Interview with Kyo Yamamoto, Fund Manager at GCI Systematic Macro Fund

Launched on 1 July 2014, GCI Systematic Macro Fund has delivered triple-digit return as of the end of February 2015. Taking into account the performance of the managed account which employs the same strategy was started on 3 February in the same year, it has attained 167% as of the end of February 2015.

This strategy is fully quant model-based, and dynamically takes long/short positions on liquid FX and listed financial futures around the globe. The in-house developed dynamic portfolio model enables to limit the downside risk without sacrificing the return. The model has a strong theoretical background, which is published as an academic research article: Akihiko Takahashi and Kyo Yamamoto (2013) “Generating a Target Payoff Distribution with the Cheapest Dynamic Portfolio: An Application to Hedge Fund Replication,” Quantitative Finance, 13(10), pp. 1559-1573.

Kyo Yamamoto, one of the authors of the paper, is managing this fund after finishing a Ph.D. course of the graduate school of economics at the University of Tokyo and experiencing some years practice in alternative investment industry. The fund is designed to achieve stable absolute return by applying their theoretical framework to actual global financial market.

1. **GCI Systematic Macro Fund** invests in various financial instruments around the globe, utilising an absolute return strategy that boasts low correlation to traditional asset classes. Please give us a brief introduction to your fund and tell us about your investment objectives.

   Our investment objective is delivering high absolute return with limited downside risk. Moreover, by employing a dynamic long/short trading strategy, the strategy generates low correlation with traditional asset classes, which is also attractive to investors. Other advantages are liquidity and cash efficiency. Because this strategy trades only liquid FX and listed financial futures, the fund offers daily liquidity and requires less cash. The target annual volatility is set to 25% for investors to enjoy this strategy with small amount of cash.

   This strategy is pursuing profit from big price movements in global financial markets, which are mainly caused by macro events. It does not only identify clear market trends but also detects hidden alpha opportunities via cross-asset combinations. This strategy is fully model-based and systematic. Our in-house developed dynamic portfolio model derives the optimal portfolio after analysing historical and real-time financial market data.

2. **Could you provide us with more of your and an overview of your distinguished research which forms the backbone of your investment strategy?**

   After majoring in mathematics at undergraduate school, I received my Ph.D. from the finance course in the graduate school of economics at the University of Tokyo. While researching at the graduate school, I interned at GCI Asset Management, Inc. Tackling practical problems there, I developed several useful models and carried out a lot of empirical analysis. My research motivation was to develop innovative models which are useful in the practice of alternative investment. Both a strong mathematical background and empirical studying skill are the backbone of my investment research.

   The model utilised in this strategy is essentially based on my research paper mentioned earlier. In the paper, we presented a new dynamic portfolio model and showed its usefulness in the context of hedge fund replication. The most important point is that the model describes multiple asset dynamics simultaneously and gives the optimal dynamic portfolio strategy explicitly. The multiple asset modelling successfully made the strategy record outstanding performance in practice.

3. **Your strategy has delivered spectacular 2014 returns of 129.3% since it started trading in February the same year. What macroeconomic factors do you think were most directly responsible for your success? Has the strategy been performing up to your expectations as compared to its simulated results?**

   There were several big macro events in 2014. QQE2 was carried out in Japan and similar expectations rose in Europe. Government bonds in those regions strongly rallied. On the other hand, in the US, the Federal Reserve ended its QE program, and market participants’ interests moved to the timing of interest rate hike. Reacting to these financial policies, FX rates also showed big trends. These big price movements directly contributed to our return. Although it is
not often that such a high return was realised in one year in our simulation, it is not an odd figure considering the fact that such many macro events occurred in one year.

4. **GCI Systematic Macro Fund has attained an impressive risk-adjusted Sortino ratio around 34 after the start of trading. Including the historical simulation from 2002, the Sortino ratio is estimated to be 7.5. How are you able to keep your downside risks so low without sacrificing return?**

Our portfolio comes to be composed of profit making positions and hedging positions. Once a position is taken to pursue profit, another position always plays a role to hedge its downside risk. Adding hedging positions cost-efficiently, the downside risk of the portfolio can be greatly reduced. By holding hedging positions consistently, we can maximize the profit making positions, which enables us to attain high returns.

5. **Could you share with our readers some information on the main sources of alpha generation for your fund? One of the more unique points about your fund is the usage of cross-asset combinations to uncover hidden trends in the financial markets. How do you identify these trends ex-ante?**

We analyse not only the dynamics of single asset but also those of the combinations of multiple assets across global financial markets. There are infinitely numerous patterns to combine those instruments, which expand our alpha opportunities. In the post-Lehman crisis period, it was very difficult to find trends in each single asset as every single asset repeatedly rallied and declined. Such a market condition made it difficult for many model-based strategies to make profits. However, if we had analysed multiple asset combinations carefully, we should have found some alpha opportunities.

For example, financial easing policies were carried out globally on a massive scale. Although stock and bond prices fluctuated individually, the portfolio of long both these two asset classes performed so well with low volatility. Such policies are continued or further policies are being carried out in Japan and European regions, although Fed is now going to exit financial easing policy in the US. The trend of financial easing policy has been continuing so long after Lehman crisis. Our high return in 2014 is also considered to stem from such a big trend in financial policy. We identify such hidden trends in financial markets through combining multiple assets efficiently.

6. **Please tell us more about the features of your dynamic portfolio model and its strengths. What is the theoretical background behind the minimum cost dynamic portfolio and how do you apply it in your portfolio? And how in particular does your model accommodate black swan events such as the recent Swiss franc appreciation?**

First of all, we describe the dynamics of multiple assets simultaneously. The multi-asset model enables to analyse not only the characteristics of each single asset but also relative relationships between them such as correlations, momentum, and so on. This helps us to find hidden trends like the example above and efficient hedging instruments against profit making positions.

The theoretical background behind the minimum cost dynamic portfolio is as follows. The dynamic portfolio theory, developed in our research paper, derived an explicit formula to attain a target payoff distribution with minimum cost. The model works for option-like asymmetric payoffs against a risky asset as well. Black-Scholes framework derives the dynamic trading strategy to replicate option on a risky asset. The important point is that the risky asset they trade is only the underlying asset. Under an ideal condition, there is only one dynamic trading strategy which can replicate the option payoff completely. Once no-arbitrage condition is assumed, the option price is determined to be equal to the cost of the dynamic replicating strategy. Because only one dynamic replicating strategy exists, the option price is uniquely determined.

We expand the trading instruments to multiple assets and consider a payoff distribution on a risky asset. When we can trade multiple instruments, there are infinitely many dynamic portfolio strategies which attain the target payoff distribution. We propose to choose the cheapest one among them. In the paper, we proved the cost minimisation problem is equal to an expected utility maximisation problem. In other words, the cost minimisation gets to the same destination as the classical utility-based portfolio optimisation theory developed by Markowitz, Merton, and so on. To my knowledge, our dynamic portfolio theory is the first theory to replicate a target payoff distribution with multiple assets.
Expanding to multiple instruments allows us to reduce replicating cost. According to our research result, we can reduce the cost to replicate option-like asymmetric payoff by the same logic as the Markowitz portfolio diversification can maximise the return-to-risk ratio. GCI Systematic Macro Fund is just one example of the applications of this theory. GCI Asset Management, Inc. also provides risk hedging strategies such as FX risk hedge and equity downside risk hedge by utilising the same model. My career as a fund manager started with the FX hedging program, which is still provided to Japanese investors such as pension funds. By utilising the same theoretical framework, we launched GCI Systematic Macro Fund to deliver an absolute return opportunity to various investors.

The portfolio of GCI Systematic Macro Fund is composed of profit making positions and hedge positions. The dynamic portfolio modes finds cost efficient hedging instruments and hedge ratios, and comes up with the most efficient portfolio which can maximise the risk adjusted return. As we aim to make profits from macro events, we consider black swan events as great alpha opportunities in most cases. In our simulation, our strategy successfully monetised the Lehman crisis and Greek shock. Generally speaking, our strategy can make huge profit from such events which generate big market trends.

As for the Swiss Franc event, we did not have any position on Swiss Franc in January due to a statistical issue called ‘multicollinearity’. The FX rates of Swiss Franc and Euro against the US dollar had shown very high correlation. Then, the confidence of statistical analysis including these two currencies comes to be very low. Therefore, Swiss Franc was screened out from our portfolio. Right usage of statistical methods helped us to avoid such black swan events. We also carried out a test to check what would have happened if we had missed the statistical issue and taken a position on the Swiss Franc. Our model gave a signal to take long position on Swiss Franc. If we had taken the position, our fund could have attained a much higher return, but I would have to say that it was accidental. I believe quant managers should recognise the limit of statistical method and use those methods properly.

7. Which instruments do you use to construct your investment portfolio and what is your portfolio comprised of at any one point of time? How does the liquidity and cash efficiency of your investments affect your investors?

As we trade only liquid FX and listed futures, we can take or adjust positions easily. Therefore, the fund provides daily liquidity. Furthermore, only margin is required to take positions on those instruments, which enables us to maximise the investment. Therefore, we do not need cash so much to take exposures. The fund provides investment opportunities with a small amount of cash. As a result, our target volatility is 25%, which is relatively high compared to other hedge funds.

Our portfolio is comprised of long/short positions on currencies, interest rate/bond futures, and equity index futures. The total number of our positions would be from 10 to 15 in order to maximise portfolio diversification effect. Because risk is well-diversified, the performance should not substantially depend on temporal market participants' sentiment like risk on/off and outcomes of economic statistics such as non-farm payrolls. As a result, although our target volatility is relatively high, our return distribution is skewed to the upside.

For example, in the last half of 2014, we took US dollar long position to make profits from the US dollar appreciation. At the same time, we took long positions on bonds and equities with global diversification. If a result of non-farm payrolls in the US is better than consensus, we incur losses from bond long positions while we make profit from US dollar long position. Furthermore, we are holding both bonds and equities; our performance does not crucially fluctuate with temporally changeable market participants' sentiments.

8. Could you share with us your major tenets for risk management? How do you create an asymmetric payoff structure by engineering your exposures and hedging your risks to construct option-like payoffs without the use of options?

Our approach to risk management is composed of two factors: dynamic trading strategy and portfolio diversification. The Black-Scholes theory proved that an asymmetric payoff structure can be created through a dynamic trading strategy on a single risky asset. It is not difficult to create option-like payoff itself. The important point is the cost of the dynamic trading strategy. To create such a payoff structure, cost equivalent to option premium is necessary. We trade multiple instruments to reduce the cost of the dynamic trading strategy. Theoretically speaking, the portfolio diversification effect helps to reduce the cost. Our dynamic portfolio model derives the cheapest dynamic portfolio. From a practical point of view, we are holding hedging positions consistently against profit making positions. There is another major approach to risk management: stop loss rule on each single risky asset. Summing up such loss cuts, the
loss would be so substantial. To avoid the cost of accumulated loss cuts, we have introduced the dynamic portfolio approach.

9. **Your fund is one of the few rare systematic macro hedge funds running out of Japan where the vast majority of funds are generally long/short equity. What kind of investor interest have you seen in your offering so far? How conducive have you found the capital raising environment for your fund?**

The fund was seeded by Japanese pension funds. We have had inquiries from funds of hedge funds and family offices that identified our fund on the database including Eurekahedge.

As I have mentioned, we also provide risk hedging strategies such as FX risk hedge and equity downside risk hedge by utilising the same model and mandates, for these strategies are increasing among Japanese pension funds. Also, we have been seeing interests from exporting companies in order to hedge their currency exposures.

10. **Lastly, please share with our readers your outlook for the future of macro oriented strategies, in particular against the backdrop of increasing market volatility. What are some of the key trends in FX and bond markets which you anticipate will drive the returns for systematic hedge fund strategies in 2015?**

I expect that there will be numerous macro events in 2015 too. An interest rate hike in the US will be executed, and a QE program in Europe started this month. The next step of financial policy in Japan will also be focused. Global financial markets would probably react to these events and there would be investment opportunities for macro oriented strategies, though they might incur some loss at the turning point of the market. I am considering that money flow would also give some positive effect. Outflows after the slump of these strategies should have given significant negative effect to their performance. Seeing the strong recovery in 2014, inflows can be expected, which should be positive for the performance of these funds.

**Contact Details**

Yuko Oka  
Senior Manager  
GCI Asset Management, Inc.  
+813-3556-5540  
info@gci.jp  
www.gci.jp