end basis

Ulcer Index: Measures how bad drawdowns are for an investment, not related to gains, just drawdowns

Sharpe Ratio: A commonly used risk adjusted performance measure, however, it penalizes for upside volatility

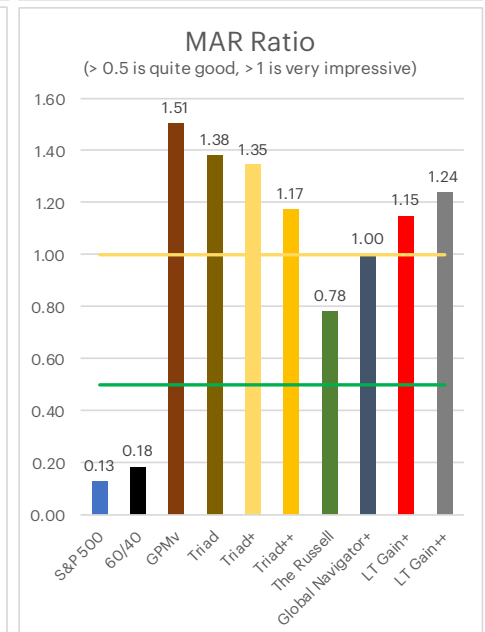
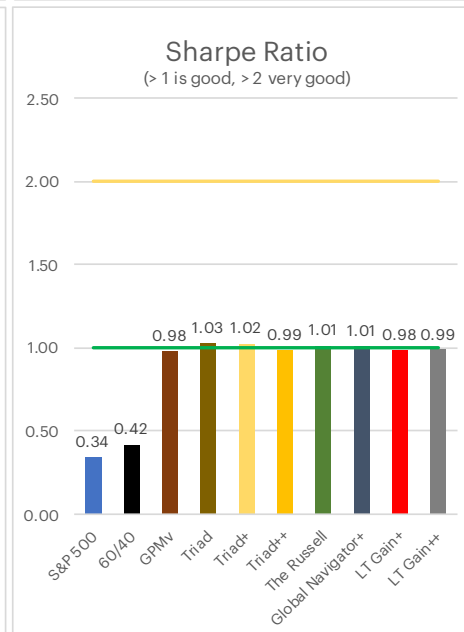
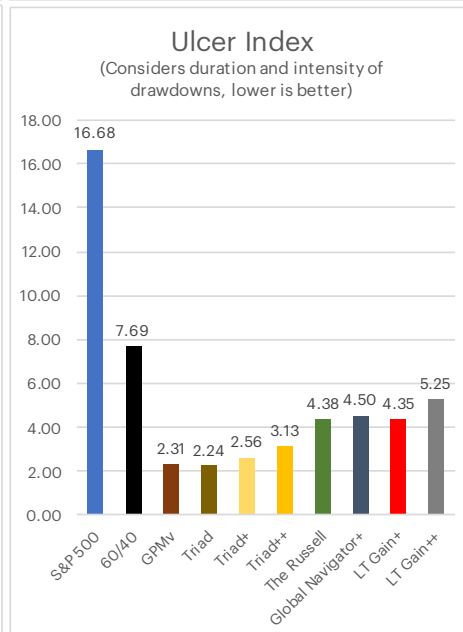
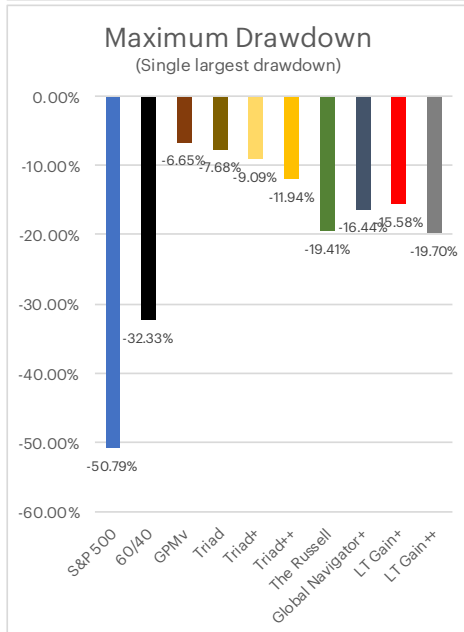
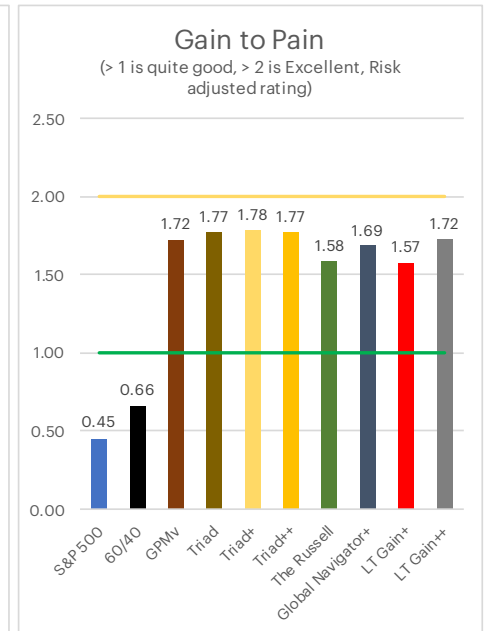
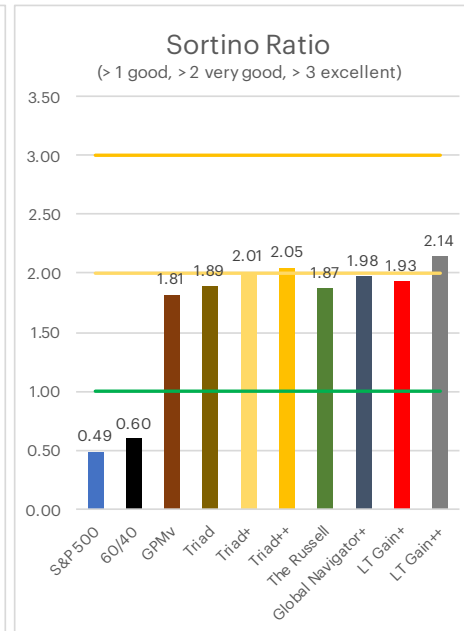
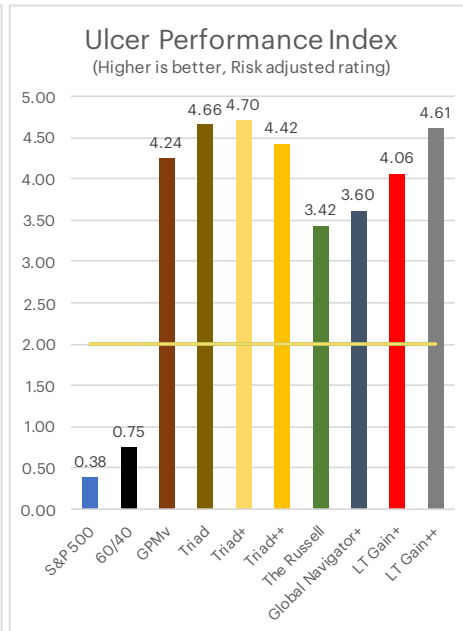
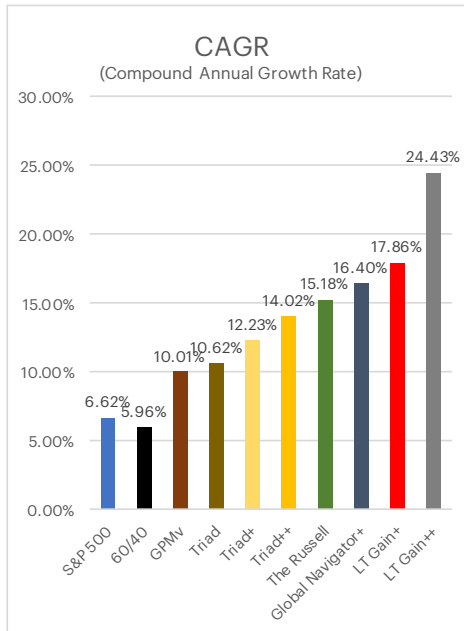
MAR Ratio: A risk adjusted performance ratio, uses maximum drawdown in it's calculations

"Long Term" Metrics Comparisons: Strategies vs S&P 500 & 60/40 1980 to current



All Metrics are calculated from Monthly returns

"Modern Era" Metrics Comparisons: Strategies vs S&P 500 & 60/40 2000 to current



All Metrics are calculated from Monthly returns

36 Month Strategy Return Correlations

←Conservative

Aggressive →

	S&P 500	Balanced 60/40	QQQ	GPMv	Triad	Triad+	Triad++	The Russell	Global Navigator+	LT Gain+	LT Gain++
S&P 500	1.00										
Balanced 60/40	0.99	1.00									
QQQ	0.81	0.84	1.00								
GPMv	0.13	0.19	0.14	1.00							
Triad	0.62	0.58	0.27	0.34	1.00						
Triad+	0.61	0.58	0.27	0.31	0.98	1.00					
Triad++	0.59	0.56	0.26	0.28	0.95	0.99	1.00				
The Russell	0.55	0.53	0.26	0.38	0.91	0.91	1.00	1.00			
Global Navigator+	0.59	0.58	0.32	0.21	0.87	0.87	0.87	0.87	1.00		
LT Gain+	0.61	0.59	0.33	0.27	0.90	0.90	0.89	0.89	0.97	1.00	
LT Gain++	0.58	0.55	0.28	0.24	0.89	0.89	0.84	0.84	0.95	0.99	1.00

DUAL MOMENTUM SYSTEMS

Thank you for your time, my hope is that these strategies may help you grow your investments more than a market index fund, with less drawdowns along the way.

Countless hours of thought, development, and modeling have gone into these strategies which were inspired from the work of Gary Antonacci at www.OptimalMomentum.com. I have entrusted my invested net worth into these strategies, I am not looking to gain from anybody else who chooses to use them, I simply want to share what I think are fantastic ways to invest money for the long run. Receive the strategy information free by emailing me and getting on the distribution list, your information is kept private.

A handwritten signature in black ink, appearing to read "Randy".

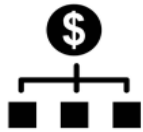
DUAL MOMENTUM SYSTEMS

Appendix: How to invest in Dual Momentum and How it works

How would a person invest in these Strategies?



- At the end of the month notice of which investments the strategies should be invested in for the next month are distributed. You can make any necessary trades the first day or two of the month. This is a free service, these models are run for my own investment portfolio, I like to share with interested people who want more than a buy and hold strategy.



- Determine your allocation, you'll need to decide if you want to go with Global Navigator, The Russell, or some combination of both. In the reporting you'll see a "30/70 Model Portfolio", that is because this is what I do personally: 30% Global Navigator and 70% The Russell.



- Place your trade at your brokerage company so that you are in the investment that the ETF which the strategy indicates for the next month. There is no need to scale in when you start the strategies, every month is a new investment decision to be fully in equities or in Treasuries. You only need to make sure that you are holding the investment for the month that the models tell you to hold.

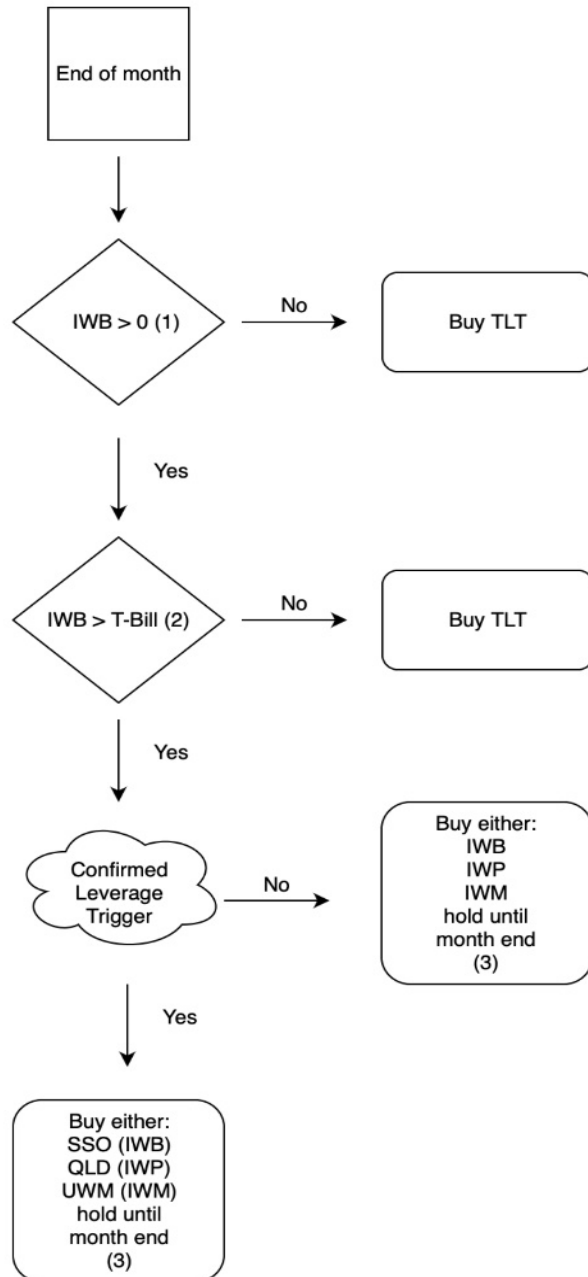


- When the models are in Risk OFF mode they are out of equities and in Treasuries. When in Risk OFF mode the models set to go into UST which is a 2X Intermediate Treasuries ETF. For most of us, this is a great choice. If you are a whale investor then you should probably be considering going into either ZROZ or EDV instead for maximum gain prospects, a whale could instead buy VGLT if they want less volatility when are out of equities.



- These strategies move differently than a market index fund, and on any given day, week, month, or year could underperform the market index, however, this does not mean that the strategies are no longer working - they are best evaluated over a longer time period. Please look closely at the annual performance compared to the S&P on the Bar Chart, it shows very clearly on an annual basis how great these strategies perform to the market, but not every year. Also look closely at the Maximum Drawdown chart, yes, there are some big dips on the dual momentum strategies, but the drawdowns are both more shallow and fewer in number than the market.

How do the strategies select where to invest?



This example to the left shows the decision process for **The Russell**.

Decision 1) When the month is over the full month results are used to calculate the weighted returns: 25% of the 1 month return plus 25% of the 3 month return plus 50% of the 6 month return. If the weighted return for the Russell 1000 is less than zero, then the strategy goes into Treasuries for the next month.

Decision 2) If the Russell 1000 weighted return was positive, check to see if the weighted return is greater than the 90 day T-Bill weighted return, if not the strategy goes into Treasuries for the next month.

Decision 3 No) If the Russell 1000 weighted return was higher than the 90 day T-Bill weighted return, do we have a confirmed Leverage Trigger (which can happen after an outsized drawdown in the Russell 1000), if not we invest in either the Russell 1000, Russell Mid-Cap Growth, or Russell 2000, the one of those three selected is the one with the highest relative strength determined by comparing their weighed returns.

Decision 3 Yes) If there was a confirmed Leverage Trigger, then we invest in SSO instead of Russell 1000, and QLD instead of Russell Mid-Cap Growth, and UWM instead of Russell 2000.

The investment is held until the end of the month, and the process is done again. On average, investments are held about 4 months before changing.

Extended Data & Out of Sample

Extended Data

The strategies use ETF monthly total return data. Leveraged ETF data is used as far back as it is available, it is simulated using the available daily return total data to extend the leverage returns back in time. At this time, only the leveraged S&P 500 from 1970 through 1979 had to be simulated on monthly data instead of daily, if that information becomes available to me it will be updated. This deck is reporting back to 1980 for all strategies, I do have Global Navigator and LT Gain 3 back to 1970 but as mentioned the extended data for the 1970's should be based on daily returns.

The Nasdaq 100 benchmark data is based on Nasdaq 100 back to 1986, however, it didn't exist or data can't be found before that time, so the Nasdaq Composite is used pre-1986 as a proxy. I couldn't reliably emulate Nasdaq 100 from Nasdaq comp.

In Sample, and Out of Sample

The strategies were created with available data from 2000 through the time each strategy was created. Because this data was available and used in the modeling of each strategy, it is considered "In Sample". "Out of Sample" is the periods that the strategy is looking at for which returns were not available when the strategies were created. 1980 through 2000, and from when the strategy was finalized forward is all out of sample.

Nothing was changed to any of the strategies after seeing the additional 20 years from 1980 through 2000, nor were any of the strategies changed or modified due to any returns which have resulted after the strategies were created. I use these strategies myself to invest my hard earned dollars in them, I don't want to fool anybody, most especially not myself by tweaking the strategies to handle some big incident better than it was originally designed to do, no data mining!