LAPLACE INSIGHTS
Global Allocation Research

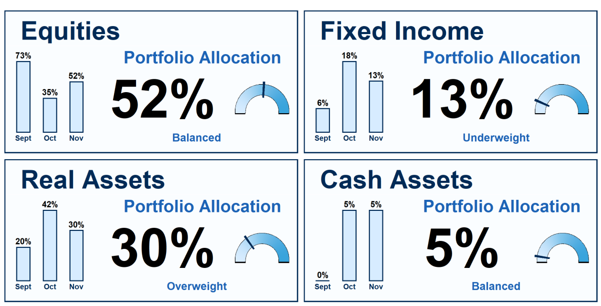
October 29, 2020

November 2020 Global Allocation Research

- **Uncertainty and volatility** is expected to be the name of the game for at least the next few weeks.
- **The risk of an economic slowdown** is becoming more real now given the Covid-19 second wave, combined with uncertainty related to a possible fiscal stimulus.
- Our Columbus Global Allocation Strategy is taking a **balanced portfolio approach**, focusing primarily on Japanese stocks and small cap stocks while diversifying in gold and TIPs.
- Our S&P 500 Sector Insights is staying neutral between all sectors. This is likely caused by **a regime shift** combined with the high level of uncertainty surrounding the markets.

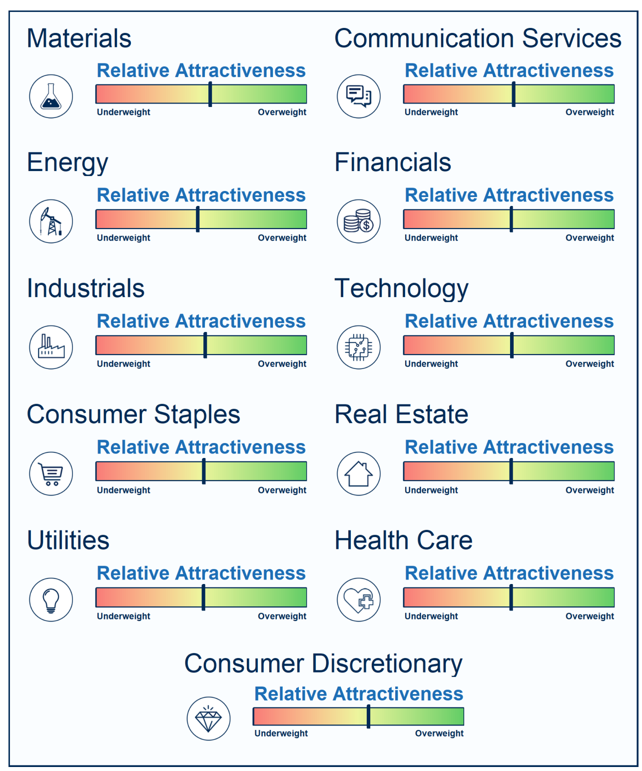
This Month's Recommendations

Columbus Allocation Summary



ETF	Curr. Weight (%)	Alloc. Chg (%)
SPY	1%	1%
VXF	19%	19%
EFA	-	-3%
EWJ	32%	-
VWO	-	-
DBC	-	-25%
GLD	29%	13%
VNQ	1%	-
TLT	-	-
IEF	-	-
LQD	1%	-13%
TIP	12%	8%
PCY	-	-
UUP	-	-
SHY	5%	-
Total	**100%**	

Sector Insights Summary



1. Insights Summary

A Deluge of Uncertainty

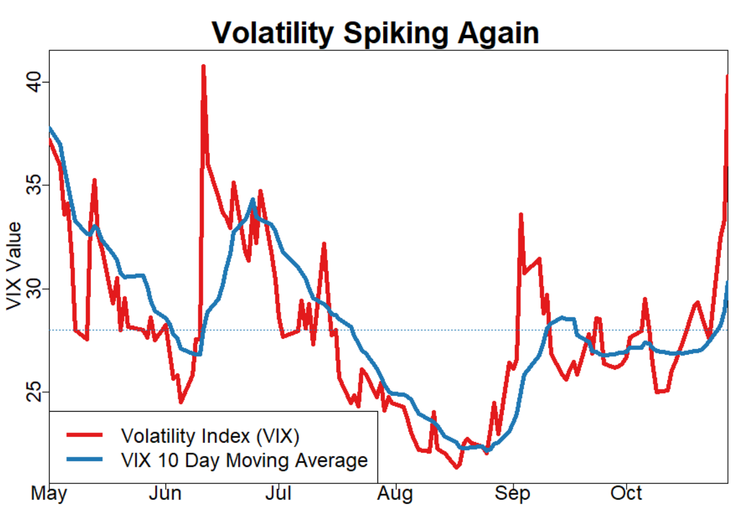
The Covid-19 second wave is now driving lockdowns in Germany and France. This situation, combined with the US hovering around its highest infection rates, is fueling a high level of economic uncertainty. It also doesn't help that much of Europe's latest infections were reportedly caused by a mutated version of the Coronavirus, adding to the **complexity of developing a useful vaccine.**

Meanwhile, the US elections next week, with the possibility that results will likely be contested in the swing states, are only adding another pillar of uncertainty and further driving party polarization. Much of the **economic recovery still depends on Washington passing a large fiscal stimulus.** While necessary for the economy, it's not unlikely that the stimulus will get delayed much further depending on how the elections turn out and the on-going level of party animosity in Washington.

In other words, all these uncertainties are only exacerbating the **real possibility of a meaningful economic slowdown** early next year. The question is whether the markets will see this as a temporary negative to be ignored, or as something more meaningful that will drive investors to run for cover.

Volatility Spiking to 40 - Again!

Last month, we stated that an increase in volatility was very likely given the uncertainty around the US elections and the Covid-19 second wave.



On Wednesday this week, the markets took a beating and the VIX index spiked to 40, a level last seen back in June, as shown on the chart. During the summer, the VIX was generally in the 20's, spiking to near 35 during the September correction. The recent sudden spike is an indicator that investors are becoming more nervous as uncertainty seems to reign everywhere. This certainly **argues for prudence while not necessarily arguing for being bearish.**

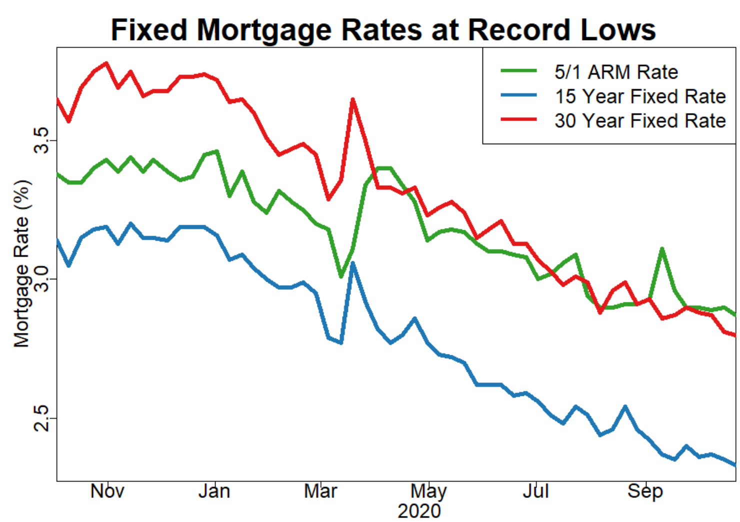
No Need for a Weekly Report Update Yet

We note to our subscribers that this report includes **a weekly update of the Columbus Strategy**, which is published only when the markets become very volatile. This is to enable a faster adaptation of the Columbus Strategy when the markets move rapidly.

Our software systems are constantly monitoring the situation, and should the market situation becomes too volatile, a weekly update will be published until the markets calm down. We have not reached that point yet.

Housing is the Economic Engine

Much of the US economic recovery is supported by the housing and the manufacturing sectors at the moment. This contrasts with many prior recoveries that were driven primarily by consumer spending and consumer services.



The risks posed by Covid-19 and the fact that most people are working from home at least for part of the week means that consumers are spending far more time at home than before. Combining this lifestyle change with the ultra low rate environment creates an important urge to splurge on home renovation projects or even to upgrade to a bigger home rather than going out to restaurants or taking expensive vacations.

The record low rates, as seen in the chart above, is therefore driving mortgage refinancing, home renovations and new home purchases. Importantly, many folks are switching from adjustable rate mortgages to long term fixed mortgages given there is no premium to do so. It is worth noting that a 30 Year fixed mortgage (red line) is now cheaper than an 5/1 Adjustable-Rate mortgage (green line). This creates a strong motivation to refinance to a fixed term.

It follows that the entire **materials and industrial supply chains are benefiting** from these ultra low rates.

Capex and Industrial Sector Driven by Low Rates

The industrial sector is also greatly benefiting from extremely low rates. Multiple business surveys, for both large businesses and small business (such as the small business NFIB survey) are showing intentions to increase capital expenditures (capex). With long term rates at record lows, businesses are able to expand their capital stock cheaply and with less financial risks. This is arguing for growth in cyclical sectors.

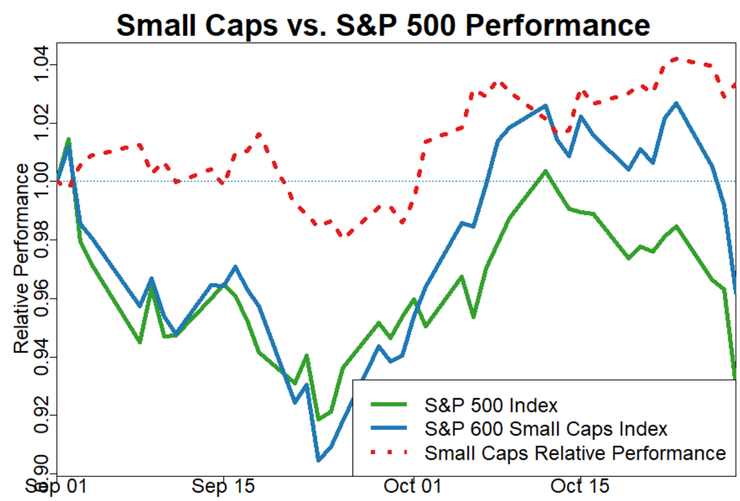
However, last week's IHS Markit Flash US Composite PMI survey indicated a slowdown in new orders due to Covid-19 and many businesses holding back on capex due to the US election uncertainty. In other words, **the high level of uncertainty is having a negative impact on manufacturing**, even if only at the margin for the time being.

Small Caps Relative Outperformance

As we discussed on multiple occasions in earlier reports, large cap stocks tend to be dominated by the technology titans, accounting for more than a quarter of the S&P 500 valuation. These tech companies generally do not hold any meaningful debt and are generally cash rich (absurdly so in some cases). This phenomenon is creating an interesting dynamic between large caps and small caps, because small caps stocks do tend to be debt heavy relative to their large cap counterparts.

This implies that small cap stocks are more inclined to be **positively affected by the ultra low rate environment.** Their ability to refinance existing debt at lower costs, or to expand their capital stock is hitting the bottom line in a positive way.

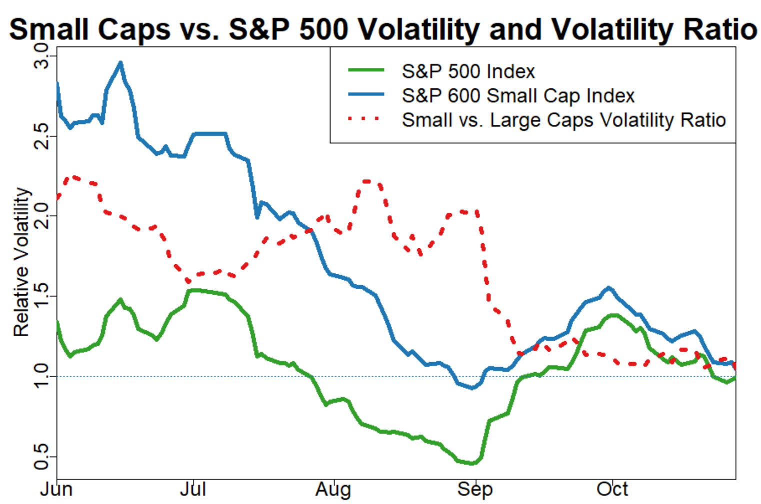
The chart shows the relative performance of small caps vs. large caps stocks (dotted red line). We can see that a positive relative performance trend has been forming recently.



Lower Small Caps Volatility Ratio

It is perhaps more telling that the **relative volatility** between small caps and large caps stocks has been cut by nearly half since August. In addition to better performance, small caps are now achieving this feat with substantially lower volatility.

Although the small caps to large caps volatility ratio is roughly one (dotted red line in the chart), it is nevertheless arguing that **small caps are becoming a more compelling investment than the tech heavy large caps at this time.**

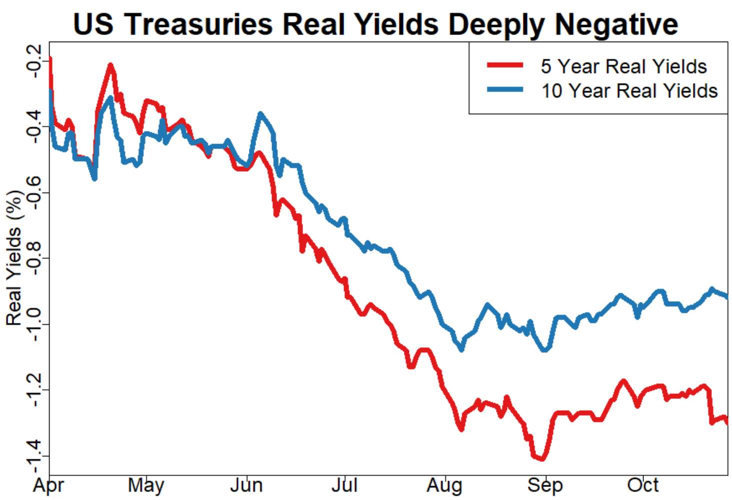


Inflation and Fixed Income

Given the uncertainties hanging over the markets, combined with the on-going slack in the economy and a likely slowdown in the coming months, inflation is unlikely to pick up in a meaningful way in the short term. Rather, a modest rise in inflation expectations is a more likely scenario.

Still, treasuries continue to be very expensive, with real rates squarely in negative territory as the chart below shows. We discussed in last month's report how the Fed's new policy will tolerate higher inflation, implying that there's essentially no room for further upside in treasuries.

As mentioned last month, we are entering a potentially volatile period for treasuries given the laxer attitude of the Fed with respect to inflation. **In other words, treasuries are simply not attractive at this time.**



Gold Remains an Important Hedge

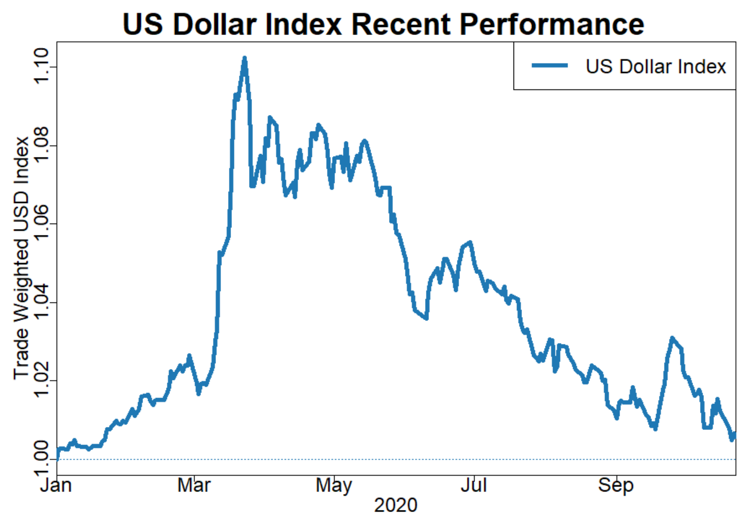
Although gold has been trending sideways lately, given the high level of uncertainties in the markets, it remains an interesting hedge. This is in part because it is generally uncorrelated to other markets, while it is also a safe haven asset. Since treasuries are not attractive at this time, gold becomes more interesting as a diversifier.

US Dollar Continues its Downtrend

The US Dollar Trade Weighted index provides a good indication of investor's appetite for risk. As the World's reserve currency, the USD tends to rise when everyone seeks a safe haven, as happened during the Coronavirus crash in March.

Since then however, the USD index has been in a clear downtrend, and has recently reached a level similar to January of this year, prior to the pandemic.

Although Wednesday's volatility creating a small spike in the index (not shown in the chart), the downtrend is well established. There are many forces at play that are pushing the dollar lower, including ultra low rates and trade. These forces could provide **a catalyst for stocks later on once the general level of uncertainty dissipates.**



Summing It All Up

In a nutshell, we continue to be in a market regime characterized by a high level of uncertainty and volatility. Some of the most important dynamics to watch for include:

- **An economic slowdown is more likely**, especially if Washington cannot pass a stimulus bill soon.
- **Inflation is appearing**, but an economic slowdown will keep it in check.
- **There is essentially no value left** in the treasuries markets.
- **A vibrant housing sector** will continue to drive materials and related commodities.
- **Small caps stocks** are becoming more attractive than large caps.
- **A weak US Dollar** may become a catalyst for stocks, once the market uncertainty dissipate.
- **Gold remains attractive**, mostly as a hedge against the dollar and market uncertainties.

These dynamics will continue to have **very important implications** for asset allocators and portfolio risk management in the weeks and months to come.

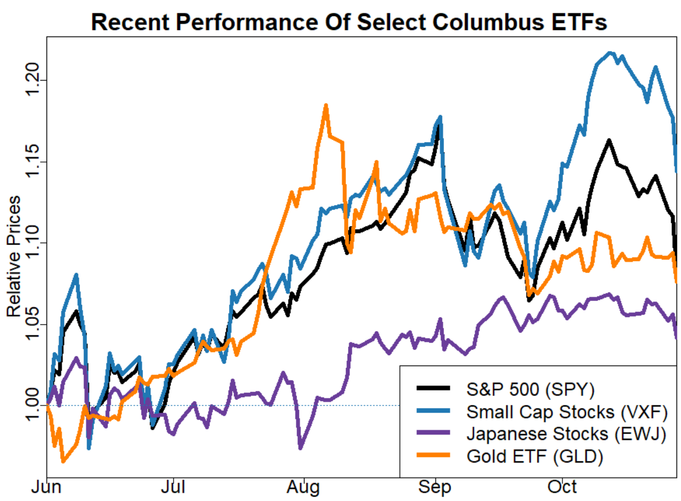
1.1. Columbus Analysis of the Situation

The Columbus Allocation Dashboard in Section 3 (and also on page 1) provides an allocation by asset class for the Columbus strategy. A quick glance at this dashboard reveals that Columbus proposes a balanced portfolio consisting primarily of small cap stocks (VXF), Japanese stocks (EWJ), gold (GLD) and inflation-protected treasuries (TIP).

US treasuries are notably absent from the portfolio. As we mentioned in the previous section, treasuries offer essentially no value at this time, so Columbus is shunning them as a result.

Meanwhile, Columbus kept its allocation to **Japanese stocks (EWJ)** identical to last month. Japanese stocks have demonstrated a strong resilience to the recent correction while delivering relatively stable growth, making them an attractive investment at this time.

In addition, Columbus is allocating a reasonable position in **small cap stocks (VXF)**. This is justified based on lower rates and the reducing volatility in small cap stocks discussed in the previous section.



Finally, gold (GLD) provides an **uncorrelated hedge during uncertain times**. The recent high level of volatility and uncertainty argues for holding a meaningful position in gold as a portfolio diversifier, particularly since there is little value in treasuries as discussed in the earlier section. **The position in inflation-protected treasuries (TIP)** also acts as a diversifier, but without assuming the risks related to a possible inflation scare should the uncertainties surrounding the market dissipate faster than expected and inflation expectations were to rise.

The chart above shows the recent price action of some of these ETFs.

Insights From our Bubble Chart

Figure 3 in Section 5 shows the Expected Returns - Volatility Bubble Chart. This chart brings further insights into the market and helps to **understand the rationale behind the Columbus asset allocation.** The chart shows the expected returns for each asset in the universe along with the volatility each of these asset is expected to suffer over the upcoming month. In general, we want to own ETFs located in the upper quadrants (showing high expected returns) and at lower expected volatility. There are some exceptions to this simple rule as Columbus also analyzes correlations in order to obtain the least risky portfolio possible.

While small cap stocks (VXF) are expected to suffer from relatively high volatility, they more than make up for it with a high expected return. Gold (GLD) is expected to continue to suffer its usual high volatility while offering interesting expected returns and, as previously mentioned, also acts as a diversifier. Japanese stocks (EWJ) offer somewhat lower expected returns but at a much lower expected volatility, making them quite attractive.

On the right of the chart, we also see inflation-protected treasuries (TIP) and corporate bonds (LQD), both offering lower expected returns at a lower volatility. Last, SHY, our short term treasuries ETF acting as our cash asset, offers low returns at essentially no meaningful volatility.

1.2. S&P 500 Sector Insights

Sector Performance and Economic Dislocations

During periods of economic dislocations, some businesses thrive while others struggle for survival, accelerating the creative destruction process.

As the economy recovers in fits and starts over the near term, the knock-on effects of dislocation will continue to take hold, offering many opportunities to profit from the relative performance of key sectors.

Our Sector Insights shows the **relative attractiveness** for each of the 11 sectors of the S&P 500 index, as analyzed by our Laplace AI™ platform. Our Sector Insights Dashboard is found in **Section 4**, while **Section 7** illustrates how to use these insights in practice for the benefit of the stock portion of client portfolios.

Changing Sector Drivers

The Sector Insights Dashboard in Section 4 currently shows that all sectors are more or less **similarly attractive** at this time. This is reflecting a situation where the underlying market drivers that have been true since April **are currently changing**.

Market dynamics, also called market regimes, regularly change when their underlying drivers are shifting. Market corrections, such as the one that occurred in September, and the recent volatility in late October often enable such important regime changes. For example, the technology, communications and consumer discretionary sectors have all been the leading sectors for several months until recently, as mentioned in previous reports.

The current regime appears to be changing these dynamics. None of the prior sectors are now leaders. Meanwhile, **cyclical sectors such as Materials and Industrials** are showing tentative signs that they could become the next leaders. This would corroborate with the analysis mentioned earlier about housing and manufacturing activity. However, the high level of economic uncertainty as mentioned earlier does not yet justify an outright overweight. Our AI model is essentially telling that it is better to put these on a watch list for the time being and wait until at least some of that uncertainty dissipates.

2. The Laplace AI™ Platform

Laplace AI™ is Laplace Insights' proprietary machine learning platform used to generate all insights, forecast and asset allocation recommendations found in this report.

Our platform uses some of the most advanced time series forecasting technologies available in artificial intelligence research and has been developed by our team of scientists and engineers in collaboration with the AI research lab at the University of Sherbrooke. **Conceived as a scalable architecture,** it can easily integrate new machine learning algorithms and statistical forecasting methods as these become available in the future.

In addition, it can scale to many hundreds of thousands of data time series to improve its ability to learn the important financial lessons of history. This means that **the platform will continue to improve over time,** essentially becoming more intelligent with increased robustness to future challenging market scenarios as we keep adding more data and introducing better machine learning and forecasting algorithms to its architecture.

Learning History's Financial Lessons

The World has experienced some very challenging periods during the past century, including two World Wars, a Depression and many recessions, as well as many political and economic crises. A fundamental tenet of finance is to learn from these great lessons of financial market history, and then see how such important learnings can help navigate today's ever more challenging markets.

Our platform is trained using data from the late 1800's until today, and includes lessons from the panics of 1901 and 1907, the two World Wars, the crash of 1929, the Great Depression, the Cold War, the OPEC crisis in the 1970s, the dotcom crash in 2000, the Great Financial crisis of 2008 and, more recently, the Coronavirus crash. In addition to these major events, our platform is also trained on tens of thousands of less dramatic financial events over the past century to bring more granularity to its decision-making process.

History often matters a lot, as Mark Twain is reputed to have said in this quote:

"History doesn't repeat itself but it often rhymes."

By learning the great lessons of financial markets history, our Laplace AI™ platform is well equipped to navigate today's challenging market environment with confidence.

A Platform that Keeps Learning the Market

Financial markets evolve constantly. While many of the market's behavior bear resemblance with the past, some of the market's behavior is also novel. This means that our platform must have the ability to keep learning from new financial market and economic data while also taking advantage of the rapidly evolving world of artificial intelligence research.

Our platform continually learns from new financial market data as the market evolves every day, enabling it to quickly adapt to new market situations and paradigm changes. In addition, **our research team is constantly developing and evaluating new market indicators** to discover new predictive relationships between assets and these indicators. When shown to have a useful predictive relationship, these indicators are added to the platform to provide new sources of information and help improve the quality of forecasts.

Furthermore, our research team is at the forefront of artificial intelligence research, so we are continually perfecting our algorithms and forecasting engines to capitalize on the best that technology can offer. We regularly publish scientific articles with the University of Sherbrooke AI team and we are recognized as a trend setter in financial AI research.

Improvements to our Software Platform

Our research team continuously works hard to improve the depth and breadth of the analyses made by our Laplace AI™ platform in order to improve its forecasting accuracy. As a research organization and leading experts in financial machine learning, improving our platform is the most fundamental way in which we continue to enhance the value we provide to our customers.

On a regular basis, **we release new and improved versions of our platform** in which we run the Columbus strategy and our sector insights. This means that this report will keep improving over time and the performance of our strategies will also progressively get better with each new versions of the platform. Should you have an interest in seeing how the Columbus strategy performance changed over time as we improved the platform, please contact us as we do trade the strategy in a live account to track its performance improvements in real time.

3. Columbus Strategy Portfolio Allocation

Columbus Allocation Dashboard

The figure below shows a summary of the current allocations by asset class for the Columbus Global Allocation alternative strategy. The figure is split into four quadrants, each corresponding to an asset class. For each quadrant, the figure shows the following information:

- The **large number in bold** represents the percentage allocation of the portfolio in that asset class.
- The **bar chart** on the left of the large number shows the allocation over each of the previous three months.
- The **half moon dial** provides a visual representation of the allocation percentage of that asset class in the overall portfolio.
- The words **"Balanced"**, **"Underweight" or "Overweight"** represent the asset class allocation compared with the reference allocation shown in the table below.

To put the Columbus allocations in context, we provide a simple reference portfolio in the table below. Deviations above or below the thresholds would represent an overweight or underweight allocation for that asset class.

Asset Class	Underweight Threshold	Balanced Allocation	Overweight Threshold
Equities	Below 30%	**45%**	Above 60%
Fixed Income	Below 20%	**30%**	Above 45%
Real Assets	Below 10%	**15%**	Above 20%
Cash Assets	Below 5%	**10%**	Above 15%

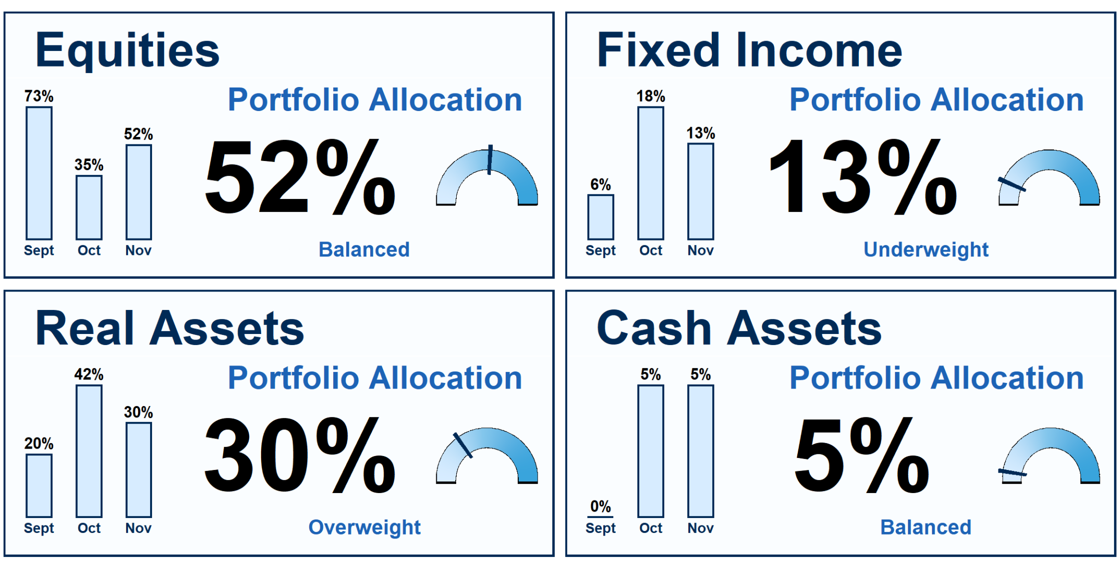


Figure 1

Columbus ETF Allocation table

The portfolio allocations for each asset are shown below for the last rebalance period and the upcoming period. The upcoming month weights are in **bold characters** and should be used to rebalance the portfolio. The Max. Weight column shows the maximum exposure weight limit constraining each ETF. This represents the upper weight limit for that ETF during an ideal market situation, where expected returns are high and volatility is low.

The maximum weight limits shown in the table have been chosen to limit the exposure to specific ETFs in the portfolio. Only on occasions will the Columbus Strategy invest in an ETF at its maximum exposure level. Such situations require a market environment with compelling positive momentum combined with low volatility. For certain clients, such exposure levels may be too aggressive. Should that be the case, **the client's advisor is urged to consider reducing the exposure to better suit his/her client's unique situation**.

Please read Section 7 - "How to Use Our Research" to understand how Columbus can be used in practice.

ETF	Max. Weight	Weight on 2020-08-28	Weight on 2020-09-29	Alloc. Change
SPY	50%	-	**1%**	1%
VXF	35%	-	**19%**	19%
EFA	35%	3%	**-**	-3%
EWJ	20%	32%	**32%**	-
VWO	25%	-	**-**	-
DBC	30%	25%	**-**	-25%
GLD	35%	16%	**29%**	13%
VNQ	30%	1%	**1%**	-
TLT	40%	-	**-**	-
IEF	50%	-	**-**	-
LQD	30%	14%	**1%**	-13%
TIP	40%	4%	**12%**	8%
PCY	30%	-	**-**	-
UUP	50%	-	**-**	-
SHY	100%	5%	**5%**	-
Total		*100%*	*100%*	

Totals may not add up to 100% due to rounding errors, in which case an adjustment is made to SHY (the cash balance).
The model portfolio trades on the next trading day after the report is sent to subscribers.

4. Sector Relative Attractiveness Analysis

Sector Insights Dashboard

The figure below shows the results of our Laplace AI™ platform analysis of the 11 sectors making up the S&P 500 index. These provide insights on each sector's relative attractiveness for the upcoming month. These insights can be used to implement your own sector strategy. We urge you to read **Section 7** of this report which explains how you can make the best use of our Sector Insights Research.

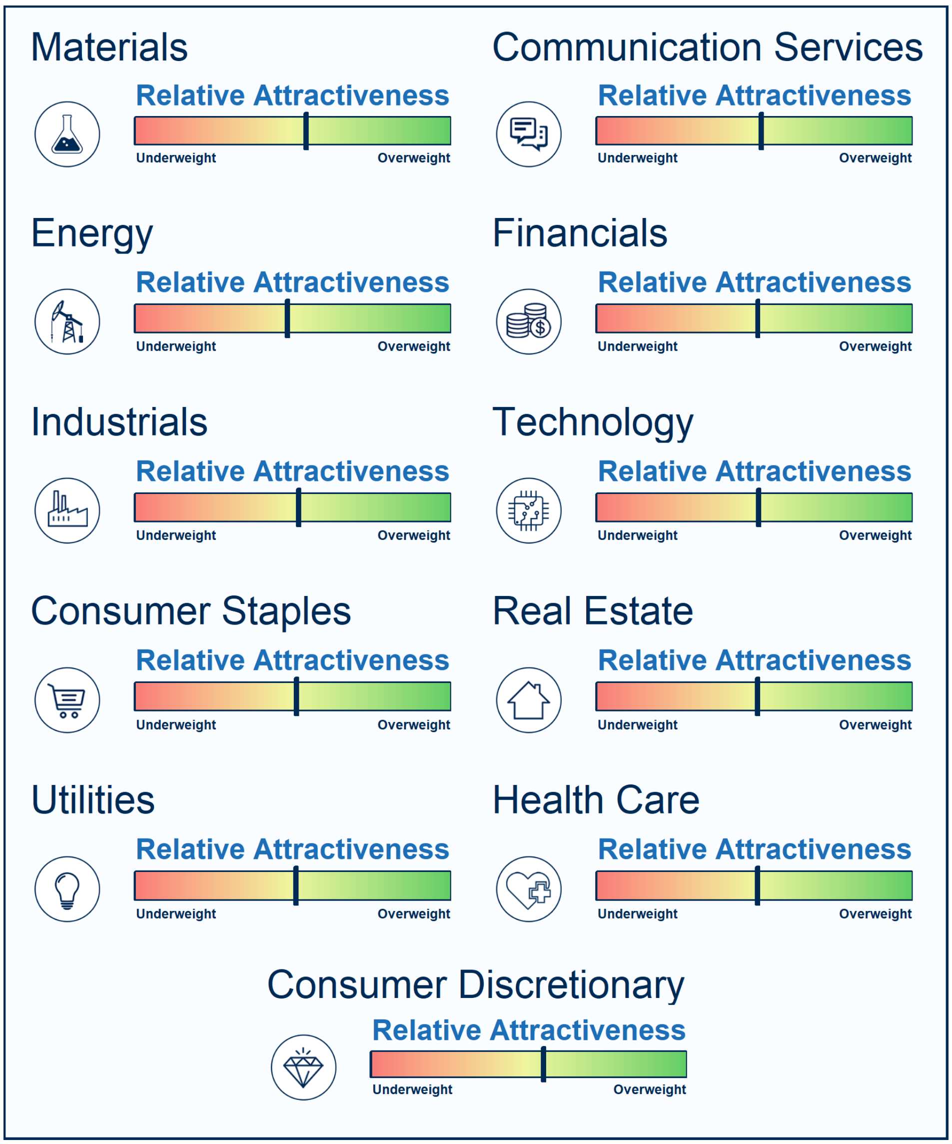


Figure 2

Please refer to the discussion in Section 1 for an interpretation of these Sector Insights.

5. Risk-Returns Analysis

Expected Returns-Volatility

Figure 3 below shows each asset in the Columbus universe on the Expected Returns - Volatility plane. The color of each dot represents the asset class each ETF belongs to, while the dot size shows the relative allocation weight for each ETF.

The Columbus algorithm selects and weighs assets in its universe based upon their relative volatility and an expected returns measure based on our machine learning forecasts. It attempts to find the optimal combination of assets to get the best returns - risk tradeoff, while also considering correlation between the assets selected.

The Expected Returns - Volatility chart does not explicitly show correlations. Some assets may therefore be more (or less) emphasized based upon their level of correlation compared to the overall portfolio.

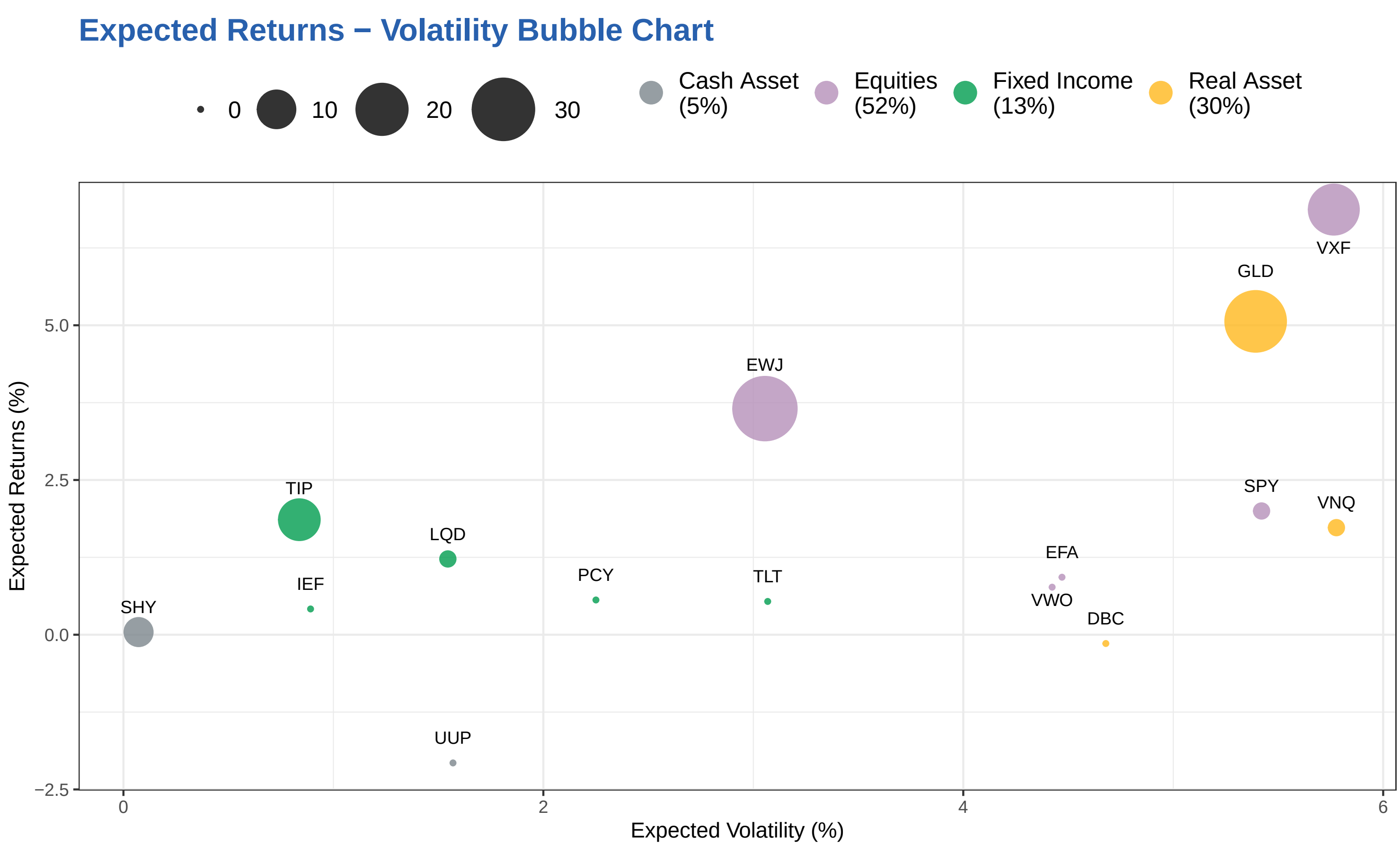


Figure 3

Optimal Weights Allocations

Figure 4 below shows the optimal weight allocation for each ETF in the portfolio for the upcoming month. The dark blue bars correspond to the optimal weights for each ETF as optimized by the Columbus Strategy. The value of these are identical to the weights in the Columbus ETF Allocation Table.

The light blue bars show the maximum weight limits for each ETF adjusted for the asset current volatility. In other words, it is the asset's theoretical maximum weight limit reduced by an amount related to the asset's recent volatility. This provides an important method for Columbus to contain portfolio volatility and control risk in turbulent market environments.

By overlapping the dark blue bars over their associated light blue bar, we can see how much Columbus chose to allocate to each asset vs. its allowable allocation limit for the current period. The allocation levels reflect the most optimal portfolio allocation for each asset.

More to the point, this chart tells us where Columbus finds the most optimal risk/return tradeoff for the upcoming period. When an ETF allocation (dark blue bar) approaches its allocation limit (light blue bar), Columbus is telling us that it greatly favors that asset. Conversely, when the ETF weight is small compared to its limit, then Columbus shuns that asset, yet may still want some exposure because it offers a de-correlation benefit to the overall portfolio.

Optimal Portfolio Weights Compared to Maximum Weight Limits

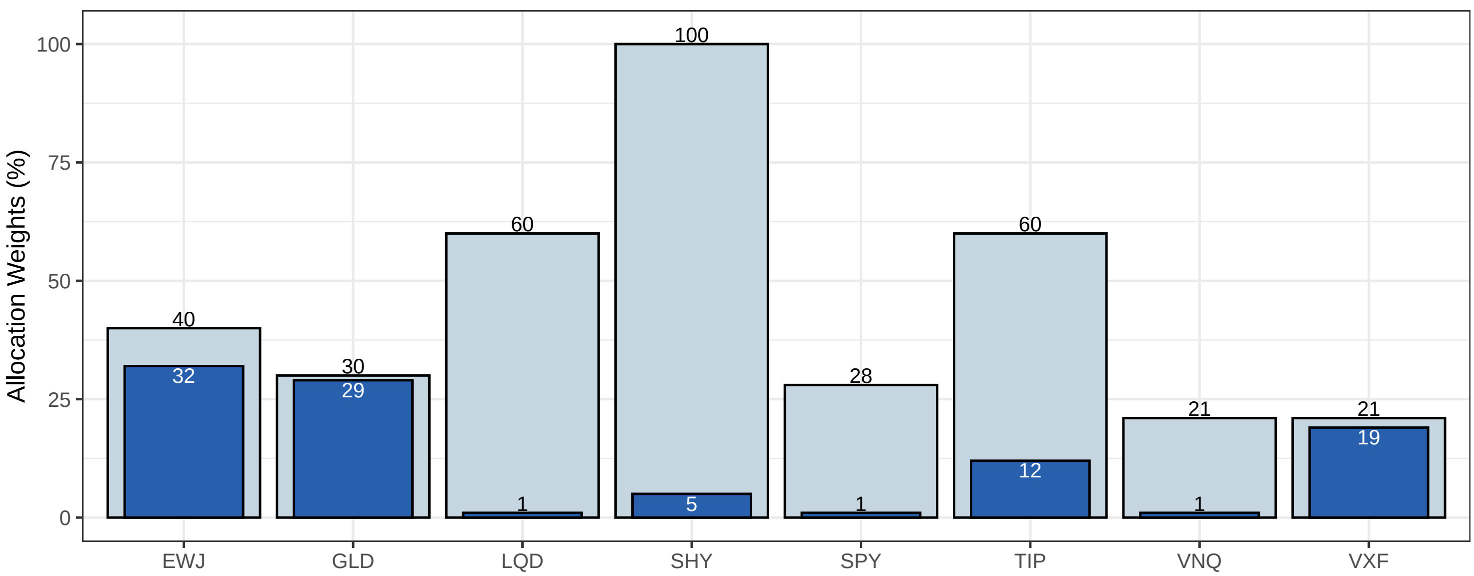


Figure 4

See the appendix for details on each ETF in the Columbus universe.

6. Performance Summary

Columbus Performance Since 2008

Figure 5 below illustrates the Columbus Strategy performance since April 2008.

The blue curve shows the performance of Columbus based on the most recent software release. The grey curve is the S&P 500 ETF (SPY), whereas the red curve is the Vanguard Moderate Growth ETF (VSMGX) which provides a 60/40 allocation between stocks and bonds. The orange curve is the equal weights portfolio created by equally weighting all 15 ETFs forming the Columbus investment universe.

The investment value (alpha) created by Columbus with respect to its investment universe is shown by the double arrow located on the right side of the chart (Columbus Alpha Creation). This double arrow compares Columbus (blue) to the no-skill portfolio represented by the Equal Weights benchmark (orange). Comparing these two curves over the time frame shows how Columbus generates returns over time above and beyond the Equal Weights no-skill portfolio. This excess return is readily seen as Columbus keeps distancing itself from its Equal Weights benchmark over time.

As we continue to improve our Laplace AI machine learning platform by adding more training data, new economic and financial indicators, and improving our machine learning forecasters with the latest technological breakthroughs, **we expect the performance of the Columbus strategy to keep improving over time.**

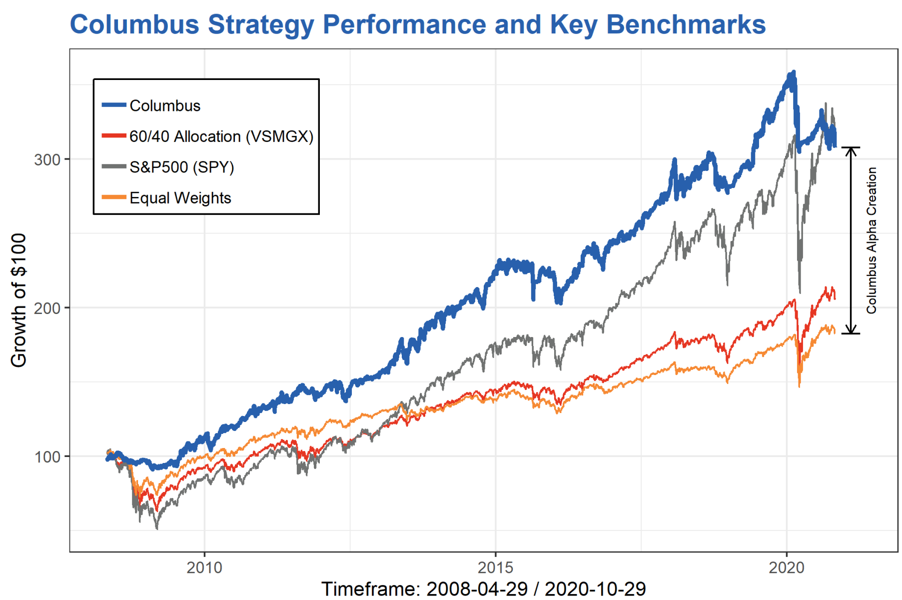


Figure 5

The table below provides a summary of the performance of the Columbus Strategy compared to the same three benchmarks shown in the Figure.

	Columbus	60/40 Allocation	S&P500	Equal Weights
Annualized Return (%)	9.59	5.86	9.38	4.79
YTD Gain / Loss (%)	-11.89	3.1	4.03	2.6
YTD Annualized Gain/Loss (%)	-14.09	3.73	4.85	3.13
Maximum Drawdown (%)	-15.03	-39.29	-51.49	-30.06
Annualized Standard Dev. (%)	10.05	13.06	21	10.14
Positive Rolling Years (%)	90.68	86.4	90.54	86.05
Annualized Sharpe Ratio	0.95	0.45	0.45	0.47
MAR Ratio	0.64	0.15	0.18	0.16

Columbus Performance Since 1999

Figure 6 below illustrates the Columbus Strategy performance since 1998 using two similar investment universes:

- The **Columbus-ETF** curve (in blue) represents the Columbus Strategy applied to our 15 ETF universe. This curve is identical to the Columbus curve in Figure 2 and is reproduced here for reference.
- The **Columbus-Funds** curve (in green) is a very similar universe to the Columbus-ETF universe except that it uses mutual funds instead of ETFs. This universe has a longer history because we selected mutual funds that have been in existence since the 1990s, and is therefore useful to extend the performance of the Columbus Strategy back over 20 years to the late 1990's.

The two regions in pink represent the bear markets from the **Dotcom crash** and the **Financial Crisis**. The table below shows some key statistics over the period.

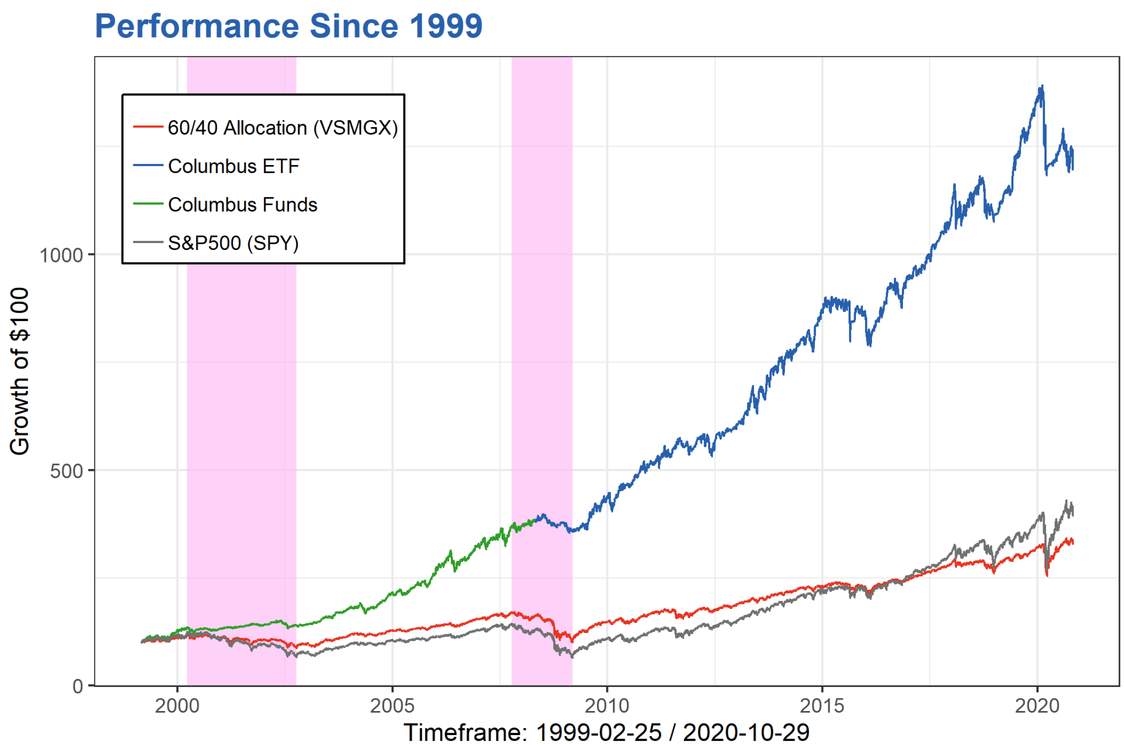


Figure 6

	60/40 Allocation	S&P500	Columbus-Funds (1998)	Columbus-ETF (2008)
Annualized Return (%)	5.68	6.59	12.14	9.59
Maximum Drawdown (%)	-41.12	-55.2	-16.1	-15.03
Annualized Sharpe Ratio	0.47	0.33	1.21	0.95
Positive Rolling Years (%)	76.44	76.21	91.01	90.68

Note: *Statistics for Columbus-Fund (green and blue curves taken together) and the S&P 500 are calculated since January 1999. Statistics for Columbus-ETF strategy are calculated since May 2008.*

Sector Insights Performance Since 2004

There are many ways to use our Sector Insights to implement a sector strategy. **Section 7** of this report proposes a few approaches. Here, we show an example of a simple strategy whereby we overweight the most attractive sectors by purchasing the appropriate SPDR Sector ETFs while underweighting those ETFs with the lowest relative attractiveness rating.

Note: This strategy is always 100% invested in equity sectors, even when all sector recommendations are underweight.

The figure below shows the performance of our **Sector Relative Attractiveness Insights** since 2004. The S&P 500 SPY ETF performance is also shown as reference to illustrate how our simple strategy of overweighting and underweighting sectors can lead to superior performance beyond a passive investment in the S&P 500.

Since markets evolve continuously, some sectors tend to perform substantially better than the S&P500 during certain periods while at other times, all sectors perform more or less equally well. A key objective of a sector strategy is to capture the extra returns offered during those periods when a clear divergence in sector performance exists. During the other periods when all sectors perform more or less equally well, our simple strategy essentially tracks the S&P500 as one would expect.

Sector Divergences Driven by Dislocations

The recent 5 years saw some very impressive gains in our simple sector strategy because of sector performance divergence. Given the **massive economic dislocations created by the Coronavirus pandemic**, we expect more such divergences going forward because certain sectors of the economy will suffer greatly from the resulting changes while other sectors will benefit from newfound opportunities. **These dislocations will create investment opportunities,** and our sector insights was developed to help you capture these opportunities as they arise.

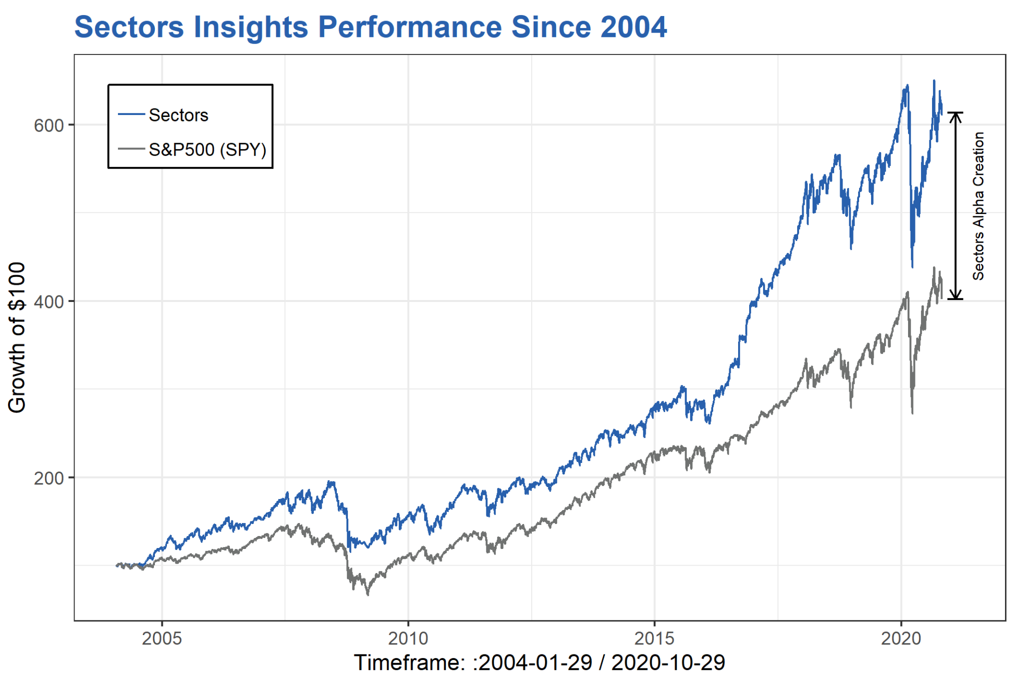


Figure 7

	Sector Insights	S&P500 (SPY)	Difference
Annualized Return (%)	9.19	6.5	2.69
YTD Gain / Loss (%)	-0.2	2.9	-3.1
1 Year Gain / Loss (%)	5	7.7	-2.7
Last 5 Years Gain / Loss (%)	117.1	75.1	42
Maximum Drawdown (%)	-43.83	-59.58	15.75
Annualized Standard Deviation (%)	18.97	19.11	-0.14

7. How to Use Our Research

Our research is 100% automated and generated by our proprietary Laplace AI™ machine learning and artificial intelligence platform. This ensures that you get recommendations and insights based on:

- **Market facts and statistics**, driven by more than 100 000 financial events and 120 years of market history.
- **Emotion-free and opinion-free information**, helping you understand market dynamics and bring clarity during turbulent and uncertain times.
- **An adaptive platform**, capable of discovering and learning new predictive relationships in financial data as the global economy evolves or as new paradigms emerge.

In addition to our automated AI process, we provide a commentary in Section 1 where we analyze the market environment from the perspective of our fact-based, emotion-free platform recommendations. This commentary helps you filter the noise of daily news and gain insights into the market driven by data, statistics, and financial market history.

Preserve Capital and Deliver Returns

This **Global Allocation Research** report can be used to help you preserve client capital while also providing a source of additional equity market returns over the long run.

These dual objectives are achieved using two complementary strategies and insights:

- The **Columbus Global ETF Allocation Strategy** helps preserve capital during turbulent or bear markets by providing tactical asset allocation recommendations. During bull markets, the strategy generally captures global equity market uptrends by allocating into global equity ETFs.
- The **Sector Relative Attractiveness Insights** help create additional equity market returns by providing insights into the S&P 500 equity sectors. These insights propose to overweight the more attractive sectors while also underweighting the least attractive sectors to help achieve higher equity market returns than those offered by the S&P 500.

Our research helps enhance the performance of your client portfolios by reducing overall risks while also improving long term returns through active tactical allocation. It is not meant to be a portfolio core, but rather **complements the core of an investor's portfolio through satellite allocations.**

The sections below explain the Columbus Global ETF Allocation strategy and the Sector Relative Attractiveness Insights in more details.

Columbus Delivers Uncorrelated Returns

The Columbus strategy provides a source of uncorrelated returns during those times when it is most important to be **decorrelated from the stock market.** The concept of uncorrelated returns is used extensively by investment professionals such as pension funds and large institutions. Rather than solely trying to maximize returns during bull markets, which often comes with amplified losses during bear markets, pension funds and institutions use different sources of returns to build portfolios that are **resilient to global economic uncertainty.** Columbus was developed with this idea in mind by providing a simple way for investment advisors to deliver uncorrelated returns in their client portfolios.

The primary objectives of the strategy are to protect capital during bear markets while also capturing stable growth over the long term.

During bear markets, Columbus invests in assets that are generally not correlated with the stock market. This helps to deliver returns during those times when it really matters to own a source of uncorrelated returns.

Conversely, Columbus becomes correlated to global equities **during stable bull markets in stocks**. This allows it to capture stock market upside and ensure your clients do not miss out on those gains.

How Columbus Works

The Columbus strategy selects up to 8 assets from a universe of 15 low costs, highly liquid ETFs, each representing one of the world's major asset classes. The strategy selects assets and adjusts their allocation weights to optimize for the best risk/return tradeoff, by emphasizing safety and capital preservation over short term gains.

The Columbus strategy trades monthly on the last trading day of the calendar month.

Columbus is Not a Market Timer

Although it may appear that Columbus can be used as a stock market timer, it is **NOT designed to be a market timer.** Unlike a market timer, Columbus will stay out of the stock market during times when it perceives a high degree of risks in equities, even though equities may turn out to be rallying strongly during those high risk periods.

Columbus is a Tactical Sleeve

In addition, Columbus can recommend a 100% stock allocation during high quality and stable bull markets in stocks, whereas it can also recommend a 100% allocation in government treasuries during bear markets. To ensure some level of diversification, certain maximum allocations have been imposed on each ETFs as discussed in Section 3 of this report. These maximums are dynamically reduced based on the expected volatility of each ETFs. This provides a way to manage concentration risks into a single ETF, but does not preclude the possibility to allocate 100% of the portfolio into equity ETFs.

For these reasons, Columbus should never be used as a portfolio core but **rather as a tactical sleeve to complement a client's core portfolio.** Columbus adjusts its allocations at the end of each month based on the prevailing market conditions and related returns and risks expected in all 15 ETFs it tracks in its investment universe. Appendix A includes the list of all 15 ETFs used by Columbus.

Sector Relative Attractiveness Insights

In addition to the Columbus Global ETF Allocation strategy, this report also includes insights on the S&P 500 equity sectors. This helps create additional equity market returns by proposing to overweight the more attractive S&P 500 sectors while simultaneously underweighting the least attractive sectors. This overweighting / underweighting approach is updated in every monthly report and are meant to provide a sense of **the sectors that are most likely to perform better on a relative basis** over the next several weeks and months.

The S&P 500 is composed of 11 sectors defined by the Global Industry Classification Standard (GICS), developed jointly by Standard & Poor's and MSCI Research. Each company making up the S&P 500 belong to a given sector. As valuations change and as companies are included or removed from the S&P 500 index, the exact sector weighting in the index changes correspondingly.

As of June 30th, 2020, the GICS sector weightings in the S&P 500 were as shown in the table below. The table also shows the SPDR Sector ETFs that can be used to track each of the S&P 500 sectors. More information on these ETFs can be found on the ETF sponsor's web site.

GICS Sector	ETF Symbol	Sector Weighting
Materials	XLB	2.5 %
Communication Services	XLC	10.8 %
Energy	XLE	2.8 %
Financials	XLF	10.1 %
Industrials	XLI	8.0 %
Technology	XLK	27.5 %
Consumer Staples	XLP	7.0 %
Real Estate	XLRE	2.8 %
Utilities	XLU	3.1 %
Health Care	XLV	14.6 %
Consumer Discretionary	XLY	10.8 %

How the Sector Insights Work

The figure below gives an example of the sector relative attractiveness insights provided in Section 4. For each of the 11 GICS sectors, a gauge shows the attractiveness of that sector relative to all other sectors in the S&P 500. When the gauge is in the green region, an overweight of that sector is warranted relative to the GICS weighting. Conversely, when the gauge is in the red region, an underweight of that sector is recommended. When the gauge is in the yellow region, the rough equivalent of the GICS sector weighting is recommended.

During a severe market correction, it is possible for all sector insights gauges to show an underweight value. This is because our AI platform would generally recommend to be underweight stocks during such periods.

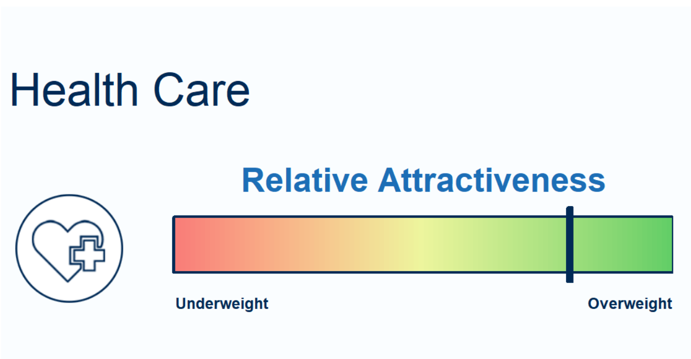


Figure 8

Using Sector Insights in Practice

Our relative attractiveness gauges provide insights on expected relative attractiveness of each S&P 500 sector. **There are many ways in which these insights can be used in an equity portfolio.** For example:

- One simple approach to achieve a sector overweight is by purchasing the equivalent SPDR sector ETF in an equity portfolio.
- For more complex portfolios that can include individual stocks, a sector overweight insight can be a sign to increase the weighting of stocks that belong to that sector.
- Conversely, also for individual stock portfolios, a sector underweight insight may be an indication to reduce some stock positions that belong to that sector.
- A combination of the above may also be useful in certain types of client portfolios.

The sector insights can be used in a variety of ways and are meant **to provide an emotion-free, fact-based, machine-driven relative outlook on the S&P 500 sectors.** It is not a complete investment strategy and should never be used as such. Rather, it should be used as a way to complement an existing equity sectors investment strategy.

8. Appendix

Appendix A - Columbus ETF Universe

The Columbus ETF universe is designed according to the following criteria:

- It is based on ETFs representing the major tradable asset classes available in global finance.
- Each ETF trades on the US markets and provides ample liquidity through its size.
- The level of correlation between each ETF is generally low enough to provide diversification.

The table below provides a short description of each ETF with their total assets and annual expense ratios.

Symbol	Assets	Exp. Ratio	ETF Name and Description
SPY	$ 242B	0.09%	SPDR S&P500 Index
EFA	$ 79B	0.33%	iShares MSCI EAFE Index
VWO	$ 82B	0.14%	Vanguard FTSE Emerging Market Equities
VXF	$ 58B	0.08%	Vanguard Extended Market (US small & mid caps, ex-S&P500)
EWJ	$ 17B	0.48%	iShares MSCI Japan Equities
VNQ	$ 65B	0.12%	Vanguard REIT Index
GLD	$ 32B	0.40%	SPDR Gold Trust (Gold Bullion)
DBC	$ 1.9B	0.89%	PowerShares DB Commodity Index Tracking Fund
IEF	$ 7.3B	0.15%	iShares 7-10 Year Treasury Bonds
TLT	$ 7.4B	0.15%	iShares 20+ Year Treasury Bonds
TIP	$ 23B	0.20%	iShares TIPS Bonds
LQD	$ 38B	0.15%	iShares iBoxx $ Investment Grade Corporate Bond Fund
PCY	$ 4.7B	0.50%	PowerShares Emerging Markets Sovereign Debt Portfolio
UUP	$ 515M	0.75%	PowerShares DB US Dollar Bullish Index Fund
SHY	$ 11B	0.15%	iShares 1-3 Year Treasury Bonds (Primary Cash Asset)
AVERAGE	**$44.6B**	**0.31%**	

Note that certain asset classes were considered large enough to warrant being covered by two separate ETFs. This is the case with US stocks, where SPY provides exposure to the large capitalization stocks while VXF provides exposure to small and mid-sized capitalization stocks.

Similarly, EFA provides exposure to international large capitalization stocks, which includes a wide range of countries. However, we also added Japanese stocks as a separate ETF (EWJ) despite some exposure to the Japanese market through EFA via large multinational Japanese companies. This choice is justified because Japan is a major global equity market that is generally less correlated with other major developed equity markets. Thus, adding Japan to the mix provides an additional decorrelation component to the universe.

Appendix B - ETF Universe Used by our Sector Insights

The Sectors universe is made up of the Select Sector SPDR ETFs, each tracking its related GICS sector making up the 11 sectors of the S&P 500 index. For more information about these ETFs, please consult the ETF sponsor's web site.

The table below provides a short description of each sector ETF with their total assets and annual expense ratios.

Symbol	Assets	Exp. Ratio	Description
XLB	$ 4.33B	0.13%	Materials Sector SPDR ETF
XLC	$ 7.74B	0.13%	Communication Services Sector SPDR ETF
XLE	$ 9.97B	0.13%	Energy Sector SPDR ETF
XLF	$ 17.57B	0.13%	Financials Sector SPDR ETF
XLI	$ 7.68B	0.13%	Industrials Sector SPDR ETF
XLK	$ 27.23B	0.13%	Technology Sector SPDR ETF
XLP	$ 14.51B	0.13%	Consumer Staples Sector SPDR ETF
XLRE	$ 4.68B	0.13%	Real Estate Sector SPDR ETF
XLU	$ 11.8B	0.13%	Utilities Sector SPDR ETF
XLV	$ 24.65B	0.13%	Health Care Sector SPDR ETF
XLY	$ 11.85B	0.13%	Consumer Discretionary Sector SPDR ETF
AVERAGE	**$12.91B**	**0.13%**	

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