

ALPHA ARCHITECT EQUITY LONG/SHORT (AA L/S)

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Disclosures

Performance figures contained herein are hypothetical, unaudited and prepared by Alpha Architect, LLC; hypothetical results are intended for illustrative purposes only.

Past performance is not indicative of future results, which may vary.

There is a risk of substantial loss associated with trading commodities, futures, options and other financial instruments. Before trading, investors should carefully consider their financial position and risk tolerance to determine if the proposed trading style is appropriate. Investors should realize that when trading futures, commodities and/or granting/writing options one could lose the full balance of their account. It is also possible to lose more than the initial deposit when trading futures and/or granting/writing options. All funds committed to such a trading strategy should be purely risk capital.

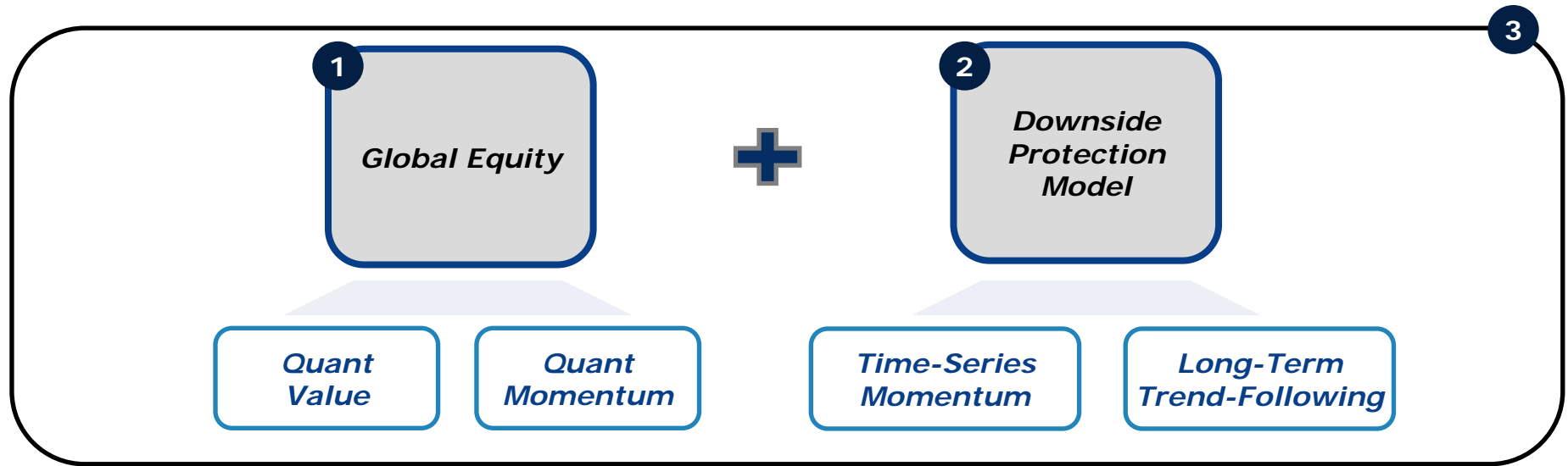
Hypothetical performance results (e.g., quantitative backtests) have many inherent limitations, some of which, but not all, are described herein. No representation is being made that any fund or account will or is likely to achieve profits or losses similar to those shown herein. In fact, there are frequently sharp differences between hypothetical performance results and the actual results subsequently realized by any particular trading program. One of the limitations of hypothetical performance results is that they are generally prepared with the benefit of hindsight. In addition, hypothetical trading does not involve financial risk, and no hypothetical trading record can completely account for the impact of financial risk in actual trading. For example, the ability to withstand losses or adhere to a particular trading program in spite of trading losses are material points which can adversely affect actual trading results. The hypothetical performance results contained herein represent the application of the quantitative models as currently in effect on the date first written above and there can be no assurance that the models will remain the same in the future or that an application of the current models in the future will produce similar results because the relevant market and economic conditions that prevailed during the hypothetical performance period will not necessarily recur. There are numerous other factors related to the markets in general or to the implementation of any specific trading program which cannot be fully accounted for in the preparation of hypothetical performance results, all of which can adversely affect actual trading results. Hypothetical performance results are presented for illustrative purposes only.

Indexes are unmanaged, do not reflect management or trading fees, and one cannot invest directly in an index.

There is no guarantee, express or implied, that long-term return and/or volatility targets will be achieved. Realized returns and/or volatility may come in higher or lower than expected.



AA L/S overview: 3 components

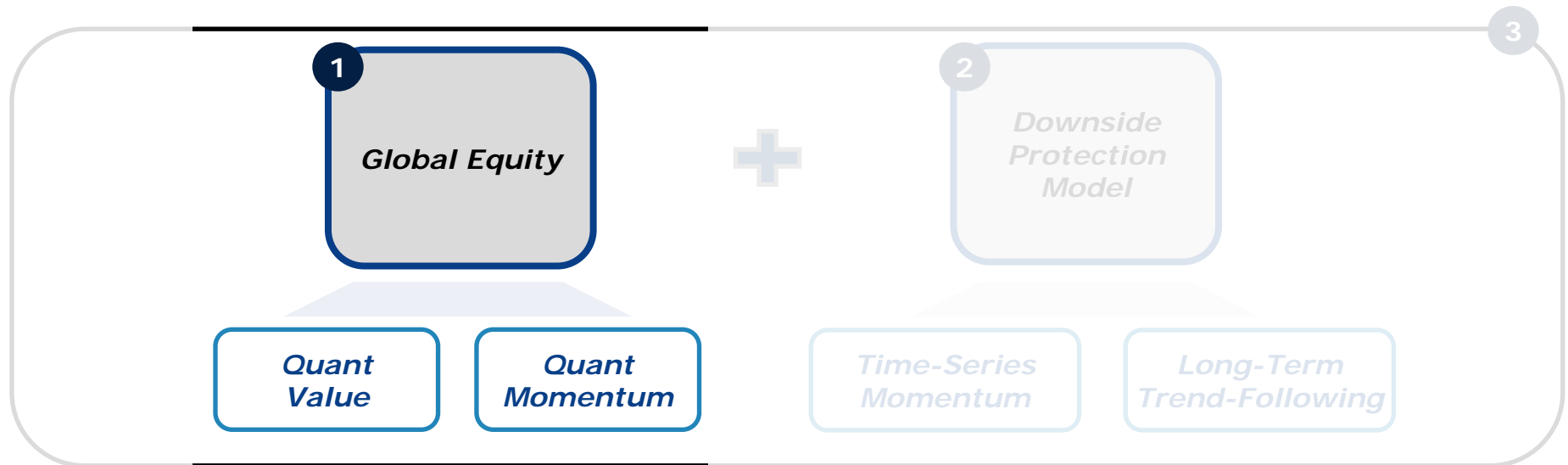


- 1 Active global **value and momentum** seeks to capture large expected equity premiums.
- 2 Our **downside protection model** seeks to minimize large drawdowns.
- 3 Dynamically hedged equity seeks to **capture risk premiums with downside protection**.



**Global Hedged Equity:
 Capture equity risk premiums with downside protection**

Component #1: Global Equity



Simple value and momentum summary statistics

Momentum Strategy "Buy Strong"

Summary Statistics	Simple MOM	SP500
CAGR	13.14%	10.19%
Standard Deviation	21.30%	14.80%
Sharpe Ratio	0.47	0.41
Worst Drawdown	-53.63%	-50.21%

- **Simple MOM** = Top Decile Momentum
 - ❑ Ranked on cumulative 12 months, skip last month
 - ❑ Monthly rebalanced
- **SP500** = SP500 Total Return Index
- **Simulated Performance:** 1/1/1963 to 12/31/2015
- **Net of fees:** 1% mgmt. fee, 2.5% transaction costs

Value Strategy "Buy Cheap"

Summary Statistics	Simple Value	SP500
CAGR	13.04%	10.19%
Standard Deviation	20.15%	14.80%
Sharpe Ratio	0.47	0.41
Worst Drawdown	-65.40%	-50.21%

- **Simple Value** = Top Decile Value, mid/large cap
 - ❑ Ranked on book-to-market
 - ❑ Annually rebalanced
- **SP500** = SP500 Total Return Index
- **Simulated Performance:** 1/1/1963 to 12/31/2015
- **Net of fees:** 1% mgmt. fee, .5% transaction costs

Simple value and momentum have worked, historically

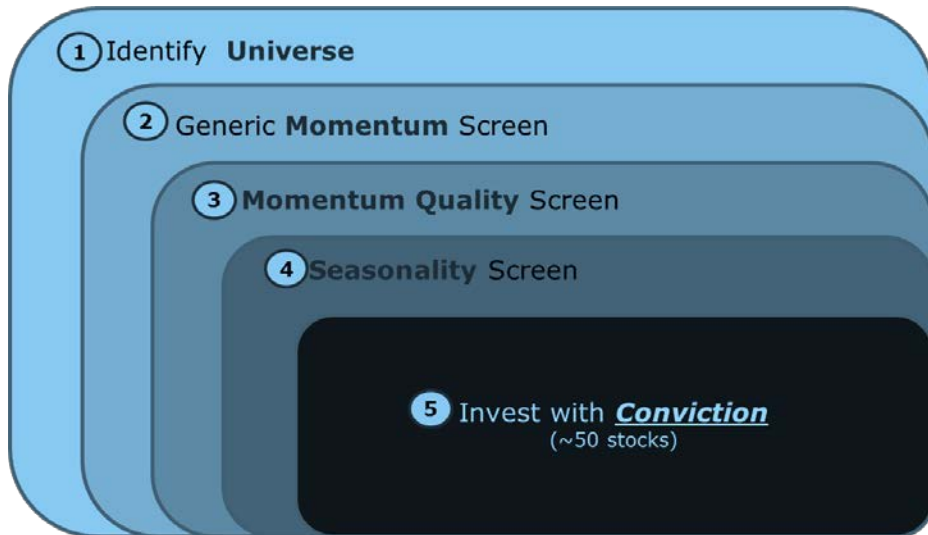


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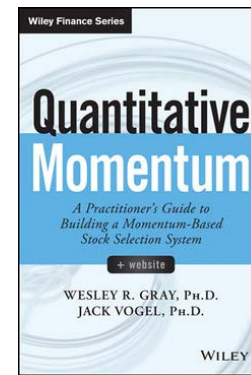
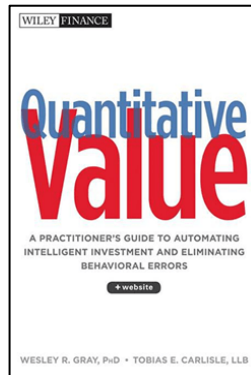
We've taken value and momentum to the next level



We seek to buy the **cheapest highest quality** value stocks

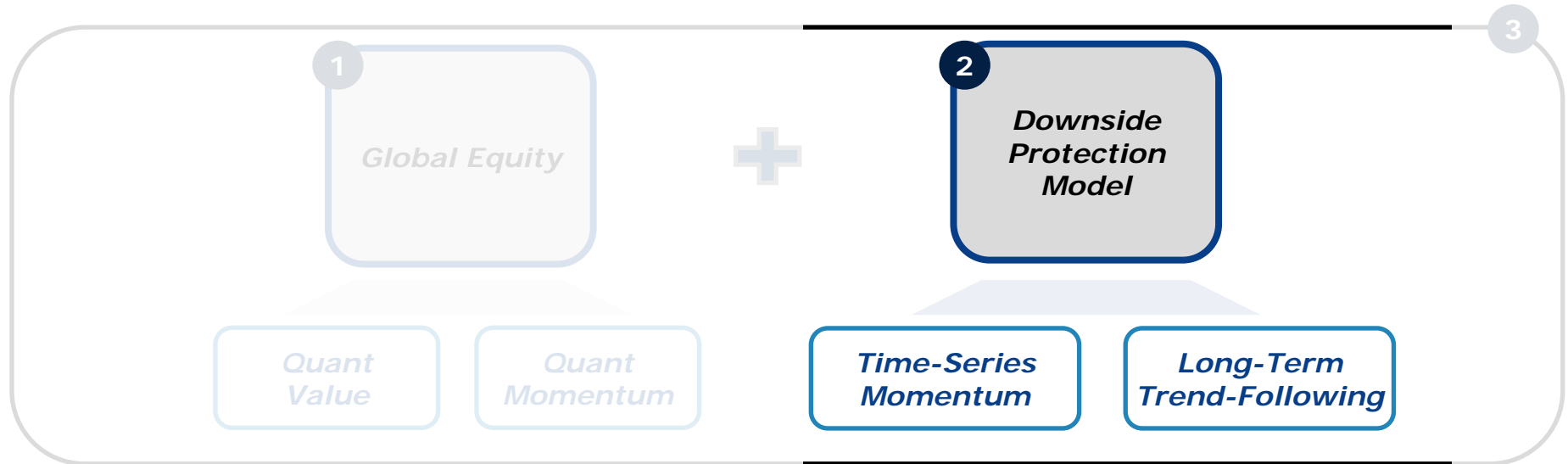


We seek to buy stocks with the **highest quality momentum**

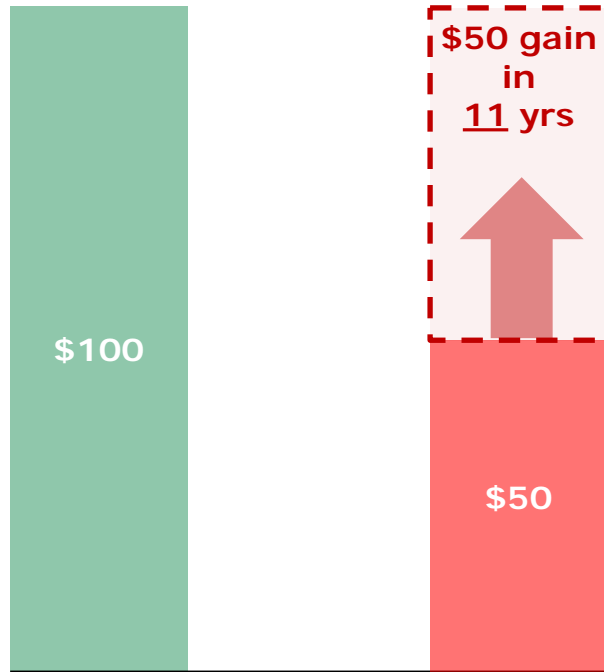


We wrote the books on quantitative value and momentum

Component #2: Downside Protection Model

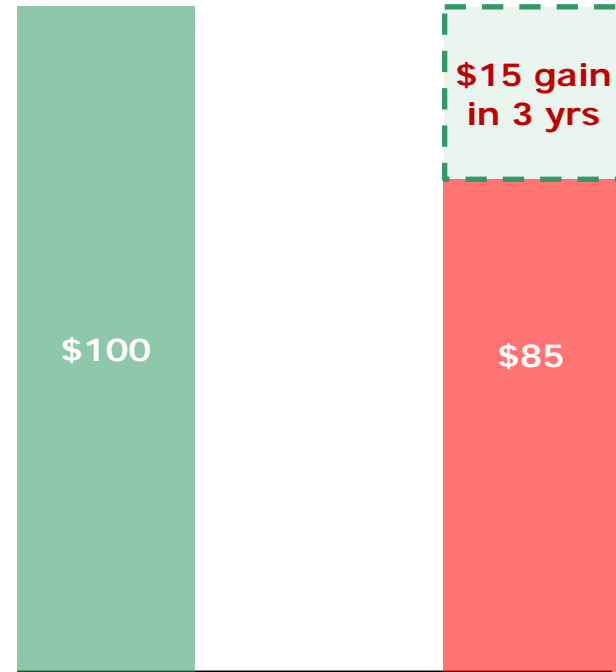


Establish a downside protection strategy...



Investor A

Buy-and-hold investor experiences a 50% drawdown: At a 7% return, Investor A recovers in **11 years**



Investor B

Investor/w downside protection experiences only a 15% drawdown: At a 7% return, Investor B recovers in **3 years**



Downside protection matters

Our downside protection methodology...

➤ 50% Time Series Momentum Rule (TMOM)

- ❑ Excess return = total return over past 12 months less return of T-bill
- ❑ If Excess return > 0, go long risky assets. Otherwise, go alternative assets (T-Bills)

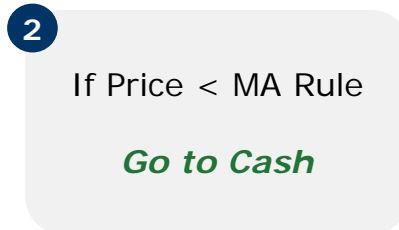
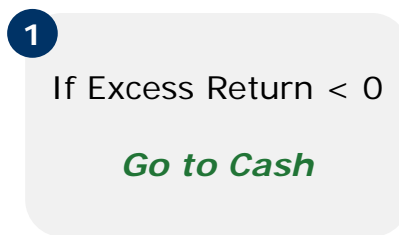
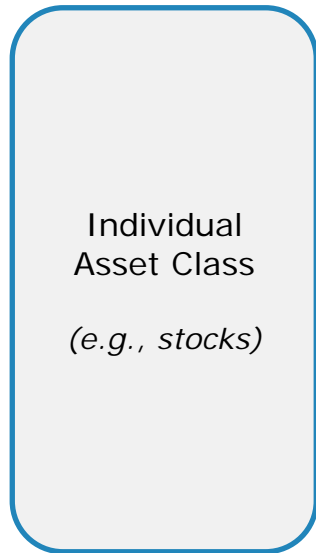
➤ 50% Simple Moving Average Rule (MA)

- ❑ Moving Average (12) = average 12 month prices
- ❑ If Current Price – Moving Average (12) > 0, go long risky assets. Otherwise, go alternative assets (T-bills).

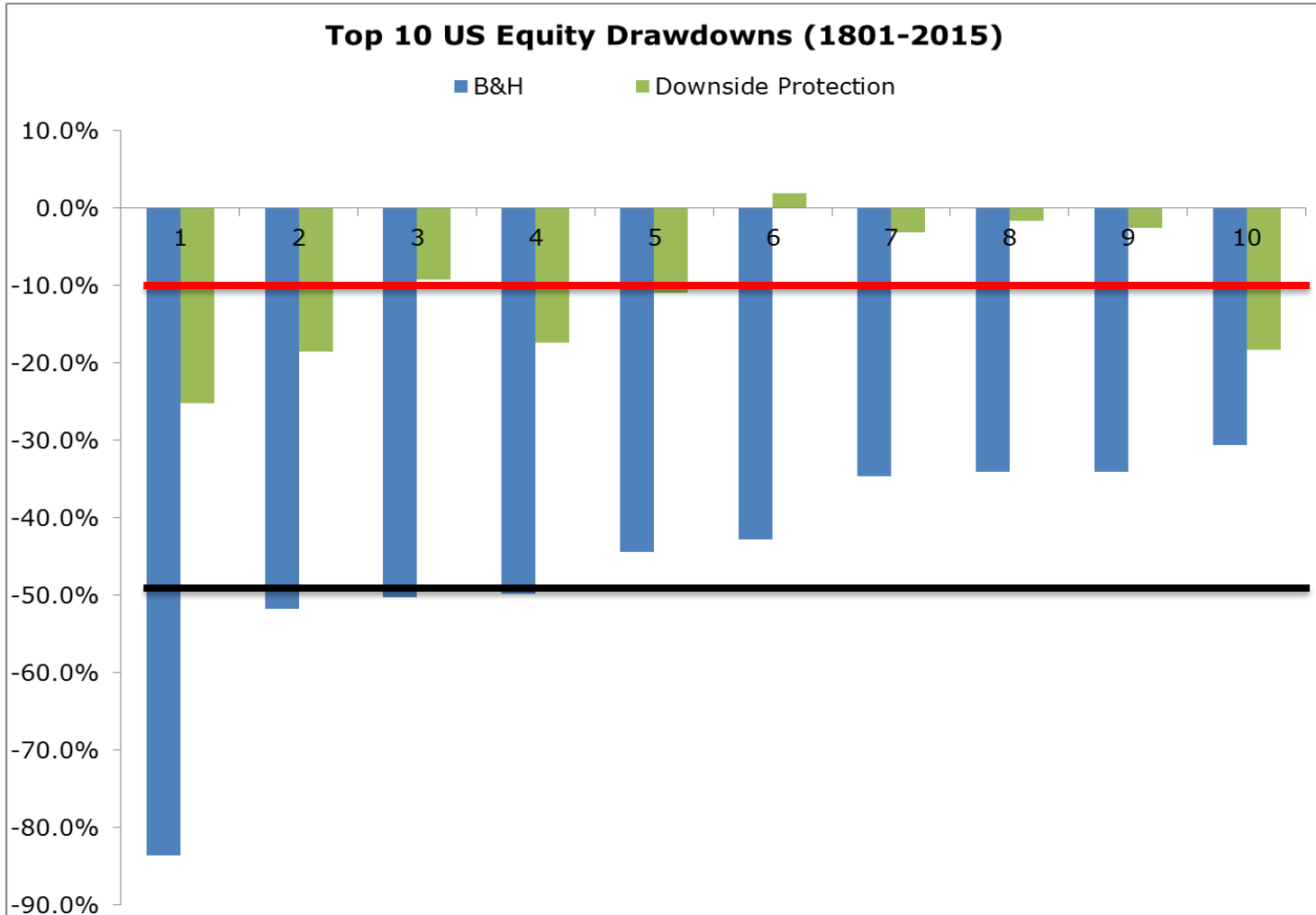
Identify Asset Class

Apply Downside Protection Rules

Create Downside Protected Portfolio



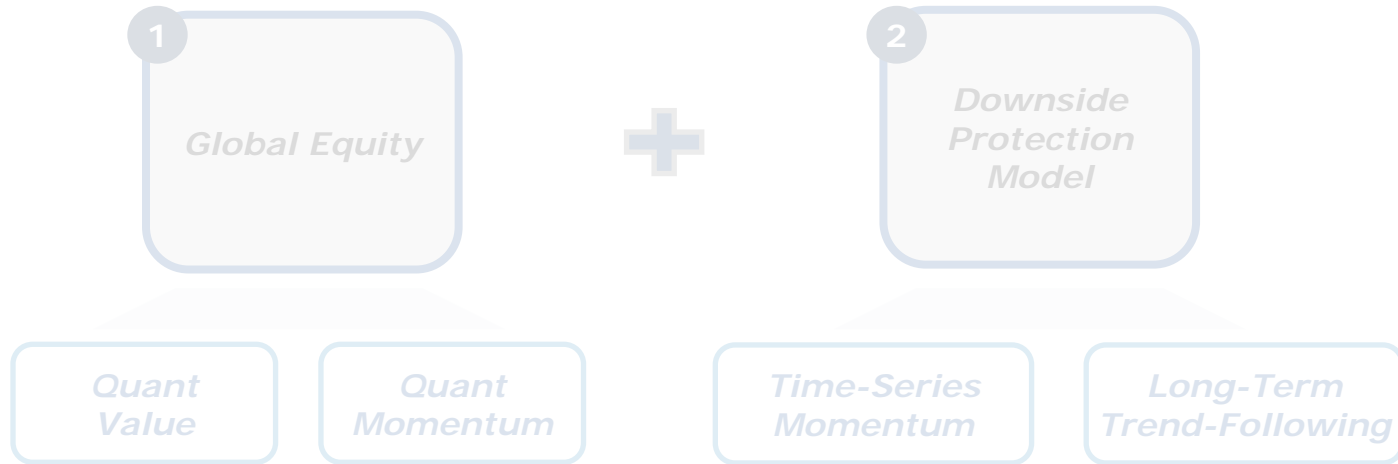
Trend-following rules prevent large drawdowns...



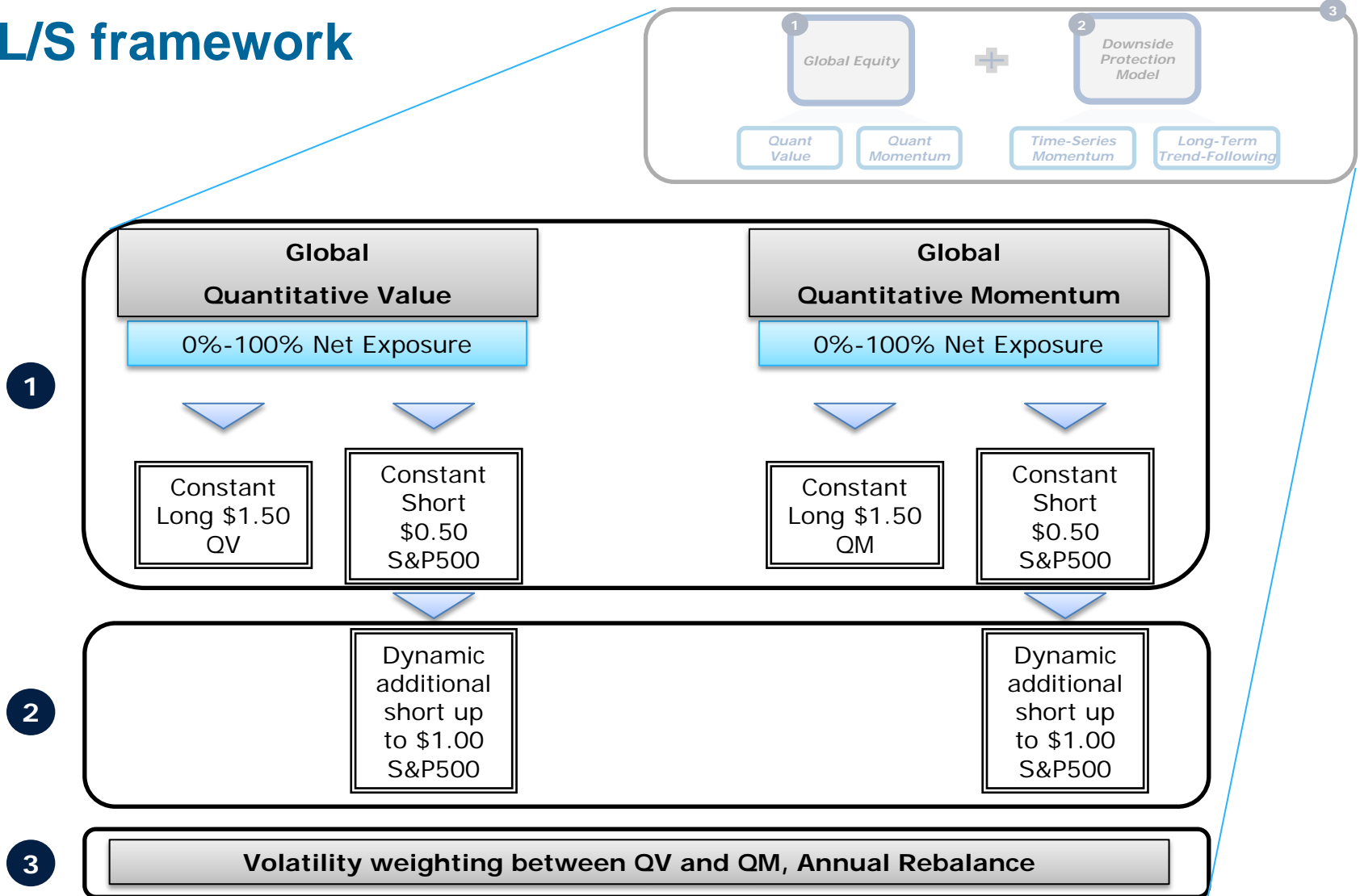
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Component #3: Putting it all together



AA L/S framework



An Efficient Approach to Long/Short Equity

The background of the image is a faded architectural floor plan. It features a grid of lines, various rooms, and technical annotations. A calculator is positioned in the upper right quadrant, and a ruler is placed diagonally across the middle of the page. The text 'HYPOTHETICAL HISTORICAL PERFORMANCE' is overlaid on a dark grey horizontal band.

HYPOTHETICAL HISTORICAL PERFORMANCE

Simulation Details

- Results are net of 1.49% management fees, +/-0.25% funding spread. All returns are total returns and include the reinvestment of distributions (e.g., dividends). Annual transaction costs are the following U.S. Value (1.00%), U.S. Momentum (1.00%), International Value (1.00%), International Momentum (2.00%).
- The 4 strategies are risk-parity weighted and rebalanced annually.
- Simulated results shown are from 1/1/1995 to 12/31/2015.
- Legend
 - ❑ **AA L/S** = Global value and momentum with downside protection.
 - ❑ **50% SP500 and 50% EAFE** = Portfolio that allocates 50% to S&P 500 total return series, and 50% to the EAFE total return series, monthly rebalanced to 50%/50%.
 - ❑ **SP500** = S&P 500 Total Return Index
 - ❑ **EAFE** = MSCI EAFE Total Return Index
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Summary Statistics: 1/1/1995 – 12/31/2015

➤ AA L/S provides much higher risk-adjusted return during this period of time.

Summary Statistics	AA L/S	50% SP500 and 50% EAFE	SP500	EAFE
CAGR	20.07%	7.29%	9.65%	4.74%
Standard Deviation	15.40%	15.10%	15.03%	16.56%
Downside Deviation (MAR=5%)	10.46%	11.71%	11.22%	12.37%
Sharpe Ratio	1.11	0.38	0.52	0.21
Sortino Ratio (MAR=5%)	1.40	0.27	0.48	0.08
Worst Drawdown	-24.78%	-53.46%	-50.21%	-56.68%
Worst Month Return	-16.69%	-18.44%	-16.70%	-20.18%
Best Month Return	10.74%	11.11%	10.93%	12.80%
Profitable Months	65.87%	61.90%	63.89%	58.33%
Rolling 1-Year Win %	--	73.03%	65.15%	81.74%
Rolling 5-Year Win %	--	90.16%	83.42%	98.45%
Rolling 10-Year Win %	--	100.00%	100.00%	100.00%
Sum (5-Year Rolling MaxDD)	-3597.11%	-6837.43%	-6579.38%	-7356.46%

Correlation Analysis**	AA L/S	50% SP500 and 50% EAFE	SP500	EAFE
Up %	--	80.77%	78.88%	82.99%
Down %	--	58.33%	57.14%	58.10%
Negative Correlation	--	32.63%	24.54%	33.56%
Positive Correlation	--	17.88%	8.61%	17.66%
Tracking Error	--	15.50%	16.51%	15.91%

Correlation Matrix	AA L/S	50% SP500 and 50% EAFE	SP500	EAFE
AA L/S	100.00%	50.70%	42.73%	53.68%
50% SP500 and 50% EAFE	50.70%	100.00%	95.15%	96.02%
SP500	42.73%	95.15%	100.00%	82.77%
EAFE	53.68%	96.02%	82.77%	100.00%

**Bold denotes values less than |.5|



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Source: Alpha Architect, LLC

Annual Returns: 1/1/1995 – 12/31/2015

➤ The strategy has high tracking error. Investors can expect to have large deviations from the benchmark.

	AA L/S	50% SP500 and 50% EAFE	SP500	EAFE
1995	12.93%	23.96%	37.64%	11.21%
1996	25.50%	14.42%	23.23%	6.05%
1997	17.99%	16.96%	33.60%	1.78%
1998	10.70%	24.78%	29.32%	20.00%
1999	79.35%	24.28%	21.35%	26.96%
2000	7.60%	-11.16%	-8.34%	-14.17%
2001	42.59%	-16.72%	-11.88%	-21.44%
2002	34.00%	-18.79%	-21.78%	-15.94%
2003	43.07%	33.63%	28.72%	38.59%
2004	36.59%	15.55%	10.98%	20.25%
2005	35.03%	9.39%	5.23%	13.54%
2006	28.27%	20.96%	15.69%	26.34%
2007	23.79%	8.49%	5.76%	11.17%
2008	-14.40%	-39.90%	-36.46%	-43.38%
2009	30.22%	29.22%	26.49%	31.78%
2010	14.02%	11.62%	15.35%	7.75%
2011	-10.68%	-5.20%	2.11%	-12.14%
2012	10.36%	16.77%	16.00%	17.32%
2013	45.11%	27.62%	32.39%	22.78%
2014	-2.63%	4.05%	13.69%	-4.90%
2015	-8.12%	0.33%	1.39%	-0.81%



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Source: Alpha Architect, LLC



APPENDIX



The background of the slide features a faded architectural blueprint with various lines, numbers, and symbols. A calculator is visible in the upper right corner, and a ruler is placed diagonally across the middle of the page. The text 'STATISTICS DEFINITIONS' is centered on the right side of the page.

STATISTICS DEFINITIONS

Statistics Descriptions

- **CAGR:** Compound annual growth rate
- **Standard Deviation:** Sample standard deviation
- **Downside Deviation:** Sample standard deviation, but only monthly observations below 41.67bps (5%/12) are included in the calculation
- **Sharpe Ratio (annualized):** Average monthly return minus treasury bills divided by standard deviation
- **Sortino Ratio (annualized):** Average monthly return minus treasury bills divided by downside deviation
- **Worst Drawdown:** Worst peak to trough performance (measured based on monthly returns)
- **Rolling X-Year Win %:** Percentage of rolling X periods that a strategy outperforms
- **Sum (5-Year Rolling MaxDD):** Sum of all 5-Year rolling drawdowns
- **Down %:** The Down Number Ratio is a measure of the number of periods that the investment was down when the benchmark was down, divided by the number of periods that the benchmark was down. The smaller the ratio, the better
- **Up %:** The Up Number Ratio is a measure of the number of periods that the investment was up when the benchmark was up, divided by the number of periods that the benchmark was up. The larger the ratio, the better
- **Tracking Error:** Tracking Error is measured by taking the square root of the average of the squared deviations between the investment's returns and the benchmark's returns
- **Negative Correlation:** Correlation of returns relative to benchmark returns when the benchmark is negative
- **Positive Correlation:** Correlation of returns relative to benchmark returns when the benchmark is positive



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