

KeyQuant – Key Trends Program



Raphael Gelrubin and Robert Baguenault de Viéville

It has been a long road travelled by quants Raphael Gelrubin and Robert Baguenault de Viéville since they first met in Paris as analysts working at a subsidiary of Man Investments (Man-Fidex) in January 2004. The two cofounders and PMs of KeyQuant turned a research project that they worked on jointly into a reality with the launch of the Key Trends program on January 8, 2010. Since inception (thru June 30, 2012), the Key Trends program has produced annualized returns of 17.03%, with 18.9% annualized volatility, and AUM of \$54 million. Most investors who have spent some time with the PMs would agree that KeyQuant brings an innovative and unique approach to the diversified systematic medium to long-term trend-following universe.

Key Principals

Baguenault de Viéville earned his graduate degree in aeronautical engineering at ESTACA (France) and his Masters degree in international finance from well-known HEC in Paris (in 2002). Raphael Gelrubin earned his undergraduate degree from Université Paris Dauphine in math, finance, and economics, and

graduated from France's top statistics university, ENSAE (in 2004). Baguenault de Viéville and Gelrubin met in 2004 when they were both hired as quant analysts by Man-Fidex in Paris. At Man-Fidex, they were tasked to improve the risk return profile of a trading program. During this period, they frequently discussed their philosophy on market behaviour and how they might construct their own trading model. They also concluded that there are some basic rules that should always be followed, rules that are very much embedded in their trading philosophy. Says Baguenault, "At Man-Fidex, we learned that one should never make changes to a trading system during a drawdown, lest it risk curve-fitting your system to yesterday's performance." Gelrubin adds, "We perform all of our research on paper; we do not throw 100 or 1000 different algorithms into the back-tester to see which one results with the highest Sharpe ratio. This system was designed and built from scratch."

Portfolio Construction

Early in their discussions, Baguenault and Gelrubin agreed that economic trends are the principal

At a Glance:

Key Trends Program

Strategy Assets: \$54 million
No. of Employees: 3

Account Information

Minimum Investment: \$100,000
Management Fee: 2.0%
Incentive Fee: 20%

Performance Analysis

Start Date: January 2010
Total Return: 48.1%
Compound Annual Return: 17.03%
Worst Drawdown: 13.12%
Sharpe Ratio: 0.90
% of Winning Months: 53.33%
Average gain: 6.00%
% of Losing Months: 46.67%
Average loss: -3.72%

Correlations

Barclay CTA Index +0.74
S&P 500: +0.29
U.S. T-Bonds: -0.02
World Bonds: +0.19
EAFE: +0.36

Annual Returns Past 3 Years

2010 43.83%
2011 9.08%
2012 (thru 6/30) -5.56%

Past results are not necessarily indicative of future performance.

market drivers, and that typically these trends are stable over a medium to long-term time frame. They concluded that not all investors are interested in the same thing at the same time, even if they have the same information, and that as a macroeconomic scenario emerges, more and more investors join the theme. They also decided to define a medium-term time frame as being approximately equal to three months and a long-term time frame to about one year. The Key Trends program is

100% systematic, and the PMs are adamant about remaining so in order to avoid human emotion impacting tomorrow's performance, especially during stressed markets. The PMs believe that simple is beautiful, and they have shied away from customizing a system by market. Instead, they have built a model which is applied in the same fashion to each market, whether it be corn, gold, the S&P 500 index, crude oil, or the 30-year T-Bond. Baguenault believes portfolio management rules should never be deduced from observations of the model, since this would be curve fitting; instead, system tools should be created to meet expectations, and their parameters defined in advance. It is for this reason that the Key Trends program uses only two tools for analyzing trends.

During the design stage, the PMs asked each other: What is a trend? Baguenault thought that one way to characterise a trend was to draw a line through a price chart, or otherwise said, regressing the price over time to find the best fit over a period of weeks, months, or even several years. The two cofounders agreed that the first tool, regressing price over time, made complete sense for a trend-following system. However, there was an inherent bias of time underlying this system. In addition, the regression tool was highly exposed to drawdowns during sharp market reversals. Gelrubin said that they therefore decided to implement a second tool which did not have an underlying time bias, and thus they came up with the non-time based investor sentiment system to estimate the quality of trends. The great thing about this tool is that it complements the regression-based tool very well. Then came the question of how they would aggregate the signals coming from these two tools. Baguenault added, "We believe that markets do not have binary behaviour (long, neutral, short), but rather continuous. Therefore we sought to create a predictive distribution function of each market. Moreover, this

tool gives us precise information on the levels of normal risk and extreme risk." Baguenault and Gelrubin designed something similar to a distribution function, which serves as the backbone of the Key Trends program. Each of the signals take a turn at "reshaping" the distribution function of each market. The reshaped distribution function calculates the three items which are essential for the initial position-taking size: expected return, normal risk, and extreme risk.

The second step of the portfolio construction process involves estimating the correlation that each market position has to the global portfolio. Positions with high levels of correlation are reduced, and positions with a low correlation to the global portfolio are increased. This is an essential step in the portfolio construction process to ensure that investor capital remains invested in a diversified manner. The final step is unique. The PMs go on to explain that they believe in dynamically adjusting the targeted risk of the global portfolio. They believe that in certain market conditions, one or more economic themes will be driving markets in a stable pattern, and this is when they would like to take higher than average risk at the portfolio level. Conversely, they may also observe market regimes when economic themes are diverging or causing markets to become more volatile, thus suggesting they should drive the global portfolio to take lower than average risk. They finally came up with the answer in 2009. The PMs call it the Global Economic Factor ("GEF"), and it measures the quality of global trends. More often than not, the global risk is increased ahead of a run-up, and in other cases the global risk is decreased ahead of the impending drawdown. The level of the GEF drives the total risk of the portfolio, thus adjusting the targeted volatility on a daily basis. This has helped increase the net asset value ("NAV") during trending markets and has helped protect gains in chop-

py markets or reversals. The PMs believe that the positions taken by the program have no impact on markets and so there are no stop loss triggers built into their system. They do not want to change the level of risk based on the NAV of the program. Using the GEF, the PMs look for moments when their strategy has the best chance to perform, and in these times the portfolio's global risk is increased. During the riskier phases (early trend reversal of certain markets and risk of contagion to other markets), the portfolio's global risk exposure is reduced. In effect, the GEF replaces the investors' task of having to change their allocations to a trend-following CTA following either a run-up or drawdown.

Baguenault and Gelrubin believe that versus their peer group, their edge is the continuous view of the markets, having the same tools for every market, and using the GEF to dynamically change the global risk of the portfolio.

Peer Group Comparison

In order to better understand whether KeyQuant's approach to portfolio construction and the use of its proprietary Global Economic Factor analysis protocols have demonstrated a measurable edge vis-à-vis the competition, we've run a comparison of KeyQuant's risk-adjusted returns relative to the averages generated by its peer group. Figure 1 (see page 20) compares the rolling 12-month risk-adjusted returns for KeyQuant's Key Trends Program with the average values for a universe of 525 CTA programs that apply a systematic approach to the trading of a diversified portfolio of futures markets. The time period under consideration was from January 2010 through June 2012. Risk-adjusted returns are calculated by dividing the 12-month rolling average of the monthly returns by the 12-month rolling average of the standard deviation.

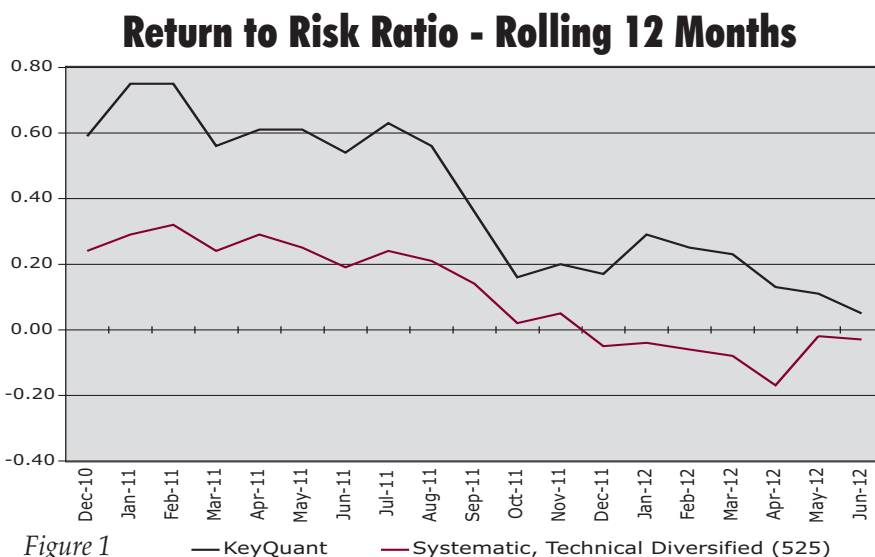
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During this period, KeyQuant has consistently outperformed the risk-adjusted return averages for its relevant subgroup in 100% of the rolling 12-month time-periods. It appears that KeyQuant's approach to portfolio construction has proven to be beneficial to its investors.

The Key Trends program currently trades in 50 diversified markets: rates, bonds, indices, commodities, and currencies. The model is currently run once per day, and trading is done over a one hour period. Later this year, the PMs will implement a more dynamic trading system. Rather than sampling and trading only once per day, the Key Trends program will trade (based on local exchange hours) every 1-2 hours. This adjustment will change neither the trading frequency nor the risk return profile of the program, but it will lessen the footprint, increase capacity, and smooth the signals. Key Trends currently clears and executes with three brokers; trading is 100% systematic, and orders are placed through brokers to the marketplace via the FIX protocol. The PMs observed a noticeable improvement in reduced slippage costs after they started trading via FIX in late 2010.

Future Plans

Looking ahead to the not too distant future, KeyQuant has two major



avenues of research. The first concerns the perception of extreme risk of the portfolio. Thanks to the distribution function, the PMs believe that they already have a fairly accurate perception of extreme risk for each market, but there remains room for improvement in the perception of extreme risk at the portfolio level. While researching this problem, they have come to realize that the traditional tools of risk analysis (volatility, VaR, & CVaR) have serious flaws. The PMs are now tasked to rethink which risk tools can be of use. This study could potentially lead to a "GEF by market" and/or a predictive study of extreme movements in the

portfolio. Their second line of research concerns the execution of orders – they are currently working on an algorithm for mapping and analyzing intraday volumes to ensure a minimal impact of their orders in the marketplace. On the business side, KeyQuant plans on increasing headcount and using an industrial approach for the day-to-day management of its business. In the future, the PMs plan on developing a "job center" which will automate as many tasks as possible, allowing their associates to focus on subjects with higher added value. ♦