AKAMAI Capital, LLC

Risk Management Policy

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I. Introduction

The purpose of this paper is to outline the following:

- Risk management philosophy
- Return goals and risk tolerance
- Definitions of various sources of risks
- Risk management policies and procedures
- Risk measurements and their limitations (Appendix I)

This paper should also serve to underscore our commitment to place priority emphasis on risk management, with an eye towards generating attractive long-term returns within an appropriate risk framework.

II. Philosophy

Our risk management philosophy is based on the premise that quality top-down research, independent thinking, and disciplined risk management are the core ingredients to superior investment returns. Long-term market trends in major asset classes are typically driven by macroeconomic forces, which can be identified and analyzed via a quality research process. Nevertheless, short-term market action is often driven by somewhat random capital flows and liquidity events. Consequently, effective risk management and a consistent methodology for allocating capital is needed to extract the full value of quality research and to optimize the risk/reward of our portfolio returns. Through disciplined risk management, we minimize the effects of losing trades to provide the flexibility required to increase portfolio exposures rapidly whenever market action warrants. To be in such a position, we must cut losing positions quickly and preserve capital through the disciplined use of stop-losses and a logical method of sizing positions.

III. Return Goals and Risk Tolerance

Our return and volatility goals include the following:

- Average annual returns of greater than 20% net
- Annualized volatility below 15%
- Maximum monthly losses below 6%, *in the most extreme of cases*
- Peak-to-trough drawdowns below 12%

Upon analyzing the potential affects of the additional risk controls described in this paper, we found that while average annual returns of over 20% net are achievable, it is necessary to allow for periodic monthly losses and drawdowns consistent with these goals.

IV. Sources of Risk

We identify 6 major sources of risk facing our portfolio:

- **Market Risk**: The risk of losses associated with directional market moves contrary to expectations.
- **"Greek" Risk**: The risk of losses associated with options positions, including delta, gamma, vega and theta risk.
- **Basis Risk**: The risk of losses associated with changing correlations and/or volatilities of related positions.
- **Liquidity Risk**: The risk of losses associated with liquidating positions in inopportune market environments.
- **Credit Risk**: The risk of losses associated with an unanticipated change in credit quality of investments, as well as the risk of losses associated with the default of our prime broker or OTC counterparty.
- **Operations Risk**: The risk of losses associated with inaccurate price feeds, settlement failures, trade errors, or contractual disputes.

V. Risk Policies and Procedures

In this section, we address the following key considerations:

A. Idea generation
B. Allocating capital and sizing positions
C. Stop loss methodology
D. Executing a "time-out" policy
E. Position limits and instrument restrictions
F. Liquidity considerations
G. Mitigating operations risk
H. Minimizing credit risk
I. Risk oversight

A. Idea Generation

We have taken great care to preserve the integrity of our research process. We submit that, although it is not possible to maintain an edge through better access to information, better investment ideas can be generated through the efficient processing of freely available information by those with different perspectives. This philosophy has helped AKAMAI Capital identify many of the key macro themes driving global markets in recent years, while simultaneously enabling us to think and take portfolio positions independently from our peers.

B. Allocating Capital and Sizing Positions

The two main risk measurement tools we use are Value-at-Risk (VaR) and Capital-at-Risk (CaR). Portfolio VaR is the expected maximum loss on a 1-month horizon at a 95% confidence level, which we calculate using Monte Carlo simulation. Portfolio CaR is defined as the expected total loss that would result if every position in our portfolio were instantaneously stopped out, *assuming that no action is taken to mitigate risk as losses are incurred*.

In this section we will focus on VaR limits because it is an industry-standard term that most readers can easily understand. Nevertheless, we maintain that CaR is a more useful tool with which to allocate capital and size positions because it assumes no diversification benefits, and hence does not have the circular argument characteristics that come with allocating capital based on a portfolio's value-at-risk. By maintaining both a VaR limit and CaR limit, we avoid the potential pitfalls related to both too much concentration and changing correlations. For example, when a portfolio appears to be well diversified, CaR limits will result in smaller positions because it assumes all trades are perfectly correlated. Alternatively, if the portfolio contains relatively concentrated risk, VaR limits will result in smaller positions because of the lower risk threshold (CaR limit is always 2x the VaR limit).

AKAMAI Capital's first step in allocating capital is to calculate our maximum monthly loss tolerance and to equate it to a VaR limit. Typically, the beginning 1-month VaR limit is 4.5% of the fund's net asset value, but is reduced in the event of year-to-date losses, drawdowns, and/or consecutive losing months.[1] We then adjust our portfolio VaR limits each day depending upon month-to-date P&L. Specifically, we allow the VaR limit to increase by 50% of any intra-month portfolio gains, but will reduce it by 100% of any intra-month losses. For example, if our beginning VaR limit is 4.5% and we are up 3% intra-month, our 1-month VaR limit will increase to 6% (4.5% + (50% x 3%)). Conversely, if our beginning VaR limit is 4.5% and we are down 2% intra-month, our 1-month VaR limit would be reduced to 2.5%.

By setting the limits on a 1-month horizon, but adjusting them daily, we can be highly confident that the stated loss tolerances will not be exceeded. To illustrate, a 1-month VaR limit of 4.5% equates to a 1-day VaR limit of about 0.96% (calculated by dividing 4.5% by the square root of 22 trading days in an average month). Statistically, the probability of losing 4.5% in a day when VaR is only 0.96% is virtually zero, as it would imply about a 7.7 sigma event (at a 95% confidence level, a 0.96% one-day loss represents a 1.65 sigma event). Nevertheless, the probability is not exactly zero due to the possibility of extraordinary circumstances that could seriously impair market

[1] Calculated as 4.5% + (min(30% * ytd P&L, 20% * consecutive monthly losses, 10% * peak-to-trough drawdown)).

liquidity. Because of this possibility, we tell our investors we can lose as much as 6% in any given month, even though we manage our risk as if 4.5% is our maximum monthly loss tolerance.

Once we calculate the VaR and CaR limits, we allocate capital to those trades that are supported both by macro fundamentals and short-term market action, as determined at weekly research meetings. Given the list of potential exposures we have identified, we effectively make each idea compete for the pre-determined amount of capital available to risk. The size of each trade that warrants exposure is determined by a subjective assessment of its short-term risk/reward and the expected volatility based on its 1-month standard deviation (trade CaR). When capital is allocated to a trade, we simultaneously set a stop-loss at its CaR so we are always aware of the precise amount of portfolio Capital-at-Risk. If a one-standard deviation move is unacceptably large to justify an attractive risk/reward, we will tighten the stop so that the maximum gain is at least 2 times the maximum loss if we are wrong.

Once the total capital has been allocated, both the portfolio VaR and the CaR must be within the prevailing limits, or else risk-reducing trades are executed as quickly as feasible. If concentration limits are exceeded, the relevant positions are reduced or removed until we are in compliance with policies (see Section E, "Position Limits"). Position sizes are then constantly adjusted, depending upon prevailing risk/reward, risk limits, and available capital to place at risk.

C. Determining and Executing Stop Losses

We experimented with several different methodologies to ensure that we could mitigate volatility without foregoing the ability to achieve strong returns before adopting the stop-loss policies explained below. Our quantitative strategist conducted a thorough analysis of several potential policies through the use of Monte Carlo simulation in an effort to optimize a stop-loss methodology consistent with our investment process. We found that adopting the following policies can minimize the losses on unprofitable trades, but allows enough flexibility to generate relatively large profits on winning trades within a reasonable framework.

Consequently, there are two types of stop-losses we have incorporated into our investment process. If either of these types of stops are triggered, our policy is to avoid the related position(s) until the beginning of the subsequent month, with no further restrictions:

- **Price-based stops** are placed on each trade, and are based on a 1-month, one standard deviation move from the beginning-of-month level (or from where the trade was initiated if it is a new trade). As a trade generates profits, the stop is reset to one standard deviation from that trade's high water mark using a "trailing stop" methodology. If a one-standard deviation move is unacceptably large, we will tighten the stop to improve the risk/ reward profile.

- **"Time-Out" Policies** are placed on the portfolio, and are based on the beginning-of-month portfolio VaR limit. If our 1-month VaR limit declines below 0% due to intra-month losses, any remaining positions will be liquidated.

Using this methodology, the probability of being stopped-out of a trade assuming no informational content (i.e. research and analysis) is approximately 33%, from a monthly one standard deviation move. We substantially reduce this probability, however, by only taking positions when both macro fundamentals and market action offer attractive risk/reward. Assuming that quality research and analysis can result in winning trades between 55%-65% of the time, the probability of getting stopped out of a trade is reduced to between 12-15%.

D. Executing a "Time-Out" Policy

"Time-Out" policies are implemented if our 1-month VaR limit declines below 0% due to intra-month portfolio losses. In practice, we adjust position sizes daily to take on the characteristics of a long option position (i.e. winning positions are generally increased as market action validates our fundamental analysis, and vice-versa). Consequently, if the portfolio sustains losses intra-month, positions are reduced accordingly until they are entirely removed. Given a normal risk tolerance, this means that if we ever incur losses of 4.5% intra-month, any remaining positions will be liquidated to ensure our monthly portfolio loss will never exceed 6%.

E. Position Limits & Instrument Restrictions

The maximum exposure for any one trade is 40% of the prevailing CaR limit. For example, under a normal risk profile when the 1-month portfolio VaR limit is 4.5% and the portfolio CaR limit is 9%, the maximum CaR per trade is 3.6% (equating to approximately 1.8% trade VaR). While oftentimes several trades exhibit relatively high historical correlations, the portfolio VaR limits act as an effective tool to limit excessive concentration when correlations are stable, and CaR limits act as an effective tool when correlations are changing.

We also have incorporated several instrument restrictions into our risk policies, including the following:

- No private placements
- No corporate bonds (though we can use ETFs or swaps that can capture broad movements in corporate credit spreads)
- No naked shorting of options
- No single equity sector exposure greater than 20% of fund equity
- No single equity greater than 5% of fund equity
- No single EMG country exposure, excluding FX, greater than 10% of fund equity
- Total EMG exposure, excluding FX, must be less than 30% of fund equity

F. Liquidity Considerations

We seek to limit the use of instruments whose liquidity may be impaired in volatile market environments. Towards this end, we generally prefer to express risk via the most liquid instruments available, but are willing to invest in other instruments if they can dramatically improve the risk/reward profile of the intended exposure. Nonetheless, we will only participate in markets where we can liquidate the entire position in a day while being less than 30% of the average daily trading volume.

G. Mitigating Operations Risk

Although operations risk can be virtually eliminated with the selection of a respected prime broker and the effective use of technology, it must also be supplemented with trained personnel and proper supervision. We discuss each of these considerations briefly below.

- **Prime Broker:** Recently, we switched our prime broker from Investment Bank A to Investment Bank B, which has resulted in significant improvements in our back-office efficiency. Superior technology, an experienced staff, and a high level of service results in fewer trade-breaks, accurate pricing, and user-friendly reports. Furthermore, by consolidating our business with a single prime broker, we have simplified the documentation process without foregoing the ability to use multiple counterparties to transact trades. We have negotiated favorable credit and margin terms in a single agreement, which has dramatically simplified the process of including additional counterparties to our list of approved dealing relationships.

- **Systems:** We have upgraded our systems to meet three major goals: (1) to simplify the process of calculating accurate NAVs; (2) to improve the accuracy of end-of-day P&L estimates; and (3) to improve the accuracy and value of our daily risk reports.

- **Trained Personnel:** The system upgrade has allowed us to reduce the amount of time needed to check trades and calculate a daily NAV. Our middle and back office personnel have been trained with the priority emphasis on attention to detail in our accounting. Our quantitative strategist has taken over all risk monitoring responsibilities.

H. Minimizing Credit Risk

Credit exposure is not a major source of risk for us, but must be considered nonetheless. Because we do not invest in corporate bonds or other credit-intensive securities, our credit risk is limited primarily to counter-party risk associated with OTC derivatives. Since we have centralized the clearing of all equities, futures, and foreign exchange at

Investment Bank B, our primary credit counterpart is the corporate parent of Investment Bank B.

Although we have not invested in emerging market debt to date, we have considered doing so and have no restrictions pursuing such strategies. If we were to invest in the sovereign debt of a non-OECD country, for risk management purposes we would classify it as if it were equity exposure that could go to zero, rather than predominantly as interest-rate risk.

I. Risk Oversight

As the primary risk manager, our quantitative strategist is responsible and accountable for maintaining the risk systems and monitoring risk exposures. Risk oversight includes the following tasks on a daily basis:

- Determining the total amount of capital that can be risked each day
- Producing and auditing daily risk reports
- Overseeing risk exposures to ensure compliance with stated policies
- Fostering discussion of risk/reward analysis
- Taking corrective action to reduce risk, if needed, to ensure compliance with risk policies.

Our quantitative strategist is authorized to reduce exposures without the consent of any other member of AKAMAI Capital, LLC if a risk management policy has been breached. This action has not been necessary to date.

VI. Conclusion

While our core investment process has not changed, the additional risk controls described in this paper relating to position sizes and stop-losses has dramatically reduced our volatility without foregoing the 20%+ returns we are seeking to achieve.

Appendix I: Risk Measurement Tools

P&L Risk

P&L Risk is the estimated loss that would be incurred if every position were stopped out simultaneously, assuming no action is taken as losses are incurred. This amount is always lower than the measured CaR because some position stop-losses are reduced to within a 1-standard deviation move that determines all CaR calculations.

Capital-at-Risk (CaR)

Portfolio Capital-at-Risk (CaR) measures the total loss that would be incurred if every trade moved one standard-deviation against us from its high-water mark, over a 1-month horizon, without any action being taken in the interim.

Value-at-Risk (VaR)

We calculate value-at-risk (VaR) for both the portfolio and for each trade. Using Bloomberg Algorithmics, we evaluate the likely maximum loss over a 1-month horizon at a 95% confidence level. The model that we use is derived from Monte Carlo simulation, using 1000 random iterations of 1-year historical data. We include a data decay factor of .94 so that recent data is given a heavier weight, with the assumption that expected volatility is partially path-dependent upon recent activity. We use Monte Carlo simulation rather than a variance/co-variance model because it captures the asymmetric payoff profile of options positions, which we tend to use extensively.

The primary drawback of most VaR analytics is that it assumes a constant or overly simple model for correlations and volatilities. Our quantitative strategist is seeking to refine this model by building a structural forecasting model for expected volatilities and correlations. The initial results from this work are rather promising, suggesting that we can improve the accuracy of VaR-based analytics.

Nonetheless, although pre-packaged VaR models can be improved, there are inherent limitations to the concept of value-at-risk, and so it cannot be exclusively relied upon as the primary risk management tool. Still, VaR provides valuable information regarding the risk of both individual assets and multi-asset class portfolios, especially when used in conjunction with other tools to compensate for its shortcomings.

Stress Tests

We regularly stress test the portfolio to evaluate expected profits and losses under various circumstances. The goal of each stress test is to foster discussion about “what if?” scenarios to partially compensate for the inherent problems of VaR models. We believe that the key to stress-testing is to include both the extraordinary scenarios that are extremely rare, as well as those that are relatively likely to occur, so that we can be best

prepared to adjust trading plans quickly as market conditions change. Our stress tests include historical shocks such as the Crash of ’87, Mexican Peso Crisis of ’94, Russia Default in ’98, etc., as well as user-defined tests focusing on major sources of prevailing portfolio risk.

We also stress-test as a way to evaluate the overall risk/reward of the portfolio. We do this by first identifying the maximum 5-day move that has occurred in each asset in our portfolio over the last ten years. We then calculate a predicted portfolio profit if each investment were to move the maximum amount simultaneously in our favor, as well as a predicted loss if each investment moved simultaneously against us. If the predicted maximum gain is anything less than 3 times the predicted maximum loss, further investigation is required to consider changes in the portfolio. Again, this is a tool to foster discussion rather than a systematic risk management policy, as we must also consider the probabilities associated with each scenario.

Net Exposures

It is important that we target an acceptable range of net directional exposure per asset class to ensure that they are consistent with our core investment themes, particularly in stressful environments when correlations among global markets tend to increase. Net exposures are calculated by summing the deltas of each position in the portfolio, differentiated by asset class. For interest-rate exposures, we convert the net exposures into 10y note equivalents to adjust for the various volatility characteristics of fixed-income instruments. For foreign exchange, a single net exposure summary is less relevant because of the ambiguities related to currency crosses, and so such trades must be evaluated according to related groups as well as net dollar exposures.

The major drawback of focusing on net exposures per asset class is basis risk (sometimes referred to as “correlation risk”). We mitigate this risk by allocating capital to individual trades with specific stops, rather than setting stops based on net asset class exposures. While there are circumstances when hedging is a more efficient method of reducing risk, *we strongly prefer to reduce risk by liquidating existing position(s) so we can eliminate basis risk altogether.*

Leverage

Our typical portfolio leverage ranges between 3x to 4.5x. To calculate leverage, we add the net delta exposures per trade, convert into USD, and divide by the net equity of the fund. For interest-rate exposures, we first convert the net exposures into 10y note equivalents. For currency crosses, we convert the delta of the settlement currency to USD.

The amount and nature of leverage in the portfolio must be controlled to maintain a portfolio risk/reward consistent with performance goals, maximum loss tolerance, and prevailing market environment. We manage leverage such that we generally allow positions to increase as we make money and to decrease as we lose money. We

incorporate this into our process by either executing additional trades, or by maintaining long option exposure such that the gamma acts as an automatic leverage management tool (i.e. favorable market movements result in higher deltas and higher leverage, and vice-versa). When portfolio leverage is relatively high, we increase emphasis on position liquidity, understanding that we need to react more quickly to unanticipated moves in order to protect capital.

"Greeks" Exposures

We tend to have extensive long options exposure (both vanilla and exotic) with typical maturities ranging between one month and two years. As a policy, we do not short options outright, but may purchase exotic options that can sometimes display the characteristics of a short volatility position. We also reserve the right to sell options as part of a spread on the same underlying asset. Nevertheless, each asset class is always flat to long gamma, and the portfolio usually has net time decay ranging between 1% - 3% per quarter.

We monitor derivatives exposures by calculating delta, gamma, vega, and theta for each position, and then focus on the sum of each per asset class. The primary considerations are time decay (theta) and sensitivities to changes in implied volatilities (vega). Position deltas are already captured in the exposure reports, and gamma always works to our benefit because we maintain flat to net long option exposures.