

GLOBAL MACRO HEDGE FUND INVESTING: AN OVERVIEW OF THE STRATEGY AN OVERVIEW

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Introduction

Since the latter half of 2007, a number of significant macroeconomic factors have dominated the global investment landscape. What started out as a bursting of the housing bubble in the United States turned into a cascading series of events that eventually threatened the entire global financial system in 2008 and 2009.

At the heart of the financial crisis are several key issues: ill-conceived and poorly constructed financial derivatives products, an overleveraging of consumer and financial institutions, the collapse of the housing market, a slowdown in consumer spending, and a precipitous fall in employment. As a result, many fundamental investment strategies based on micro-level analysis of company-specific situations have had their difficulties.

During this time, however, one investment strategy—global macro—has differentiated itself in terms of both producing positive absolute returns and diversifying the risks of institutional portfolios.

In fact, over the ten year period ending in September 2010, the Dow Jones Credit Suisse Global Macro Index¹ posted an annualized return of more than 12%, compared to a -0.2% annualized return for the MSCI The World Index. The global macro

1: For the purposes of comparison, we used the Dow Jones Credit Suisse Global Macro Hedge Fund Index. While shortcomings associated with hedge fund benchmark construction and composition exist, we believe that the use of this index represents the broad global macro investment set and presents a directionally accurate comparison relative to other investment benchmarks and strategies.

2: The Dow Jones Credit Suisse Managed Future Index experienced a 8.6% annualized return and a 12.2% annualized standard deviation over the ten year period ending September 2010.

strategy outperformed the equity market while experiencing an annualized volatility of 5.5%, significantly lower than the MSCI The World Index's volatility of 17.4%.²

ONE OF THE ONLY INVESTMENT STRATEGIES THAT HAS STOOD OUT... HAS BEEN GLOBAL MACRO

There are three primary reasons why global macro generally has outperformed other investment strategies.

1. Global macro benefits from a sustained increased volatility in currencies, interest rates, commodities, and equity markets.
2. As an investment strategy, it has a low correlation to equities.
3. It tends to perform well when markets are driven by overall macroeconomic themes rather than by individual bottoms-up fundamental analysis.

As a result, global macro has produced positive returns when other strategies have been severely challenged. In addition, when added to a portfolio where equities are the dominant risk, global macro can dampen portfolio volatility, even though it is a relatively volatile strategy when implemented independently.

The outperformance of global macro over the last decade, combined with increasing institutional investor appetite for liquidity, performance, diversification, uncorrelated return streams, and transparent asset pricing/valuation have highlighted the benefits of this hedge fund investment strategy.

This primer attempts to shed light on global macro, that has been largely ignored by institutional investors. This document, which is the result of an extensive process that included interviews with practitioners and interaction with the GM hedge fund community, provides an introduction to and summary of the global macro investment landscape.

This paper is designed to:

- Briefly describe the history of the strategy
- Define global macro and its relation to the rest of the hedge fund universe
- Break down the strategy into its sub-components for a deeper level of analysis and understanding of how these hedge funds operate

History & Strategy Evolution

History

The global macro (GM) strategy's modern roots trace back to the international monetary system's departure from the gold standard, which created trading variables in the fixed income and currency markets.

In 1944, the Bretton Woods Conference was held to address the international monetary and financial order following World War II, and, more specifically, to identify a replacement to the gold standard—the international monetary regime until that time. The conference resulted in the creation of both the International Monetary Fund (IMF) and the International Bank for Reconstruction and Development (IBRD). The latter organization provided a system of fixed exchange rates—backed by the U.S. dollar as its reserve currency—and encouraged an open system by committing the Allies to both the convertibility of currencies and to free trade.³

By the early 1960s, many believed that the U.S. dollar was overvalued against gold, setting off a series of events described here by the IMF: “A sizable increase in domestic spending on President Lyndon Johnson's ‘Great Society’ programs and a rise in military spending caused by the Vietnam War gradually worsened the overvaluation of the dollar... In August 1971, President Richard

Nixon announced the ‘temporary’ suspension of the dollar's convertibility into gold. After an attempt to revive the fixed exchange rates failed in March 1973, major currencies began to float against each other.”⁴ This untethering of the world's markets created new trading opportunities between different sovereign fixed income and foreign exchange instruments. According to author and industry practitioner Steven Drobny, “with currencies freely floating, a new dimension was added to the investment decision landscape. Exchange rate volatility was introduced while new tradable products rapidly developed.”⁵

Investment managers began to focus on profiting from macroeconomic dislocations that emerged from this latest economic paradigm, and over the next few decades, talented traders generated dramatic profits.

For example, Paul Tudor Jones, a discretionary GM portfolio manager (PM), successfully predicted and traded on the collapse of the equity markets in 1987. In September of 1992, George Soros forced the British government to pull the British pound from the European Exchange Rate Mechanism, and in the process famously made \$1 billion “breaking the Bank of England.” Successful prognosticators and the media coverage that followed combined to draw attention and assets into the GM strategy.

Strategy Evolution

Through time, two major types of GM sub-strategies have evolved. The “systematic” sub-strategy relies more heavily on computerized algorithms to identify market movements and make decisions on buying or selling instruments. The “discretionary” sub-strategy, on the other hand, relies more heavily on portfolio managers to make those decisions. Both strategies are discussed more thoroughly later in this document, but a brief overview is needed to understand the history of GM funds.

3. The only currency strong enough to meet the rising demand for international currency transactions was the USD because of 1) the U.S. economy's strength, 2) the fixed relationship of the dollar to gold, and 3) the commitment of the U.S. government to convert dollars into gold.

4. International Monetary Fund, *About the IMF: History: The end of the Bretton Woods System (1972-81)*, <http://www.imf.org/external/about/histend.htm> (September 28, 2010).

5. Steven Drobny, *Inside the House of Money: Top Hedge Fund Traders on Profiting in the Global Markets* (Hoboken, New Jersey, United States: John Wiley & Sons, Inc., 2006, 2009), 7



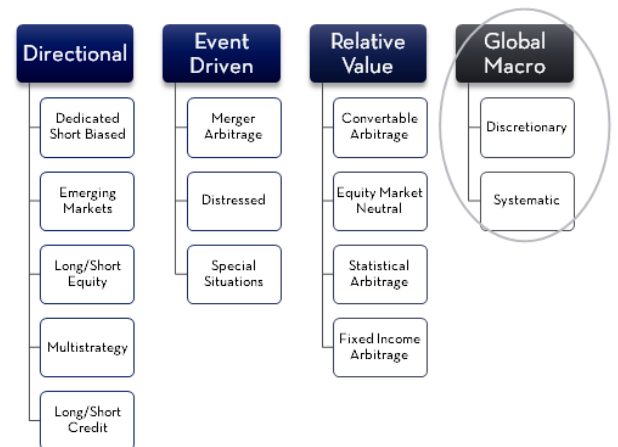
Both the discretionary and systematic global macro sub-strategies have changed dramatically over time as a result of evolving market opportunities and investor demand. Originally, PMs predominantly traded foreign exchange currencies and fixed income instruments by placing directional trades—making outright bets on the future movements of these markets. Likewise, some firms created computer programs (trading systems or models) to identify and exploit long-term price trends in markets. Discretionary firms that originally opened with a focus on the principal’s general area of expertise broadened their investment scope as more capital, markets, and opportunities became available. They began to target opportunities outside their original fixed income and foreign exchange asset classes. In addition to outright directional bets, PMs placed relative value trades to take advantage of the mispricing between two similar instruments. Systematic firms, in an attempt to lower the volatility of their returns, began to employ new computerized models, designed to capture markets reverting to a natural equilibrium, in addition to their original models focused on capturing longer-term trends. New advancements in computing power and bandwidth allowed these trend-following strategies to adjust their models to analyze more data, resulting in algorithms that could evaluate data captured in days, hours, minutes, and shorter frequencies.

Origin of Global Macro Portfolio Managers

The origins of many high profile GM traders can be traced back to investment bank proprietary trading businesses, as well as to Commodities Corporation, Tiger Asset Management, and Soros Fund Management. These macro pioneers created platforms within their firms that bred a new generation of GM PMs.

Global Macro’s Place in the Hedge Fund Industry

Figure 1: Hedge Fund Strategy Breakdown



We have renamed Global Macro and Managed Futures from hedgeindex.com to Discretionary and Systematic in the exhibit above. NEPC also does not break out Event Driven funds into multi-strategy as Hedgeindex.com does.

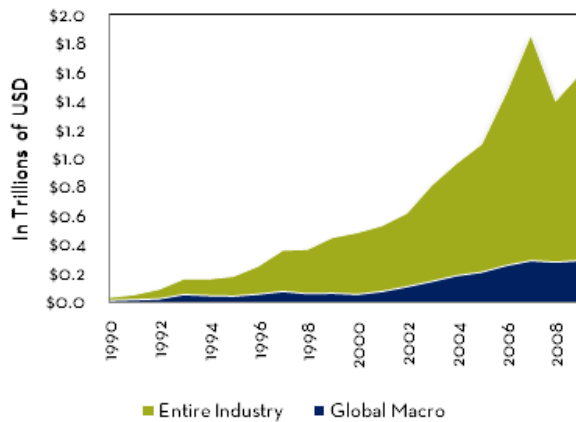
Source: www.hedgeindex.com

While there are a number of ways to classify hedge funds, this paper uses the Dow Jones/ Credit Suisse Index (www.hedgeindex.com) methodology. Hedge funds implement strategies and styles that vary widely. As Figure 1 shows, there are 14 general hedge fund strategies that can be placed into four major categorizations; Directional, Event Driven, Relative Value, and Global Macro. Global macro, often referred to as “tactical trading,” is a significant component of the overall industry. As we have discussed, it consists of two sub-strategies: Discretionary and Systematic.

Size of the Hedge Fund Industry & the Global Macro Hedge Fund Strategy

While registration and reporting are not mandatory in the hedge fund industry, data from Hedge Fund Research Inc. (HFR) serves as a proxy for overall marketplace trends. The HFR Database indicates that the peak of total assets for all hedge funds was reached at the end of 2007 at \$1.9 trillion. After assets fell by 25% to \$1.4 trillion at the end of 2008, asset levels rebounded to \$1.6 trillion at the end of 2009 for the 9,050 hedge funds reporting data to HFR.⁶

Figure 2: Growth of the Hedge Fund Industry



SOURCE: HFR 2009 GLOBAL HEDGE FUND INDUSTRY REPORT

Global macro managers represent a significant portion of the overall hedge fund market. Figures 2 and 3 depict the historical assets of the GM funds compared to the historical assets of the entire hedge fund industry. At the beginning of the 1990s, the GM strategy made up almost 40% of the total assets in the industry. Anecdotal indications suggest that the percent of hedge fund assets managed by GM funds was even greater in the 1980s. As other strategies developed and flourished, especially long/short equity benefiting from rising equity markets in the latter half of the 1990s, GM assets fell as a percent of the total industry. By the height of the equity bull market at the end of 2000, GM had declined to 11.6% of total hedge fund assets—but they began a steady climb back to 18% by December 2009.

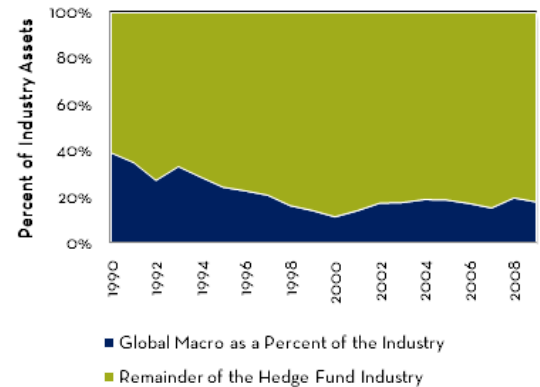
Figure 3: Percent of the Hedge Fund Marketplace

HFR's most recent annual hedge fund report indicates that GM funds currently represent \$289 billion of the hedge fund industry's \$1.6 trillion in assets under management, making it the smallest of the four major HFR categories. This is a significant change from 20 years ago—the result of growth in the overall industry outpacing the growth of assets in global macro, and not the result of a significant asset decline in the strategy.

GM assets did decline in 2008 despite performing very well relative to other hedge fund strategies and traditional equity and credit markets. That decline in assets was actually a byproduct of GM funds' favorable liquidity terms, rather than any performance issues. GM funds are liquid and readily valued, and provide frequent redemption terms. Thus, many institutional investors and

funds made up of hedge funds redeemed their investments from their GM investments during the credit crisis. Funds of hedge funds, in particular, were in some cases forced to redeem from their hedge fund holdings as they experienced significant redemptions from their underlying clients due to the market selloff and Madoff scandal. Both of these events—combined with the credit crisis and the collapse of some large funds of hedge funds due to their Madoff exposure—caused a massive need for liquidity. Nevertheless, though the amount of assets in the strategy decreased, the strategy itself performed very well.

Defining the Global Macro Strategy



SOURCE: HFR 2009 GLOBAL HEDGE FUND INDUSTRY REPORT

GM managers generally have a broad investment mandate to trade and hold positions in any liquid asset class globally. GM funds analyze a large variety of data, including:

- Fiscal and monetary policy
- Historical price data
- Country-specific fundamental economic data, such as interest rates, levels of unemployment, spending rates, and money flows

6. Actual industry size may be much larger as not all funds report to HFR. For example, large hedge funds that are not open to new investors may choose not to report to the database because attracting additional interest may be of little value to them, poor-performing hedge funds may choose to halt reporting, small hedge funds managed by a firm with very few employees may not have the time to report, and hedge funds with very few clients may not see the benefit in doing so.



- Social and demographic trends, regional political events, and population behavior

Analysis is conducted to identify patterns, trends, imbalances, and inflection points across the global financial markets to forecast market movements. Global macro hedge funds focus on major liquid investment classes—fixed income, currencies, commodities, and equity indices—with investments expressed in instruments such as futures, forwards, options, ETFs, and cash positions. The strategy is not biased to be long or short a particular asset class and active management, rather than passive exposure, is the primary return driver.

GLOBAL MACRO MANAGERS... HAVE A BROAD INVESTMENT MANDATE TO TRADE AND HOLD POSITIONS IN ANY LIQUID ASSET CLASS

There are generally four types of trades GM hedge funds implement. Trades are structured to profit from:

- Directional market movements or momentum trends
- Carry trades (or the profit earned by financing one trade with another)
- Mean-reversion movements, or movements between two related instruments
- Mispricing, in which the actual prices of instruments in the market are too cheap or expensive because the risks in the markets are not well understood

Sources of Alpha

Within strategies that have a defined universe, alpha is the excess return over a benchmark. PMs generate alpha by making investments that differ from the underlying securities held by the benchmark. Because the GM investable universe is undefined—GM hedge funds can trade any liquid instrument anywhere—a relevant benchmark on which investment decisions are based does not exist. The strategy targets absolute returns; therefore, alpha is the return over a risk-free rate without being correlated to major traditional indi-

ces.

Some argue that alpha in the GM strategy is generated by competitive advantages in information, technology, and/or trading skill. Others claim alpha is derived from the types of trades initiated. A third group believes that alpha comes from capturing certain exposures and market movements. And a fourth defines the sources of alpha as market conditions that lend themselves to positive returns.

While an informational advantage may result in higher expected returns in some strategies, this is most prevalent in illiquid markets. Because the markets that GM hedge funds trade in are liquid, an informational advantage is not a significant driver of alpha generation, unless a hedge fund management company has a specific edge in a niche area of a market. Likewise, an infrastructure technology advantage—such as hardware, bandwidth, and computational power—may help on the margin, but is more a barrier to entry than a significant driver of returns.

We believe the sources of alpha within the GM strategy come from:

- The processing of information—including the use and analysis of economic data and testing computer models
- The risk management program
- Trading skill, including:
 - Process of designing and implementing computer models
 - The actual computer models (i.e., the software algorithms)
 - Allocation of capital to actively time the types of trades, exotic betas, asset classes, and frequency that will perform well

These three alpha sources result in the placing of trades and capturing of market movements, which benefit from positive market conditions.

Difference from Other Hedge Fund Strategies

Global macro differs from other hedge fund investing strategies in some important respects:



- **Trader versus Investor** – Profits are generally created from a PM’s trading skill as opposed to a PM’s ability to identify intrinsic value variances. PMs or models will cut positions that move against them, whereas fundamental investors view adverse price movements as potential purchasing opportunities.
- **Quantitative Emphasis** – The use of quantitative inputs, and their weights in the evaluation and/or the actual purchase or sale of instru-

fore represent a realistic redeemable value when compared to less liquid hedge fund strategies.

- **Liquidity** – GM portfolios are liquid and their funds generally offer investors redemption terms that reflect this liquidity. Liquidity terms that allow investors to redeem monthly with only five days’ written notice are not uncommon. As a result, a large redemption from a fund can be much easier to meet when compared to redemptions from funds with less-liquid strategies.
- **Return Pattern** – Aspects of the GM strategy tend to have a long volatility component. Over time, GM has proven to be uncorrelated to major traditional market indices and other hedge fund strategies. Many GM funds perform well during times of increased risk and uncertainty. The combination of these attributes makes a strong case for an allocation to the strategy from institutional portfolios looking to increase returns, lower volatility, and decrease the depth of drawdowns.

THE SOURCES OF ALPHA WITHIN GLOBAL MACRO COME FROM... TRADING SKILL...

ments, tends to be higher at GM hedge funds than at hedge funds that implement other investment strategies. (The exception would be statistical arbitrage strategies and extremely fundamental-based discretionary GM PMs who may hold positions for many months or years.)

- **Geographic and Asset Class Diversity** – Instead of focusing on a single asset class like long/short equity, or a geographical area such as an emerging markets strategy, a broader range of diversified global financial instruments and markets is applied in the GM space.
- **Time Horizon Diversification** – GM managers generally make multiple investments within the same markets based on different time horizons or trading frequencies.
- **Leverage** – Leverage is generally embedded in the financial instruments themselves, rather than leverage provided by a prime broker. GM funds generally do not borrow money.

Because GM funds generally do not borrow money in order to multiply returns, the traditional definition of leverage is not applicable. For more information on this topic, please contact this author or your NEPC consultant to request a paper providing an overview of leverage utilized by GM funds.

- **Valuation** – Most instruments that are traded by GM hedge funds are priced by an exchange and are extremely liquid, and there-

It is not easy to define global macro sub-strategies. However, for the purpose of clarity, it is helpful to split the universe into two parts: “Systematic” and “Discretionary.”

Contrasting Sub-Strategies

PMs who formulate judgments on global fundamental analysis, either fully or in part, fall into the Discretionary camp. Systematic hedge funds implement trading rules based on technical data and generally create algorithms to identify and capture market movements. In Systematic strategies, buy and sell decisions, trade structuring, and execution are computerized. These funds harness computer technology to evaluate a vast number of inputs to identify opportunities, a task not possible without technology. Discretionary GM PMs, on the other hand, apply their judgment to decisions of timing, sizing, trade structure, and execution.



Figure 4: Differences within the Global Macro Sub-Strategies

Discretionary	Systematic
Buy/Sell Decisions Made By Portfolio Manager	Buy/Sell Decisions Made By Computer
Thematic And Fundamental Investment Approach	Model Driven Investment Approach
Trade Turnover Based On Tactical Or Thematic Trading Style	Trade Turnover Based On Model Frequency
Emphasis On Trade Construction And Economic Themes	Emphasis On Trade Execution And Model Development
More Human Emotional Impact, Large Key Man Risk, And Larger Next Generation Portfolio Management Issues	Less Human Emotion Impact, Less Key Man Risk, And Smaller Next Generation Portfolio Management Issues
Risk Management Is Done During Trade Structuring And Ex-Post	Risk Management Integrated Into Entire Investment Process
Processes Not As Measurable, But Managers Have A Better Ability To Take Advantage Of Short-Term Dislocations	Measurable Processes Allowing Incremental Improvement
Exchange-Settled Instruments And Cash-Settled Instruments (I.E. Options, Forwards, Swaps, Swaptions)	Exchange-Settled Instruments (I.E. Index Futures, Commodity Futures, Fixed Income Futures, Foreign Exchange)

SOURCE: NEPC, LLC

Still, these two sub-strategies are more similar than different at first glance. They trade similar instruments and have global exposures, and their historical returns are more correlated to each other than to other hedge fund strategies. In many cases, the systematic strategy is an attempt to automate the innate and immediate decisions discretionary PMs make when researching markets, placing trades, optimizing portfolios, and managing risk across multiple time frames and styles.

Many Shades of Gray

While the Discretionary or Systematic sub-strategies can be distinctively defined as black and white, many shades of gray exist between them as hedge funds often combine approaches. For example, at a systematic firm, a human may direct the process of discovering technical signals for a computer to determine trade entry and exit points, while some Discretionary PMs use these same technical signals in their investment process.

In addition to the Systematic and Discretionary characterization, prospective investors may find it helpful to evaluate:

- The scale at which a fund employs a technical versus fundamental approach
- How long a fund holds positions (e.g., long term versus short term)

- Where a fund is geographically focused (global versus specific countries or regions)
- The asset classes in which the fund invests

In essence, evaluators can use these characterizations to help map out their universe. An understanding beyond the fund's sub-strategy label is necessary in order to comprehend the risks and drivers of return.

Discretionary Global Macro

Discretionary GM PMs typically use a broad analysis of economic, financial, demographic, social, and political trends to identify investable themes. Decisions regarding timing, pricing, and structure—used to enter and exit positions—rest in the hands of PMs who attempt to profit by relying on their fundamental macroeconomic view of the world's economies. These PMs structure trades based on basic concepts of value and/or risk/reward that seek to capitalize on directional and relative price movements.

GM PMs have a variety of investment pedigrees, personal backgrounds, investment philosophies, and trading strategies. As a result, the correlation of funds within GM to one another tends to be lower than the correlation of funds within other hedge fund strategies.

Research Process

In order to identify themes or potential imbalances, discretionary managers first look to the global economic fundamentals in both major and emerging economies. Research is conducted by analyzing market or technical data produced by internal and external sources. In some markets, industry contacts that have access to specific information or key decision-makers can play a vital role in a firm's research process. Most GM firms have employees located around the world—mainly in major financial centers such as New York, London, Singapore, Shanghai, Mumbai, and Rio de Janeiro—who conduct macroeconomic analysis and speak to influential fiscal and monetary policy-makers in order to forecast the supply and demand of asset classes around the world. Short-term market movements are generally most influenced by technical movements or fundamental catalysts, whereas long-term movements (six months and longer) are impacted more by funda-



mental data and policy. Consequently, in addition to fundamental research, many PMs rely on technical data—including the use of price and volume charts and asset flow levels—as other inputs to their research process when deciding 1) when to enter a trade, 2) the size of the position, and 3) when to exit the trade.

Portfolio Construction

Investments tend to be “thematic.” A PM might hold dozens of positions, but they often relate to a few key themes. Given this potential concentration or correlation of themes, risk management is critical. PMs often have a long-term view on the price of a security, but will trade around that position in order to cut risk, to lock-in profits from quick run-ups in the market, and to test the liquidity in the market to see how fast—and at what levels—instruments can be bought and sold. In addition to trading around positions, many PMs trade frequently to lock-in small profits to offset the premium paid to hold longer-term, option-like payouts that have the probability of producing significant asymmetric returns (e.g., greater upside than downside).

Firm General Structure

When GM firms are launched, they often have a single portfolio manager managing a single fund. The PM conducts strategic business planning, economic research, trading, and marketing. As the fund grows, PMs sometimes allocate capital to other trading groups. The President/CEO role also evolves to allow the main PM to focus his/her time on investment-related decisions. This separation of the investment professionals from the day-to-day management of the firm is an important development that allows the primary PMs to focus on generating returns. While the separation of these duties is not unique to the GM strategy, in comparison to other types of hedge fund strategies it is imperative that discretionary GM PMs are highly focused, particularly on the pulse and technical elements of the market.

Typically, most large discretionary firms are led by a single primary PM, such as Louis Bacon of Moore Capital Management, Paul Jones of Tudor Investment Corporation, Alan Howard of Brevan Howard Asset Management, and Mike Platt of BlueCrest International. These PMs are generally founders and chief investment officers of their

firms. Assets are allocated to underlying PMs who trade within a given mandate and are monitored by a risk management department. The underlying PMs are expected to be 1) profit centers, 2) idea generators whose insights can be integrated into the larger book controlled by the main portfolio manager, and/or 3) diversifiers who expose the fund to different strategies or skill sets. In addition, PMs are often able to source or check ideas with an internal economic research department that has deep connections to monetary policy makers and is often staffed with ex-US Federal Reserve Bank, World Bank, or other ex-central bank professionals. This structure is tied together by a central asset allocation committee, which is usually influenced by the main PM.

Each underlying PM runs his/her business, earning a portion of the profits generated. The netting risk—the liability incurred by a fund when an underlying PM has a positive year while the overall fund is negative—is often paid by the management company or by the main PM directly. Each underlying PM or trading group is charged a fee to access the management company’s platform (risk management, economic research, etc.) and may pay interest on the amount of capital allocated from the firm. Instead of launching their own funds, these PMs have access to capital and are provided with infrastructure and technology so that they are able to focus on investing.

Asset Allocation

While the main PM may have the largest allocation, that allocation may not be the majority of the fund’s assets. Asset allocation to different PMs is generally a combination of forward-thinking analysis and backward-looking performance-chasing. The asset allocation committee, which generally consists of the main PM, head of research, head of risk management, and the COO/President of the firm, will consider any combination of the following:

- The forward market predictions about which geographic areas, trading styles or asset classes will work best in the current and predicted market environment
- Their confidence in the underlying portfolio manager, which is often the result of tenure, performance, and risk management capabilities



- The quantitative benefit from a lack of correlation or other diversification metrics
- The underlying PM's recent and historical performance
- The competency of the head of risk management
- How well risk management is imbedded into the culture of a firm

After receiving allocations, PMs are able to trade within any market that fits their mandate to take advantage of market opportunities. Although asset allocation is generally decided by a "committee," these committees tend to follow the lead of the main portfolio manager who is the most qualified to determine the future market movements.

- How much authority the head of risk management has over the portfolio to:
 - Stop out PMs/trading groups, and
 - Evolve the risk management system to protect investors from future dramatic drawdowns.

Risk Management

In comparison to other strategies that use risk-management teams primarily for risk reporting of certain exposures or limits, risk management is much more of an active responsibility in the Discretionary GM space. Many risk managers not only report the risk, but also have the authority to cut risk or the allocation to an underlying PM, or even "stop out" the primary PM. Portfolio or investment risk management is focused around five main tools:

- Trading group mandates
- Incremental drawdown intervals
- Portfolio level liquidity
- Concentration limits
- Stress tests/scenario analysis

Each risk management tool has its own strength and weakness, the detail of which is outside the purview of this paper. The best approach is to use each risk-management tool as a pillar of a holistic risk-management platform, and not to rely too much on any single tool.

The effectiveness of this risk-management approach is based on:

The amount of authority the head of risk management has is directly tied to the primary PMs perception of risk management, and how much control over the portfolio the primary PM is willing to concede.

Role of the Risk Manager

The role of the head of risk management at global macro firms is the exact reverse of the nature of that firm's sub-strategy.

The head of risk management at a Systematic firm questions what the models are not capturing. He/she is responsible for thinking outside of the numeric parameters and identifying market environments or stressed periods that cause the portfolio to depreciate.

The role of risk managers at Discretionary macro firms is to control the portfolio's risk by keeping it in line with the numeric parameters.

In both cases, the head of risk management plays a critical role in a GM firm's investment process.

Trading Group Mandates

Underlying trading groups follow a well-articulated outline of what they can trade. These mandates are generally agreed upon prior to initial trading, and are clearly written with definable limits to certain geographic areas, instrument types, asset classes, leverage, and/or Value at Risk ("VaR"). The mandates are signed by the head of risk management and by the underlying PMs with the expectation that the underlying PMs will adhere to the "spirit" of the mandate in addition to the "letter." If a PM begins to trade in an area outside of their mandate, risk management is alerted and a discussion will ensue.

Incremental Drawdown Intervals

The risk management guidelines, including drawdown intervals, of the legendary Commodities Corporation created a foundation for new GM hedge funds. Incremental drawdown intervals provide a system in which a GM fund will have a defined reaction to negative performance of an underlying PM.



For example, if an underlying PM's portfolio is down from the beginning of any calendar year by:

- 4%, then he/she must meet with the head of risk management and/or main portfolio manager to discuss his portfolio
- 8%, then his/her allocation is cut in half
- 12%, then he/she is asked to take a month leave, during which time his/her future at the firm is reconsidered

These intervals are set in conjunction with the amount of volatility expected from a trading

...THE TRENDS OF STRESS TESTS OVER TIME ARE MORE IMPORTANT THAN THE RESULTS

group and the volatility target of the fund--i.e., PMs trading at higher volatility levels may have tighter stop-losses. While the intervals and subsequent reactions to drawdowns reached may differ at each discretionary GM firm, the concept remains largely consistent across firms.

Portfolio Level Liquidity

In order to maintain liquidity in the portfolio, Discretionary GM funds implement liquidity standards targeting a certain percent of the portfolio that can be liquidated within a certain number of days based off previous trading volumes.

Concentration Limits

Concentration limits are designed to maintain a fund's diversification. They are set up to prevent large concentrations in an asset type, issuer, geographical region, etc., and are applied to both the overall portfolio and an individual trading group.

Stress Tests and Scenario Analyses

Stress Tests and Scenario Analyses are utilized by a variety of hedge fund managers, but are particularly important for GM strategies. As a way to test the portfolio, current positions are run through models of historic market crises such as the Russian debt crisis, Mexican peso crisis, dot-com run-up, tech crash, and the September 11th terrorist attacks, as well as simulated crises. In addition to these stress tests, hedge funds will

determine the result of a shock to the portfolio by simulating a sudden change in market levels. For example, a risk manager may see how the portfolio will perform if equities increase by 10%, if credit spreads tighten, if the U.S. dollar falls by 2% compared to a basket of EM currencies, or if interest rates increase by 0.5%. As a result of these tests, a fund will seek to limit the impact of a stressed event on their current portfolio. If this testing limit is breached, offsetting positions can be placed or those positions most sensitive to that stressed event may be exited completely. From a risk evaluator's standpoint, the trends of stress tests over time are more important than the result. If the results of a September 11th terrorist attack stress test on a portfolio over three months were -2.4%, -2.6%, -2.5%, and then -9.2% in the fourth month, this drastic change in test results would indicate a significant change in the exposure or structure of the portfolio and should be evaluated further.

Sources of Alpha

Alpha is generated from trading skill, which is a result of a manager's ability to:

- Collect, decipher, retain, and analyze massive amounts of information immediately
- Structure trades to capture the intended market movements while protecting downside risks
- Account for--and mitigate--the risks in the portfolio
- Assess his/her own strengths and weaknesses

While it may be counterintuitive, alpha is also the result of extremely diligent risk-management--specifically, the discipline to cut unprofitable positions and to separate emotion from the decision-making process during difficult periods. While every discretionary GM PM may claim that he/she is devoted to managing risk, those who truly focus on risk management as the cornerstone of their trading approach have a better chance of staying in business. PMs cannot forecast every market movement correctly. Risk management and portfolio management processes lead to long-term value, as PMs who stick to their risk management rules tend to preserve capital during negative periods.



PMs also hone their trading skill by studying their own trading styles. PMs who have the discipline to review previous trades and information flow to determine what worked and what did not work have an advantage over their peers. Consider this not-so-hypothetical: One Discretionary PM who reviewed his performance noticed significant underperformance compared to his average daily return on days when unemployment numbers were released—likely due to a number of behav-

THE AMOUNT OF AUTHORITY THE HEAD OF RISK MANAGEMENT HAS IS DIRECTLY TIED TO THE PRIMARY PM'S PERCEIVED VIEW OF RISK MANAGEMENT...

ioral finance factors. As a result, the PM chose to no longer trade on days when unemployment numbers are released.

Market Environment Impact

Discretionary GM hedge funds generally do well when market volatility increases, and when macroeconomic influences such as fiscal and monetary policy, world growth rates, and interest rates are driving the price of markets. Managers also tend to produce strong results when trends in the financial markets coincide with economic fundamentals. Conversely, Discretionary hedge funds tend to have difficulty generating alpha when there is little risk in the market, volatility and interest rates are low, and major equity markets are rallying.

Systematic Global Macro

“Systematic” refers to the use of computer programs to build a portfolio using proprietary systems for trade order entry and exit. While investment professionals may exercise some judgment in determining system parameters, the model formulates entry and exit positions in the various markets. The investment focus is on liquid, global futures, and cash foreign exchange (FX) markets using algorithmic, systematized trading. While models are generally technical and focus on price

data, a number of managers have been successful building fundamental systems using macroeconomic information as inputs.

With models performing a number of responsibilities typically expected of PMs, Systematic hedge funds do not have “portfolio managers,” but instead employ heads of risk management, execution, and research who are responsible for directing development of new models and approving them with the consensus of a committee. Systematic funds generally invest in a number of models simultaneously and rebalance across models.

Rebalancing can differ by trading frequency (from daily to annually) and by the capital allocation decision process (an algorithm or non-systematic), depending on the firm.

Systematic History

The Systematic hedge fund space began with a small group of innovative trend-following investors. Over time, many of these firms attempted to diversify their sources of return by incorporating additional strategies, such as mean reversion models, which have uncorrelated return characteristics, to reduce reliance on any single strategy. Trend-following models tend to lose small amounts of capital most of the time and then perform very well in brief bursts, whereas relative-value and mean-reversion models perform fairly well most of the time and then experience significant drawdowns. The addition of mean-reversion models helped to diversify the return stream and build a more stable business and a more appealing product. Over time, pattern recognition models were developed and, more recently, Systematic managers have been developing and incorporating strategies that rely on fundamental information.

Types of Systematic Models

While some Systematic funds specialize in one type of model, others employ a multi-model (multi-strategy) approach.

Types of models include:

- Trend-Following
- Mean Reversion
- Pattern Recognition



- Fundamental
- Relative Value

Trend-Following

The trend-following model is capable of scanning a variety of instruments to identify trends. This model relies primarily on price data. The distance from a security's average price does not necessarily influence the power of a signal to buy or sell a security. The model often misses the beginning of a trend, generally does well in trending markets, and then loses money as trends reverse. Choppy markets with sustained short-term volatility provide a difficult environment in which to profit. The duration of trend-following models range from short-term (days) to long-term (one year or longer). This model has a return pattern that exhibits slightly negative returns and large positive outlying performance that can make up for the negative performance. Trend-following funds may lose on the majority of their trades, but make up these losses when the positive trades produce outsized returns.

Mean Reversion

A mean-reversion model is also based on price data. This model scans a universe for securities that exhibit price movements away from historical averages with the assumption that they will revert to normal levels. It does not focus on the trends of the price movement, but instead focuses on shorting securities that are overpriced compared to their historical averages and buying securities that are below historical averages. A mean-reversion model typically has consistent positive performance followed by large declines when the technicals (i.e., market shocks) affect security valuation. The duration of mean-reversion models ranges from short term (a few days) to longer term (one year or longer).

Pattern Recognition

Pattern recognition is probably the smallest category of models in the systematic space. This model attempts to scan universes of investable securities for price patterns that have appeared numerous times in history. It then calculates the probability of the price of the historical pattern moving in one direction or the other. If there is enough statistical significance in the prediction of the future market direction, the model will make the appropriate trades. The model assumes that mar-

ketplace patterns occur for an emotional reason and that the next portion of the trading path can be predicted. If historical market patterns are the reflection of people's behavior and people behave similarly in comparable circumstances, then the historical market prices may give an indication of what may happen in the near future. Unlike trend-following and mean-reversion models, pattern-recognition models have no natural performance stream characteristics.

Fundamental

A fundamental model generally has a medium- to long-term (six month or longer) investment horizon. In fact, this is due to the types of inputs used, including macroeconomic data such as GDP growth, inflation, unemployment numbers, currency prices, and consumer spending—which are used to predict long-term supply and demand differences. Unlike the pattern recognition, mean-reversion, and trend-following models, this model's main input is not price data but rather economic information. Like pattern recognition, it has no natural performance stream characteristics, although it generally does less well during stressed market events when flights to quality in overall asset flows have a greater impact on security prices than basic macro fundamentals.

Relative Value

The relative Value model looks at the relative prices of similar securities and creates portfolios in which each position is dependent on at least one other position in the portfolio. Examples include spread-trading, yield-capturing strategies, and convergence trades that produce profitable monthly performance the majority of the time yet experience significant losses on the remaining, albeit infrequent, negative months.

Research Process

Unlike Discretionary GM funds, the research process at Systematic GM hedge fund firms focuses on creating new trading models and continually monitoring existing models to control risk. Generally, a written thesis is prepared describing a market inefficiency, why it exists, how to profit from that opportunity, and how long this inefficiency may last. The author proposes it to a review committee, which can include the head of research, the head of risk management, and others. Once approved, a financial model designed to produce



buy and sell signals is built around the principles of the thesis. Once constructed, historical data is used to test the model. If the outcome is positive

A Brief Note On CTA's

Traditionally the term Commodity Trading Advisor (CTA) has been interchangeable with Systematic managers. According to the National Futures Association, a CTA is:

“an individual or organization that, for compensation or profit, directly or indirectly advises others as to the value of or the advisability of buying or selling futures or options contracts. Providing advice indirectly includes exercising trading authority over a customer's account. Registration with the Commodity Futures Trading Commission is generally required.”

A CTA is any investment firm registered with the CFTC that has permission to trade futures or options. We view CTAs as legal entities that can be either Discretionary or Systematic global macro funds. While at one point all Systematic funds were CTAs this is no longer the case. Many Systematic global macro hedge funds are not structured as CTAs. Therefore the CTA name is not attributable to the Systematic global macro strategy. Likewise, Systematic global macro funds are not necessarily CTAs. Another name for the Systematic space is Managed Futures, but we feel that this name is not appropriate because it indicates that all firms trading futures can be categorized together.

For the purpose of our hedge fund research, we group all global macro investors that can encompass CTAs and Managed Futures strategies, but we do not

and the model performs as predicted, an independent research professional will test the model against an additional batch of historical data. If it passes this final test, the model's champions will present it for final approval to a model review committee.

Because the models are the property of the hedge fund management firm and are, in essence, the lifeblood of the firm's profits, they are the firm's intellectual property. These Systematic firms are therefore less inclined to describe in detail their own models to minimize the risk of those models being developed elsewhere.

Portfolio Construction

After the models have been created, the largest portfolio construction decision

is how to allocate money among them. Because of the technical nature of the Systematic business, it is not a normal practice to conduct forward-looking analysis to determine which models are going to perform better with the hope of overweighting those models. In fact, this is thought of as the “holy grail” within the space: someone who could do this with accuracy could generate enormous profits over time.

Like Russian nesting dolls, each model at a firm fits into a model family that then fits into a model

type. For example, a high-frequency, interest-rates-trend-following model might be one of seven within a high-frequency, trend-model family, which is itself one of three trend-following model types. In general, because firms believe there is no value added in attempting to predict the next best model, they generally start with the foundation that the model types should be equally risk-weighted. From that starting point, model types and the underlying model families can be tweaked on the margin for any practical reason. For example, in an effort to match the liquidity of the portfolio, assets might be moved away from longer-term fundamental models. Likewise, if a model is performing much better or worse than predicted, its allocation may be cut because the model is not capturing what is driving the model-traded market. Nevertheless, these changes are on the margin, and the overwhelming foundation for portfolio construction at a Systematic firm is to equally weight the portfolio of models. Later, correlations, diversification, and other risk measures are used to help understand the concentration in the total portfolio.

Firm Structure

Because Systematic firms do not have a portfolio manager, the structure of the firm is built around three main areas: 1) research and model development, 2) programming and model coding, and 3) trade execution and model implementation.

The research professionals tend to come from an applied mathematical backgrounds and have advanced degrees in computational mathematics and economics from top-ranked universities around the world. In addition, skilled programmers with financial backgrounds take the theorized models and code them into the larger trading platform.

Because a high frequency of trading occurs at many of the Systematic firms, transaction costs are substantial. To address this, execution teams focus on filling trades at the best possible prices. These teams build better connections to the exchanges, negotiate trading agreements with their counterparties, establish strong relationships with floor traders, and develop systems to execute trades over a number of different exchanges over a period in an effort to minimize market impact. In some circumstances, execution-trading groups have traders who are compensated for executing trades at buy and sell prices better than those



produced by the models.

Asset Allocation

The frequency and the manner of portfolio rebalancing vary at each firm. Some firms have built an overarching portfolio optimization model that can rebalance the portfolio at the management's discretion. Other firms prefer the use of an asset allocation committee that meets to discuss the merits of the models. While some firms attempt to maximize returns, others target a certain risk level (volatility, semi-deviation, or maximum drawdown).

Risk Management

Some firms have a human element that can turn off a model, and others build this characteristic into the model itself (e.g., if the model is not working due to changes in the marketplace, it will cut risks or exposures and go to cash). Models are rigorously back-tested over multi-decade periods, including scenario analyses and stress tests. After testing, models are more objective and provide a repeatable investment process that's less subject to behavioral biases than discretionary GM PMs.

Sources of Alpha

Since trading is all systematized, alpha is not produced by a trader's edge the way it is on the Discretionary side of the GM space. Alpha is the result of building better models and having faster access to information, access to more information, and a technological advantage over others to execute trades faster. The biggest benefit comes in the sourcing, design, testing, and implementation of models and the rebalancing around them. In essence, the source of alpha is the research, testing, and asset allocation process.

Favorable Market Environments

Because trend-following is the dominant model type in the Systematic space, markets that have clean trends provide the best environment for strong positive returns. When crises occur and technical indicators, such as asset flows, have a greater impact on market price than fundamentals, trends and breakouts occur that can be captured by systematic models. In essence, Systematic GM captures the excess returns when a mar-

ket moves more than a fundamental manager may expect.

Conclusion

This primer described the history of global macro, how it fits into the rest of the hedge fund universe, and both Discretionary and Systematic approaches.

An allocation to GM can provide an institutional portfolio with an uncorrelated return stream. We believe that, over time, an allocation to the global macro strategy can:

- increase overall portfolio level returns
- decrease volatility
- decrease the depth of maximum drawdowns
- decrease "left tail" events
- help maintain overall liquidity

We will provide additional detail supporting these conclusions in upcoming research.

While we have consistently recommended an allocation to GM, today's markets, characterized by high correlation and a risk on/risk off environment, are particularly well suited for this strategy.



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In addition, it is important that investors understand the following characteristics of non-traditional investment strategies including hedge funds, real estate and private equity:

1. Performance can be volatile and investors could lose all or a substantial portion of their investment
2. Leverage and other speculative practices may increase the risk of loss
3. Past performance may be revised due to the revaluation of investments
4. These investments can be illiquid, and investors may be subject to lock-ups or lengthy redemption terms
5. A secondary market may not be available for all funds, and any sales that occur may take place at a discount to value
6. These funds are not subject to the same regulatory requirements as registered investment vehicles
7. Managers are not required to provide periodic pricing or valuation information to investors
8. These funds may have complex tax structures and delays in distributing important tax information
9. These funds often charge high fees

10. Investment agreements often give the manager authority to trade in securities, markets or currencies that are not within the manager's realm of expertise or contemplated investment strategy.

