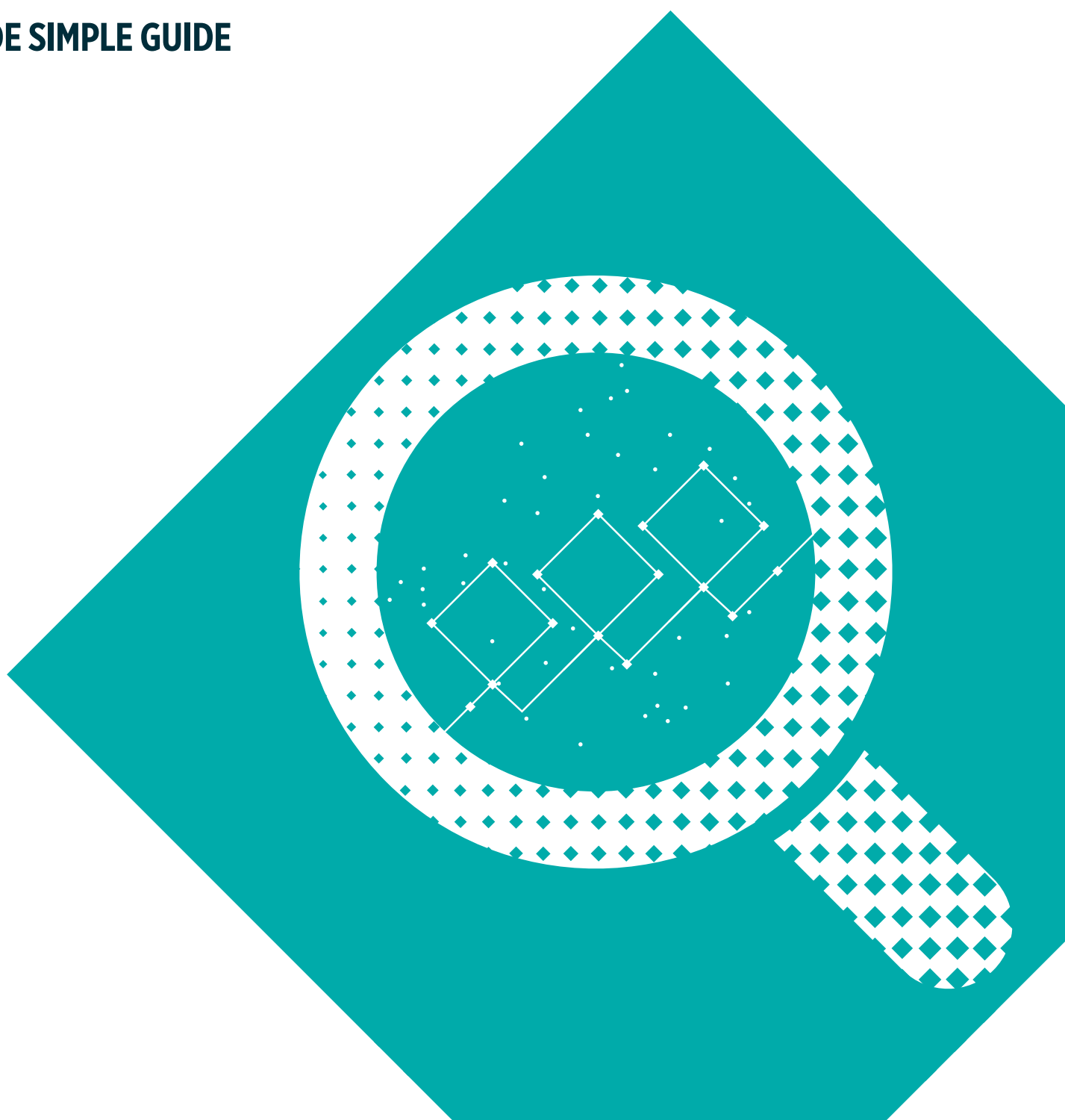


SYSTEMATIC INVESTING



MADE SIMPLE GUIDE



ACKNOWLEDGEMENTS

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It is not investment advice.

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CONTENTS

Introduction	4
1. What is systematic macro?	5
2. Systematic versus discretionary	7
3. How do systematic macro funds generate returns?	8
4. Systematic macro fund performance	12
5. Why include systematic macro in a pension fund?	14
6. Considerations for a pension fund	18
7. The case for systematic macro	19

INTRODUCTION

THE CENTRAL PROBLEM ANY PENSION SCHEME FACES IS HOW TO ENSURE IT HAS THE FUNDS TO PAY ITS LIABILITIES AS AND WHEN THEY ARE DUE.

A key aspect of this is ensuring the assets the scheme is investing are generating the necessary returns. There are many ways to approach this. If the behaviour of the underlying financial markets were more predictable then the job would be an easy one, and much less ink would have been spent on finding the 'optimal solution'.

Accepted practice, though, is for pension schemes to divide the investment management problem down the middle, by separating decisions on how to allocate to a range of assets, such as shares, bonds and property, from those on how best to invest in each type of asset. At Winton, we have spent much of our 18-year existence consigned to the 'alternatives' allocation of the typical institutional portfolio, within which we are often labelled 'systematic macro'. It is in this space we have built our reputation. However, we are not an asset class in the sense that other alternative investments such as property, forestry or distressed debt can be considered. Instead, it is our approach – rather than the markets we invest in – that is alternative.

While systematic macro can appear complex at first glance, many of the concepts that underpin it are intuitive and, in our view, it is well worth the effort in taking the time to understand. In the following guide, we endeavour to introduce how Winton and our peers approach investment management and, in turn, we hope to demonstrate how such an approach could benefit your pension scheme.

MATTHEW BEDDALL

Chief Investment Officer, Winton Capital Management

1 WHAT IS SYSTEMATIC MACRO?

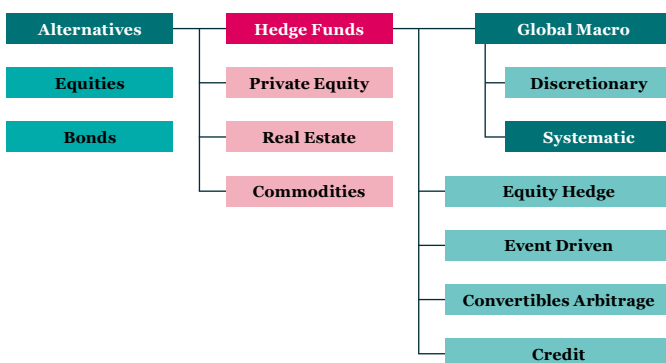
IN THIS GUIDE WE WILL BE EXAMINING ONE OF THE MOST EXTENSIVE APPLICATIONS OF SYSTEMATIC INVESTING, THE SYSTEMATIC MACRO STYLE OF HEDGE FUND.

CLASSIFICATION

A 'hedge fund' is a flexible investment vehicle that seeks to generate profits for investors, regardless of whether financial markets are rising. There are many types of hedge fund, and 'global macro' is a broad-brush label used to describe those that employ a range of global data in an attempt to predict and profit from rises and falls in markets around the world. The success and breadth of such an approach has turned some of its biggest fund managers into household names. George Soros, for example, gained fame (or notoriety) in the UK when his bets against the British pound "broke the Bank of England" and contributed to Britain leaving the European Exchange Rate Mechanism in 1992.

There are two fundamentally different approaches to global macro investing: 'discretionary' – that is, the likes of Soros, where investment decisions are based on the analysis and judgement of an investment manager or team – and 'systematic'.

HEDGE FUND STRATEGY CLASSIFICATIONS¹



Even though it is now considered a subset of the global macro hedge fund genre, 'systematic macro' is a term used – often interchangeably with 'managed futures' or 'commodity trading advisors (CTAs)' – to describe an alternative investment approach with roots as far back as 1948; arguably predating global macro strategies and hedge funds themselves.²

Starting with speculators hand-drawing charts to identify simple trading patterns that can profit from trends in the value of commodity contracts, systematic macro has evolved, alongside financial markets and computers, into the global and digitalised industry it is today: a distinct and important alternatives allocation for many pension funds around the world.

The systematic macro industry currently manages around US\$300 billion; involves over 500 different investment managers; and has provided pension funds, foundations, university endowments and individuals with annualised returns of 9.0% over the past 20 years.³

INVESTMENT APPROACH

In pursuing a systematic macro approach to investing, fund managers tend to follow a clear, three-stage investment process:

1. Collect huge datasets from a diverse range of sources;
2. Analyse the data to find persistent patterns; and finally
3. Encode trading rules into a computer-based program to profit from the identified patterns.

These rules can then be used to trade financial securities around the world, 24 hours a day. The most common example of a pattern that systematic macro funds seek to exploit is the price trend, which we will discuss in more detail later on.

Typically, such an approach invests in futures and forwards, which are contracts that derive their value from an underlying asset, often a commodity, market index, bond or currency. Some systematic macro funds invest directly in company shares, or 'equities', as well. The global nature of these markets means that there is a large number of hedgers, speculators and investors willing to take the opposite side of transactions. Altogether, this deep and easily-traded choice of investments helps with liquidity – that is, being able to open or close a position when desired – and provides huge datasets on which trading systems can be researched, built and tested.

¹ Classifications as defined by Credit Suisse Hedge Fund Index LLC.

² The first publicly held fund that could be considered 'systematic macro', Futures Inc, was launched in 1948 by Richard Donchian, an Armenian-American commodities and futures contracts trader; the first hedge fund was A.W. Jones & Co, founded in 1949.

³ Assets under management sourced from BarclayHedge, an alternative investments database, as at 31 December 2014; number of investment managers from Goldman Sachs Asset Management, Investing in Managed Futures Hedge Funds White Paper, October 2011; returns from Bloomberg as at 31 December 2015 using the HFRI Macro: Systematic Diversified Index.

SYSTEMATIC MACRO IN BRIEF



- Sits within a pension fund's allocation to 'alternative' investments



- Trading rules are based on the statistical analysis of diverse datasets



- Follows multiple investment strategies



- Invests across a global and liquid multi-asset universe

BACK TO THE FUTURES: AN INTRODUCTION TO DERIVATIVES

The majority of systematic macro investments are made through derivatives such as futures and forwards. These are contractual agreements between two parties that involve buying or selling set amounts of commodities, financial instruments or currencies in the future. They are called 'derivatives' because they *derive* their value from an underlying commodity, financial instrument or currency.

Derivatives contracts go back as far as ancient Babylon. However, the first formal trading is believed to have started in 1710 on the Dojima Rice Exchange in Osaka, Japan. In 1865, standardised futures contracts were introduced on commodities in the US by the Chicago Board of Trade as a way to help farmers and merchants shelter themselves from fluctuations in the price of their goods. They were later introduced on financial instruments such as stocks, market indices and bonds from the 1970s, which dramatically increased the investment universe for systematic approaches.⁴

Futures are contracts where a buyer or seller agrees to exchange an asset at a fixed price at a fixed expiry date in the future. They are traded on exchanges and, on the expiry date, the contract is settled by delivering or receiving the underlying asset or by paying the difference between the contract price and the asset price. Futures buyers profit if the underlying asset price is above the contract price at expiration; futures sellers profit if the underlying asset price is below the contract price at expiration.

Forwards are similar to futures but are customised as they are a private transaction between two parties; they are not exchange-traded and are primarily used by systematic macro funds for taking positions in currencies.

⁴ Goldman Sachs Asset Management, *Investing in Managed Futures Hedge Funds White Paper*, October 2011.

2

SYSTEMATIC VERSUS DISCRETIONARY

DISCRETIONARY INVESTING IS – AND CONTINUES TO BE – MORE WIDELY USED THAN SYSTEMATIC INVESTING.

Intuitively, trusting a trained individual to invest on behalf of beneficiaries might feel more comfortable than using an automated program. However, there are clear benefits of a systematic approach, highlighted in the table below.

DISCRETIONARY AND SYSTEMATIC INVESTING: A COMPARISON

Discretionary	Systematic
Susceptible to emotional and cognitive biases, which could lead to irrational investment decisions.	Rules-based decision-making means that biases can be controlled at the research stage through disciplined processes.
Humans respond inconsistently to events and may deviate from the strategy at times.	Consistent and rules-based response to market movements.
Key-man risk: strategy success is dependent on an individual's experience and expertise.	Program maintenance can be done by a team of individuals.
Investment strategies may need to be altered to cope with new assets or markets. Managers tend to be expert in a single strategy or market.	Automated so can readily accommodate new markets and strategies. Systems can trade over multiple markets and strategies at the same time.
Typically only trades during working hours.	24-hour trading.
Limits on the amount of data that can be assessed and analysed at one time.	Data processing is constant and limited only by computing power.

MANY PENSION FUNDS ALREADY USE SYSTEMATIC INVESTING

In addition, it could be argued that nearly 10% of the world's estimated US\$87 trillion assets under management are already invested systematically: the US\$8 trillion invested in index-tracking or 'passive' products.⁵

An index by its very nature is a system, governed by a set of trading rules. A FTSE 100 Index tracker, for example, invests in the shares of the hundred largest companies listed on the London Stock Exchange, and it weights each position by a company's free-float market capitalisation.⁶ Whether a stock is bought or sold by the fund is based on these pre-defined criteria.

Systematic macro funds are similar in that they take a rules-based approach to investing. But rather than simply attempt to replicate the performance and makeup of a market index, managers use dynamic, research-based strategies and rigorous risk management processes in their search for consistent investment returns.

⁵ Estimated assets under management sourced from Andrew G Haldane, the chief economist at the Bank of England, in a speech titled *The age of asset management?*, April 2014.

⁶ This example assumes the index tracker uses physical replication, many trackers are 'synthetic' and use financial engineering to systematically achieve a similar effect.

3 HOW DO SYSTEMATIC MACRO FUNDS GENERATE RETURNS?

GIVEN THAT PRE-DEFINED, RULES-BASED INVESTMENTS CAN BE REPLICATED BY COMPETITORS, SYSTEMATIC MACRO FUND MANAGERS OFTEN NEED TO BE SECRETIVE ABOUT THEIR TRADING SYSTEMS TO PREVENT THEM BEING COPIED BY OTHER MARKET PARTICIPANTS AND TO STOP RETURNS BEING ERODED FOR THEIR INVESTORS.

This often leads to the misconception that systematic macro funds are highly complex. It is true that the identification and application of successful systems is challenging, but the principles underpinning many of the main strategies are fairly straightforward.

Systematic macro funds are also not constrained to the traditional equity and fixed income asset classes and can profit from price movements across a truly multi-asset investment universe: this can range from increases in livestock and crop prices to falls in major stockmarket indices around the world such as the S&P 500 and the Nikkei 225, which follow the most valuable companies listed in the US and Japan, respectively.

EXAMPLES OF MARKETS TRADED BY SYSTEMATIC MACRO FUNDS

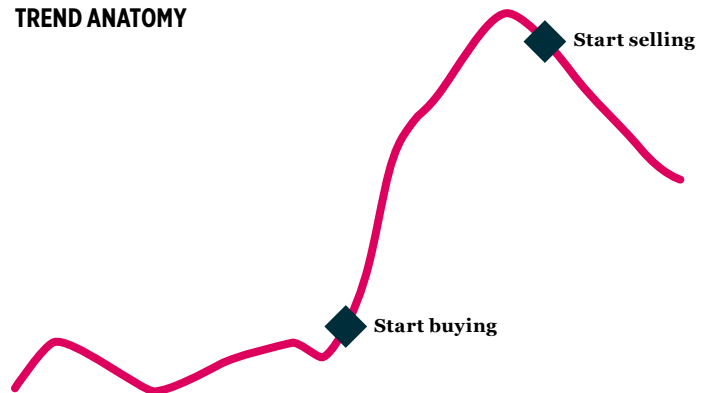


The esoteric nature of some of the markets in which systematic macro funds trade, while unfamiliar to some investors, can add compelling diversification benefits, as can the range of investment strategies they operate.

TREND FOLLOWING

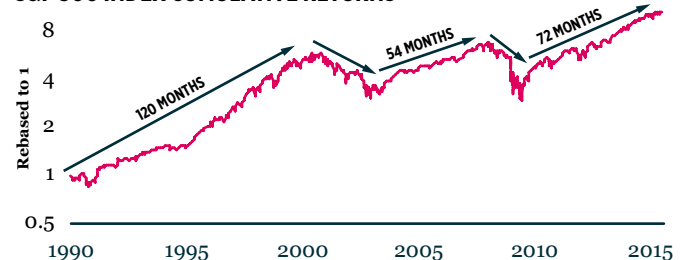
Trend following is one of the most common strategies pursued by systematic macro funds. Put simply, trend following involves buying (selling) an asset when its price starts to rise (fall) in the hope that it continues to rise (fall). Trend followers can benefit from both rising and falling prices by buying and selling futures contracts on assets, respectively.

TREND ANATOMY



There is a great deal of empirical evidence that suggests trends in financial markets exist, and even some of the most prominent markets have exhibited this behaviour; for example, the US stockmarket over the past 15 years, represented by the S&P 500 Index.

S&P 500 INDEX CUMULATIVE RETURNS

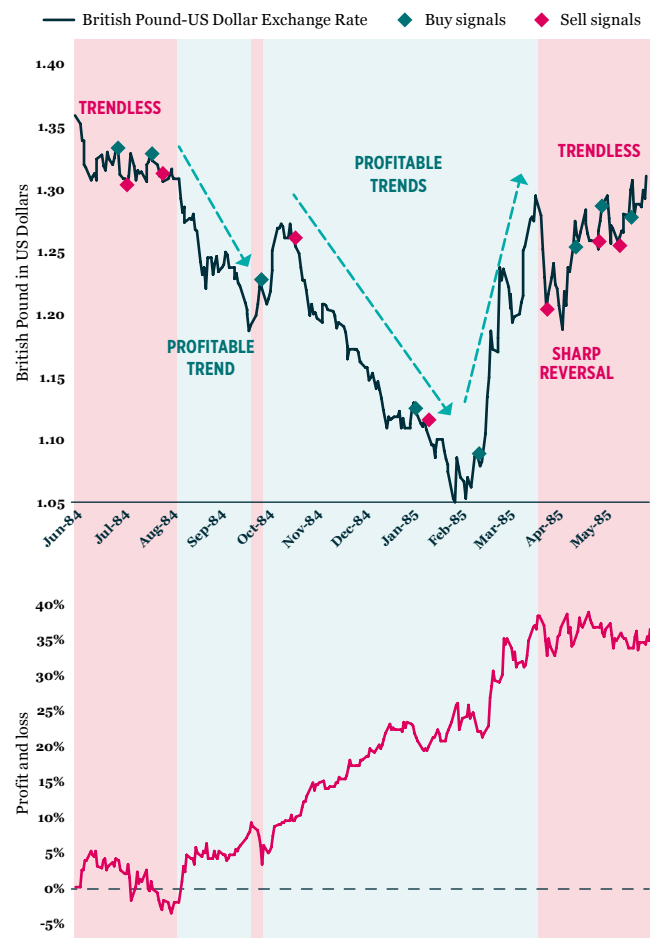


Source: Bloomberg, as at 30 September 2015.

Many trend-following strategies have also delivered compelling long-term returns for investors: a study by Capital Fund Management, a French systematic macro fund, finds evidence that trend-following systems would have been consistently profitable over the past 200 years.⁷ This success clearly contradicts traditional theories of finance, which suggest that markets are efficient and asset prices reflect all available information; therefore making it impossible to for strategies based solely on price data to be consistently successful.

CASE STUDY: A BRITISH POUND TRADING SYSTEM, 1984 TO 1985

The chart on the right shows a simulated trend-following system on the British pound-US dollar exchange rate between 1984 and 1985, a notable trend where the British pound nearly reached parity with the US dollar during the miners' strikes. The red line on the corresponding chart underneath shows a simulated profit and loss (P&L) for the strategy.



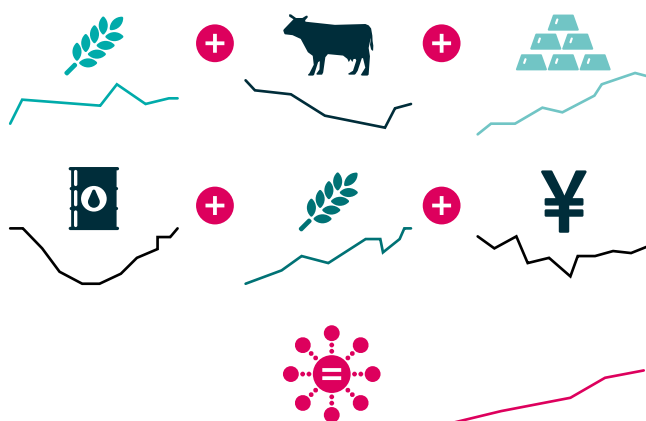
⁷ Capital Fund Management, *Two centuries of trend following*, April 2014



THE POWER OF DIVERSIFICATION

As the P&L chart illustrates in the British pound case study, even though trend-following strategies can be highly profitable when there are strong, persistent trends, they can struggle during trendless periods or sharp reversals. Therefore, a single trading system operating in isolation may generate inconsistent returns and even losses over periods of time, which is clearly little use to investors.

Trend-following strategies, however, reduce their dependence on trends in individual markets by running systems with different timeframes, over huge numbers of diverse markets at the same time. This enables systematic macro funds to draw on the power of diversification to achieve more consistent long-term returns from this strategy.

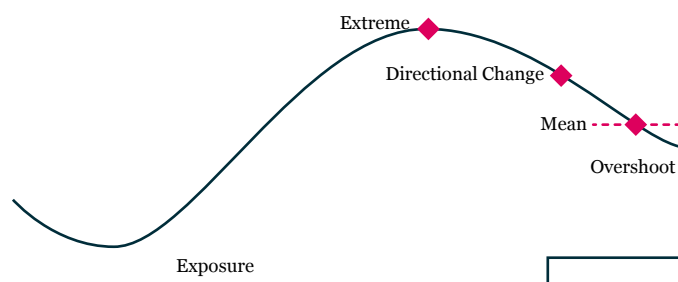


NON-TREND STRATEGIES

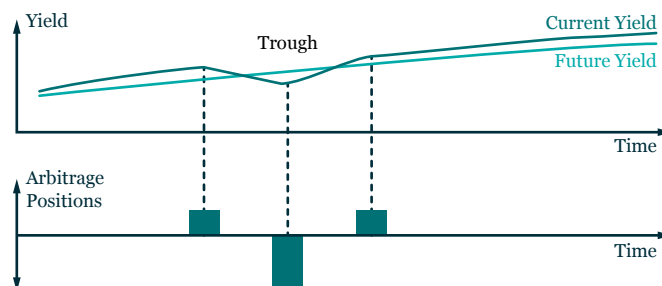
Trend following is not the only way systematic macro funds generate returns, and many will also operate different strategies simultaneously. Similar to trend following in multiple markets and over different timeframes, the diversification benefits of running multiple strategies can help a fund achieve more stable returns.

The success of trend following has also raised concerns around overcrowding; that is, returns from the strategy diminishing due to too many investors chasing the same profits. Many of the leading funds are therefore actively diversifying into other systems to help ensure they are able to continue to deliver the attractive returns their past track records are built on. Next we highlight examples of other widely-used systematic strategies.

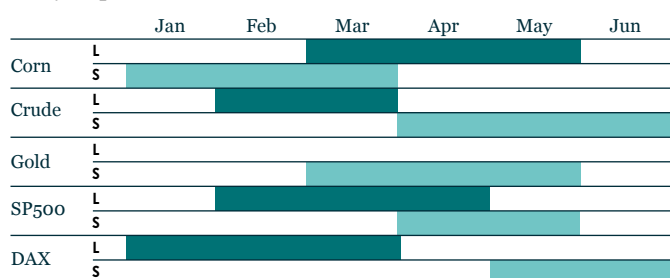
Counter-trend: A system which assumes that current price trends will not continue and will reverse.



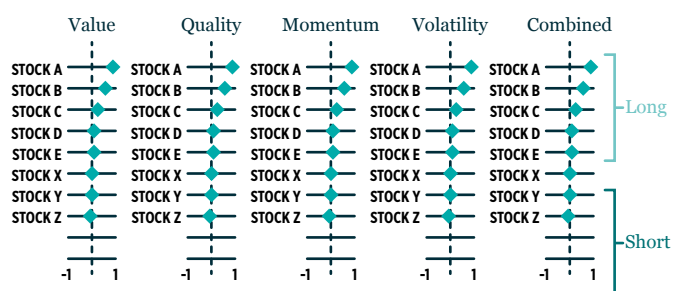
Carry/fixed income relative value: Strategies that seek to systematically exploit differences in the yields of different currencies, the shape of the yield curve or the roll yield of commodity futures. Roll yield is the return a futures investor receives from the futures price converging to the asset price as the contract gets nearer to its delivery date. This system tends to do better when markets are stable.



Seasonality: A system that takes positions based on seasonal patterns in prices, volumes and volatility; particularly in agricultural, energy and equity markets. Examples in stockmarkets might include the old adage “sell in May and go away” or the ‘January effect’. Rigorous statistical analysis is required to determine whether such seasonality is likely to persist.



Equity hedge: A system that invests long and short in company shares using data from financial reports or prices, while limiting exposure to the direction of the overall market through positions designed to act as a ‘hedge’. For example, a strategy might rank company shares on a number of factors such as their value and quality or their price momentum and volatility. It will then buy the stocks that score highly on these factors combined, while selling those that score poorly.



This above list is by no means exhaustive and leading funds use research and development to identify new ways of applying mathematics to investment management on an ongoing basis. This should lead to new strategies and potentially enable systematic macro funds to continue to generate the good returns investors have experienced to date.

CONSIDERATIONS OF A SYSTEMATIC INVESTMENT STRATEGY

The principles behind the above strategies are intuitive, but developing the systems and implementation needed to be a successful systematic investor is complex and requires much experience and know-how. A number of important factors need to be considered:

- ▶ The quality and breadth of the data utilised as system inputs;
- ▶ The research approach to identifying signals and selecting those to trade on; and
- ▶ Choosing the size of the positions, the markets to operate in and the way in which trades are placed.



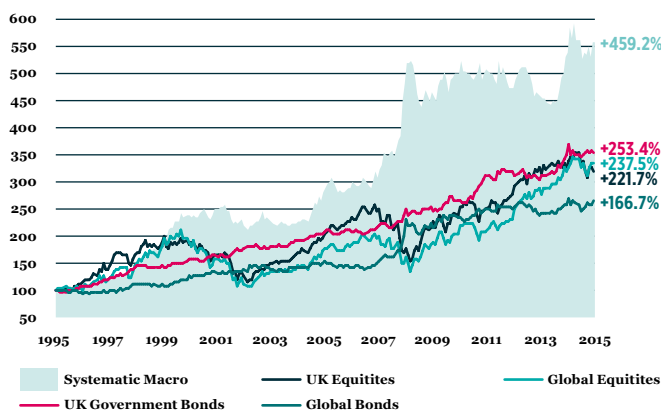
Structured human decision-making is key in shaping responses to each of the above considerations. While the application of systematic macro is objective and rules-based, hard-earned human experience is essential for combining a number of these subjective factors into a robust and appropriately diversified investment product.

4 SYSTEMATIC MACRO FUND PERFORMANCE

SYSTEMATIC MACRO HAS GENERATED EXCEPTIONAL TOTAL RETURNS FOR ITS INVESTORS OVER THE LONG TERM.

As the chart below shows, systematic macro funds have outperformed equities and bonds over the past 20 years, both in the UK and globally, by a huge margin overall.

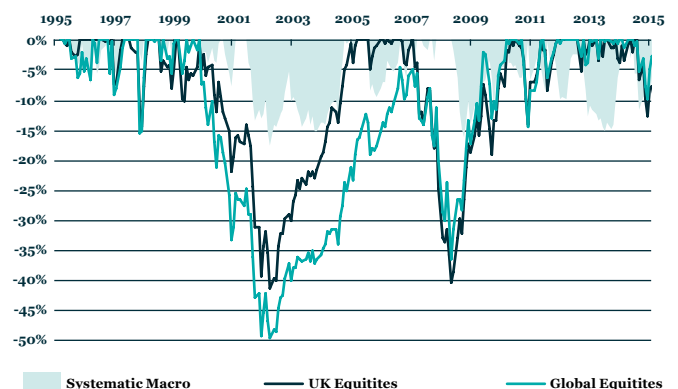
TOTAL RETURNS VERSUS EQUITIES AND BONDS



Source: Bloomberg, as at 31 December 2015, rebased to 100 as at 31 December 1995. Systematic macro: HFRI Macro: Systematic Diversified Index, converted to GBP; UK equities: MSCI TR Net UK; global equities: MSCI TR Net World GBP; UK government bonds: Bloomberg/EFFAS Bond Indices UK Govt All > 1 Yr TR; global bonds: JPM Global Aggregate Bond Index - Total Return Unhedged GBP.

These returns have been achieved with shallower and shorter drawdowns than equities: systematic macro funds held up better than the UK and global market during both the Dotcom Crash and the Global Financial Crisis. Drawdowns indicate the maximum loss an investor could have experienced in a period of time.

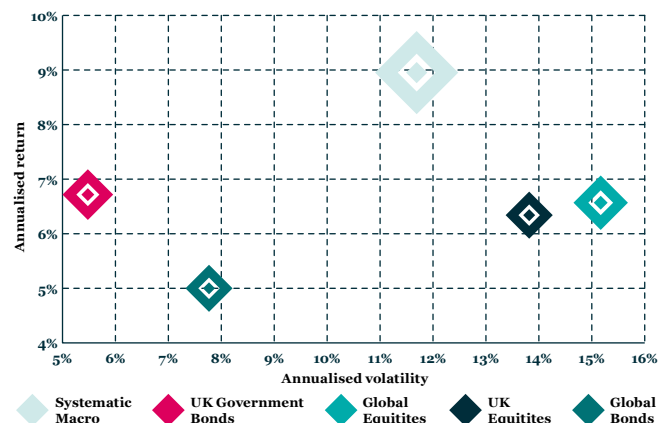
DRAWDOWNS VERSUS EQUITIES



Source: Bloomberg and Winton Capital Management Limited, as at 31 December 2015, total returns converted to sterling. Systematic macro: HFRI Macro: Systematic Diversified Index, converted to GBP; UK equities: MSCI TR Net UK; global equities: MSCI Daily TR Net World GBP.

The approach has also delivered these returns with lower volatility than equities, resulting in systematic macro having a comparatively attractive risk/reward profile, as the chart below illustrates.

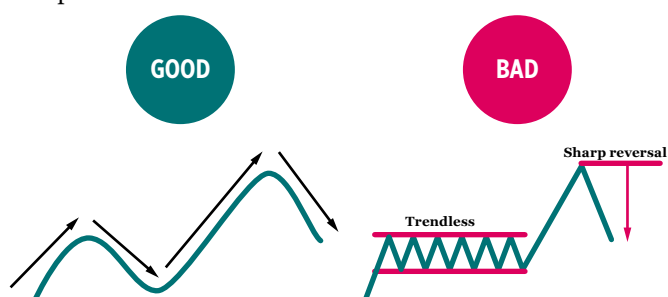
ANNUALISED RETURN/VOLATILITY VERSUS EQUITIES AND BONDS



Source: Bloomberg and Winton Capital Management Limited, as at 31 December 2015, based on monthly returns. Systematic macro: HFRI Macro: Systematic Diversified Index, converted to GBP; UK equities: MSCI TR Net UK; global equities: MSCI TR Net World GBP; UK government bonds: Bloomberg/EFFAS Bond Indices UK Govt All > 1 Yr TR; global bonds: JPM Global Aggregate Bond Index - Total Return Unhedged GBP.

PERFORMANCE IN DIFFERENT MARKET CONDITIONS

Historically, systematic macro funds have placed a large weight on trend-following strategies. This means that their performance has been closely aligned with trend following. And so, as illustrated in our British pound case study, systematic macro funds have performed strongly in environments where clear, persistent trends are prevalent; conversely, they have struggled during trendless periods and sharp market reversals.



It is for this reason that many systematic macro funds have been diversifying into other investment strategies. Doing so should enable funds to deliver stable returns that are not dependent on prevailing market conditions. The analysis on the right from Winton Capital Management provides evidence for this by showing the average quarterly performance of a simulated trend-following, carry and seasonality system, given a corresponding S&P 500 Index return over the past 40 years.⁸

QUARTERLY PERFORMANCE OF THREE INVESTMENTS SYSTEMS GIVEN AN S&P 500 INDEX RETURN OVER THE PAST 40 YEARS



Source: Winton Capital Management, February 2015. Carry systems are only since 1995 and on currency markets.

While all three systems had positive average returns, they each performed well at different times: trend-following returns were strongest during larger market gains and losses, average carry performance was higher when market returns were higher, while there was no clear pattern with the seasonality system. Combined in a portfolio, which allocates 50% to trend following, 25% to carry and 25% to the seasonality system, performance would have been more consistent than any individual system.

⁸ Winton Capital Management, *Performance characteristics of trend and non-trend trading systems*, Research Brief, February 2015.

5 WHY INCLUDE SYSTEMATIC MACRO IN A PENSION FUND?

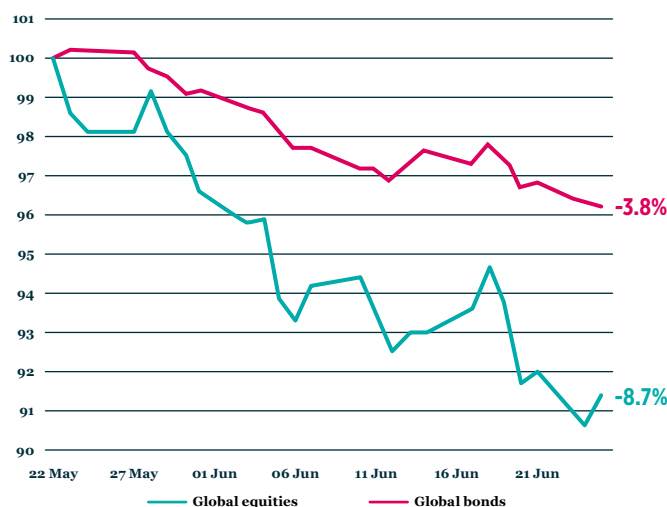
PENSION FUND HEADWINDS

SUSTAINED LOW INTEREST RATES SINCE THE GLOBAL FINANCIAL CRISIS HAVE DRIVEN DOWN THE RETURNS ON OFFER FROM GOVERNMENT BONDS AND INCREASED THE CHALLENGES FACED BY PENSION FUNDS IN MEETING THEIR LIABILITIES.

The Pension Protection Fund estimated the aggregate deficit to be £367.5 billion in January 2015 for the circa 6,000 UK pensions it covers. This is the largest deficit recorded since the defined benefit compensation scheme was started in April 2005.⁹

In instances, correlations between equities and bonds have also risen and, at times of stress, the two asset classes have behaved very similarly to each other, leaving some usually well-diversified investors with no place to hide. This was the case in the 'Taper Tantrum' during the summer of 2013, when bond and equity prices fell alongside each other after the US Federal Reserve announced on 22 May that it would begin to rein in its quantitative easing. The historically low returns offered on 'safe-haven' government bonds may mean that these assets could fail to provide the portfolio protection they have exhibited during market shocks in the past.

'TAPER TANTRUM', 2013



Source: Bloomberg, as at 25 June 2013, indices rebased to 100, as at 22 May 2013. Global equities: MSCI TR Net World Index GBP; global bonds: JPM Global Aggregate Bond Index - Total Return Unhedged GBP.

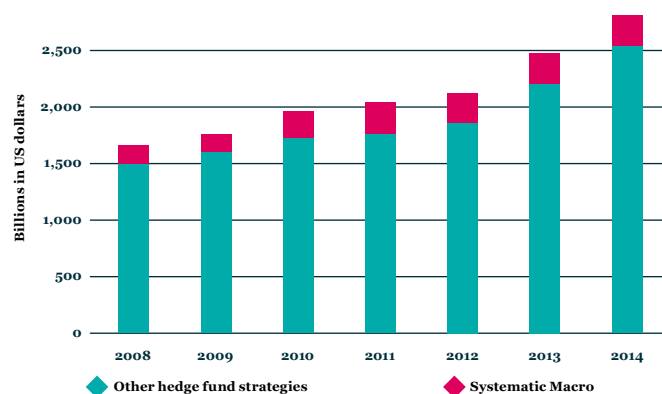
THE RISE OF ALTERNATIVES

It is little surprise, then, that pension schemes are looking increasingly outside of their traditional allocations in equities and bonds to find investments that can help provide diversification and the consistent, risk-adjusted returns necessary to ensure sufficient funding to pay member benefits.

A study published in February 2015 showed that average allocations to alternatives in UK pension funds have more than doubled since 2008, from 7% to 15%.¹⁰ This is a trend that can be seen around the world with alternative investments now accounting for around 25% of portfolios on average in the seven largest pension markets, according to the same study.

Within alternatives, assets managed by hedge funds have risen by over 70% since 2008 to end 2014 at around US\$2.8 trillion, while assets managed within systematic macro strategies have increased by 80% in this time to comprise around US\$300 billion of the hedge fund total.¹¹

HEDGE FUND AND SYSTEMATIC MACRO ASSETS UNDER MANAGEMENT



Source: BarclayHedge, as at 31 December 2014, the hedge fund total excludes funds of hedge funds but includes managed futures funds, which BarclayHedge classifies separately.

⁹ The Pension Protection Fund, PPF 7800 Index, as at 31 October 2015.

¹⁰ Towers Watson, *Global Pensions Asset Study*, February 2014 and 2015; asset allocation data as at 31 December 2008 and 2014.

¹¹ BarclayHedge, an alternative investments database; the hedge fund total excludes funds of hedge funds but includes managed futures funds, which BarclayHedge classifies separately.

Given the strong performance of systematic macro over the past two decades, the rapid growth in assets under management is understandable and – while there is no guarantee that these outstanding returns will persist – there are a number of reasons as to why a pension fund portfolio should consider an allocation to the strategy.

ENHANCING PENSION FUND RETURNS

Systematic macro, due to its dynamic allocation of risk, has the potential to enhance the performance of traditional pension fund portfolios; especially those with fixed allocations across the asset classes.

A study carried out by Winton Capital Management provides evidence for this by showing that if the average UK pension fund had allocated just 5% of its assets to their flagship systematic macro fund between its launch in October 1997 and the end of 2014, it would have achieved higher annualised returns, lower volatility and a smaller maximum drawdown.¹²

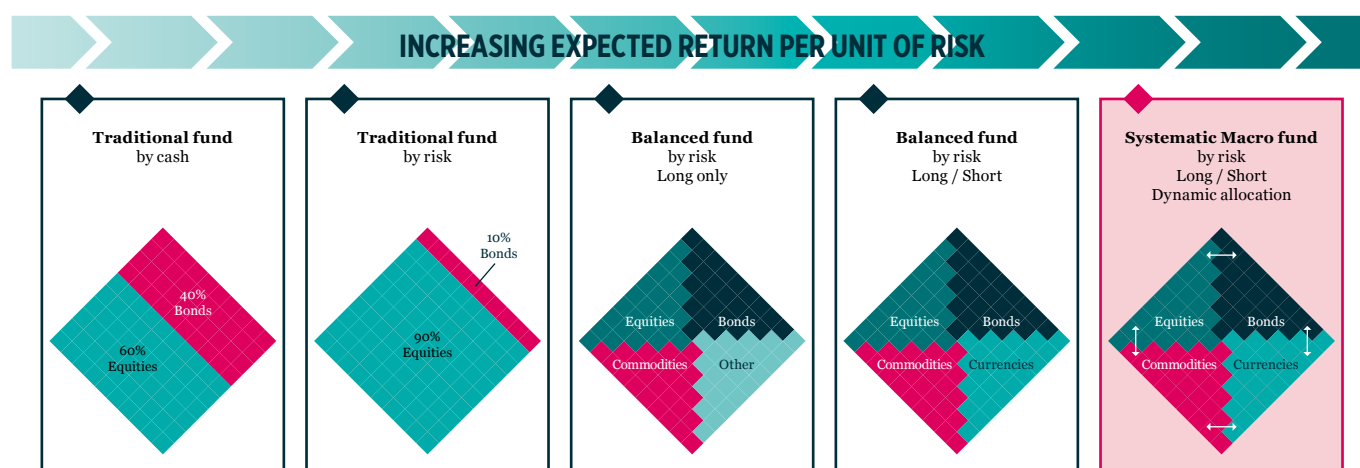
PERFORMANCE OF AN AVERAGE UK PENSION FUND WITHOUT AND WITH AN ALLOCATION TO A SYSTEMATIC MACRO FUND, 1997 TO 2014

	Annualised returns	Annualised volatility	Maximum drawdown
Without	6.2%	8.7%	41%
With 5%	6.7%	8.3%	37%
With 10%	7.2%	8.0%	32%
With 20%	8.2%	7.7%	29%

Source: Winton Capital Management, as at 31 December 2014. Example systematic macro fund: Winton Futures Fund GBP share class, launched in October 1997.

Interestingly, Winton attributes part of this performance enhancement to the systematic macro fund acting as a ‘dynamic asset allocation overlay’, shifting the pension fund asset class allocations higher or lower depending on whether the systematic macro fund is long (buying) or short (selling) the asset class overall.

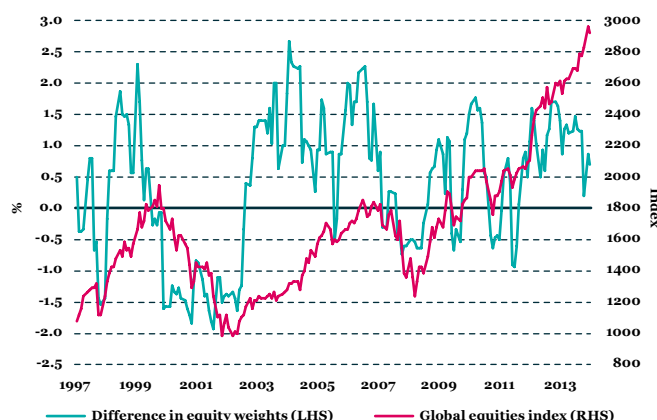
MODERN PORTFOLIO THEORY



¹² Winton Capital Management, *Performance of UK Pension Funds Enhanced with an Asset Allocation Overlay*, October 2015. The average UK pension fund used is based on the annual holdings of equities, bonds, cash and alternative investments for self-administered pension funds, shown in the UK Office for National Statistics MQ5 reports, and is assumed to have rebalanced annually at year end.

Taking equities as an example, the chart below suggests this 'dynamic allocation' would have added value as the systematic macro fund often increased the overall pension fund allocation when global equities were rising, while reducing exposure when markets were falling. This, in part, also explains the smaller maximum drawdowns shown in the previous table.

DIFFERENCE IN EQUITY WEIGHT OF AVERAGE UK PENSION FUND WITH AND WITHOUT 5% ALLOCATION TO SYSTEMATIC MACRO



Source: Winton Capital Management, as at 31 December 2014. Example systematic macro fund: Winton Futures Fund GBP share class; Global Equities: MSCI TR Net World GBP.

ADDED DIVERSIFICATION

The ability to buy or sell asset classes short, as well as investing across hundreds of futures markets from cocoa to crude oil, means that systematic macro funds tend to perform very differently to traditional asset classes in the long run.

We can examine this by looking at correlations between systematic macro funds and other asset classes. A correlation of +1 (-1) suggests that the two assets compared perform in an identical (opposite) manner, whereas a correlation of 0 indicates that there is no linear relationship between their returns.

As the charts to the right show, while systematic macro returns have been similar to equities and bonds at times, they have been very different overall in the long run. This implies that holding a systematic macro fund, alongside investments

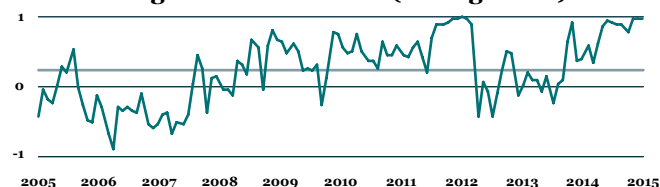
in these asset classes, could provide a pension fund portfolio with long-term diversification benefits, potentially providing higher returns with lower levels of volatility.

ROLLING 6-MONTH SYSTEMATIC MACRO CORRELATIONS OVER THE PAST 10 YEARS

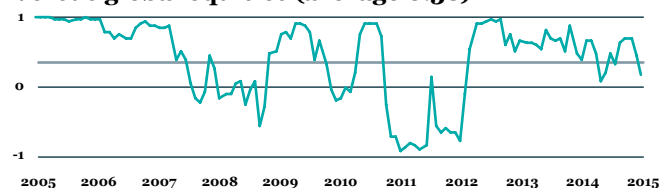
Versus UK equities (average 0.25)



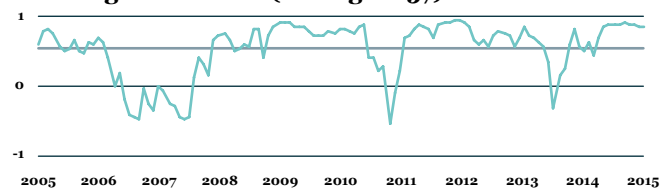
Versus UK government bonds (average 0.26)



Versus global equities (average 0.38)



Versus global bonds (average 0.57)



Source: Bloomberg and Winton Capital Management Limited, as at 31 December 2015, using data from 30 June 2005. Systematic macro: HFRI Macro: Systematic Diversified Index, converted to GBP; UK equities: MSCI TR Net UK; global equities: MSCI TR Net World GBP; UK government bonds: Bloomberg/EFFAS Bond Indices UK Govt All > 1 Yr TR; global bonds: JPM Global Aggregate Bond Index - Total Return Unhedged GBP.

CAPABLE OF MAKING MONEY IN FALLING MARKETS

Another important factor is that due to their ability to sell futures contracts on assets, systematic macro funds can profit in falling markets; this, in turn, means that they are not dependent on rising asset prices.

During the Global Financial Crisis, for example, global stockmarkets fell 33.4% between 31 October 2007 and 28 February 2009, whereas systematic macro funds rose by 64.5%.¹³ More in-depth analysis from NEPC, a US investment consultant, shows that systematic macro has delivered positive returns after a further eight large 'market dislocations' over the past 30 years, including Black Friday, the Iraqi invasion of Kuwait, the Russian default/Long-Term Capital Management crisis and 9/11.¹⁴

In fact, unlike many traditional investment products, the objective of systematic macro funds is usually to generate positive returns over the long term, rather than outperformance of a stated benchmark. Hence their objective is more aligned with pension fund liabilities which do not rise and fall depending on the performance of a stock market or bond index.

A HIGHLY LIQUID INVESTMENT

Alternative investments such as commercial property or private equity, or even some of the bigger mainstream bond funds that invest in company debt, can be highly illiquid; that is, investments can be expensive or difficult to buy and sell. Systematic macro funds, on the other hand, mostly invest in major markets through futures contracts, which means that positions can be opened or closed with relative ease. Not only does this bring down underlying trading costs, but it also means an investment in a systematic macro fund can be invested or redeemed quickly, usually on a monthly or quarterly basis and sometimes even weekly.¹⁵

This can be particularly important during times of stress. In the aftermath of the Global Financial Crisis, for example, a number of property funds suspended dealing.¹⁶ As a matter of course, some private equity funds 'lock in' investors for multiple years, given the long-term nature of their underlying investments. Overall, this can impose unwanted restrictions and hinder portfolio rebalancing or redemptions required to meet liabilities.

AN ALTERNATIVE TO THE ECONOMIC ORTHODOXY

Finally, perhaps the most distinguishing feature of systematic macro is that, according to traditional economic theories, many of its underlying investment strategies should not work. Economic theory often argues that it is impossible to deliver better returns for a certain level risk with active investment management as asset prices already reflect all available information; higher returns are only achieved by taking on higher levels of risk. This philosophy, which underpins many modern investment approaches, in part explains the proliferation of index-tracking products in recent years.

Rather than using deductive reasoning from economic 'truths', systematic macro funds look to empirical evidence from which they can make statistical inferences. It is for this reason that their investment strategies tend to be rooted in mathematics and the scientific method rather than financial theory; the long-term success of strategies such as trend following demonstrates that such an approach can be highly successful. As a result, adding a systematic macro fund to a pension portfolio may add a counterview and a fundamentally different approach to other investments held within the portfolio.

¹³ Bloomberg; Systematic Macro: HFRI Macro: Systematic Diversified Index; Global Equities, converted to GBP: MSCI TR Net World GBP.

¹⁴ NEPC, *Demystifying Systematic Macro Hedge Fund Strategies*, October 2014.

¹⁵ Analysis from JP Morgan showed systematic macro to be the most liquid style of hedge fund while offering investors the lowest 'lock-in' terms: JP Morgan, *2015 Hedge Fund Terms Analysis*, December 2014.

¹⁶ Indirect Property Funds Group, *Lessons for property funds following the crisis*, May 2011.

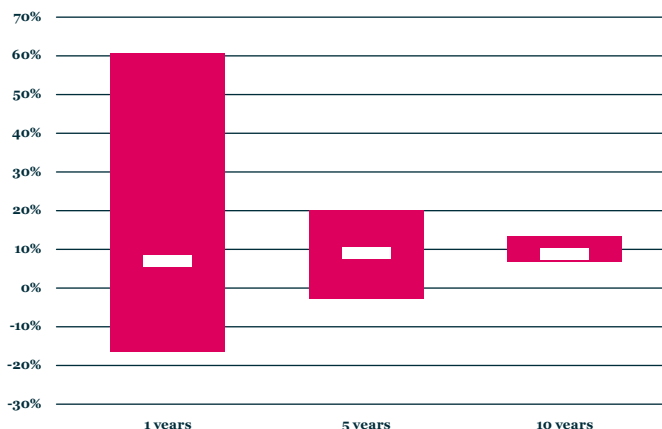
6 CONSIDERATIONS FOR A PENSION FUND

WHILE THE PREVIOUS SECTION HIGHLIGHTS THE MANY BENEFITS OF ADDING SYSTEMATIC MACRO TO A PENSION FUND PORTFOLIO, AN ALLOCATION IS CLEARLY NOT SUITABLE FOR EVERY INVESTOR.

There are a number of points that pension trustees should consider before deciding whether systematic macro is an appropriate investment for their scheme:

1. Systematic macro is very much a long-term investment; the shorter the holding period, the more probable an investor will experience a loss. As the below chart illustrates, the number of rolling periods an investor would have lost money and the variance of returns dramatically falls as the investment horizon increases; in every 10-year rolling period over the past 20 years, the systematic macro index has delivered positive returns. There is no guarantee that this strong performance will persist.

BEST, MEDIUM AND WORST SYSTEMATIC MACRO RETURNS IN A 1-YEAR, 5-YEAR AND 10-YEAR ROLLING PERIOD OVER THE PAST 20 YEARS



Source: Bloomberg, as at 31 December 2015. Systematic macro: HFRI Macro: Systematic Diversified Index, converted to GBP.

In addition, systematic macro funds can behave very similarly to equities and bonds in the short run – as we demonstrated with the correlation charts in the previous section – which could leave an investor heavily exposed to short-term movements in markets.

2. Predicting future systematic macro returns is also very difficult so it is not appropriate for pension schemes attempting to “time the market” or those making tactical allocations – that is, positioning away from a pension fund’s long-term allocations in an attempt to benefit from shorter-term market conditions.

Indeed, research carried out by Winton Capital suggests that there is no significant link between trend-following returns in adjacent years; thus 2015’s performance gives little clue to how these funds will perform in 2016.¹⁷

3. Systematic macro comes at a cost. The research, infrastructure and technical expertise required to operate such a fund can be expensive compared to traditional asset classes; especially those that can be invested in via passive, index-tracking products. A thorough cost-benefit analysis by trustees is therefore essential for understanding the value such a strategy can add to a wider portfolio.

¹⁷ Winton Capital Management, *Autocorrelation of trend-following returns: illusion and reality*, June 2015.

7

THE CASE FOR SYSTEMATIC MACRO

THROUGHOUT THIS GUIDE, WE HAVE SOUGHT TO EXPLAIN WHAT SYSTEMATIC MACRO IS, HOW IT WORKS, HOW IT HAS PERFORMED, HOW AN ALLOCATION COULD BE BENEFICIAL TO A PENSION SCHEME'S WIDER PORTFOLIO AND WHAT TO CONSIDER WHEN INVESTING IN SUCH A FUND.

While systematic macro can appear complex at first glance, many of the concepts that underpin it are intuitive and, in our view, it is well worth the effort taking the time to understand as it has a lot to offer the typical pension portfolio. The most notable benefits we have discussed in this guide are listed below.

- ▶ Performance enhancement – systematic macro has delivered:
 - Strong risk-adjusted returns;
 - Smaller drawdowns; and
 - Compelling long-term performance.

- ▶ Additional diversification – systematic macro:

- Invests in a vast and diverse investable multi-asset universe;
- Employs an 'alternative' investment approach; and
- Has shown to have low correlations with traditional asset classes in the long run.

All in all, systematic macro is becoming an increasingly important part of many institutional portfolios. We believe it offers a compelling and complementary investment opportunity for UK pension schemes.

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