

## The Role of Systematic Relative Value Strategies

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As investors are realising that the re-pricing of corporate and sovereign debt was based on overly optimistic assumptions and as the equity market rally has come to a stop, the sources of available attractive investment opportunities have become more restrained. The silver lining lies in short-term relative value strategies. Those managers do not rely on long term asset price dislocation but rather on short-term market anomalies or patterns. Thanks to sophisticated and scientific quantitative analysis, often with a systematic trading implementation, they can quickly analyse huge amounts of data and identify alpha opportunities. Like the chameleon, who catches a fly faster than one can blink, the systematic relative value manager will capture trades faster than a group of analysts can detect it.

We will focus on systematic relative value managers, which are highly suitable for the current environment. We can then look at how leverage is used and how those strategies are strongly different from traditional trend-following algorithms. Market neutrality is achieved with multiple trading techniques. It is not just one strategy, it is a mind-set of how to approach trading in markets. We specifically select managers who are able to master the art of market neutrality in the discretionary as well as in the systematically managed side.

### 1. Systematic Relative Value - What is it for us?

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- We focus exclusively on systematic approaches designed to identify dislocated value.
- We focus on market neutral approaches that notwithstanding their volatility are substantially NOT correlated to the markets where they are extracting value from or to any other market.
- We do not focus on generic trend following and momentum driven strategies prone to suffer from direction change

Systematic relative value (RV) has always been part of the Ayaltis' portfolio, but we invest in different types of Systematic RV depending on market conditions.

Classifying systematic managers into clearly differing strategies is difficult on one hand, the diversity of these strategies is enormous. On the other hand, almost no manager implements a simplistic, one-dimensional model in their algorithms. Today managers often implement combinations of algorithmic techniques to allow their engines to adapt to changing trading environments. In addition, systematic managers are very reluctant to reveal the details and specifications of their algorithms. Especially, if they successfully extract value from markets. That is a fact, which you have to work with, when you decide to include this spectrum of funds in your portfolio.

Nonetheless we do conduct extremely detailed due diligence on funds to understand their specific approach. To identify our targets and reduce the analysis set, we start from the very end: we conduct demanding mathematical test on a fund's performance versus all markets. Our

tests are designed to identify market neutrality. It has to be stressed that, in the end, we are agnostic to a manager's particular combination of the various known and unknown algorithmic models. What matters is that they deliver truly solid uncorrelated, sound market neutral returns. As chairman Mao said, as long as the cat-model catches the performance-mouse we do not really care for the colour of its fur. We also seek more detailed data from the manager, like performance attribution by strategy or asset class, that allows us to clarify the sources of alpha and the risks associated.

Once the potential candidates are identified, then we subject them to our intensive qualitative due diligence process. If they pass our analysis, and in particular, if their specific algorithmic model implementation coincides with our Systematic RV preferences, then we consider them for investment. As explained before, our preference is to avoid pure trend following or momentum models. We concentrate on the models which focus on identifying dislocated value and which extract value in as market neutral fashion as possible.

## Basic Models:

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Any compilation of Systematic Relative Value Strategies lacks comprehensiveness due to the vast array of mathematical models available. Technical innovations in computer technology have also been ground breaking for the hedge fund industry. What used to sound like science fiction in terms of processing data and simulating returns has become reality. Impractical models of the past can now be implemented and results obtained within reasonable time frames. Neural networks, which have an integrated learning component and aim to recognize patterns of the past are leading to a new area of models and algorithms.

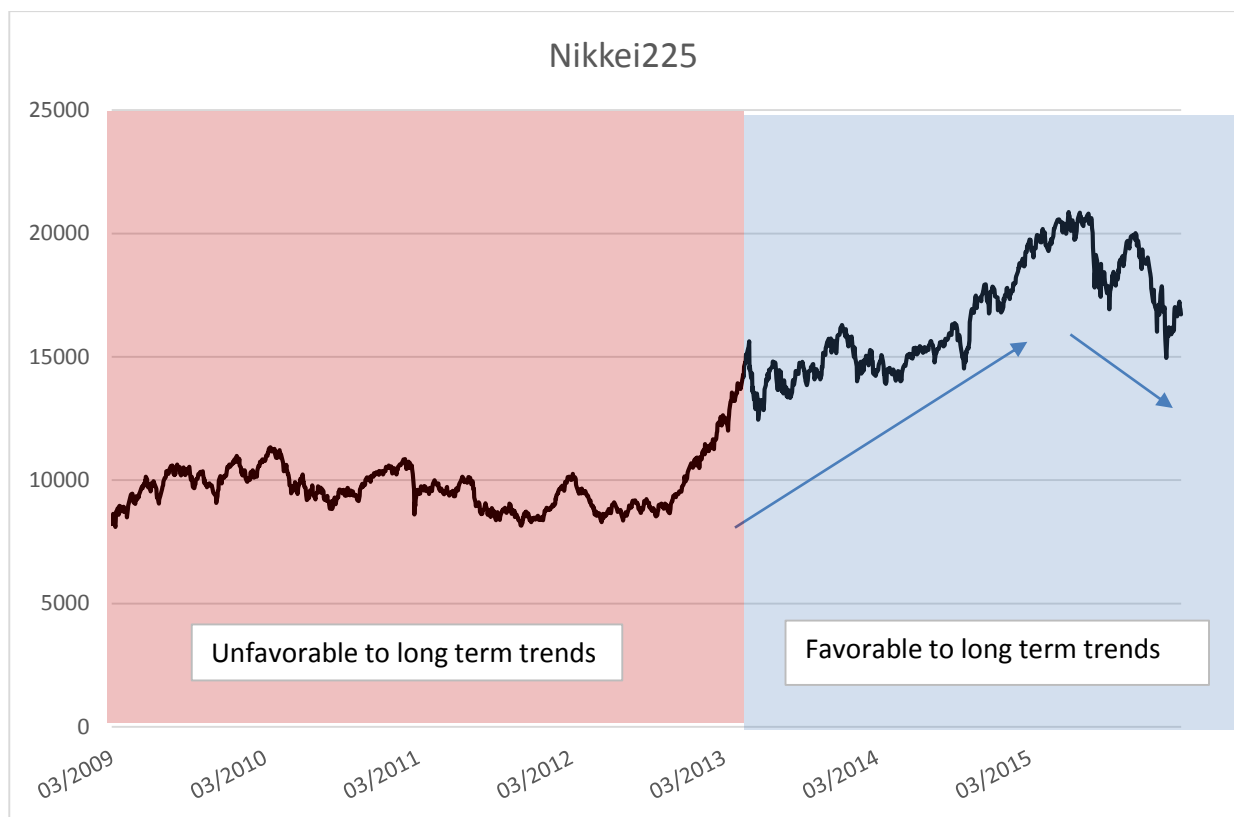
We would like to begin with the traditional systematic models. It has to be highlighted that Ayaltis does not invest in any of these strategies in their simple form. This is not our focus at all. Ayaltis' interest is on sophisticated models emphasising on relative value. However, deep down within these complex models, you might come across these basic elements. It is important to understand them since they include some of the base ingredients for any complex algorithmic model engine.

So let's cover the basic models in more detail.

### Basic Models: (a) Trend Following

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Trend following focuses on direction. Trend following can be described as a reactive strategy, which goes with the flow and follows the flow: It buys on the upswing and sells on the downswing. The theme is "buy high and sell higher". It does not forecast future market levels. It is backward looking and analyses previous patterns and looks for similarities. A trend following model for example employs moving average indicators, RSI (relative strength index), Bollinger Bands, Stochastics (max high, min low) etc. The size of a trade is a critical element within this strategy as the position within the model grows and falls over time.



The shortcomings of this model is that it is designed to miss the exit point. Most of them behave like a jet engine: it is slow to start in following a trend. If the trend lasts it gathers speed and progressively loads exposure on the trend. Then, when it is at maximum exposure and the trend turns, it misses the turn and goes off the curve, losing some or all of the gains. This strategy is ideal when trends are long and clean. As they have a late entry and a late exit, if the trend is too short, the strategy will suffer losses. In 2007 and 2008 when massive credit defaults knocked-off the market, generating some of the most beautiful downward trends in a generation, these strategies deliver performance promise. But when central bankers finally woke-up and intervened (read “started manipulating markets and stopping trends”), markets became choppy and trendless. Managers then failed to perform to this date.

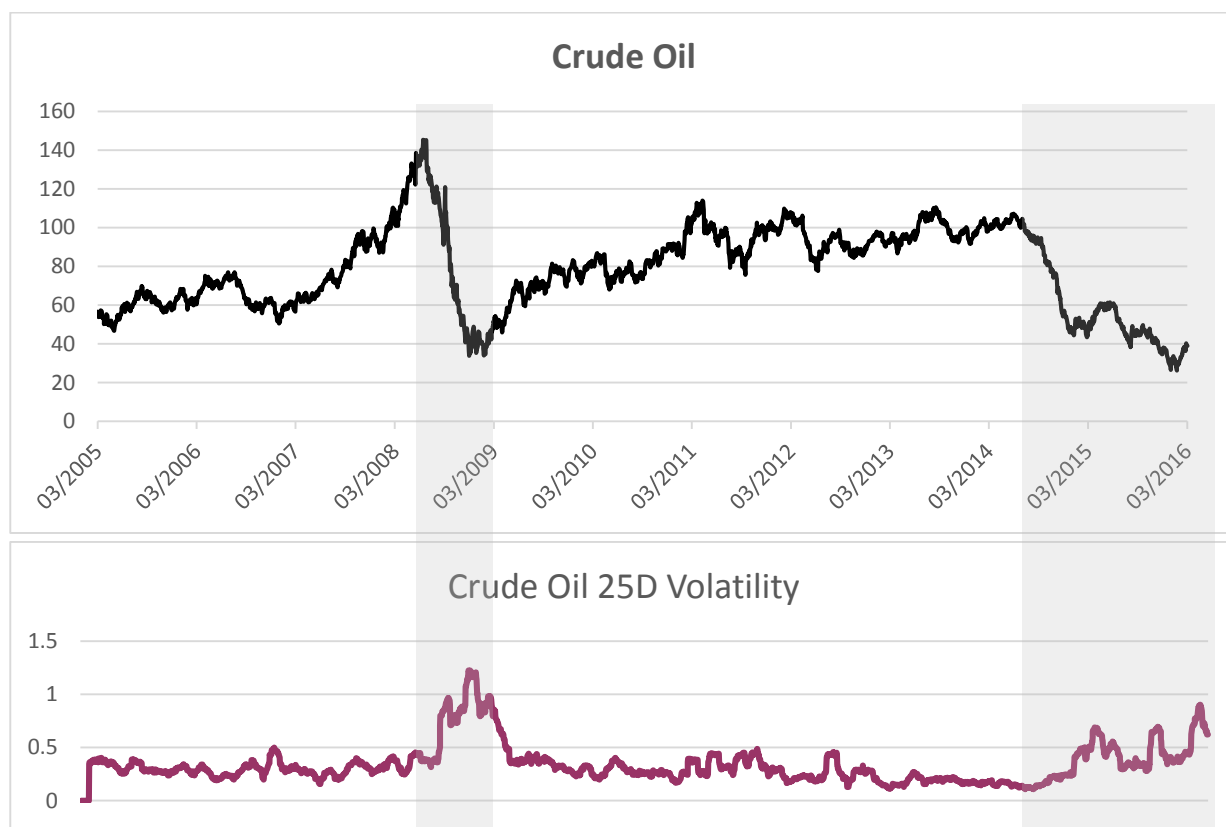
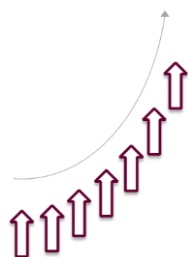
At Ayltis we allocated assets to strategies with this component in late 2008 and redeemed from then when QE was announced. With Central Banks taking on a key role in breaking negative trends financial markets, these strategies were destined to fail. Although trend following strategies will not be the main focus in the near future, there might be a time for them in a well-diversified portfolio. Especially if really severe corrections, beyond the power of central bankers materialize.

This being said, every algorithmic engine contains strands of trend following DNA. The art is to know when they can play a role within the algorithms and with what purpose.

## Basic Models: (b) Momentum

Momentum focuses on the acceleration in price movement. Momentum shares some properties with trend following as it follows movements with the trend: going long on the upswing and short on the downswing. However, momentum strategies incorporate some fundamental analysis. The sources can range from trading volumes, bid-ask stack, overshoot-undershoot to

idiosyncratic end of month/year behaviour... The range of predictive momentum is vast. Momentum strategies tend to have a predicting and forward looking element and usually work as a leading indicator within technical analysis.



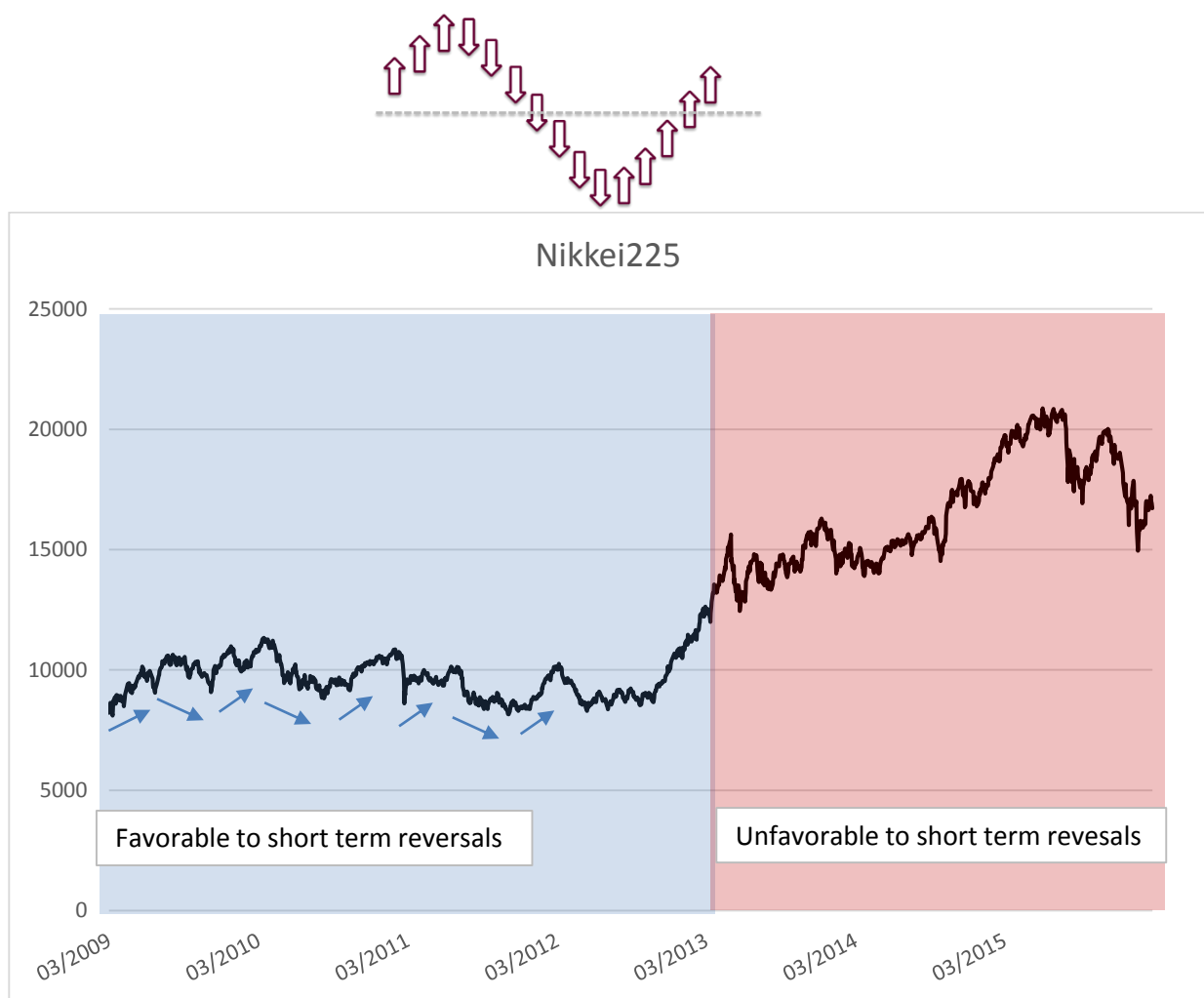
Momentum strategies are related to herd moments, which tends to be problematic to say the least. Predicting such movements is likely to be difficult.

It is important to mention that these strategies are often associated with trend following: trend following tends to be a precursor engine to momentum. However, momentum strategies also tend to be combined with mean reverting engines.

### Basic Models: (c) Mean Reverting

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Mean Reverting strategies differ fundamentally in their underlying logic from trend following strategies. Their key theme is much more: “buy low, sell high”. Here it is expected that a price moves within a set range based on its previous statistical behaviour. If a price level beyond this range is reached, it is assumed that the asset’s price will move back to its long term average price - it will revert to its mean. While trend following strategies have holding periods of several weeks, mean reversal strategies tend to be much short, usually over a few days, trying to benefit from over-shooting (up or down) movements.



The shortcomings of this strategy is that is likely to miss a paradigm shift. This being said, we find some of the most powerful implementations of Systematic RV in variations of the mean reversion theme. Look at it this way: generic mean reversion is too simplistic. Just because a price got dislocated from its previous period mean, it does not mean it will revert. Implemented like that, the model is likely to lead to failure. However, embed more practical trading experience to this model like fair DCF valuation, credit worthiness, history of recovery speed, cleanliness of financials, trading volume, bid-ask stack and you end up with a rocking performance engine. These are the types of managers we focus through the combination of our quantitative and qualitative due diligence. Furthermore, in environments when Deep RV has disappeared and Traditional RV is less abundant, these managers have the market cut out for them.

There might be external reasons, which legitimately push an asset to move away from its long term mean e.g.: a market shock or a company specific problem, usually triggering a herd effect which exacerbates the initial move, before the asset returns to a fairer value. Companies and markets evolve and do not stand still at any point in time. These diversions from the past can also be added and implanted in the more sophisticated implementations of the model that we seek.

## Additional: Systematic Relative Value Strategies

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For educational purposes we would like to touch on a few additional strategies, which also play a role in our Systematic RV implementation.

### (a) Statistical Arbitrage

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Statistical arbitrage relies on pairs trading and the principal of mean reversion. A statistical arbitrage portfolio consists of numerous small holdings, which are rebalanced a number of times during the day. It looks for mispricing within a set of securities. The focus is on detecting “stationary pairs”. Many of them make use of cointegration. Cointegration differs from the concept of correlation. Correlation assumes movement in the same direction. Cointegration on the other hand assumes that there is a stable spread between two assets, but not necessarily a consistent movement in the very same direction. When this spread is breached, the assets should move back to this spread. Only when this test is passed, it is valid to assume that the pair will show mean reversion.

Statistical arbitrage, like other systematic strategies, can rely on high speed data analysis. The dragonfly hunting skills offer a good analogy. The insect’s brain calculates within milliseconds the distance of its prey, the speed at which it is flying and the distance at which it is, in order to intercept it, instead of chasing it. Likewise, systematic managers analyse tremendous amount of data to detect opportunities in a fast moving environment. Their advantage versus slow reacting human beings is enormous.

Most of the managers we invest in our portfolio combine key elements of statistical arbitrage to achieve market neutrality after identifying trades based on trend-momentum and mean reversion variations.

### (b) Multifactorial idiosyncratic models/Big Data

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The extensive power of computation that comes from cloud computing and big data storing significantly changed the landscape for statistical arbitrageurs. The traditional pairs trading and uni-factorial models have been replaced by complex resource-consuming algorithms able to crunch a larger number of factors on a myriad of assets. The resulting strategies may vary from a small number to more than one hundred. A non-comprehensive classification of strategies may include:

- Fundamental mispricing of individual stocks based on earnings, cash-flows, volumes, recommendations, analysts’ forecast reclassification, insider dealings and other inputs. The ability of a machine to capture short-term deviations largely overcomes the inevitably slow capital allocation process that marks the investment activity of human-driven stock pickers.
- Behavioural themes: the algorithms extract from the price pattern the trading strategies used by market participants. Pattern recognition techniques (Parzen

windows, neural networks) are used to induct the current behaviour of the traders and the likelihoods of their future moves.

- IPOs, M&A, spin-offs, dividends or other special situations may produce price distortions easily captured by models.
- Data-Intensive models: several new strategies are making use of large-scale language processing to handle quantitative news data. Besides company's fundamentals, stock prices tend to follow the public sentiment. Since the mood of investors can be captured by text mining techniques, the combination of language processing and large-scale news analysis represents a promising gold mine.

Idiosyncratic models require liquidity and a large set of assets. For this reason they are almost entirely confined to the equity market.

### (c) Index Arbitrage

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Index arbitrage can be described as a sub-set of statistical arbitrage, with a focus on dislocations between the index and its components. It is legitimate to assume that the index should act as the sum of its components and should therefore react to movements of those. Index arbitrage used to be very popular with equity indices. Nowadays, we see index arbitrage much more on the credit side and synthetic credit indices such as CDX and ITRAX.

Some of the managers, which are within our scope of analysis, implement tactically highly elaborated versions of this strategy.

### (d) Neural Networks

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Neural networks represent the latest addition of state-of-the-art computer programs, which try to resemble the human brain in the way the work. As such these models have integrated models on how to react to external stimulus. They are able to link temporal concepts and have a learning component. In particular within the concept of pattern recognition these types of models are emerging.

In its purest form, Ayaltis does not invest into these types of models at this point in time.

## 2. Leverage and Volatility - A Matter of fine tuning

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The term "leverage" has usually a negative connotation among investors as the excessive use of leverage has led to numerous hedge fund failures in the past. With the use of leverage it is a little bit like with the use of salt: You have to be careful and you have to understand which ingredients requires the application of leverage in order to thrive. For quantitative strategies leverage is critical as the strategies look for incremental, small returns - like collecting pennies - which only makes economic sense with the use of leverage.

Systematic Relative Value portfolios also differ by their approach to managing leverage in the portfolio. One way to navigate the portfolio is to keep a constant leverage, which automatically leads to higher volatility in the portfolio in times of risk.

A different approach would be to target a constant volatility level within the portfolio. This setting automatically triggers deleveraging of the portfolio in times of elevated volatility. So in this case the use of leverage is dynamically managed: When volatility is high, leverage will be low. On the other hand, when volatility is low, leverage will be higher.

Depending on the strategy and the holding period, constant leverage or constant volatility can be applied. The former avoids the trap of having to cut positions at the spike of volatility, potentially locking in a loss. The latter allows to control volatility and drawdowns.

### 3. Differences to CTA Strategies

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It is a common misconception to assume that every trading style which uses algorithms must be a trend following CTA (commodity trading advisor). CTAs may well be on one of the first systematic strategies, but definitely not the only one. There are substantial differences between trend following CTA hedge funds and what we consider Systematic Relative Value.

- Multiple Models

CTAs usually consist of one basic model, which relies on a trend following strategy. On the other hand the Systematic Relative Value managers, which Ayaltis screens, implement a multitude of models and do not rely on one single strategy or model. The strategy can incorporate some mean reversal features, cross asset correlation, macro factors,...

- Short Term

CTAs focus on the long term. Systematic Relative Value managers on Ayaltis' radar screen are very agile and have a shorter time horizon in mind. This varies from minutes to days and sometimes weeks. But it is definitely not a long term approach. This allows to extract some recurrent alpha while staying away from any beta exposure.

- Multi Asset

Whereas CTAs solely trade futures, the scope of investment instruments for Systematic Relative Value managers is wider as they also consider single stocks.

- Diverse Source of Returns

CTAs aim to capture large gains over longer periods of time. In the case of Systematic Relative Value Managers the emphasis is mostly on numerous smaller gains, which sum up to a decent performance. Diversification is a key factor.



#### 4. Why Systematic Relative Value Matters - Conclusion

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The “raison d’être” for Systematic Relative Value managers in our portfolio is their ability to provide returns in volatile, sideways markets. It’s their underlying agnostic approach to market direction. As outlined previously, these type of managers have been a part of our holdings and research focus from the launch of the company. At this point in the market cycle, we view them as a key element in positioning the portfolio and moved them to the spotlight. We hope that we manage to take you along on our train of thought.

The paramount features of Systematic Relative Value can be summarized as follows

- Short term trading horizon
- Market neutrality
- Focus on micro Systematic RV sources of return
- High diversification
- Integrated and advanced risk management
- High liquidity