Allocating to Managed Futures: Performance Considerations within a Risk Parity Framework

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Introduction

Both institutional and retail investors in managed futures are often challenged with the same two questions:

1. What percentage of my investment portfolio should I allocate to Managed Futures, if any?
2. Do Managed Futures still present a differentiated and valid investment opportunity despite 2 back to back years of disappointing performance?

This paper is an attempt to share our thoughts on the subject. We will describe our asset allocation philosophy and then attempt to use it as a guide to approach the first question. We will also discuss performance of managed futures in 2011-2012. We will argue that despite disappointing recent results, the strategy still presents a valid and differentiated investment opportunity for both institutional and retail investment communities.
Risk Parity Based Asset Allocation

It is generally investors’ experience that it is much easier to predict an asset’s risk than the same asset’s return over a given period of time. Financial advisors routinely develop “conservative”, “moderate”, and “aggressive” portfolios for their clients by blending equities, fixed income instruments, and other assets in different proportions.

By doing this, the advisors effectively imply that certain assets (for example, equities) have inherently and predictably higher levels of risk than other assets (for example, US Treasury bonds). At the same time, predicting which asset will actually outperform others for a given time period is rightfully understood as one of the biggest challenges of investment management. In other words, our confidence in predicted future returns is lower than our confidence in predicted risks of available investments.

How does one translate this confidence gap into the asset allocation scheme? The approach adopted by many institutional investors is known under the umbrella name of “Risk Parity Based Asset Allocation”.

The spirit of the risk parity framework is as follows. For an investor with multiple differentiated 1 investment opportunities 2 at his disposal, he should aim to allocate risk equally to all of them at all times and, through that, maintain a portfolio which is structurally diversified.

1 Assets are viewed as differentiated if they are perceived to reflect different sources of investment returns. The differentiation is expected to be manifested through low return correlations over meaningful periods of time and through the complementary behavior during the periods of market dislocation.

2 We qualify an asset as an “investment opportunity” if this asset has, in our view, a positive expected return over a full business cycle. Equities, most fixed securities and major hedge fund strategies would generally be considered to meet this condition. An example of type of assets that we would not consider “investment opportunities” would be various hedging strategies where the economic objective is risk mitigation, as opposed to producing positive expected returns.
Risk Parity and THE TRADITIONAL ASSET MIX

The core of most traditional investment portfolios is an allocation to equities and bonds, with risk typically dominated by the former. In fact, a “60/40” portfolio with 60% of assets invested in an equity mix and the remaining 40% invested in some sort of fixed income mix has become a staple investment blend for many investors in the US and beyond, leading to rather volatile returns over the last decade and a half.

Let us now illustrate how the risk parity framework can be applied to the asset classes of equities and bonds. For simplicity, throughout this paper we always use the S&P 500 Total Return Index as a proxy for the equity market and the JPMorgan Aggregate Bond Index as a proxy for the bond market (Source: Bloomberg).

By way of example as to how the risk parity framework operates, we built a Risk Parity portfolio of equities and bonds by calculating the monthly return volatility of each of the two asset classes for every month over the preceding 12 months and then allocating capital for the following month so that risk contribution of each asset is the same using the formula below:

\[ w_{Equities} \times Volatility_{Equities} = w_{Bonds} \times Volatility_{Bonds} \]

The process is then repeated month after month with the portfolio rebalanced accordingly.

Comparing the results of this process with the traditional “60/40” blend, we note that even a simple risk parity procedure described above would have yielded a visible improvement in the portfolio risk characteristics without a material loss in return potential.

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3 We chose volatility as a proxy for risk and hence a starting point for the risk parity based portfolio construction throughout this paper primarily because of its simplicity. As investors finesse their investment objectives, they may choose other, more refined measures of risk than volatility.
CHART 1: PERFORMANCE OF EQUITIES, BONDS, AND A “60/40” PORTFOLIO OVER THE LAST 15 YEARS

CHART 2: PERFORMANCE OF EQUITY/BOND RISK PARITY BLEND VS. A TRADITIONAL EQUITY/BOND “60/40” BLEND

CHART 3: PERFORMANCE OF FIXED WEIGHT PORTFOLIOS (“60/40” AND “50/30/20”) AND TWO RISK PARITY PORTFOLIOS (EQUITY/BOND RISK PARITY BLEND AND EQUITIES/BONDS/MANAGED FUTURES BLEND)
Managed Futures
WITHIN THE RISK PARITY FRAMEWORK

The risk parity asset allocation philosophy can easily be expanded to more asset classes than equities and bonds, including managed futures.

A diversified portfolio of managed futures strategies (which blend is represented throughout this paper by the Barclays Managed Futures Index, Source: BarclaysHedge), in our opinion, satisfies the main criteria for a “differentiated investment opportunity”4:

- Managed Futures have historically demonstrated low to moderate correlation to other traditional investment opportunities over the long term (since 1996, monthly return correlation of Managed Futures to equities is –11% and to bonds is +28%) and during periods of market dislocation (see Chart 4).
- Managed Futures also have positive expectancy of return over the long term as demonstrated by the 30 years of actual history (Barclays index goes all the way to 1980) and academic research encompassing 100 years of history5.

4 CME’s write-up entitled “Managed Futures: Portfolio Diversification Opportunities” may serve as a good introduction to the subject, please see http://www.cmegroup.com/education/files/ManagedFutures.pdf
5 See, for example, a research report by AQR “A Century of Evidence on Trend Following Investing”, which can be found at http://www.aqr.com/Research/AllResearch.aspx
The result of applying the risk parity framework to the blend of equities, bonds, and managed futures is set forth in Chart 3. We built our 3-asset Risk Parity portfolio in the same manner as before by evaluating the volatility of each asset over time and rebalancing the portfolio to spread risk evenly across each asset on a monthly basis. The resulting portfolio performance is plotted on Chart 3. For comparison purposes, Chart 3 also contains performance of a fixed weight “50/30/20” portfolio comprised of 50% equities, 30% bonds, and 20% managed futures.

The simulated 3-asset risk parity portfolio consisting of equities, bonds, and managed futures easily outperformed other versions on a risk adjusted-basis. In fact, its information ratio6 was 1.1 (since 1997) as compared to 0.66 for the 60/40 portfolio, 0.76 for the 50/30/20 portfolio, and 0.95 for the 2-asset bond/equities risk parity portfolio.

The allocation to managed futures in this portfolio constituted on average 37%. It is worth noting that the Barclays CTA index, which we use throughout this paper (and hence for the risk parity portfolio construction), has a historical volatility around 7%, which is rather low compared to most investable managed futures products. When substituted with a more typical, 10-15% annualized volatility product, the average risk parity allocation for managed futures would end up in the 15-25% range.

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6 Information ratio is the commonly used measure of risk adjusted returns of a given asset, which is calculated by dividing annualized returns of that asset by its annualized volatility.
The Emergence of MANAGED FUTURES MUTUAL FUNDS

A very important development of the last few years is the proliferation of liquid alternatives and specifically, the creation of managed futures mutual funds.

Our recent white paper entitled “The Emergence of Liquid Alternatives and The Case For Managed Futures Mutual Funds” outlines the current liquid alternative investments landscape and illustrates what, in the authors’ opinion, are the criteria for the successful conversion of a hedge fund strategy into the mutual fund format with consideration to structural issues, liquidity, and daily valuation challenges. The paper illustrates that managed futures mutual fund products preserve the key investment properties of the strategy described in section 2 herein, with significant improvements in liquidity and transparency when compared to their private placement counterparts.

We would like to finish this section with one key point. Adopting a risk parity framework which includes managed futures has only been possible to implement since the advent of managed futures mutual funds. Previously, and since the 1970s, this investment strategy was not available through an investment vehicle with the operational ease and daily liquidity required for rebalancing. Overall assets currently in managed futures mutual fund vehicles are still small when compared to the $300+ billion invested in the strategy globally, but it is an option which is quickly growing.

CHART 5: GROWTH OF MANAGED FUTURES MUTUAL FUNDS

(Source: Morningstar)
The Managed Futures Index IS NEGATIVE FOR A SECOND CONSECUTIVE YEAR. IS SOMETHING WRONG?

Managed Futures are currently in their 21st month of drawdown since reaching the previous high watermark.

CHART 6: CURRENT DRAWDOWN IN THE HISTORICAL CONTEXT FOR MANAGED FUTURES

Drawdown is a commonly used metric of the investment historical performance. It measures the decline from the single highest peak to the lowest trough decline in an investment net asset value over a period of negative performance of the investment.
While this is a source of frustration, we do not believe this should be a cause for alarm when observed through the lens of a longer-term perspective. First, let us look at the current drawdown depth as compared to previously observed drawdowns:

The current drawdown is deep but it is not crippling; it is also not the worst ever observed in the space (the worst was observed in 2004-2005). The current drawdown is actually the second-worst over the last 15 years. What is most frustrating about the current drawdown is not its depth, but rather its length; we are now entering its 21st month. The longest observed drawdown of the last 15 years – which also happens to be the deepest – lasted 19 months. We just broke that record.

Is there an explanation for the current performance of the strategy? There is no shortage of speculation and soul searching going on in the industry, ranging from apocalyptic to strongly positive statements (see, for example, “Is Trend Following Dead?” by Attain Capital). However, we prefer not to indulge in speculation and instead note a few observations that we believe are compelling.

1. **The Volatility Observation**

The dominant strategy within the managed futures space is trend following. Its performance is not directly linked to markets going up or down – in fact, the strategy is agnostic to market direction – but instead to markets’ propensity to trend or, in other words, to move materially and consistently from one level to another.

A necessary (albeit not sufficient!) condition that has the potential to improve markets’ propensity to trend is volatility, as a more volatile market often provides a trading environment where price adjusts meaningfully.

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9. Trend following is a trading strategy that attempts to capture gains through determining the direction of asset’s momentum and taking long or short positions alongside that momentum. The trend trader enters into a long position when the asset is trending upward (expecting it to reach successively higher highs). Conversely, a short position is taken when the asset is in a down trend (expecting it to reach successively lower lows).
over the medium-term and hence trading trend can become a profitable strategy within a portfolio. The essence of “The Volatility Observation” is that the volatility across markets has dropped precipitously over the last two years and markets, particularly commodity and currency markets, have produced few opportunities for trend following. This drop is not unusual from a historical perspective and has typically been followed by volatility returning to normal levels, thus providing a better environment for trend following-type strategies.

In a recent investor letter Winton Capital Management created a compelling illustration of “The Volatility Observation” by plotting the annualized volatility of daily returns for the Dow Jones Industrial Average for the last 100+ years on the same chart (see a similar chart below):

The year 2012 (represented by the red dot) is clearly a below average year in terms of volatility (as are 2004 and 2005 each of which witnessed material drawdown in the managed futures strategy returns). The chart also demonstrates that low volatility clusters are often followed by years with comparatively high volatility, implying that difficulties experienced recently by the trend following strategy may be temporary in nature.

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10 In addition to the level of volatility in underlying markets, the smoothness of both price adjustments and volatility are important in providing a fertile environment for trend followers.
2. The Correlation Observation

A typical trend following portfolio consists of many small bets spread across a large number of markets and models. Each bet has a relatively low expected Sharpe ratio, but the combination has this ratio significantly improved through expected market diversification. The essence of “The Correlation Observation” is that in the last year this diversification has reduced and markets have been moving in a much more synchronous fashion than they used to. Some in the media have referred to this phenomenon as the “RoRo Effect”, where global markets have been alternating between “Risk on” and “Risk off” regimes, thus reducing overall portfolio diversification. The chart below illustrates the point:

**CHART 9: 1 YEAR MOVING CORRELATION OF WEEKLY RELATIVE CHANGES IN US EQUITIES AND 10Y TREASURY YIELDS**

While not by any means stable over time, the observed bond yield/equity price correlations have indeed been elevated recently to the highest level since 2003-2004. Chart 9 demonstrates that similar, albeit not quite as high, peaks have also been observed after 2004. If history is a guide, those peaks were always temporary, with markets returning to a more asynchronous, diversified behavior after a period of 6-12 months of elevated correlations.

The good news, in our opinion, is that the toolkit of central bankers is not bottomless and economic fundamentals will ultimately prevail potentially creating a more fruitful environment for managed futures.
The amount of central bank intervention over the last 2 years has been, by many accounts, unprecedented. As a result, market participants are paying an unusual amount of attention to politicians and their statements, which may have altered the way the markets operate. In particular, the interventions were largely responsible for keeping market volatility comparatively low, may have been the primary reason for the “RoRo Effect”, and as a result had a potentially negative effect on the managed futures performance. The good news, in our opinion, is that the toolkit of central bankers is not bottomless and economic fundamentals will ultimately prevail potentially creating a more fruitful environment for managed futures. Given the political gridlock in the US, the end of the election season, and current levels of budget deficits, we believe that this shift may happen sooner rather than later.

3. The Two-Legged Horse Observation

In recent years we have witnessed an expansion of strategies within the managed futures’ universe. Some are short term and technical by design, while others are fundamental and value based. Nevertheless, the dominant managed futures trading style remains trend-following and these managers typically apply their models to several dozen, and often more than a hundred, underlying futures markets. What they share in common is that they need a reasonable subset of these markets to move in a meaningful manner in order to profit from these momentum based opportunities. In other words, they need trends. As you can see in Chart 10, two of the four asset classes traded, commodities (represented by the S&P GSCI Commodities Index) and currencies (represented by the US Dollar Index), have produced yearly moves that were not only well below historic averages, but have barely shown a pulse! That reduced opportunity set available to managed futures managers; a circumstance that we believe is also temporary in nature.
Conclusion

A risk parity portfolio framework can be quite helpful when constructing portfolios of multiple differentiated investment opportunities. In this paper, we used this framework to combine managed futures with a portfolio dominated by stocks and bonds. Spreading risk equally among those three investment opportunities and rebalancing frequently – something made possible in practice recently by the emergence of managed futures mutual funds – could lead to portfolio’s return stream that is smoother and with shallower drawdowns as compared to a traditional 60/40 allocation scheme. When adopting this framework the “math” suggests an allocation to managed futures somewhere in the 15-25% range.

The paper also discusses recent performance of managed futures. We believe there are a number of reasons for the disappointing performance within the managed futures industry over the past two years, including volatility that has contracted to below historically normal levels, correlations between markets that have been high, aggressive government and central bank intervention that has likely muted trends, and the commodity and currency asset classes that have been a consistent drag on performance. The question to ask is: Are all of these phenomena likely to continue over the coming years? If the answer is yes then trend followers will be challenged. We, however, think it is more likely that some of the phenomena negatively affecting managed futures performance will soon return to more normalized levels and the period of 2011-2012 will eventually be remembered as a period of frustration for the strategy that still presents a valid and differentiated investment opportunity.
Appendix: Definitions

**Barclay CTA Index** provides a benchmark of representative performance of commodity trading advisors (CTAs). In order to qualify for inclusion in the Index, a CTA must have four years of prior performance history. When a CTA already in the Index introduces an additional program, this additional program is added to the Index after its second year. In order to limit potential upward bias, only CTAs with at least four years of performance history are included in the Index and the performance history begins with year five, ignoring the first four years of performance. In 1999, 319 CTA programs were included in the calculation of the Barclay CTA Index. The index is unweighted and rebalanced at the beginning of each year.


**S&P 500 Total Return Index** is the total return version of S&P 500 index. Dividends are reinvested on a daily basis and the base date for the index is January 4, 1988. All regular cash dividends are assumed reinvested in the S&P 500 index on the ex-date. Special cash dividends trigger a price adjustment in the price return index.

**US Dollar Index** (USDX) is an index (or measure) of the value of the United States dollar relative to a basket of foreign currencies. It is a weighted geometric mean of the dollar’s value compared only with Euro (57.6% weight), Japanese yen (13.6% weight), Pound sterling (11.9% weight), Canadian dollar (9.1% weight), Swedish krona (4.2% weight), and Swiss franc (3.6% weight). USDX goes up when the US dollar gains “strength” (value) when compared to other currencies.

**The S&P GSCI Commodity Index** serves as a benchmark for investment in the commodity markets and as a measure of commodity performance over time. It is a tradable index that is readily available to market participants of the Chicago Mercantile Exchange. The index currently comprises 24 commodities from all commodity sectors - energy products, industrial metals, agricultural products, livestock products and precious metals.
The RTS Fund pursues its investment objective by allocating its assets using two principal investment strategies: a “managed futures” strategy and a “fixed income” strategy. The managed futures strategy is intended to capture returns tied to global macroeconomic trends in the commodity futures (including financial futures) markets, and the fixed income strategy is intended to generate interest income and capital appreciation to add diversification to the returns generated by the Fund’s portfolio.

You should consider the RTS Fund’s investment objectives, risks, charges and expenses carefully before investing. For a prospectus, or summary prospectus that contains this and other information about the RTS Fund call 1.877.6RAMIUS (1.877.672.6487) or visit www.ramiusmutualfunds.com. Please read the prospectus or summary prospectus carefully prior to investing.

The RTS Fund intends to achieve exposure to the commodity and financial futures markets primarily by investing by investing up to 25% of its total assets in a wholly-owned and controlled subsidiary formed under the laws of the Cayman Islands (the “Subsidiary”). The Subsidiary is advised by the Advisor and has the same investment objective as the RTS Fund. The Subsidiary invests the majority of its assets in limited liability companies or other business entities (each a “Trading Entity” and collectively the “Trading Entities”), the trading of each of which is managed on a discretionary basis by a different third-party commodity trading advisor (a “Trading Advisor”) pursuant to such Trading Advisor’s commodity-related investment program (a “managed futures program”). Each Trading Entity is wholly owned by the Subsidiary and thus indirectly wholly owned by the RTS Fund. The Advisor expects that each Trading Entity will pay its Trading Advisor both a management fee based on the Trading Entity’s investment exposure (which the Advisor anticipates could exceed the Trading Entity’s total assets) and a performance fee calculated as a percentage of the Trading Entity’s profits.

To qualify for the tax treatment available to regulated investment companies under the Internal Revenue Code of 1986, as amended (the “Code”), the RTS Fund must derive at least 90% of its gross income for each taxable year from sources treated as “qualifying income” under the Code. Income derived from direct investments in commodities is not qualifying income. The Internal Revenue Service (the “IRS”) has issued a revenue ruling and private letter rulings. However, these rulings apply only to the taxpayers that requested them and may not be used or cited as precedent. The RTS Fund has not received and does not intend to seek such a ruling from the IRS. Rather, the RTS Fund intends to take the position that income from the RTS Fund’s investment in commodity index-linked notes and in the Subsidiary will constitute qualifying income for these purposes, but this tax treatment is not entirely clear. Moreover, the tax treatment of the RTS Fund’s investment in commodity index-linked notes or of the RTS Fund’s investment in the Subsidiary may be adversely affected by future legislation, Treasury regulations or guidance issued by the IRS. If income derived by the RTS Fund does not constitute “qualifying income,” the RTS Fund will most likely not qualify as a regulated investment company under the Code; in that case, the RTS Fund would be subject to U.S. federal income tax at regular corporate rates on its taxable income, including its net capital gain, even if distributed to shareholders. Distributions out of earnings and profits would be taxed to shareholders as dividend income. The Advisor may also consider potentially liquidating the RTS Fund.

The investment processes used could fail to achieve the RTS Fund’s investment objective and cause your investment to lose value. Accordingly, the RTS Fund should be considered a speculative investment entailing a high degree of risk and is not suitable for all investors. The RTS Fund is new and has a limited history of operations. The use of derivatives can be highly volatile, illiquid and difficult to manage. Derivatives involve greater risks than the underlying obligations because in addition to general market risks, they are subject to illiquidity risk, counterparty risk, credit risk, pricing risk and leveraging risk. The use of derivatives including futures and forward contracts, and ETFs may reduce returns and/ or increase volatility. The RTS Fund will invest a percentage of its assets in derivatives, such as futures and options contracts. The use of such derivatives may expose the RTS Fund to additional risks that it would not be subject to if it invested directly in the securities and commodities underlying those derivatives. The RTS Fund may experience losses that exceed losses experienced by funds that do not use futures contracts. There may be an imperfect correlation between the changes in market value of the securities held by the RTS Fund and the prices of futures. Although futures contracts are generally liquid instruments, under certain market conditions there may not always be a liquid ordinary market for a futures contract. As a result, the RTS Fund may be unable to close out its futures contracts at a time which
is advantageous. Trading restrictions or limitations may be imposed by an exchange, and government regulations may restrict trading in futures contracts. Over-the-counter transactions are subject to little, if any, regulation and may be subject to the risk of counterparty default. A portion of the RTS Fund's assets may be used to trade OTC commodity interest contracts, such as forward contracts and other commodities or spot contracts. A substantial portion of the trades of the global macro programs, if any, are expected to take place on markets or exchanges outside the United States. Short sales are speculative transactions and involve special risks, including that the fund's losses are potentially unlimited. The RTS Fund may take short positions, directly and indirectly through the Subsidiary, in derivatives. If a derivative in which the RTS Fund has a short position increases in price, the underlying RTS Fund may have to cover its short position at a higher price than the short sale price, resulting in a loss. The RTS Fund is non-diversified, meaning it may invest a relatively high percentage of its assets in a limited number of positions making it more vulnerable to changes in the market value of a single position.

Foreign investments present additional risks due to currency fluctuations, economic and political factors, lower liquidity and other factors. The RTS Fund's indirect and direct exposure to foreign currencies subjects the RTS Fund to the risk that those currencies will decline in value relative to the U.S. Dollar, or, in the case of short positions, that the U.S. Dollar will decline in value relative to the currency that the RTS Fund is short. Currency rates in foreign countries may fluctuate significantly over short periods of time for a many reasons, including changes in interest rates and the imposition of currency controls or other political developments in the U.S. or abroad. In addition, the RTS Fund may incur transaction costs in connection with conversions between various currencies.

Some foreign markets present additional risk, because they are not subject to the same degree of regulation as their U.S. counterparts. Trading on foreign exchanges is subject to the risks presented by, among other things, exchange controls, expropriation, increased tax burdens and exposure to local economic declines and political instability. An adverse development with respect to any of these variables could reduce the profit or increase the loss earned on trades in the affected international markets. International trading activities are subject to foreign exchange risk. The RTS Fund may employ leverage and may invest in leveraged instruments. The more the RTS Fund invests in leveraged instruments, the more this leverage will magnify any gains or losses on those investments. The value of your investment in the RTS Fund will likely fluctuate with changes in interest rates. Typically, a rise in interest rates causes a decline in the value of fixed income securities owned by the RTS Fund. In general, the market price of debt securities with longer maturities will increase or decrease more in response to changes in interest rates than shorter-term securities. Other risk factors include credit risk (the debtor may default) and prepayment risk (the debtor may pay its obligation early, reducing the amount of interest payments). These risks could affect the value of a particular investment by the RTS Fund possibly causing the RTS Fund's share price and total return to be reduced and fluctuate more than other types of investments. To respond to adverse market, economic, political or other conditions, the RTS Fund may invest 100% of its total assets, without limitation, in high-quality short-term debt securities and money market instruments. The RTS Fund's annual portfolio turnover rate may vary greatly from year to year. Frequent trading may result in transaction costs, which could detract from the RTS Fund's performance and potential tax consequences. ETF shares may, at times, trade at a premium or discount to their net asset values and may not replicate exactly the performance of the benchmark index it seeks to track and may involve duplication of advisory fees and certain other expenses. ETFs may be held to maturity, but unlike bonds there are no periodic interest payments and principal is not protected.

The RTS Fund will be indirectly exposed to the risks associated with the Subsidiary's and the Trading Entities' respective investments. The Subsidiary and the Trading Entities are not registered under the Investment Company Act of 1940, as amended (the “1940 Act”) and, unless otherwise noted in the RTS Fund's prospectus, are not subject to all of the investor protections of the 1940 Act. Changes in the laws of the United States, the U.S. states or the Cayman Islands, under which the RTS Fund, the Trading Entities and the Subsidiary are organized and operated, as applicable, could prevent the RTS Fund, the Subsidiary or the Trading Entities from operating as described in the RTS Fund's prospectus and could negatively affect the RTS Fund and its shareholders. In addition, the Cayman Islands currently does not impose any income, corporate, capital gain or withholding taxes on the Subsidiary. If this were to change and the Subsidiary were required to pay Cayman Island taxes, the investment returns of the RTS Fund would be adversely affected. The Subsidiary concentrates its investments in the commodity futures markets, which have historically experienced substantial price volatility. This concentration subjects the RTS Fund to greater risk of loss as a result of adverse economic, business or other developments than if the Subsidiary's investments were diversified across different sectors and markets. The performance-based fees paid to the Trading Advisors may create an incentive for the Trading Advisors to make investments that are riskier or more speculative than those they might have made in the absence of such performance-based fees. A Trading Advisor with positive performance may receive performance-based compensation from the Trading Entity, which will be borne indirectly by the RTS Fund, even if the RTS Fund's overall returns are negative. The views expressed is those of the authors at the time created. They do not necessarily reflect the views of other persons in the Ramius LLC ("Ramius") organization. These views are subject to change at any time based on market and other conditions, and Ramius disclaims any responsibility to update such views. No forecasts can be guaranteed. These views may not be relied upon as investment advice or as an indication of trading intent on behalf of any Ramius portfolio.

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