Reference Point All Country World Directional Trading Strategy

"Algorithms beat individuals about half the time. And they match individuals about half time," Kahneman said. "There are very few examples of people outperforming algorithms in making predictive judgments. So when there's the possibility of using an algorithm, people should use it."

Daniel Kahneman, 73rd CFA Institute Annual Virtual conference

Rod Jones
CIO, GST Management, LLC
September 12, 2020

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The GSTCAP Reference Point All Country World Directional Trading strategy has been backtest prior to January 1, 2020. The back-test was generated with data as stated historically. The signals are generated at time t and the index is repositions at t+1 based on end of day closing prices. Future performance may be different from the data generated from the back-tested index data for a variety of reasons. Back-tests may have biases that cause the index to perform in a different manner than the back-tested performance. Solactive calculates the index and GST Management, LLC is the index administrator.

Introduction

The Reference Point All Country World Directional Trading Strategy is designed to beat the combined developed and emerging market public equity universe, the all country world universe. We provide an alternative to traditional fundamental and quantitative strategies that focus on asset level information to generate returns. A gathering body of research indicates that today's market structure and behavior produces systematic effects that undermine the utility of asset level information used by these approaches. We, instead, find more promise managing the sources of market risk themselves and trade index products exclusively.

Passive Investing Is Reshaping Equity Market Behavior

Equity market behavior has changed in the United States over the past two decades. Growth in the use of index products and index trading is reshaping the way markets work. It has precipitated greater trading commonality in index constituents because index funds and ETFs buy and sell stocks via basket orders in response to capital flows and rebalancing. The result is that returns of index constituents tend to move together throughout the trading day. Two important knock-on effects are a migration of pricing information from single assets to index products and increased market fragility.

Research from Israeli, Lee and Sridharan (2016) shows returns of stocks with greater ETF ownership impound less information today. They find that stock returns with high ETF ownership are more synchronous and have lower future earnings response coefficients. Other research provides similar types of conclusions. This suggests that investment processes that focus on idiosyncratic sources return are less well-off and processes that focus more on behavioral effects may be better off.

Market fragility has also increased. This is the idea that markets are vulnerable to unanticipated events today. Research from Sullivan and Xiong (2012) observes that the growth in trading of passively managed equity index portfolios and ETFs corresponds to a rise in systematic risk reflected in the rise and convergence of U.S. equity market betas since 1997. They show that diversification benefits of equity investing have decreased for all styles of stock portfolios. This means that assets move more in lock step with the market today which puts a premium on processes that are more agile and can hold dry powder.

We view market fragility as an alpha opportunity and, in addition, find that certain ETFs impound information useful for active equity strategies. Our tests show that behavioral models that use ETF data (and other data) can predict equity market prices over different horizons and limit drawdowns. We capture this opportunity with adaptive, technology enabled portfolios called Reference Point strategies. The following paragraphs describe our Reference Point All Country World Directional Trading strategy. It provides access to the broadest equity market opportunity set.

Strategy Objective and Performance Overview

The strategy seeks to provide qualified investors the opportunity to capture equity market returns in excess of the global developed and emerging market universe. It is designed to exploit mispricing in different markets and regimes by trading U.S. listed ETFs that capture regional equity market returns.

The strategy's performance is highlighted in Graph I and in Appendix I. It outperforms the MSCI All Country World Net Index by 7.23% on an annualized basis after expected transaction costs and borrowing costs.[1] The max drawdown is 33% versus 56% for the index.

Graph I

Prices from April 30, 2003 to August 31, 2020

Algorithmic Approach: Multi-State, Multi-Model, Multi-Horizon

The strategy is composed of four sub strategies: U.S. Small Cap, U.S. Large Cap, Non-U.S. Developed Markets and Emerging Markets. Each sub strategy is designed to generate active returns against its underlying equity market universe. Sub strategies hold cash and short sell regions that are expected to underperform and take leveraged positions in regions that are expected to outperform. Figure I shows each sub strategy's target capital allocations and the

equity ETFs used to access markets. Long positions target 133% equity exposure and defensive positions target 33% short equity exposure and 67% cash.

Figure I

Sub Strategies and Target Positions

Sub Strategy	Equity ETF	Positioning: Long	Positioning: Defensive
U.S. Large Cap	SPDR S&P 500 ETF Trust	133% ETF	-33% ETF, 67% Cash
U.S. Small Cap	iShares Russell 2000 ETF	""	""
Europe, Far East, Asia Developed Markets	iShares MSCI EAFE ETF	""	""
Emerging Markets	iShares MSCI Emerging Market ETF	""	""

Each sub strategy applies behavioral models with sentiment and flow based signals designed to capture shifts in investor preferences for equity market risk. We utilize ETF data for equity and credit asset classes and index data for volatility. The ETFs have liquidity clienteles, i.e., they are more liquid than their underlying index portfolios and are the preferred sources of short term liquidity for institutional investors. We find their data carry information that is absent from ETFs used by longer term investors. We use volatility indices like the CBOE Volatility Index. We find their prices carry information from informed option traders that signal market regimes and shifts in equity market prices. Lastly, it is important to note that we will, almost certainly, add other data sets in the future.

Each sub strategy applies a process that layers output from long horizon and short horizon models. The long horizon models signal turning points in investor's equity market exposure preferences that produce significant drawdowns. They also signal shifts to normal market regimes with new equilibrium prices. To demonstrate the model's effectiveness, we run a test using the small cap sub strategy. The test excludes the short term models and does not allow leverage or short selling. Our goal is to simply understand the degree to which the models reduce drawdown. The results are summarized in Figure II. While the strategy performs roughly in line with the Russell 2000 Index, it has significantly lower volatility and drawdown as intended.

Figure II

Numbers from December 29, 2000 to July 31, 2020

	Long horizon models with Small Cap Sub strategy	Russell 2000 Index
Annualized Return	7.1%	7.3%
Annualized Standard Deviation	16.9%	24.4%
Maximum Drawdown	-35%	-59%

The short term models are used within regimes to generate alpha. They are designed to exploit errors made by uninformed investors. The models are activated in dislocated markets that are either highly stressed or irrationally exuberant. They predict short term price reversals based on behavioral signals. Two examples are the Selling Exhaustion and FOMO models. Both models are activated when sub strategies are positioned defensively (33% short equity and 67% cash) in highly stressed market regimes. Graph II shows that stressed markets produce the largest and smallest rates of return. These two models are activated when CBOE Volatility Index prices are between approximately 25 and 65. The Selling Exhaustion model takes leveraged equity positions when investors sell in a panicked manner on above average volume. The FOMO model

Graph II

Daily data from March 3, 1990 to September 15, 2020
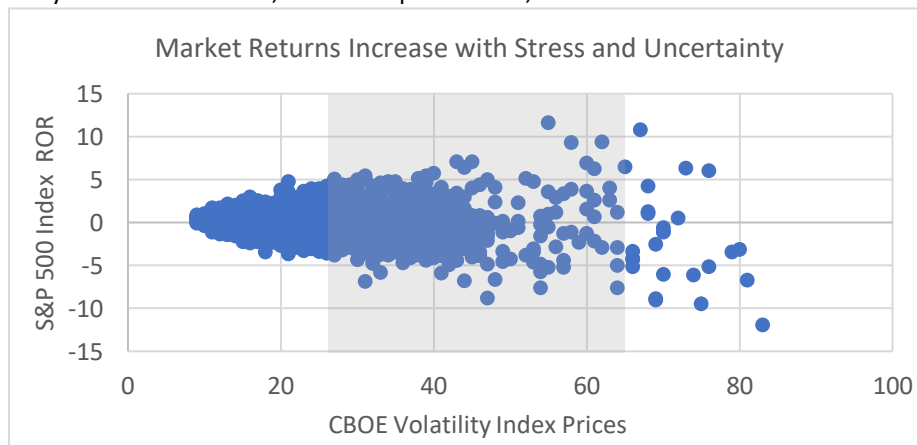
takes leveraged equity positions when investors buy in a panicked manner on above average volume. Graphs III and IV show how the FOMO model added value in the Corona virus drawdown this year. Graph III shows the Small Cap Sub strategy's performance with the long term models only, sans shorting or leverage. The strategy moved to cash from March 9th to

May 28th. The sub strategy avoided half the iShares Russell 2000 ETF drawdown but under performed it by 6.6%.

Graph IV shows the Small Cap Sub strategy performance with both the long term models and the FOMO model. These tests exclude other short term models we applied in the live strategy; the point of this exercise is to show an example of the FOMO model at work. The gray bars show the times the FOMO model added IWM exposure and the realized returns over the model horizon. The sub strategy avoided the same percentage drawdown but performed in line with the iShares Russell 2000 ETF. In other words, the FOMO model added approximately 6.6% of return.

Graph III

Small Cap Sub Strategy Test with Long Term Models
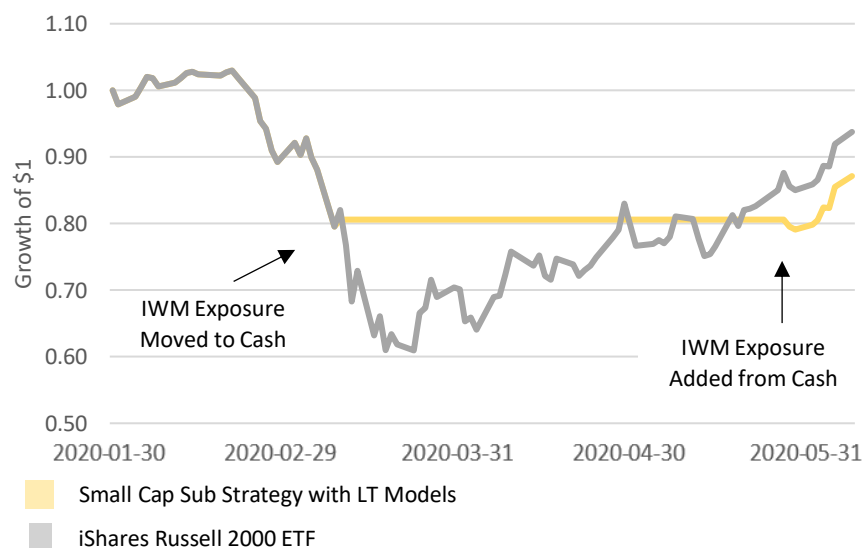
Graph IV

Small Cap Sub Strategy Test with Long Term Models and FOMO Model

Small Cap Sub Strategy with LT Models and FOMO Model

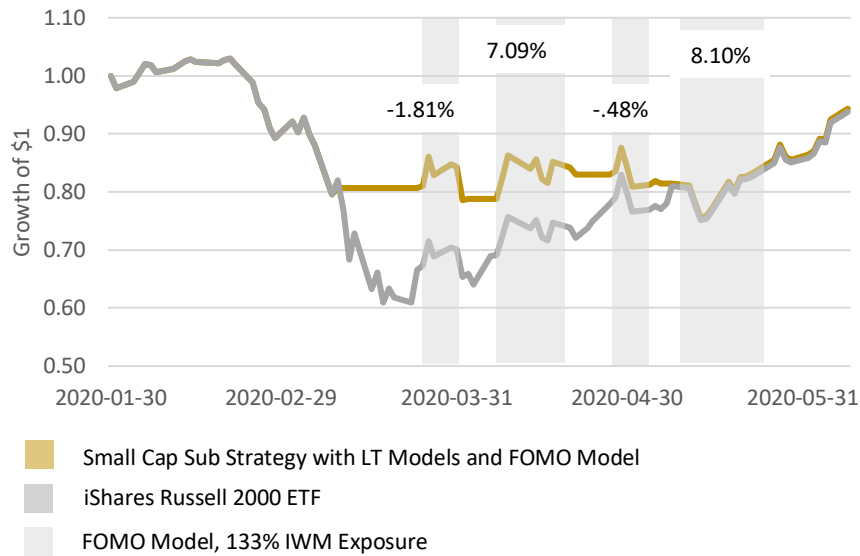iShares Russell 2000 ETF

FOMO Model, 133% IWM Exposure

Figure III shows the Selling Exhaustion and FOMO model's effectiveness using the small cap sub strategy over its life. Each model is tested independently of the other short term models. Both produce strong statistically significant returns.

Figure III

Selling Exhaustion model Statistics
December 29, 2001 to July 31, 2020

	Realized Value
Count	27
Average Return	2.48
Standard Deviation	3.19
T-Stat	4.04
Critical Value-95%	2.05
Success Rate	78%

FOMO model Statistics
December 29, 2001 to July 31, 2020

	Realized Value
Count	14
Average Return	4.31
Standard Deviation	5.33
T-Stat	3.02
Critical Value-95%	2.16
Success Rate	79%

Sub strategies are allocated to countries in similar proportions to the iShares MSCI ACWI ETF, subject to our constraints. The target allocations are shown in Figure IV. The allocations differ from the ACWI ETF for three reasons: (1) we do not include certain countries in the iShares ETF because we cannot find effective signals (2) we have not completed research on certain countries and exclude them (3) we access markets with ETFs that have country allocations different than the ACWI ETF. In the future, we expect to add other countries or regions based on research findings.

Figure IV

Target Sub Strategy Allocations, December 29, 2001 to July 31, 2020

Sub Strategy	Equity ETF	Target Allocations
U.S. Large Cap	SPDR S&P 500 ETF Trust	42%
U.S. Small Cap	iShares Russell 2000 ETF	18%
Europe, Far East, Asia Developed Markets	iShares MSCI EAFE ETF	25%
Emerging Markets	iShares MSCI Emerging Market ETF	15%

Finally, we want to underscore that the strategy has had equity market exposure over most historical trading days. Figure V shows the percentage of trading days that the sub strategies and parent strategy held at least 100% equity exposure over their lives. The parent strategy was fully invested almost 87% of the time.

Figure V

Historical Cash-Equity Allocations, May 30, 2003 to July 31, 2020
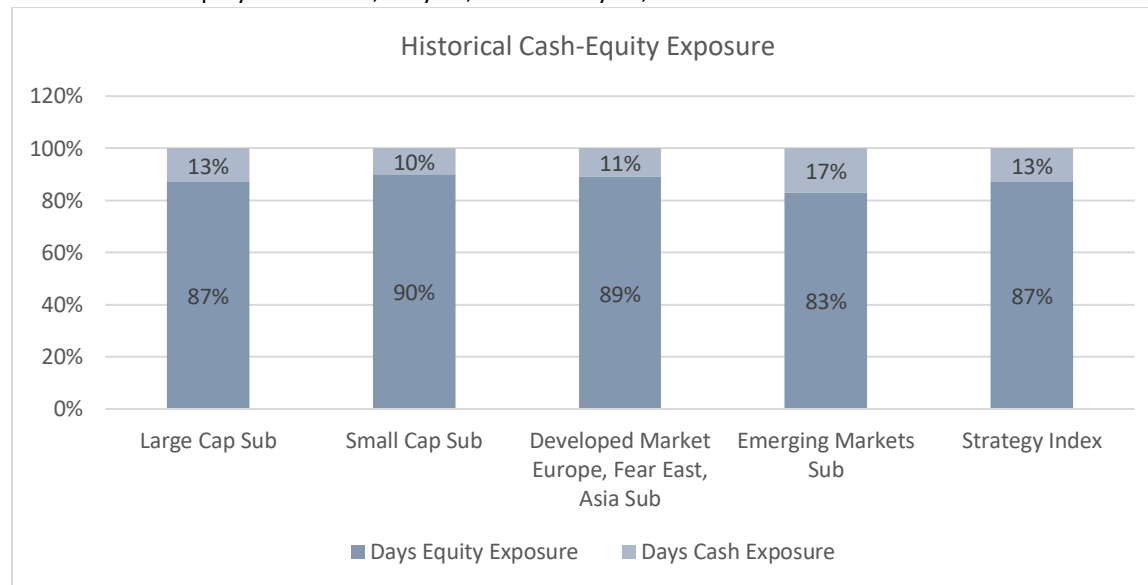
Summary

We believe the strategy offers qualified investors the potential to improve diversification and performance in their overall public equity programs. The strategy is novel in that it focuses directly on managing sources of market risk to generate alpha. It recognizes that markets have different regimes and applies algorithmic processes to exploit them. We think it is difficult for managers that run single process strategies, that cannot explicitly adapt to regimes, even strategies that use multiple factors, to outperform over a market cycle today. We agree with the academic research that indicates pricing information is migrating from single assets to group level assets. We also agree that market risk, while hidden, is greater today. Our Reference Point approach offers a tangible way to exploit this behavior with a process that includes intellectual and algorithmic barriers to entry.

While this strategy is geared toward qualitied investors, we have indexed unleveraged, non-shorting versions of the U.S. Large Cap and U.S. Small Cap sub strategies with Solactive, a global index provider, for high net worth investors.

Appendix I:

Prices from April 20, 2003 to September 30, 2020

	Reference Point All Country World Directional Trading Strategy	MSCI ACWI
Annualized Return	16.66	9.00
Annualized SD	15.59	15.23
Tracking error	8.87	
Sharpe Ratio	0.99	0.51
Information Ratio	0.86	
Beta	0.86	
Alpha	8.12 (3.88)	
MAX DD	-31.70	-55.80

Calendar Year Performance as of September 30, 2020

	Reference Point All Country World Directional Trading Strategy	MSCI ACWI	Active Return
YTD	16.52%	1.77%	14.75%
2019	24.25%	27.30%	-3.05%
2018	-7.39%	-8.93%	1.53%
2017	31.15%	24.63%	6.53%
2016	16.25%	8.48%	7.76%
2015	6.94%	-1.84%	8.77%
2014	2.97%	4.71%	-1.74%
2013	26.48%	23.44%	3.04%
2012	17.33%	16.80%	0.53%
2011	-7.89%	-6.86%	-1.02%
2010	26.94%	13.21%	13.73%
2009	43.84%	35.40%	8.44%
2008	-4.66%	-41.84%	37.19%
2007	18.12%	12.19%	5.93%
2006	25.80%	21.53%	4.27%
2005	10.25%	11.37%	-1.12%
2004	17.35%	15.75%	1.60%

Notes:

1. The strategy is calculated using end of day closing prices. The performance includes dividends. We deduct the following transaction cost for each trade from cash to equity and vice versa: U.S. Large Cap 8 bp per trade, U.S. Small Cap 16 bp per trade, EAFE 10 bp per trade, Emerging Markets 16 bp per trade. We also deduct 1.97 bp borrowing cost.

References

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