Investment Committee

California Public Employees' Retirement System

September 16, 2013

ITEM NAME: Discussion of Currency Hedging Program and Other Asset Liability Management Related Topics

PROGRAM: Asset Allocation and Risk Management

ITEM TYPE: Investment Committee Workshop – Information

EXECUTIVE SUMMARY

There are several components to this agenda item related to the Asset Liability Management (ALM) process that is currently ongoing. This material shall be presented in a workshop format:

1. Review of the Currency Overlay Program (Program) – An analysis of the results from inception in July 1992 through June 2013 shows an insignificant overall risk impact from hedging a portion of the foreign currency exposure. Additionally, staff identified major operational costs and risks related to the Program. Therefore, staff recommends eliminating the passive Currency Overlay Program as part of the ALM decision process.

2. Updated Capital Market Assumptions (CMAs) – As indicated at the June 2013 Investment Committee (IC) meeting, the CMAs for the Global Fixed Income (GFI) asset class (as currently specified) have been updated to reflect recent interest rate changes. Additionally, CMAs for a low volatility Global Equity component have been estimated with the assistance of Wilshire Associates and Pension Consulting Alliance.

3. Actuarial Risk Considerations and ALM Workshop Preparation – At the July 2013 Board Offsite, the CalPERS Actuarial Office demonstrated a model that reflected how the combination of investment return, volatility estimates and actuarial assumptions impact three characteristics identified as "risk considerations." These risk considerations are:

    - The plan's funded level,
    - The level of contributions, and
    - The volatility or change in the contribution level.

An additional element of the July Offsite presentation contemplated "flexible de-risking" of the plan as a way to improve long-term sustainability. The material presented in this item will seek to further enhance the understanding of the risk considerations' interactions and the de-risking topic.

STRATEGIC PLAN

This agenda item supports the CalPERS Strategic Plan goal of improving long-term pension and health benefit sustainability. The information being provided supports the ALM process which is currently expected to be completed by the end of calendar year 2013. A key deliverable of the ALM process is setting the target allocations to the various asset classes and portfolio segments that underlie the asset allocation framework. These target allocations are the predominant drivers of the overall return and risk results that are generated from the CalPERS investment portfolio.

BACKGROUND

Currency Overlay Program: The Program was initiated in July of 1992 with a passive, static 25% hedge on the currency exposure within the International Equity Program. The Currency Overlay Program was managed by external managers. The internally managed passive component was approved by the IC in 2000. In 2008, the hedge ratio was changed to a static 15%. At that time, it was also decided to hedge the currency exposure of the Total Fund instead of just Global Public Equities. Currently, the entire passive Program is managed internally by the currency team within GFI. CalPERS currency team also manages an active currency strategy with $927 million of assets under management as of June, 2013. This agenda item does not review the active currency program.

Updated CMAs for GFI: Staff's estimation of expected returns for GFI is based on yield-to-maturity, and then adjusted for yield curve, roll and credit spread. The previous estimates were based on yield-to-maturity as of December 31, 2012. Recent interest rate increases, which have raised the yield-to-maturity component by 73 basis points, constitute the recommended adjustment pending any benchmark change for the asset class.

Updated CMAs for Low Volatility Global Equity: A substantial body of academic literature and research produced by asset managers and index providers has documented risk-adjusted outperformance by a subset of Global Equity securities: securities with low volatility of returns. Staff has concluded that a low volatility equity component may constitute a scalable alternative to market capitalization weighting, which could improve the risk and return characteristics of the Global Equity asset class. Tilts such as low volatility, demonstrate performance patterns significantly different from market capitalization-weighted benchmarks. However, scaling a sufficient degree of exposure to impact the outcome for the Total Fund would require either a dramatic increase in the active risk limits for the asset class, or the incorporation of these tilts into the strategic asset allocation.

Actuarial Risk Considerations and ALM Workshop Preparation: The 2013 ALM schedule includes a day and a half workshop in November to complete the strategic allocation segment of the ALM analysis. This work is being undertaken in conjunction with the Actuarial Office in an effort to bring asset allocation and actuarial decision making into a common framework. This common framework results in a highly complex set of variables to be considered. To help facilitate decision making in November, staff suggests using some fixed thresholds for the risk considerations. Staff will also demonstrate the sensitivity of the risk considerations to asset allocation outputs such as expected return and volatility. Staff will also present the current progress of "flexible de-risking", which was introduced at the July 2013 Offsite.

ANALYSIS

Currency Overlay Program: The primary rational for passively hedging a portion of the foreign currency exposure has been to reduce the volatility of returns for the Total Fund. Analysis of returns from inception in 1992 has shown very small, and statistically insignificant, impacts of the Total Fund's volatility from the passive hedge. Additionally, the Program has significant operational costs in terms of resources and complexity, as well as liquidity risks. Examples include:

1. Periodic settlement of forwards utilized by the Program cause unpredictable and sizable volatility in cash flow, which is becoming increasingly difficult to absorb through the Total Fund with the current cash flow shortfall.

2. There is significant difficulty in estimating the optimal hedge ratio, including:
    - Difficulty in estimating the Total Fund's true foreign currency exposure
    - Issues in the adopted methodology
    - Lack of industry consensus on the optimal hedge ratio

3. Added complexity from the Program increases vulnerability to operational risks. The calculation of Total Fund Benchmark with Currency Overlay has been inconsistent with the industry standard since April 2009.

4. The added-value of the Program is far outweighed by its demands on limited staff resources, including:
    - The Investment Strategy Group
    - Dedicated staff from GFI, Asset Allocation and Risk Management, and Investment Servicing, etc.

Based on the aforementioned operational costs and risks, staff recommends eliminating the passive Currency Overlay Program while maintaining active management of currency. Attachment 1 contains additional information on this topic.

Updated CMAs for GFI: Attachment 2 contains updated CMAs for the GFI asset class. Estimation of expected returns for fixed income begins with current yield-to-maturity. When work was initiated for the 2013 ALM Workshop, it utilized yield-to-maturity numbers as of December 31, 2012, which were at historical lows. Although adjustments were made on the yield curve based on historical averages, uncertainty remained on the potential for interest rate increases. Year-to-date, interest rates have increased which constitutes the basis for the adjustment of the CMAs for GFI. Should a decision be made to change the benchmark of the asset class, it would likely be necessary to make a further adjustment.

Updated CMAs for Low Volatility Global Equity: Attachment 2 also contains information related to a low volatility equity alternative. Both academic literature and research pieces from asset managers and index providers have documented a market anomaly where securities with lower price volatility have been used to construct strategies with superior risk-adjusted returns. Various derivations of these strategies have reduced portfolio volatility within a range of 20% to 30%, compared to a parent universe of market capitalization-weighted public equity, while returns actually outperformed by 1% to 2%. These results are inconsistent with conventional market efficiency theories, but there are several hypotheses proposed to explain this abnormal phenomenon.

Volatility based strategies may have the capability of improving the risk-adjusted returns of the Total Fund, but caution and additional diligence in the actual implementation of this strategy are warranted. Implementation alternatives are being examined by staff with particular attention being focused on position concentration and turnover. Staff conferred with Wilshire Associates and Pension Consulting Alliance to estimate CMAs for this asset class segment. Should a target allocation to low volatility Global Equity result from the 2013 ALM Workshop, staff shall bring an implementation plan to the Investment Committee in early 2014.

Actuarial Risk Considerations and ALM Workshop Preparation: Attachment 3 contains information intended to help simplify the array of variables which were expanded by the introduction of actuarial risk considerations. Of particular note, the capability of shifting the warning track thresholds appears to have added significant complexity to the interpretation of the actuarial model output. Using some fixed assumptions, the information in Attachment 3 more clearly illustrates the sensitivity of the risk considerations to various return and volatility profiles.

At the 2013 July Offsite, the topic of “flexible de-risking” was also introduced. This item seeks to maintain awareness of this topic and to also recognize that a degree of de-risking has already taken place through the interaction of:

1. The Public Employees’ Pension Reform Act of 2013 (PEPRA)
2. Adoption of modified amortization periods and smoothing methods by CalPERS Board of Administration in April 2013
3. The positive 12.5% investment return generated in Fiscal Year 2012-13

BUDGET AND FISCAL IMPACTS
Not Applicable

ATTACHMENTS
Attachment 1 – Currency Overlay Program
Attachment 2 – CMAs for Low Volatility Global Equity and GFI
Attachment 3 – The Impact of Portfolio Choice on Key Risk Considerations

Eric Baggesen
Senior Investment Officer
Asset Allocation and Risk Management

JOSEPH A. DEAR
Chief Investment Officer