Editors’ Letter

As this letter is being written, a number of traditional equity indices are reaching new all-time highs. Meanwhile, there is little evidence of reduced fundamental risk in the global economy. This issue of the Alternative Investment Analyst Review (AIAR) contains a series of articles spanning a number of topics that are critical to investors in today’s market environment – including the drivers of returns during market stress, investment and risk management alternatives such as private equity (PE), timberland and realized volatility futures, and the impact of data frequency on research results.

This issue’s What a CAIA Member Should Know section features a review of U.S. timberland investing by Corriero, Healey, and Bond. The authors conclude that the timberland industry has matured significantly during the last 25 years, resulting in significantly varying returns. While returns turned negative in 2009, they have increased since then and the authors expect stronger returns to timberland in the future as long-term demand drivers for timber remain strong and most indicators predict a meaningful mid- to long-term recovery in timber prices. A pine beetle epidemic in western Canada will put further upward price pressure on timberland as supply is expected to significantly drop in the future. Finally, the authors argue that timberland may provide an effective inflation hedge since, unlike stocks and bonds, timberland returns have significant positive correlation with inflation.

This quarter’s Research Review section focuses on private equity. Ang and Sorensen provide a survey of the academic literature on the risks and returns of PE investments and optimal PE allocation. The very nature of PE poses many challenges to researchers and investors, including limited data, illiquidity risk, high transaction costs, and great heterogeneity, resulting in significant disparity in performance estimates across studies.

Andrew Rozanov authored the CAIA Member Contribution for this issue. Rozanov focuses on risk exposures in times of extreme market stress. In particular, the author reviews the literature which focuses on three models of risk exposures: (1) volatility, (2) non-randomness in returns, and (3) non-linearity in returns; or more specifically: (1) long or short volatility, (2) divergent or convergent, and (3) convex or concave payoffs. The author compares and contrasts these three models and argues that convexity/concavity may be the most useful of the three approaches for mitigating portfolio fragility.

In the New Product Developments section, Sixiang Li provides an introduction and performance analysis for a forthcoming realized volatility investment product, RealVolTM futures (VOL). Using theoretically derived VOL prices based on historical exchange traded S&P 500 option prices, Li considers a variety of methodologies for determining an allocation of VOLs to an S&P 500 portfolio. While the impact of adding a VOL allocation to an S&P 500 portfolio varies significantly across the different strategies the author tests, he finds that VOLs generally reduce the standard deviation of an S&P 500 portfolio, and in some cases may also increase returns. Based on the results of the analysis, Li concludes that RealVolTM futures may provide investors with another valuable alternative for altering the risk/return profile of their portfolios.

The final section, Issues in Empirical Research, Schneeweis, Kazemi, and Szado take a look at an issue that is often glossed over, or not even considered in quantitative research. While many researchers implicitly or explicitly assume that the results of their data analysis are independent of the choice of the frequency of their observations,
the authors suggest that the data frequency of observations may significantly influence some research findings. The authors use daily data over a common time frame to create a series of weekly (5-day), and 20-day return intervals, which form the basis for a series of empirical comparisons based on daily, weekly and monthly data. The authors find that data frequency choice may impact calculated return and risk measures less than it impacts measures of beta estimation and autocorrelation. The authors also consider the impact of outliers. They find that setting a single extreme data point a day (October 15, 2008), a week (October 13-18, 2008) or a month (October 2008), to zero has major impact on beta estimation and autocorrelation results. In short, some empirical results based on the use of monthly data may not be found if researchers were to use weekly or daily data.

Like the knowledge base provided by the CAIA curriculum, we hope that the articles featured in this issue of AIAR will provide insight into navigating the market uncertainty we all face as investment professionals. As always, we encourage and appreciate your feedback and look forward to your submissions to the AIAR.

Sincerely,
Hossein Kazemi and Edward Szado
Editors, AIAR
Rise above the crowd with the CAIA Charter

The CAIA Charter offers you immediate credibility in the complex world of alternative investing, along with access to a global network of peers. Find out how you can earn a better rate of return on your educational investment at CAIA.org.
**What a CAIA Member Should Know**

**“Timberland Investing in the U.S: What You Need to Know Now”** . . .6
*By Timothy Corriero, Tom Healy, and Scott Bond*

**ABSTRACT**: In this article, Corriero, Healey and Bond provide a comprehensive and up-to-date look at U.S. timberland investing, addressing: (1) historical timberland returns, (2) expectations for the future, and (3) the impact of inflation on timberland returns.

The authors conclude that timberland returns have varied over time as the industry has matured. Returns were negative for a year after the financial crisis of 2008, but have since been increasing. Long-term demand drivers for timber remain strong and most indicators predict a meaningful mid- to long-term recovery in timber prices. This recovery should support stronger timberland investment returns in the future. In the face of increasing demand, a significant reduction of timber supply is projected, primarily due to a pine beetle epidemic in western Canada. In addition, timberland returns show significant positive correlation with inflation, while stocks and bonds do not.

**Research Review**

**“Investing in Private Equity”** . . .20
*By Andrew Ang and Morten Sorensen*

**ABSTRACT**: In this article, Ang and Sorensen survey the academic literature that examines the risks and returns of private equity (PE) investments and optimal PE allocations. The irregular nature and limited data of PE investments have led to substantial disparity in performance estimates reported across studies. The large illiquidity risk and transaction costs inherent in PE investments imply that optimal Holdings of PE investments should be modest for some investors.

**CAIA Member Contribution**

**“Volatility, Non-Randomness or Non-Linearity: What Drives Portfolio Returns in Times of Stress and Dislocation?”** . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .34
*By Andrew Rozanov, CAIA*

**ABSTRACT**: In this article, CAIA member Andrew Rozanov considers the risk exposures that drive portfolio returns in periods of extreme market stress and dislocation. Specifically, the author considers three types of underlying return drivers: (1) exposure to volatility, (2) exposure to non-randomness in returns, and (3) exposure to non-linearity in returns. He compares and contrasts these three “schools of thought” and concludes that it is non-linearity – or, more specifically, convexity – that appears to offer the most comprehensive and consistent framework for finding solutions to mitigate portfolio fragility.
New Product Developments
“RealVol Futures Overlay on an S&P 500 Portfolio”.................................46
By Sixiang Li

ABSTRACT: In this article, Li introduces a forthcoming realized volatility investment product, RealVol™ futures (VOL). The author considers the performance implications of adding the products to a S&P 500 portfolio. The goal of this paper is to demonstrate how a VOL overlay can enhance the return and/or reduce the standard deviation of an equity portfolio. Since VOLs were not yet traded at the time of the analysis, the author performs his analysis using a theoretically generated price series derived from historical S&P 500 options data. The author tests a variety of methodologies for allocating VOLs to an equity portfolio and suggests that VOLs generally reduce the standard deviation of an S&P 500 portfolio, and in some cases may also increase returns. Ultimately, Li argues that RealVol™ futures may provide investors with a valuable exchange-traded tool for controlling the risk and enhancing the returns of their portfolios.

Issues In Empirical Research
“What a Difference a Day, Week, Month Makes - The Convertible Arbitrage Case”.................................66
By Thomas Schneeweis, Hossein Kazemi, and Edward Szado

ABSTRACT: In this analysis, Schneeweis, Kazemi, and Szado take a step back and remind investors and researchers alike, that there is no simple answer to the dependency of empirical results on the data, period of analysis, or methods of quantitative analysis used to address issues of interest. A common time frame and source of daily data is used to create a series of weekly (5-day), and 20-day return intervals that form the basis for a series of empirical comparisons. Results indicate similar time adjusted return and risk measures (standard deviation) determined from the use of daily, weekly, and 20-day time frames, however, results also indicate that the use of the various data intervals impacts measures of beta estimation and autocorrelation.

Lastly, in contrast to using a common model approach (e.g., robust estimators) to reduce the impact of outliers on empirical analysis the authors show the results of removing a particular time frame (e.g., October 2008) on the empirical results. Results indicate that adjusting an extreme data point a day (October 15), a week (October 13-18) or a month (October 2008) to a simple assumption of zero has major impact on beta estimation and autocorrelation results. Researchers may simply wish to use their own knowledge of data dependency to adjust data to reflect expected conditions rather than use models of general applicability that may offer results that are not truly reflective of conditions outside of that unique data period.

In short, the results in this analysis indicate that some of the empirical results based on the use of monthly data may not be reflected in the use of weekly or daily data.
Call for Articles

Article submissions for future issues of Alternative Investment Analyst Review are actively invited. Articles should be approximately 15 pages, single spaced, and cover a topic of interest to CAIA members. Please download the submission form and include it with your article in an email to AIAR@CAIA.org.

Chosen pieces will be featured in future issues of AIAR, archived on CAIA.org, and promoted throughout the CAIA community.