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NEXT GENERATION ASSET ALLOCATION

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The following was a 'Finalist' for the 2020 Charles H. Dow Award, of 31 papers submitted globally

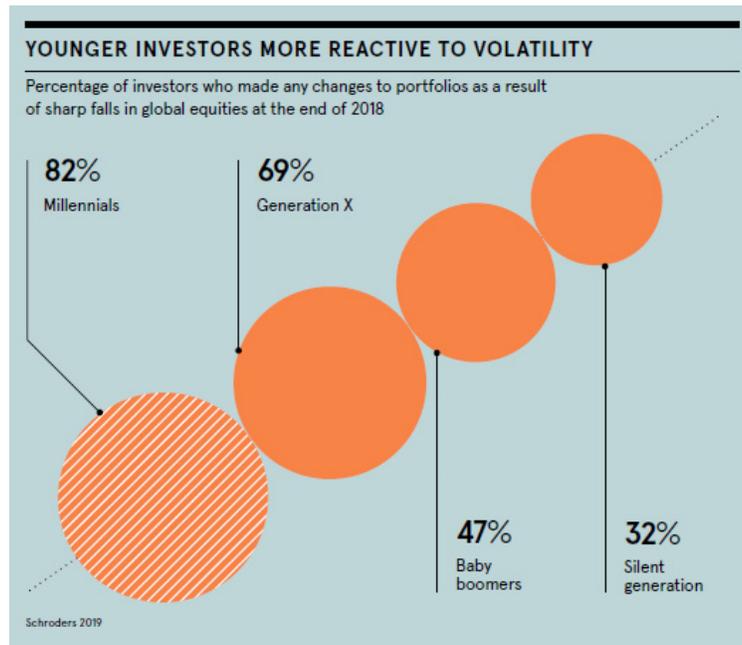
Introduction

For over 50 years the investment industry has conditioned us all to believe that Modern Portfolio Theory (or “MPT”) is the most effective way to manage money in the markets. The theory being, that different asset classes will provide uncorrelated returns and a smoother, more efficient, return stream for investors. While great in theory, the reality is that all asset classes tend to correlate when markets are under stress. This is of course the most inconvenient time for investors, and exactly the problem MPT promised to solve

This issue is finally becoming a problem for advisors, as younger clients are proving to be less forgiving of volatility in their portfolios. According to Schroders, an overwhelming 82% of millennial investors rebalanced their portfolios as a result of the 4Q’18 bear market in stocks. By far the largest of the 4 demographics surveyed, and nearly double that of baby boomers and nearly triple that of the silent generation (Figure 1).

Our point being, investment advisors who want to continue being investment advisors, clearly need to offer clients a solution better than “MPT and an apology”. Put differently, the next generation of clients is already demanding the next generation of investment solutions.

FIGURE 1



What Really Works

According to a recent study by several very credible professionals on the performance of trend-following investing across global markets, it was found that in each decade since 1880 time-series momentum has delivered positive average returns with low correlations when compared to traditional asset classes¹. Further, time-series momentum performed well in 8 out of 10 of the largest crisis periods over the century, as defined by the largest drawdowns for a 60/40 stock/bond portfolio. Finally, time-series momentum has performed well across different macro environments, including recessions and booms, wartime and peacetime, high and low interest rate regimes, and periods of both high and low inflation.

While clearly a critically important concept, we believe momentum is a term which is used far too cavalierly and often without a specific definition. In the research noted above, the authors constructed a measure that combined 1-, 3- & 12-month differences in price for 67 markets across stocks, bonds, commodities and currency pairs. We will keep it even simpler and define momentum to be the percentage change in the price of an asset over a defined number of months. For example, if the price of XYZ is 100 on December 31st and 120 on June 30th, the '6-month momentum' will be 20% $((120-100)/100)$.

Position Sizing

Besides posting good returns, the other critically important priority in building our 'next generation' asset allocation model was to reduce the volatility of the portfolio. This is so investors could actually live with the strategy during times of stress. While there are numerous ways managers have tried to accomplish this, our choice was to weight individual positions based on their 60-day volatility, as reported by Bloomberg².

More specifically, asset classes with higher volatilities should represent a smaller relative position within the portfolio. This gives each position an equal opportunity to add \$1 of profit to the investor, as well as provides them a potentially smoother, less volatile ride – our stated goal from the beginning, as well as that of MPT.

It should be noted that we capped the maximum volatility reading of 3-month Treasury Bills. This was needed due to the extremely high volatility readings associated with low levels of short-term interest rates (ZIRP³). An example being, that when the return on a T-Bill increases merely from 1bp to 2bp over a 60-day period the volatility of those returns is 100%. This led to outsized portfolio weighting during the 2008 financial crisis and hence our decision to limit the volatility of 3-month Treasuries to a maximum of 50%.

The Universe

When building our 'next generation' asset allocation model, we chose to use common investment vehicles which had a long history and that were widely available as some form of ETF or ETN. A complete list of specific indices used for this model are listed in Table 2, along with their available ETFs.

The only (minor) exceptions are in the calculations with the fixed income vehicles. In the case of intermediate

term bonds, we used the TLT ETF in the model (which represents 20+ Year US Treasuries) as its monthly price change incorporates earned interest. For 3-month Treasury Bills, we used the actual yield.

A 'Next Generation' Asset Allocation Model

It takes a different approach to build an investment model that provides a different return stream from MPT. We chose to combine momentum and volatility / risk parity to create a model that adapts to actual market conditions, while keeping trading and turnover to reasonable and manageable levels.

The first step is to use an 'n-period' momentum to define which markets / asset classes are currently performing the best. While this can sometimes mean 'losing less' than the others, this process typically identifies markets that are actually trending higher. We then rank the 10 markets / asset classes within our universe at the end of each month, choosing the 5 strongest to be in the portfolio the following month. Finally, we use the 60-day volatility to weight positions in a risk-parity manner.

The Results

While a very simple approach, we believe this is an equally elegant one which provides materially better returns than MPT's traditional 60/40 mix. More specifically, our 'next generation' adaptive model posted stock-like returns with 60/40 like volatility over a 17-year period, which included (by our definition) 4 cyclical bear markets. A '21st century solution'.

The key to achieving the above returns was of course to take a 'trend following' approach, which allowed the portfolio to adapt to changing market conditions.

Annual returns are detailed in Table 3, with 2002 and 2019 representing partial periods. August 2002 was chosen as a start date as the TLT ETF was launched July 2002.

TABLE 2

Market / Index	Tradeable
S&P 500 Index	SPY
NASDAQ Composite	QQQ
Russell 2000	IWM
MSCI EAFE Index	EFA
MSCI Emerging Markets	EEM
Bloomberg Commodity Index	DJP
Gold	GLD
Real Estate Companies & REITs	IYR
20+ Year US Treasury Bonds	TLT
3 Month US Treasury Bills	T-Bill Rate

TABLE 3

	A3	SPY	60/40	4/2/4
2002	5.7%	(1.4%)	2.1%	1.4%
2003	31.7%	26.1%	14.6%	15.7%
2004	10.1%	10.6%	8.0%	9.2%
2005	8.6%	5.1%	4.7%	5.9%
2006	14.7%	14.9%	7.5%	8.9%
2007	10.7%	5.8%	5.6%	6.2%
2008	(6.8%)	(43.2%)	(15.2%)	(17.5%)
2009	16.0%	26.0%	5.0%	5.3%
2010	15.0%	15.8%	11.7%	10.0%
2011	2.4%	3.2%	12.7%	9.2%
2012	5.1%	15.4%	9.6%	9.3%
2013	20.2%	28.7%	10.5%	8.5%
2014	7.3%	13.2%	16.6%	12.5%
2015	(4.2%)	2.2%	(0.0%)	(0.9%)
2016	12.8%	11.8%	7.0%	4.4%
2017	18.7%	20.0%	14.6%	14.6%
2018	(3.8%)	(3.4%)	(3.6%)	(6.2%)
2019	11.0%	21.8%	19.5%	17.8%
Avg	9.7%	9.6%	7.3%	6.3%
σ	9.5%	16.2%	8.1%	8.4%

(Please note 4/2/4 returns in the above table and in the chart to right represent a portfolio composed of 40% S&P 500, 20% MSCI EAFE Index and 40% US 20+ Year Treasuries.)

Chart 4 displays cumulative model returns, with the lower section detailing exposure to each broad asset class. The pie charts below (Charts 5 & 6) show the specific portfolio adjustment which would have been made just ahead of the 2008 US financial crisis.

This shift would have saved investors roughly half the drawdown of the market from September 2007 to March 2009. The resulting loss mitigation would have then allowed them to see a new high in the total value of their portfolio roughly 2½ years ahead of the S&P, and roughly 1½ years earlier than the 60/40 portfolio. Powerful confirmation that you ‘win by losing less’.

CHART 4

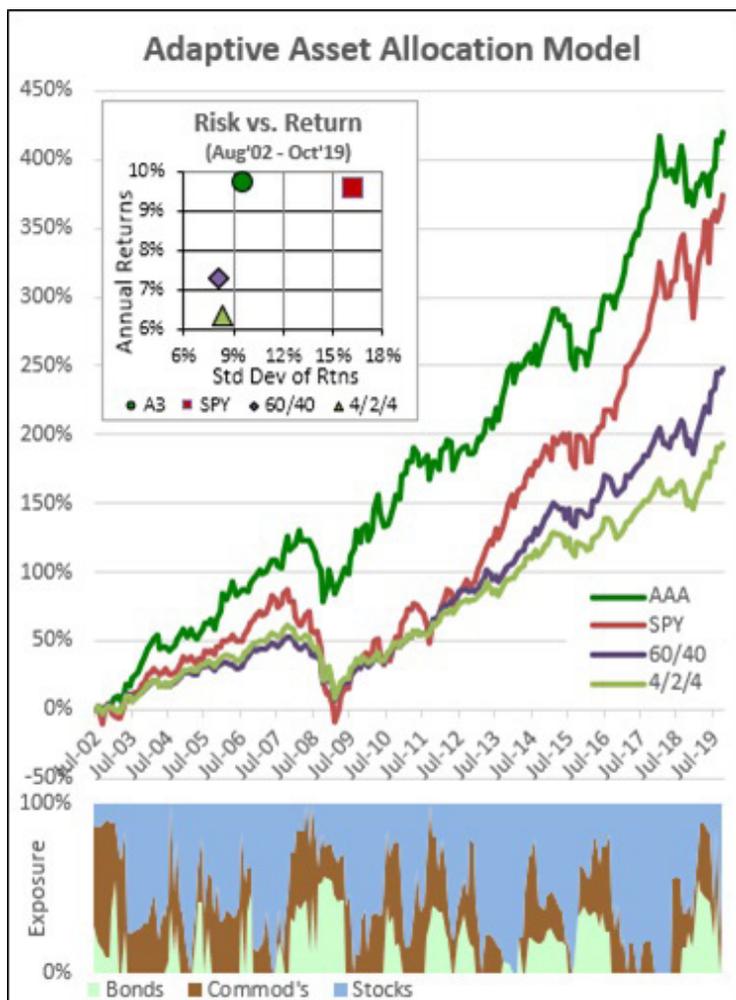


CHART 5

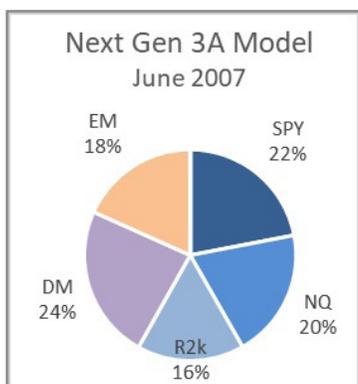
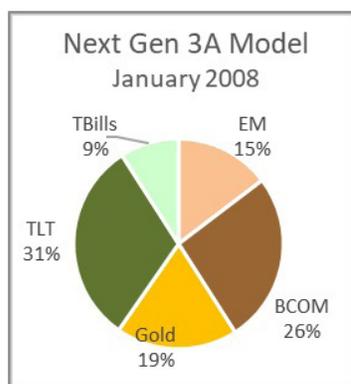


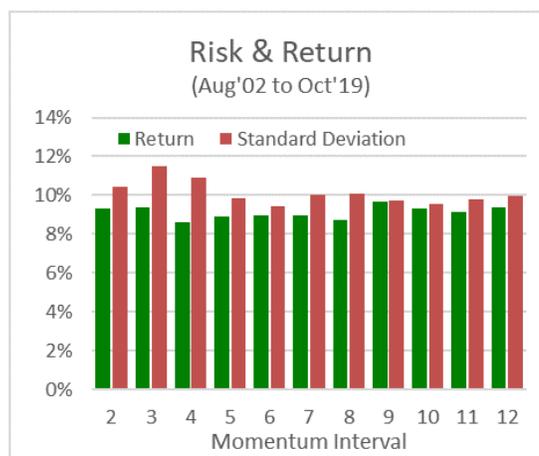
CHART 6



Optimization and Robustness of Results

The returns above were achieved using a 6-month momentum on all asset classes in the universe shown in Table 2. Chart 7 shows the annual returns and standard deviations of our ‘next generation’ model when using monthly momentum intervals from 2 to 12. Model returns were consistent across the series and the 6-period value was chosen as it showed the lowest standard deviation – a common measure of portfolio risk.

CHART 7



Additionally, the pie chart below (Chart 8) details the contributions of each market to the overall portfolio. While a very ‘qualitative’ look, the fact that no single asset class provided an outsized proportion of returns gives us additional comfort in the robustness of the investment model.

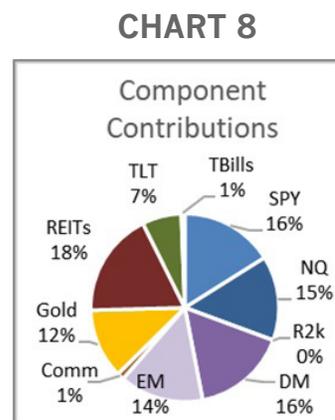
Conclusion

As we noted in our introduction, Modern Portfolio Theory remains the most popular method to manage assets in the markets. Introduced in 1952, MPT is not modern at all, and is actually older than electronic calculators, the TV show ‘Happy Days’ and Sputnik. We also maintain that it is at best a theory, as all asset classes (other than cash) typically get highly correlated during times of financial market stress.

While many chose to turn a blind eye, we have indeed made progress over the last 70 years in the way we can manage assets in financial markets. This is largely due to the silicon revolution, and the power to thoroughly test ideas.

One we believe whose time has come is Adaptive Asset Allocation. A truly ‘next generation’ strategy which can potentially provide materially better returns than MPT and given a few market cycles, stock-like returns with 60/40 volatility.

Advisors who ignore innovative strategies may soon find themselves in very difficult conversations with millennial investors, who are a generation that questions the status quo and who expects effective, modern, solutions.



Risk Disclosures & Notes

Sources

1. Brian Hurst, Yao Hua Ooi, and Lasse Heje Pedersen, A Century of Evidence on Trend-Following Investing, (Jun 27, 2017)
2. A measure of the risk of price moves for a security calculated from the standard deviation of day to day logarithmic historical price changes. The 60-day price volatility equals the annualized standard deviation of the relative price change for the 60 most recent trading days closing price, expressed as a percentage.
3. Zero interest-rate policy (ZIRP) is a macroeconomic concept describing conditions with a very low nominal interest rate, such as those from 2008 through 2015 in the United States.

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