

Waypoint Asset Allocation Technical Whitepaper

September 2019

Waypoint Investment Partners have developed proprietary software and tools to create optimal asset allocations for clients across various asset classes:

- Asset allocation strategies are based upon a mutual understanding of a client's investment objectives and risk tolerance
- We combine your objectives with appropriate scenario outlooks for asset class risk and return expectations
- Our analytical tools - including the α Scenario Analysis System (α SAS) - are uniquely flexible in handling a wide variety of asset classes and financial market scenarios in real-time
- Asset mix models can help estimate junctures when significant asset class shifts should be considered.
- Our Global Portfolio System (GPS) allows us to screen a large universe of equities based on desired criteria and to construct and optimize portfolios in a variety of ways

This report is a technical whitepaper on this system works to optimize an asset mix & aid in portfolio construction



Make Your Portfolio Do More: A White Paper on Improving your Portfolio with All Weather and our α Scenario Analysis System

INTRODUCTION

Our α Scenario Analysis System (α SAS) is a proprietary, comprehensive and fully customizable portfolio analysis system, designed and maintained in-house at Waypoint Investment Partners. It is a system we developed to enhance the process of portfolio management; integrating portfolio strategy and market outlooks, with an asset allocation optimization overlay. By using our system, we can quickly draw comparisons between a “before and after” picture of any portfolio in real-time and on-demand.

The α SAS is the mastermind of 30+ years of industry expertise and hundreds of hours of software development with methodologies that have been rigorously tested and proven to stand the test of time. We are committed to on-going development, enhancements and improvements to meet the needs of the changing market.

Furthermore, through the use of the α SAS, we can easily demonstrate how our All Weather Strategy will improve overall returns and reduce risk within any investor’s portfolio; along with the optimization feature, we can optimize the All Weather weighting within any portfolio for maximum expected return or maximum risk-adjusted expected return – The allowable range for every asset class is also customizable to fit any portfolio mandate.

This paper outlines examples of how our All Weather Strategy can enhance any investor’s portfolio using the α SAS; detailing, specifically, an optimized All Weather inclusion portfolio versus those portfolios without.

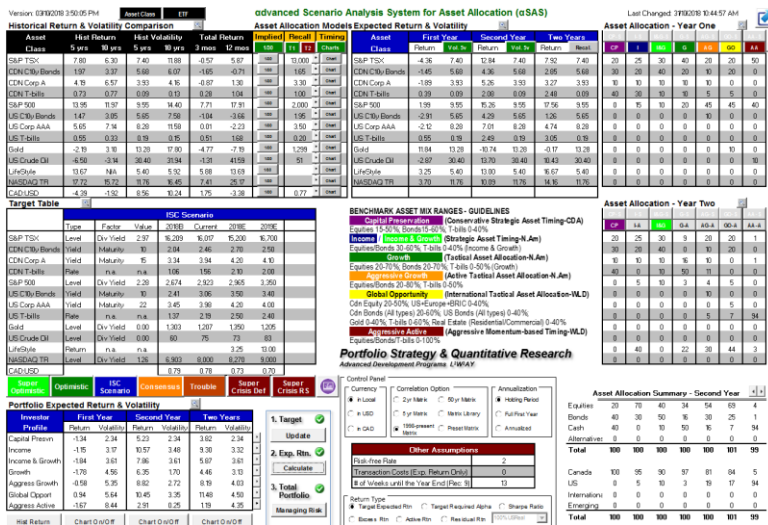
A Quick Overview of the α SAS

The α Scenario Analysis System (α SAS) is an advanced, proprietary portfolio analysis system used to illustrate the implications of asset mix recommendations to portfolio returns/volatility and, demonstrates its significance in relation to varying economic scenarios for investors.

The α SAS combines target levels and the resulting rate of return of various asset classes to show first and second year expected return and volatility for seven different investor profiles. Each investor profile has set allowable ranges for various asset classes. Our 7 investors’ profile include Capital Preservation (CP), Income (I), Income & Growth (IG), Growth (G), Aggressive Growth (AG), Global Opportunity (GO) and Aggressive Active (AA).

Looking at Figure 1, we can broadly imagine the α SAS as having three rows and three columns. In the first row, from left to right, we have, 1) Historical returns and volatility for a selected list of assets, 2) Expected returns and volatility for the first, second and combined two-year returns, and 3) Asset allocation for the 7 investor profiles for the first year. On the second row, we have, 4) Targets table for a selected market scenario, 5) our Recommended guideline for asset mix ranges, and 6) Asset allocation for the 7 investor profiles for the second year. Lastly, in the third row, we have, 7) Portfolio returns and volatility for each investor profile, 8) a Control panel, and at the bottom right, 9) Allocation summary by asset class and region. We emphasize that most fields in the α SAS are fully customizable by the user and results are updated on-demand and in real-time.

Figure 1. The α Scenario Analysis System (α SAS)

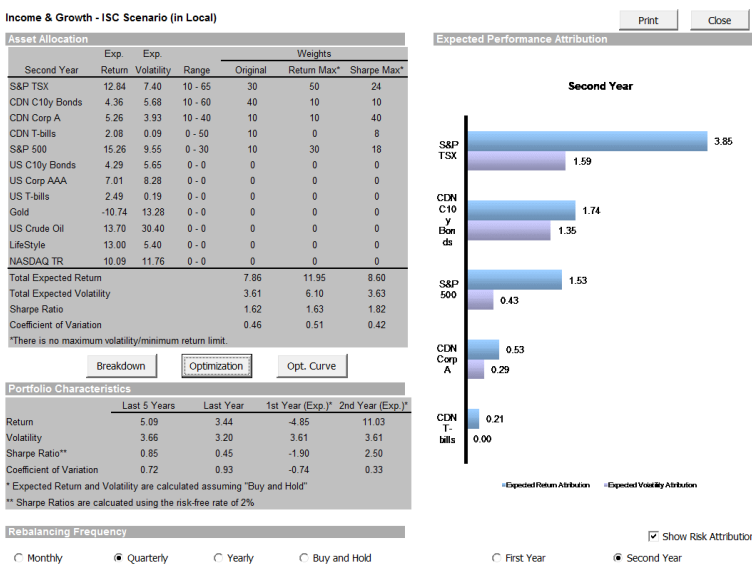


An Illustration of the Benefits of the α SAS

How often does an investor make suboptimal asset mix decisions? The answer: *More frequently than any investor would like to admit.* In our experience, most asset allocation decisions are made without ever been systematically optimized and the process is often ad hoc, however, by using our α SAS, this process is streamlined, real data-driven with zero black box algorithms providing our clients with reliable results.

Illustrated in Figure 2 is the α SAS Portfolio Analysis page where it summarizes the portfolio asset allocation (original and optimized), the allowable range for each asset class, and the overall total expected return, total expected volatility and Sharpe ratio for the portfolio. It is important to note that the allowable ranges for each asset class is fully customizable. The bar chart on the right illustrates the expected performance attribution, charting the expected returns and risk attribution for each asset class.

Figure 2. Optimization Income & Growth without The All Weather Strategy



In the example above, we assume an Income & Growth investor profile using our ISC scenario (Waypoint) market outlook in local currency. With these assumptions, we are able to show the improved second year return for an optimized portfolio vs. its original weightings. The expected total return for the original composition of this portfolio is 7.86% with a Sharpe ratio of 1.62; compare that with returns optimized for maximum Sharpe ratio, the total expected return is 8.60% with a Sharpe ratio of 1.82. Therefore, simply by employing our α SAS, we were able to improve expected returns by 74 bps with similar expected volatility, 3.61 vs. 3.63, respectively.

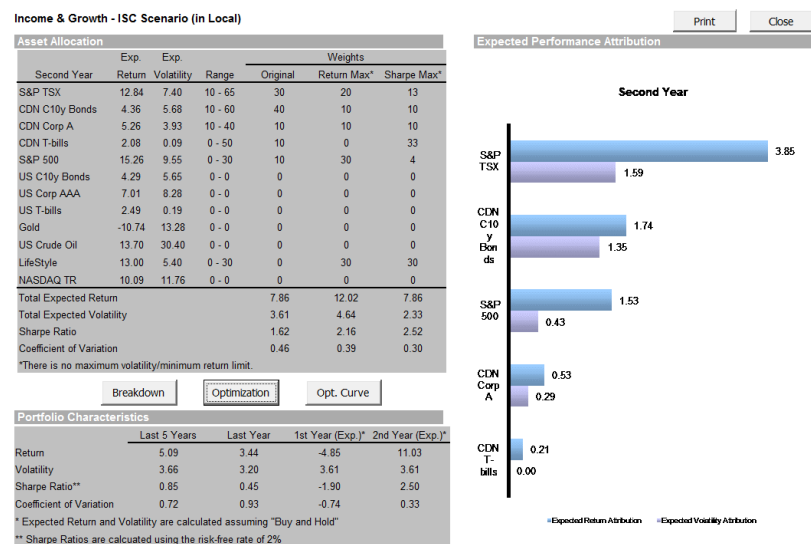
Similarly, when the portfolio is optimized for maximum return, the overall expected return is much higher at 11.95% with a Sharpe ratio of 1.63; however, we do note that the markedly improved expected return (+4.09%) also had higher volatility.

Taking Full Advantage of the α SAS and our All Weather Strategy

In Figure 3, using the previous investor profile and market outlook assumptions, we illustrate the full potential of using the α SAS and adding All Weather by comparing the original portfolio (ad hoc weighting, without optimization) with the inclusion of All Weather then optimized portfolio. The optimized All Weather-included portfolio benefits both from an overall optimization and a further enhancement of adding All Weather with its very good returns and much lower volatility, thereby, offering a very high Sharpe ratio.

In this example, we add All Weather to the Income & Growth investor profile with ISC scenario outlook in local currency; setting the allowable range for All Weather to 0-30%, with a second year target of 13% return and 5.40% volatility, then optimizing for maximum return and maximum risk-adjusted return.

Figure 3. Adding All Weather to Income & Growth Portfolio



With the inclusion of All Weather combined with an optimization overlay for maximum return, the total expected return is 12.02% vs. 7.86% for the original ad hoc portfolio; that is a significant increase of 4.16%, with only a small increase to its volatility, 4.64 vs. 3.61, respectively.

When optimizing the All Weather-included portfolio for maximum Sharpe ratio, we observed that the expected return is unchanged at 7.86%, however, the expected volatility is lowered to 2.33 from 3.61, with an improved Sharpe ratio of 2.52 vs. 1.62, thus improving the portfolio's overall risk profile.

Positive Performance When Investing in All Weather for Other Investor Profiles

We continue this approach of using the α SAS optimization plus All Weather to see its benefits in two other investor profiles, Capital Preservation and Global Opportunity, where we can compare All Weather with other more volatile asset classes.

First, we perform an optimization of the Capital Preservation profile using its original weights, setting the All Weather allowable range to zero (see Figure 4 – Optimization with Original Weights).

Second, we will attempt to isolate the All Weather benefits, by setting the allowable range for All Weather to 0-30% based on our previous target settings and then optimizing (see Figure 4 – Optimization Adding All Weather).

In the table below, we summarize the recorded overall portfolio's total expected return, volatility and Sharpe ratio for the optimized portfolio without All Weather vs. optimized portfolio with All Weather added in the Capital Preservation portfolio.

Table 1. Isolating the Benefits of Adding All Weather to the Capital Preservation Portfolio

| Capital Preservation (ISC Scenario) | All Weather Weight | Total Expected Return | Total Expected Volatility | Sharpe Ratio | All Weather Allowable Range |
|--|-----------------------|-----------------------------|---------------------------------|-----------------|-----------------------------------|
| Optimized for Max Return | | | | | |
| Original Optimized Portfolio | 0 | 9.62 | 4.55 | 1.67 | 0% |
| With All Weather Added | 30 | 10.43 | 3.66 | 2.30 | 0 – 30% |
| Optimized for Max Sharpe | | | | | |
| Original Optimized Portfolio | 0 | 8.87 | 4.05 | 1.70 | 0% |
| With All Weather Added | 30 | 8.60 | 2.75 | 2.40 | 0 – 30% |
| Original Portfolio | 0 | 5.23 | 2.34 | 1.38 | 0% |
| No All Weather added, un-Optimized | | | | | |
| Original Portfolio No All Weather added, un-Optimized | 0 | 5.23 | 2.34 | 1.38 | 0% |

By optimizing the original portfolio for maximum return without adding All Weather, the total expected return improved from 5.23% to an impressive 9.62%, however, simply optimizing for maximum return does cause an increase in volatility from 2.34 to 4.55, with a Sharpe ratio of, 1.38 and 1.67, respectively.

In this example, however, we capture most of the maximum return but also for a lower volatility when we maximize the asset allocation for Max Sharpe; the expected return becomes 8.87%, a 364 bps increase compared with the un-optimized original return, with volatility of 4.05 and a Sharpe ratio of 1.70.

WITH ALL WEATHER: When we compare the “optimized original allocation” and the optimized portfolio with All Weather, we can see the full benefits by employing both All Weather AND optimization to the portfolio. By adding All Weather to the portfolio, the total expected return when optimized for maximum return is 10.43% vs. 9.62%, with a Sharpe ratio of 2.30 vs. 1.67 and a lowered expected volatility from 4.55 to 3.66 with All Weather added. Observing optimization for max Sharpe ratio, we preserve most of the returns (8.87% vs. 8.60%), but improve the risk profile of the portfolio significantly, reducing expected volatility from 4.05 to 2.75 and improving Sharpe ratio from 1.70 to 2.40, respectively.

Figure 4. Capital Preservation: “Before and After” Adding All Weather with Optimization

Optimization with Original Asset Class Weights

Capital Preservation - ISC Scenario (in Local)

| Asset Allocation | | | | | | |
|---------------------------|-------------|-----------------|---------|----------|-------------|-------------|
| Second Year | Exp. Return | Exp. Volatility | Range | Weights | | |
| | | | | Original | Return Max* | Sharpe Max* |
| S&P TSX | 12.84 | 7.40 | 10 - 60 | 20 | 60 | 50 |
| CDN C10y Bonds | 4.36 | 5.68 | 20 - 60 | 30 | 20 | 20 |
| CDN Corp A | 5.26 | 3.93 | 10 - 40 | 10 | 20 | 30 |
| CDN T-bills | 2.08 | 0.09 | 0 - 50 | 40 | 0 | 0 |
| S&P 500 | 15.26 | 9.55 | 0 - 0 | 0 | 0 | 0 |
| US C10y Bonds | 4.29 | 5.65 | 0 - 0 | 0 | 0 | 0 |
| US Corp AAA | 7.01 | 8.28 | 0 - 0 | 0 | 0 | 0 |
| US T-bills | 2.49 | 0.19 | 0 - 0 | 0 | 0 | 0 |
| Gold | -10.74 | 13.28 | 0 - 0 | 0 | 0 | 0 |
| US Crude Oil | 13.70 | 30.40 | 0 - 0 | 0 | 0 | 0 |
| LifeStyle | 13.00 | 5.40 | 0 - 0 | 0 | 0 | 0 |
| NASDAQ TR | 10.09 | 11.76 | 0 - 0 | 0 | 0 | 0 |
| Total Expected Return | | | | 5.23 | 9.62 | 8.87 |
| Total Expected Volatility | | | | 2.34 | 4.55 | 4.05 |
| Sharpe Ratio | | | | 1.38 | 1.67 | 1.70 |
| Coefficient of Variation | | | | 0.45 | 0.47 | 0.46 |

Breakdown

Optimization

Opt. Curve

Portfolio Characteristics

| | Last 5 Years | Last Year | First Year* | Second Year* |
|--------------------------|--------------|-----------|-------------|--------------|
| Expected Return | 2.93 | 1.52 | -1.34 | 5.23 |
| Volatility | 2.48 | 2.28 | 2.34 | 2.34 |
| Sharpe Ratio** | 0.37 | -0.21 | -1.43 | 1.38 |
| Coefficient of Variation | 0.85 | 1.50 | -1.75 | 0.45 |

* Return and Volatility of first year and second year are calculated assuming "Buy and Hold"

** Sharpe Ratios are calculated using the risk-free rate of 2%

Optimization Adding All Weather

Capital Preservation - ISC Scenario (in Local)

| Asset Allocation | | | | | | |
|---------------------------|-------------|-----------------|---------|----------|-------------|-------------|
| Second Year | Exp. Return | Exp. Volatility | Range | Weights | | |
| | | | | Original | Return Max* | Sharpe Max* |
| S&P TSX | 12.84 | 7.40 | 10 - 60 | 20 | 40 | 23 |
| CDN C10y Bonds | 4.36 | 5.68 | 20 - 60 | 30 | 20 | 20 |
| CDN Corp A | 5.26 | 3.93 | 10 - 40 | 10 | 10 | 10 |
| CDN T-bills | 2.08 | 0.09 | 0 - 50 | 40 | 0 | 17 |
| S&P 500 | 15.26 | 9.55 | 0 - 0 | 0 | 0 | 0 |
| US C10y Bonds | 4.29 | 5.65 | 0 - 0 | 0 | 0 | 0 |
| US Corp AAA | 7.01 | 8.28 | 0 - 0 | 0 | 0 | 0 |
| US T-bills | 2.49 | 0.19 | 0 - 0 | 0 | 0 | 0 |
| Gold | -10.74 | 13.28 | 0 - 0 | 0 | 0 | 0 |
| US Crude Oil | 13.70 | 30.40 | 0 - 0 | 0 | 0 | 0 |
| LifeStyle | 13.00 | 5.40 | 0 - 30 | 0 | 30 | 30 |
| NASDAQ TR | 10.09 | 11.76 | 0 - 0 | 0 | 0 | 0 |
| Total Expected Return | | | | 5.23 | 10.43 | 8.60 |
| Total Expected Volatility | | | | 2.34 | 3.66 | 2.75 |
| Sharpe Ratio | | | | 1.38 | 2.30 | 2.40 |
| Coefficient of Variation | | | | 0.45 | 0.35 | 0.32 |

Breakdown

Optimization

Opt. Curve

Portfolio Characteristics

| | Last 5 Years | Last Year | First Year* | Second Year* |
|--------------------------|--------------|-----------|-------------|--------------|
| Expected Return | 2.93 | 1.52 | -1.34 | 5.23 |
| Volatility | 2.48 | 2.28 | 2.34 | 2.34 |
| Sharpe Ratio** | 0.37 | -0.21 | -1.43 | 1.38 |
| Coefficient of Variation | 0.85 | 1.50 | -1.75 | 0.45 |

* Return and Volatility of first year and second year are calculated assuming "Buy and Hold"

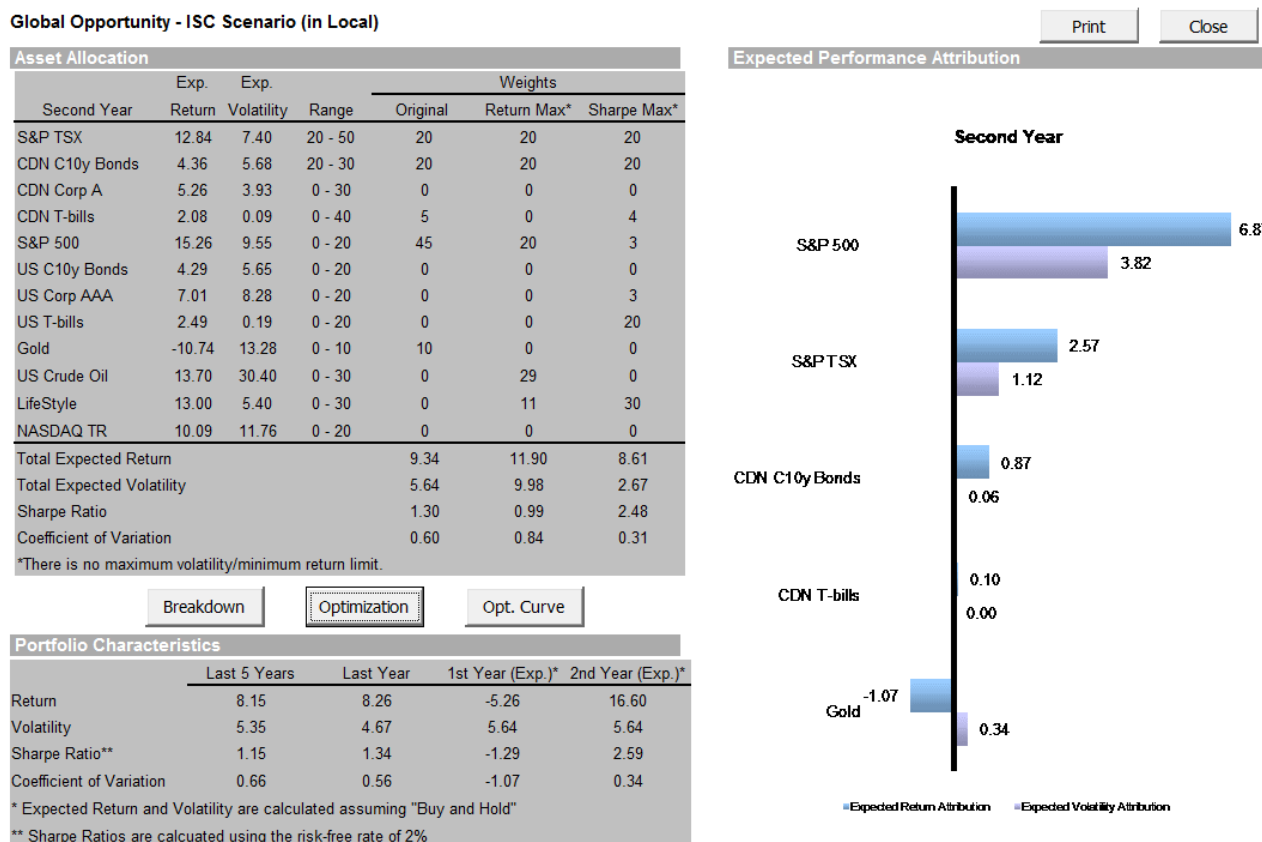
** Sharpe Ratios are calculated using the risk-free rate of 2%

Our All Weather strategy offers the benefit of capital preservation and the potential for outperformance relative to the S&P/TSX. In a higher return environment, when optimizing for maximum return, there will be competition between S&P/TSX and All Weather when setting weights for these two asset classes. However, when optimizing for maximum Sharpe, the All Weather will compete more competitively relative to all other asset classes due to its lower volatility profile.

Benefits of Adding All Weather to the Global Opportunity Investor Profile

To see how our All Weather strategy compares with more volatile asset classes, we look at the Global Opportunity investor profile. In Figure 5, using that as our basis for an example, we observe that our All Weather Strategy remains extremely competitive, offering reduced overall expected volatility (2.67 vs. 5.64) when optimized for maximum Sharpe, without giving up too much on returns (8.61 vs 9.34) with much higher Sharpe ratio of 2.48 vs 1.30, respectively.

Figure 5. Adding All Weather to Global Opportunity



CONCLUSION

Our exclusive α SAS offer Waypoint Investment Partners' clients a systematic approach to advanced portfolio management, allowing for real-time analysis of portfolio performance from asset allocation decisions to setting market outlooks. Our α SAS optimization feature combined with our All Weather strategy also offer superior enhancements to any investors' portfolio, both improving total expected return while reducing overall expected volatility.