Thomas Toth, CFA
Managing Director

Julia Bonafede, CFA
President of Wilshire Consulting

September 23, 2014

Mr. Henry Jones
Chairman of the Investment Committee
California Public Employees' Retirement System
400 P Street, Suite 3492
Sacramento, CA 95814

Re: Internal Fixed Income Annual Review

Dear Mr. Jones:

Wilshire conducted an on-site review of the internal fixed income team's personnel, investment process, and resources. This review was conducted as part of Wilshire's contractual requirement to periodically review all of CalPERS' internal asset management functions. As in prior years, we found that the team manages the portfolio in an effective, risk aware manner and has state of the art systems to assist in monitoring and managing the portfolio. Staff has continued to augment the fixed income team with additional personnel in an effort to enhance the internal management capabilities of the fixed income group. Further, the Global Fixed Income Programs' investment policy documents afford Staff sufficient flexibility to manage the portfolio's inherent investment risks.

This document serves as a review of the entire fixed income management process. We have also included a multi-page table at the end of this review which is similar to what we would complete for an external manager, detailing our opinion on specific aspects of the fixed income program. As part of our review, we met with Staff members involved with the management and trading of the various fixed income portfolios. We discussed the strategy for each portfolio, how research is conducted, what risk controls are in place, how the portfolio is traded and how feedback and input is provided at each step of the investment process.

In short, we believe the investment approach is appropriate for the various CalPERS portfolios and Staff is aware of and appropriately manages the investment risks faced by the portfolios. Further, with the addition of new personnel, Staff has sufficient resources at its disposal to handle the current scope of the fixed income team's duties. As stated previously, it is likely that additional incremental personnel will be required over time to handle the portfolio and the growing complexity of the internal management functions.

Discussion

Global Fixed Income

The fixed income team manages portfolios with various duration targets ranging from highly liquid, short-term Fed Funds-benchmarked portfolios to longer duration portfolios benchmarked to the Barclay's Long Liability Index. Additionally, the fixed income team invests across the credit spectrum from U.S. Treasury bonds to high yield bonds and in a variety of structured fixed income securities, such as mortgage obligations and asset backed securities. Staff also manages international fixed income, currency and the securities lending program. A separate allocation to inflation-linked bonds as a part of the "Inflation" portfolio is managed within the internal fixed income program. Finally, there are a number of external managers who provide both direct investment management and strategic partnerships to supplement the work done by Staff.

The SIO-Fixed Income has overall responsibility for all portfolios' sector weights and duration positioning. The SIO-Fixed Income will adjust exposures at the aggregate portfolio level, but does not direct the portfolio managers to change the underlying portfolios' exposures provided they remain within the appropriate guidelines. The investment philosophy is based on garnering a yield advantage in each sector compared to the sector's yield, but without substantially increasing the risk of default in the sector. Duration is normally close to the duration of the benchmark, unless real returns and economic analysis dictate otherwise. According to policy, both the domestic and international programs' duration can range from -50% to +10% of the duration of their respective benchmark indexes.

Staff has sector specialists that focus on credit (corporate), structured products (mortgage backed, asset-backed, etc.), and global governments that are highly knowledgeable and manage their respective sectors of the portfolio against appropriate benchmarks. In addition, the domestic research team has been expanded and there are six open positions under active recruitment. Wilshire views the addition of resources favorably and believes that continuing to build out the depth and breadth of the internal fixed income team should be a long-term goal for CalPERS. particularly as new mandates are considered for internal management. Investment team turnover continues to be a long term concern, given the improvement in the economy and the competitive compensation packages offered to private sector employees.

Wilshire views the overall investment approach favorably and believes it is an appropriate one for CalPERS that is supported by research and experience. Staff's desired yield advantage, although not an "all weather" strategy, tends to perform very well across a market cycle. The strategy is likely to underperform when credit and structured spreads widen, but has demonstrated the ability to recover. It is important to point out that as credit markets have normalized, the fixed income portfolio has strongly outpaced the benchmark. Additionally, since Staff does not generally make significant duration bets, the term structure aspect of the performance of the portfolio should track the benchmark fairly closely when interest rates rise or fall.

The custom-designed (by a third-party) portfolio management and trading platform is high quality and helps to achieve the program's goals. Staff members continue to investigate potential improvements to the systems utilized in the investment process. The enhancement of the internal systems continues to be a focus for certain team members and ensures that new capabilities keep pace with the additional workload being undertaken by the internal team, a process which Wilshire fully supports.

As a result of this review, we continue to be confident in the ability of CalPERS' Staff to effectively manage the fixed income portion of the CalPERS program.

PERF – Income Portfolio

The bulk of CalPERS' fixed income assets are invested in the PERF – Income Portfolio. This portfolio is managed against a blend of 90% Barclays Long Liability Index and 10% Barclays International Fixed Income Index GDP Weighted ex-U.S. For internal management purposes, Staff has sector specialists covering sovereign bonds, structured securities, and corporate bonds. The sector specialists manage their sectors against the performance and characteristics of the respective sectors of the index. Each sector specialist, as well as the SIO-Fixed Income, emphasized the importance of having an established framework with which to construct and monitor a portfolio. In this way, the sector specialists maintain consistency across time as they evaluate securities for inclusion/exclusion from the portfolio.

The SIO-Fixed Income has overall responsibility for managing the duration of the portfolio and the sector mix. The SIO-Fixed Income determines the appropriate mix of sectors based on the relative attractiveness of the sectors, comparing the option - adjusted spread of each sector and stress testing the forecasted results of the portfolio under different economic assumptions. Philosophically, the SIO-Fixed Income believes that improved risk-adjusted returns are likely to come from "spread sectors, like mortgages and credit; hence, the portfolio is likely to show a consistent bias towards those sectors.

The sector specialists are intimately involved in sourcing and evaluating securities that might fit into the opportunistic bucket, although the SIO-Fixed Income is the ultimate arbiter of that portion of the portfolio. The SIO-Fixed Income is now able to vary the duration of the portfolio by +10%/-50% versus the benchmark per policy. The additional flexibility allows Staff to significantly shorten the duration of the portfolio if they have high conviction that rates will rise. Staff is required to report to the Investment Committee the duration and the sector weights of the portfolio, relative to the benchmark. Staff has positioned the portfolio duration to be about one year less than the index currently, which is in line with Staff's view that interest rates will normalize going forward. The shorter duration positioned portfolio will outperform the index, all else equal, during a period of rising interest rates.

Total Domestic Program Sector Guidelines

Sector	Index	Range
U.S. Treasury & Gov't Sponsored	40%	10% - 80%
Mortgage	30%	15% - 45%
Corporate	24%	10% - 40%
Opportunistic	3%	0% - 12%
Sovereign	3%	0% - 10%

Total International Program Sector Guidelines

Sector	Benchmark	Net Range
U.S. Treasuries (ex TIPS)	0%	-10% - +10%
Governments (ex U.S.)	100%	90% - 100%
Investment Grade Corporate	0%	-10% - +10%
Mortgages	0%	0% - +10%
Non-Investment Grade Corporate	0%	0% - 5%

The senior portfolio manager responsible for U.S. Governments has shifted over to the CalPERS real estate team, and the Governments ex-U.S. senior portfolio manager has taken on interim oversight of all Government portfolios. The SPM's background is well suited for this and he brings broad experience across markets. Staff would like to continue to build out the team's capabilities by adding additional portfolio management resources in emerging markets. Wilshire would support this direction, particularly as additional international fixed income assets are managed internally.

One theme which emerged during our interviews with a number of the senior members of the team was the cross functional work being done to help improve total fund performance. For example, the economic research and analysis done within the fixed income team is shared with other parts of the Investment Office for debate and discussion. The work done by the derivatives policy committee impacts areas outside of Global Fixed Income as well, while the Short Duration program is utilized by the Equity team in the synthetic enhanced equity portfolio.

Overall, the stability of the more senior members of the group and a time-tested investment process along with continued cross-functional information sharing has resulted in an increase in the total score for the internal Fixed Income program.

Low Duration

CalPERS' staff manages three low duration portfolios: High Quality LIBOR (HQL), Short Duration Fund (SDF), and Low Liquidity Enhanced Return (LLER). The performance objective for HQL is Fed Funds plus 8 basis points and the objective for SDF is Fed Funds plus 30 basis points. Since neither benchmark has credit risk and both have a known duration (overnight), Staff can add value by managing a portfolio that has some credit exposure and some increase in duration. The vast majority of the HQL portfolio and SDF portfolio is invested in floating rate securities and the majority of the portfolio is invested in asset backed securities (autos, credit cards, home equity loans, student loans, CMOs, etc.), all with very short maturities. The securities are highly rated securities with the substantially all of HQL and more than three quarters of SDF rated AAA or A1/P1. The target duration of HQL is 30 days and the target duration of SDF is 90 days, so interest rate risk is considered minimal.

The securities lending collateral is managed by the same team overseeing the limited duration portfolio and is managed in accordance with the CalPERS' Global Fixed Income Policy – Dollar Denominated Fixed Income Limited Duration Investment Policy. As such, this portfolio is invested in structured securities with short maturities, which are generally rated AAA or A1/P1. Additionally, stress testing is performed on the structured securities in order to understand and appropriately manage how changes in interest rates will affect the price of the securities.

The LLER portfolio is structured to exceed the return of one month LIBOR. In contrast to HQL and SDF, the portfolio mandate allows for lower liquidity and a total rate of return focus with an emphasis on investment grade floating rate securities. An important consequence of allowing lower liquidity is the natural occurrence of larger security concentrations, which is appropriate provided that LLER is utilized in a prudent manner. Per the approved policy, there are no sector limit restrictions on floating rate instruments or those rated AAA and AA.

Other characteristics are laid out in the table below, per the approved Policy:

	High Quality LIBOR	Short Duration Program	LLER Program
Investment Horizon	Less than 30 days	6 - 12 months	Hold to Maturity
Objective	Medium / High Liquidity	Medium Liquidity	Low Liquidity
	Capital Preservation	Total Rate of Return	Total Rate of Return
	Total Rate of Return		
Liquidity Requirement	High	Medium	Low to None
Program Duration Constraint	90 Days Max	180 Days Max	270 Days Max
Weighted Average Life Constraint			
Fixed Rate Securities	90 Days	2 years	3 Years
AAA-Rated Floating Rate Securities	5 Years	7 Years	10 Years
Minimum Credit Quality	AAA	BBB	BBB- at Purchase
Participants	Global Fixed Income Domestic Equity Securities Lending	Securities Lending	Enhanced Equity Global Fixed Income

The SDF and HQL portfolios are utilized by the securities lending program. It is important to remember that the securities lending program must take on some form of investment risk within the collateral investment pool in order to earn a yield spread on each loan. Essentially, the collateral investment pool must produce a return in excess of the Fed Funds rate. As discussed earlier, Wilshire believes it is appropriate to take on the incremental risk necessary to produce returns over and above the Fed Funds rate of return. The portfolio manager has significant experience in evaluating structured product characteristics and has continually worked to refine the process and implement new investment ideas. Additional legal and research resources could prove helpful going forward depending on the complexity and legal documentation necessary to expanded use of certain strategies (such as CLOs, etc.).

Commodities

The team for the Commodity program consists of an experienced portfolio manager along with an additional Staff resource to focus on research and trading. The portfolio manager has worked to build a risk system to monitor the portfolio, and has introduced a tactical inflation strategy utilizing a quantitative framework developed internally. In discussions with the portfolio manager, he described the development of transparent reporting through the 3rd party systems, including a look-through on a commodity by commodity basis into the swap agreements the used to gain commodity exposure. The portfolio manager is also utilizing more approaches to manage exposures, including actively trading commodity futures to hedge positions over short periods as well as capitalizing on relative value opportunities. From a resource perspective, the portfolio manager feels they could benefit from further fundamental research resources.

The portfolio manager also works on the derivatives policy committee within fixed income, which is consistent with the previously stated plan to utilize his expertise more broadly across the portfolio. The derivatives policy committee has made strides in improving counterparty governance and monitoring, which provides a benefit throughout the Investment Office.

The commodities portfolio continues to be managed in accordance with the approved policy.

Currency

The internally managed currency program falls under the Global Fixed Income group, but can be utilized across asset classes as necessary. Asset Allocation staff are responsible for setting the target currency hedge, which is then implemented by currency experts within Global Fixed Income. A currency committee composed of senior staff research macroeconomic trends which should influence currency valuations over longer term cycles, while being cognizant of the costs of hedging. Changes to the hedge ratio are likely to be infrequent given the focus on longer term cycles.

Securities Lending and Credit Enhancement

The securities lending program is intended to generate income primarily from fees derived from lending both equity and fixed income positions to qualified borrowers. CalPERS' stable base of lendable securities allows the program to act as a backstop to the large clearing houses like Depository Trust Corporation (DTC) and Offshore Clearing Corporation, and earn an appropriate level of compensation even when securities lending is not required. To a smaller extent, the collateral backing the loans is invested in lower risk, short duration instruments described above. Staff members are responsible monitoring the participating lending agents and principal borrowers. Loans are expected to be over-collateralized with daily margin movements required to maintain the specified level of collateral on a continuous basis. Counterparties are monitoring continuously and must meet specified financial criteria to participate in the securities lending program.

Risk Factors

The two primary investment risks of fixed income securities are well known and unchanged: interest rate risk and default risk. Wilshire believes that Staff is monitoring and managing these risks appropriately. The duration of the portfolio is generally kept very close to the duration of the index, ameliorating much of the interest rate risk *relative* to the index. The guidelines have increased the lower duration band to allow Staff to position the portfolio for rising interest rates. However, *absolute* interest rate risk will always be present due to the duration of the portfolio. Default risk is managed by limitations on the size of any corporate issuer in the total portfolio. The Fixed Income policy further controls credit risk with minimum rating requirements by sector. Default risk cannot be eliminated without forgoing the potential return of credit-related securities and investing solely in treasury securities, and academic studies clearly illustrate that the increased yield from corporate bonds over a market cycle fully compensates for any normal level of default risk.

While the extreme fixed income market movements in 2008 and early 2009 underlined that a yield advantage strategy will not outperform in all market environments, a look at cumulative performance shows that the internal fixed income team has generated excess returns over the 1, 3, 5, and 10 year time periods. A decline in interest rates since the beginning of 2014 has positively impacted the absolute returns of all fixed income investments.

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Performance as of June 30, 2014

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	Date
INCOME	**46.9**	**3.6%**	**8.3%**	**6.3%**	**9.2%**	**7.0%**	**6/88**
Income Policy Benchmark [41]		3 6%	7 1%	5 6%	7 0%	6 3%	
Value Added		0 0%	1 2%	0 7%	2 2%	0 7%	
Internal US Income + Opportunistic	**42.1**	**3.5%**	**8.2%**	**6.7%**	**9.6%**	**7.2%**	**12/95**
Mortgage Bonds	8 6	2 4%	6 8%	4 2%	7 3%	5 1%	12/82
Long Duration Mortgages*	2 2	3 1%	5 3%	4 9%	10 2%	- -%	6/05
Corporate Bonds*	10 5	4 7%	13 4%	10 2%	12 1%	8 3%	3/02
U S Government*	15 7	3 5%	4 6%	6 3%	6 2%	5 8%	12/99
Sovereign Bonds* [42]	1 9	5 6%	11 3%	7 1%	9 4%	7 4%	6/96
Long Duration Corporates*	1 6	2 3%	11 8%	13 3%	16 8%	- -%	9/05
Custom Benchmark [43]		3 6%	6 9%	6 1%	7 3%	6 4%	
Opportunistic [44]	**3.1**	**2.6%**	**11.4%**	**6.1%**	**16.7%**	**8.6%**	**6/00**
Internal High Yield Bonds*	0 7	3 0%	12 7%	6 6%	11 0%	13 2%	9/99
External High Yield*	1 7	2 4%	11 6%	9 8%	13 8%	7 3%	3/02
High Yield Mortgage*	0 3	3 2%	10 3%	13 6%	18 1%	- -%	3/08
Citigroup High Yield Cash Pay		2 3%	11 5%	9 3%	13 5%	8 6%	
Special Investments	**0.0**	**1.8%**	**8.1%**	**9.4%**	**6.7%**	**6.4%**	**3/91**
Total International Fixed Income	**4.8**	**3.7%**	**10.0%**	**1.9%**	**5.7%**	**5.7%**	**3/89**
Custom Benchmark [45]		3 5%	9 1%	1 0%	3 7%	4 9%	
Value Added		0 2%	0 9%	0 9%	2 0%	0 8%	
Currency overlay [46]							
Active Currency Overlay - Internally Managed	-0 1	-0 1%	-0 2%	-0 6%	-0 4%	0 2%	6/92
Custom Benchmark		-0 1%	-0 3%	-0 3%	-0 3%	0 2%	
Value Added		0 0%	0 0%	-0 3%	-0 1%	-0 1%	
	Market Value	**Qtr**	**1-Year**	**3-Year**	**5-Year**	**10-Year**	**Date**
Securities Lending*	**17.2**	**0.1%**	**0.8%**	**0.8%**	**2.2%**	**1.9%**	**8/00**
Custom Benchmark		0 0%	0 1%	0 1%	0 1%	1 7%	
Value Added		0 1%	0 7%	0 7%	2 1%	0 2%	
Internal Active Short Term**	2 7	0 0%	0 2%	0 2%	- -%	- -%	3/11
Custom Benchmark		0 0%	-0 1%	0 0%	- -%	- -%	
Value Added		0 0%	0 3%	0 2%	- -%	- -%	
CalPERS ESEC Cash Collateral**	14 4	0 0%	0 1%	0 1%	- -%	- -%	6/10
Custom Benchmark		0 0%	0 1%	0 1%	- -%	- -%	
Value Added		0 0%	0 0%	0 0%	- -%	- -%	
External Collateral Portfolio***	0 1	2 7%	56 4%	- -%	- -%	- -%	11/00

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR[49]	5-year Sharpe Ratio[50]	5-year Info Ratio[51]
INFLATION	**9.9**	**3.9%**	**8.3%**	**2.8%**	**6.2%**	**-.-%**	**$0.6 bil**	**0.7**	**0.3**
Inflation Policy Benchmark [47]		3 8%	8 2%	3 1%	5 4%	- -%		**0.8**	**0.0**
Value Added		0 1%	0 1%	-0 3%	0 8%	- -%			
Internal Commodities [48]	**1.3**	**3.3%**	**8.9%**	**-0.5%**	**3.8%**	**-.-%**			
GSCI Total Return Index		2 7%	10 4%	0 2%	3 7%	- -%			
Value Added		0 6%	-1 5%	-0 7%	0 1%	- -%			
Core Inflation Linked Bonds	**6.2**	**4.3%**	**8.3%**	**4.8%**	**6.4%**	**-.-%**			
Custom Benchmark		4 2%	8 0%	4 4%	6 0%	- -%			
Value Added		0 1%	0 3%	0 4%	0 4%	- -%			
Tactical Commodities	**1.2**	**2.7%**	**9.8%**	**-.-%**	**-.-%**	**-.-%**			
GSCI Total Return Index		2 7%	10 4%	- -%	- -%	- -%			
Value Added		0 0%	-0 6%	- -%	- -%	- -%			
Tactical TIPS	**1.2**	**3.6%**	**4.1%**	**-.-%**	**-.-%**	**-.-%**			
CalPERS TIPS		3 8%	4 4%	- -%	- -%	- -%			
Value Added		-0 2%	-0 3%	- -%	- -%	- -%			

Operational and compliance risk is also present in the internal fixed income portfolio, as it would be for any external manager. CalPERS has both enterprise and investment compliance teams, and a risk management group which are collectively tasked with monitoring portfolios across asset classes. Given the size and complexity of the CalPERS portfolio, ensuring that the risk management group is adequately staffed is important.

Additionally, there are two risks that are CalPERS-specific. First, CalPERS has invested in systems and technology to provide the fixed income team with state of the art tools. However, this should not be (and is not currently) viewed as a one-time investment. The systems need to be maintained, customized, and upgraded as necessary so that the team does not face a competitive disadvantage versus other investors. In dialogue with senior team members, they reiterated that the systems are sufficient at this time, and it is clear that Staff is well aware of this requirement and are actively engaged in improving system capabilities and supplementing them when necessary.

Second, CalPERS, as a governmental organization, faces some organizational risks that for-profit enterprises do not face. For example, non-governmental organizations can induce key employees to stay with the firm long-term by offering ownership in the enterprise. CalPERS cannot match this retention incentive and is more at-risk for losing intellectual capital than a for-profit enterprise would be. While the Fixed Income team continues to look for outstanding candidates for new and open positions, compensation rules may constrain its ability to attract candidates and has generally extended the search timeline. This is an ongoing risk for the entire CalPERS organization, and has been discussed previously in our reviews of the other investment teams within CalPERS.

Conclusion

In brief, we believe that Staff has demonstrated the ability to both effectively and efficiently manage CalPERS' fixed income portfolios. The investment philosophy is appropriate to CalPERS' needs and sufficient investment risk controls are present to mitigate many of the risks of managing fixed income portfolios. Operational and compliance risks continue to be examined and improvements have been implemented.

Should you require anything further or have any questions, please do not hesitate to contact us.

Best regards,

Julia Bonafede
President of Consulting

Thomas Toth
Managing Director

Strategy Evaluation: CalPERS Internal Fixed Income Strategy

Organization (0-100)

SCORE:

COMMENTS:

Ownership/Incentives (0-30)
Direct Ownership/Phantom Stock
Profit Sharing
Performance Bonus
Depth of Incentives

Score: 10

Employees receive performance bonus only. Bonus is driven by multiple factors, some geared around the investment performance generated by the fixed income team but others related to total fund performance. This bonus structure has been revised to bring it in-line with the new alpha targets.
Obviously, no equity ownership is available for employees. Further, travel rules and regulations have the potential to impede the review of external managers as well as information sharing between internal Staff and outside resources. The score has been adjusted upward to be consistent with the recent Global Equity evaluation.

Team (0-25)
Communication
Role of Manager, Research, and Operations
Longevity of Team

Score: 22

Additions to the Team in portfolio management and research have improved the capacity to manage additional strategies effectively. This has reduced the key-person risk and allows Staff to focus on more value-added opportunities. An informal succession plan for senior fixed income positions exists and should include appropriate mentoring and monitoring to ensure a smooth evolution. The team members have back-up from others on the team. Communication links are informal and proximity of team members is close, adding to the team's ability to communicate quickly.
Senior members of the team have generally been together for several years, although one of the five Senior PMs transitioned to join the PERF real estate team recently. The addition of new research analysts is a positive as the internal high yield portfolio continues to expand.

Quality of Key Professionals (0-15) Experience Quality of Leadership Quality of Education Score: 15	Education, experience and technical skill set of portfolio managers and SIO-Fixed Income are exceptionally good, by any standard. The tenure of the SIO Fixed Income with CalPERS is the longest of the senior investment staff. Appropriately concerned about process, reporting, and monitoring. The senior professionals reiterated that they feel their teams are stronger than at any time in the recent past.
Turnover of Senior Professionals (0-15) Low (<10%), Medium (<20%), High (>20%) Score: 10	Staff turnover for CalPERS (as an organization) is typically high at both the senior and junior levels. Lack of long-term retention incentives lead some staff to consider the organization as a "stepping stone" to better compensation in similar positions elsewhere. Turnover on the fixed income team has been more limited than the organization as a whole, but there have been lateral movements this year, including one SPM.
Commitment to Improvement (0-15) Clear Mission Re-investment Process Enhance Score: 15	Strategies have clear mission and objectives. Resources levels have been improved and are sufficient for the tasks assigned to team as well as additional programs being considered for inclusion in the internal Fixed Income program. Staff is open about continuing to improve internal investment capabilities in both the Short and Long Duration portfolios, portfolio transparency and attribution, as well as making operational safeguards more robust.

Philosophy/Process (0-100)

SCORE:	**COMMENTS:**
Market Anomaly/Inefficiency (0-40) Permanent or Temporary Clear Identification Where and How Add Value Empirical or Academic Evidence to Support Score: 35	Sector specialists (Sovereigns, Structured Products, Credit) actively manage respective parts of the portfolio in an attempt to outperform through yield curve positioning and issue selection. SIO-Fixed Income oversees the total allocation to each sector and the portfolio's overall interest rate positioning. Value has been added by focusing on maintaining a yield advantage in the spread sectors. Yield advantage strategies are not "all weather" strategies – they will underperform when spreads are widening – but the consistent additional yield in the portfolio versus the benchmark compounds to the advantage of CalPERS over longer time periods. High score given as the yield advantage approach is appropriate and consistently applied across all sectors of the portfolio.
Information (0-15) Unique Sources, Unique Processing Score: 13	Information sources are primarily external, which is appropriate given the size of Staff relative to the size of the market (more than 10,000 available securities). In the case of structured products, the underlying securities are analyzed at a granular level utilizing systems provided by an outside strategic partner. On the corporate side, senior staff felt particularly confident of the way the research staff was working together. Staff also has frequent contact with outside managers to gain information.

Buy/Sell Discipline (0-15)
Disciplined/Structured Process
Quantitative and Qualitative Inputs

Score: 15

Buy/sell discipline based on relative value of securities. If Staff has an opportunity to "upgrade" one of the holdings in the portfolio, a trade will be initiated by the appropriate sector specialist, who has intimate knowledge of his/her sector.

Portfolio Construction (0-15)
Benchmark Orientation
Risk Controls
Ongoing Monitoring

Score: 13

Portfolio construction techniques and monitoring are very good with industry-leading software. SIO-Fixed Income has ultimate oversight as to the construction of the portfolio, utilizing a defined framework. Further, it is likely that the future performance of the portfolio will exhibit less tracking error relative to the index as risk is reduced across sectors. This is evident in the rolling tracking error available in the Performance Appendix. The Strategy has written compliance policies and procedures in place and a "checklist system" to ensure compliance.

Quality Control (0-15)
Return Dispersion
Performance Attribution
Performance Consistency
Style Drift
Compliance

Score: 13

The process has risk controls built in with regard to sector weights and duration. Attribution analysis provided by BlackRock's Aladdin system, but Staff has indicated that the attribution capabilities could be improved and have implemented substantial improvements, particularly on the credit side. Within the portfolio management team there is good separation of responsibilities as well as back-up and cross-checks. Guidelines, roles, and responsibilities have been updated and reflected in policy. Further, trade settlement and back-office support is separate from portfolio management. The procedures manual that covers portfolio management, trading operations systems operations, and monitoring is in the process of being updated. Systems are in place to monitor compliance of the portfolio on a regular basis, including daily trade reports.

Resources (0-100)

SCORE:

COMMENTS:

Research (Alpha Generation) (0-40)

- Appropriate for Product Style
- Conducted Internally/Externally
- Quantitative/Qualitative
- Sufficient Databases and Models for Research
- How are Research Capabilities Enhanced

Score: 37

Much of the credit research is provided by external sources and synthesized by Staff. Structured research is conducted internally analyzing the underlying securities with regards to quality and risk of prepayment. More granular research into the underlying collateral is done in collaboration with external managers.
Additional internal research can now be performed with the continued expansion of Staff. This additional research can be used in conjunction with the external research to help provide a more robust analysis of credit, discussions with a number of investment professionals within the corporate credit team indicate that the current team is one of the strongest in recent memory and works well together.

Information/Systems Management (0-15)

- Ability to Manage Large Flows of Data
- Appropriate Systems for Research and Management

Score: 13

Hardware and software support is very strong. Members of Staff all have access to Bloomberg for research and information on current market conditions. Trading and portfolio management tools were custom-designed to CalPERS' specifications by a leading external vendor. Ongoing improvements in structured product research capabilities continue to help round out the systems more completely for structured products side. Staff continues to actively work to improve the system capabilities which is reflected in the strong score.

Marketing/Administration/Client Service (0-15)

- Dedicated and Knowledgeable Group
- Quality of Materials/Presentations of RFPs
- Responsiveness
- Measuring Client Satisfaction

Score: 15

Since marketing and client service are not involved, unlike external sources for such a strategy, the full resources of the fixed income staff will be devoted to CalPERS, as the portfolio managers will not have to travel to service other clients or market to prospects.
End client (Investment Committee) has regular meetings that usually require SIO and Portfolio Manager, but team is able to continue to operate in their absence.

Trading (0-30)

Turnover Relative to Process
Sophistication of Trading Process
Measurement of Trading Costs
Operational Controls

Score: 22

CalPERS' trading room is very sophisticated, and has subscriptions to all of the most popular trading resources, i.e. Bloomberg, Instinet, ITG, WM, etc. There is sufficient back-up and separation of responsibilities in the trading function. There is ex-post review of trading execution, but as with all trading reviews it can be improved. The score has been moderately increased to reflect the separation of trading and portfolio management within the credit team.

Discussion

Wilshire's score on this strategy of 82.7% or 248 out of 300 possible points, an increase of 7 points over the prior score, continues to reflect the strong team and clear success demonstrated at managing the portfolio as charged. The increased score relative to the prior review is attributable to the increase in score associated with the adjustment in the Ownership score component. The main reasons for a less-than-perfect score overall are largely due to organizational-level issues such as senior changes in leadership and lack of long-term retention incentives rather than issues specific to the fixed income group. Through conversations with Staff, Wilshire expects to see continued progress in operations and compliance processes over time.

	Total Fixed Income					
	Possible	Actual				
		2014	**2013**	**2011**	**2010**	**2009**
Ownership	30	10	5	5	5	5
Team	25	22	22	22	20	15
Quality of Pros	15	15	15	15	12	15
Turnover	15	10	10	5	7	7
Commit to Improve	15	15	15	15	15	10
Market Anomaly	40	35	35	35	35	35
Information	15	13	12	12	12	12
Buy/Sell Discipline	15	15	15	15	15	15
Portfolio Construction	15	13	13	13	12	10
Quality Control	15	13	12	12	10	10
Research	40	37	37	35	35	35
IT Systems	15	13	13	13	13	13
Marketing	15	15	15	15	15	15
Trading	30	22	22	20	20	20
Total	300	248	241	232	226	217
		82.7%	80.3%	77.3%	75.3%	72.3%

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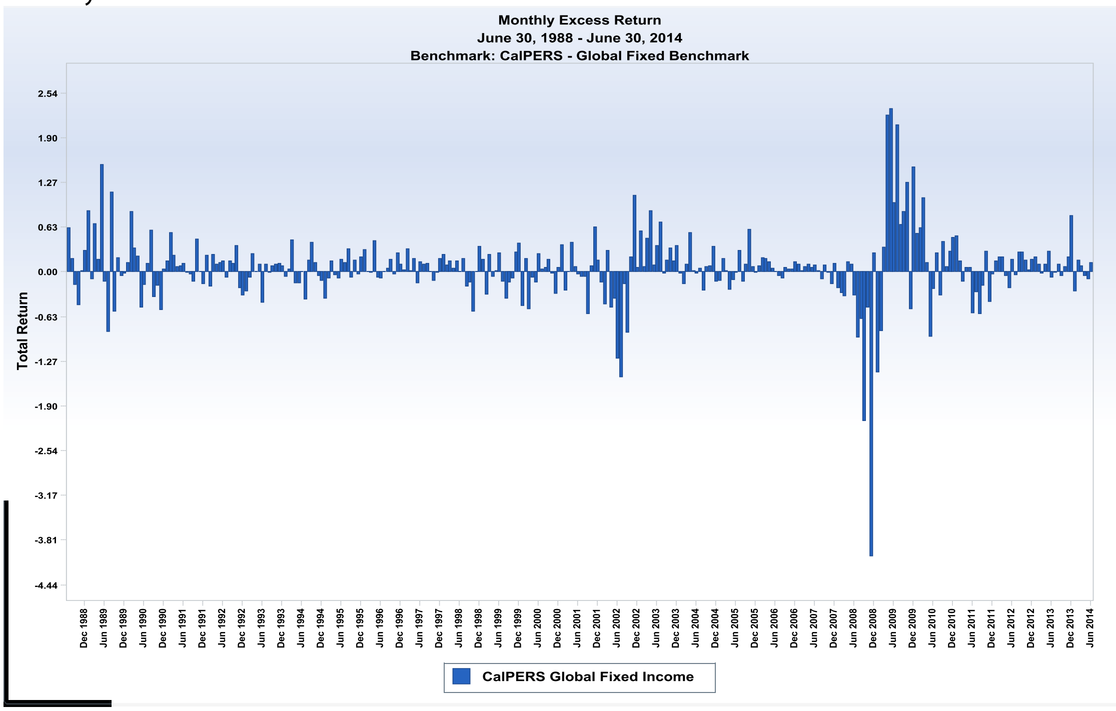
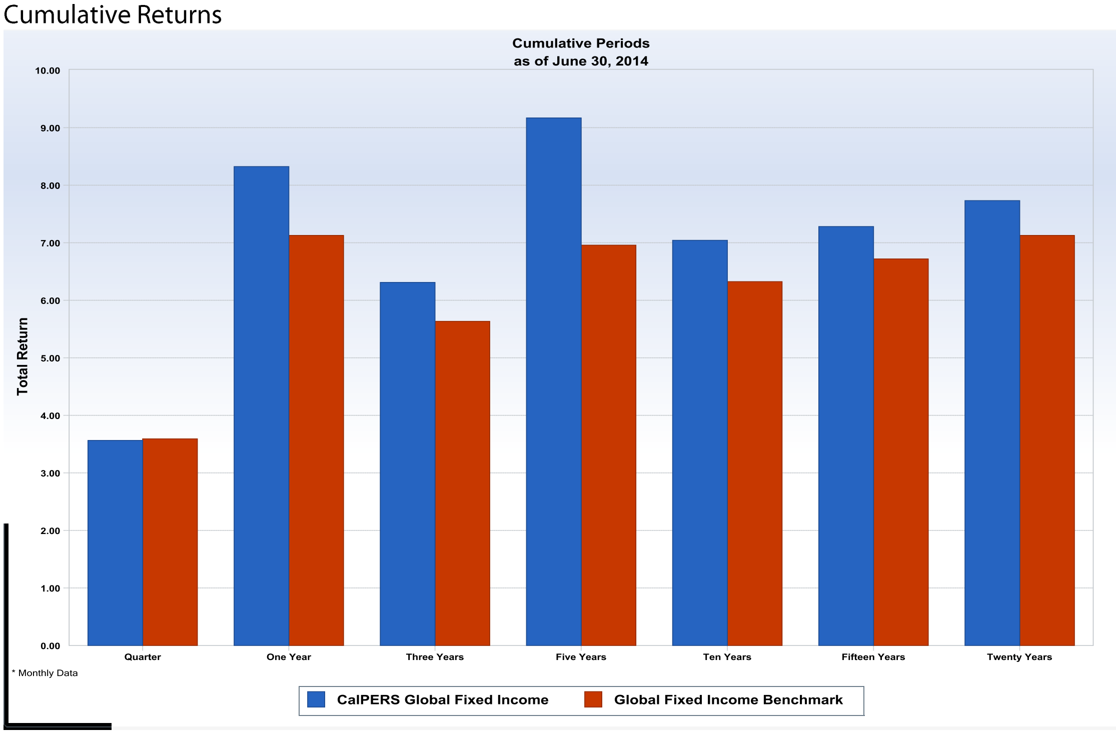
Performance Appendix

Monthly Excess Returns



Cumulative Returns



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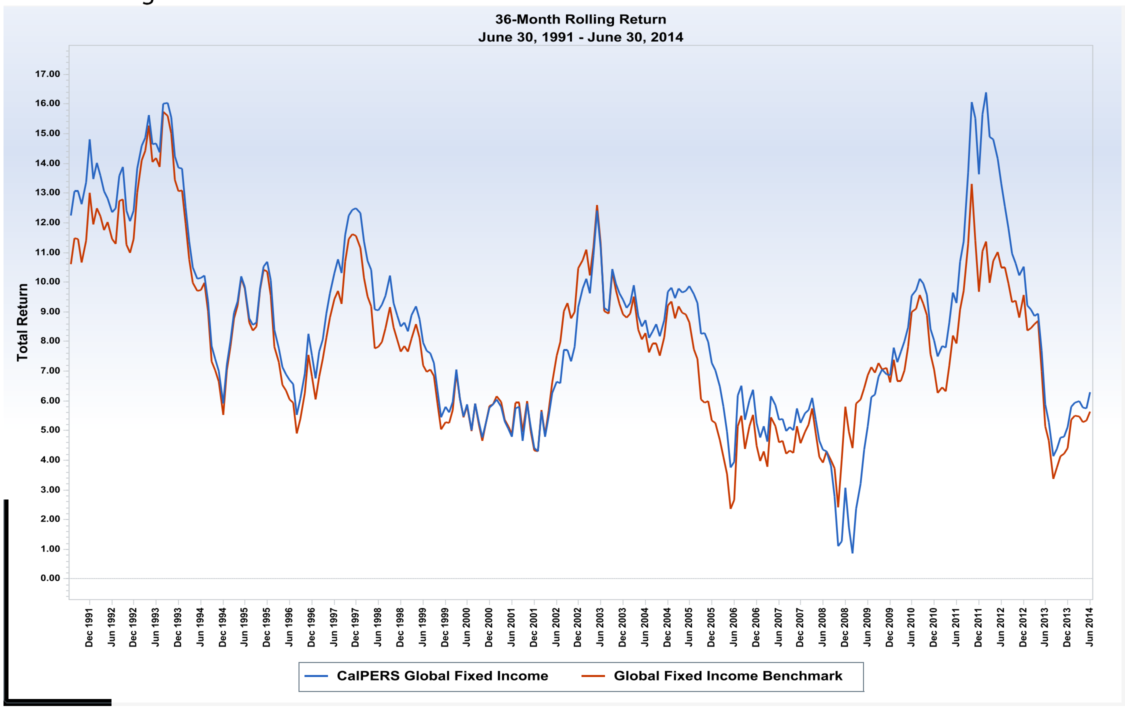
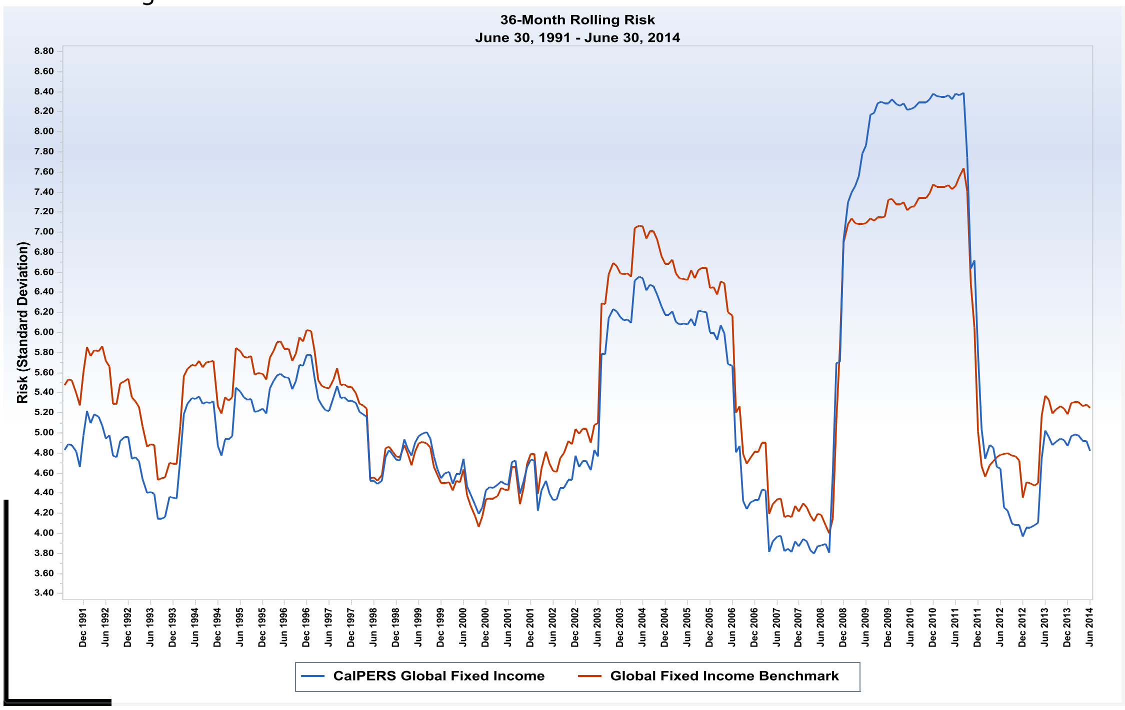
3 Year Rolling Returns



3 Year Rolling Risk



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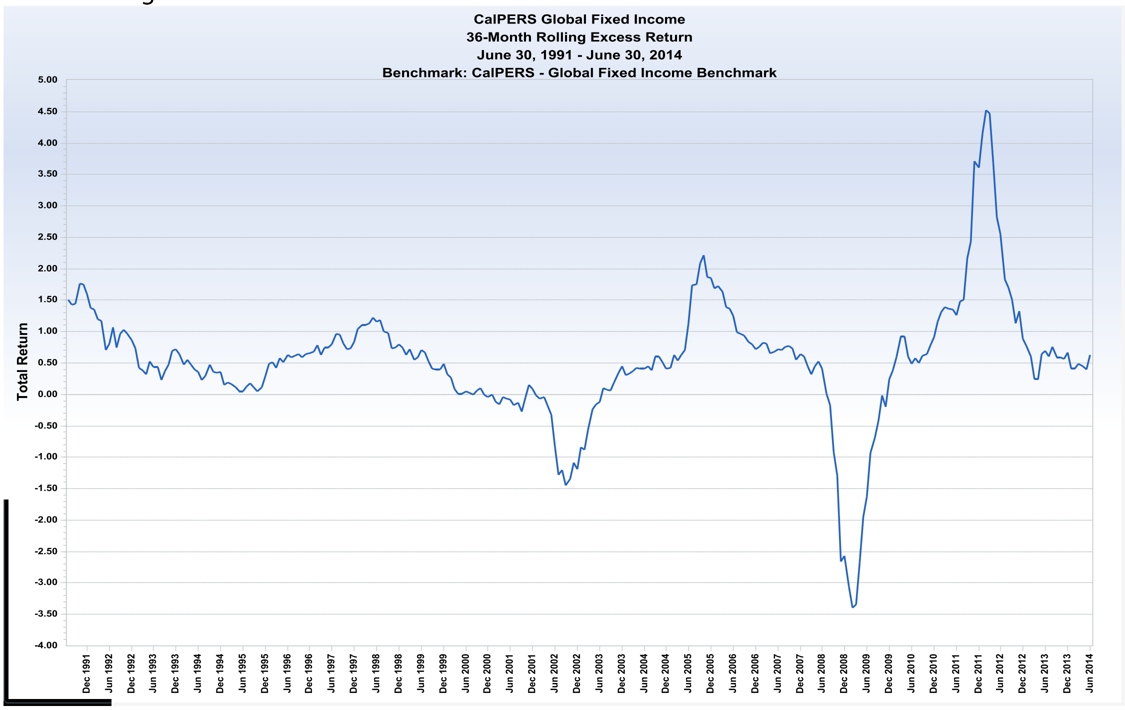
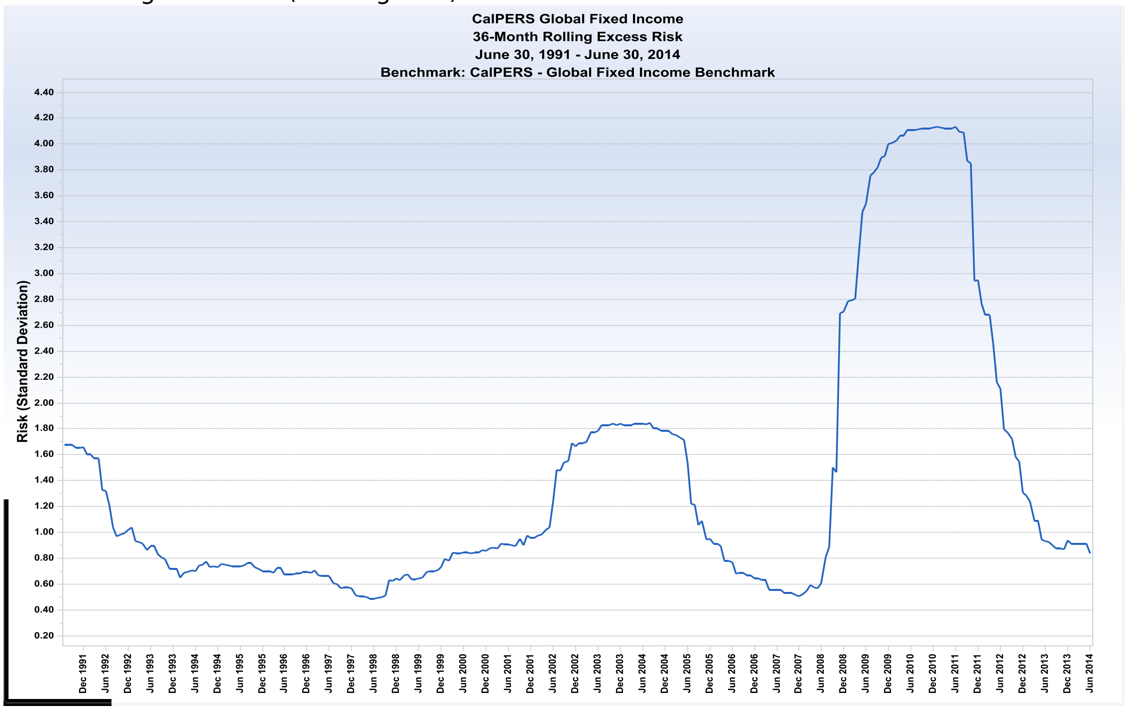
3 Year Rolling Excess Returns



3 Year Rolling Excess Risk (Tracking Error)



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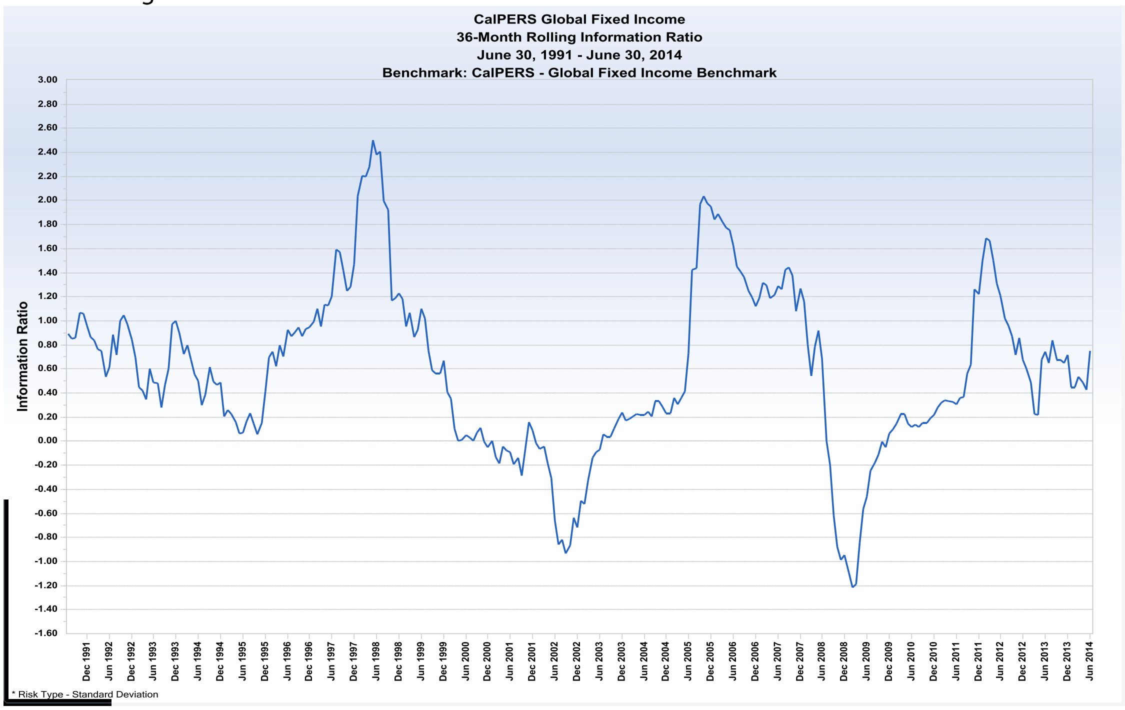
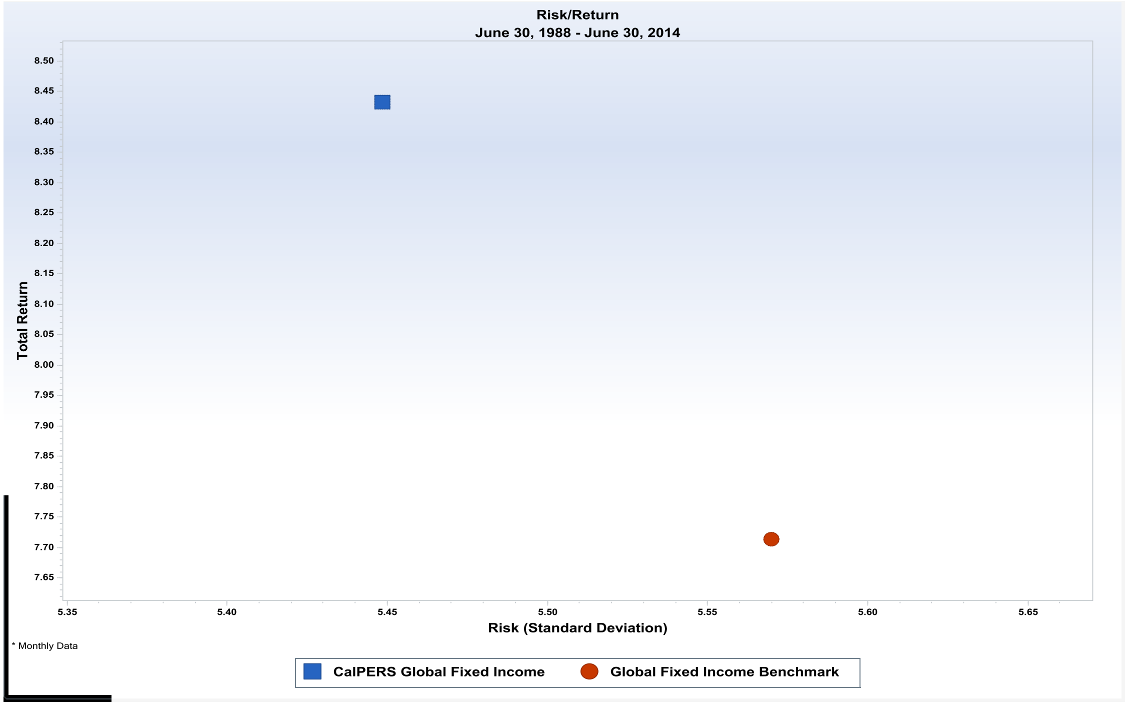
3 Year Rolling Information Ratio



Risk vs. Return since 6/30/1988



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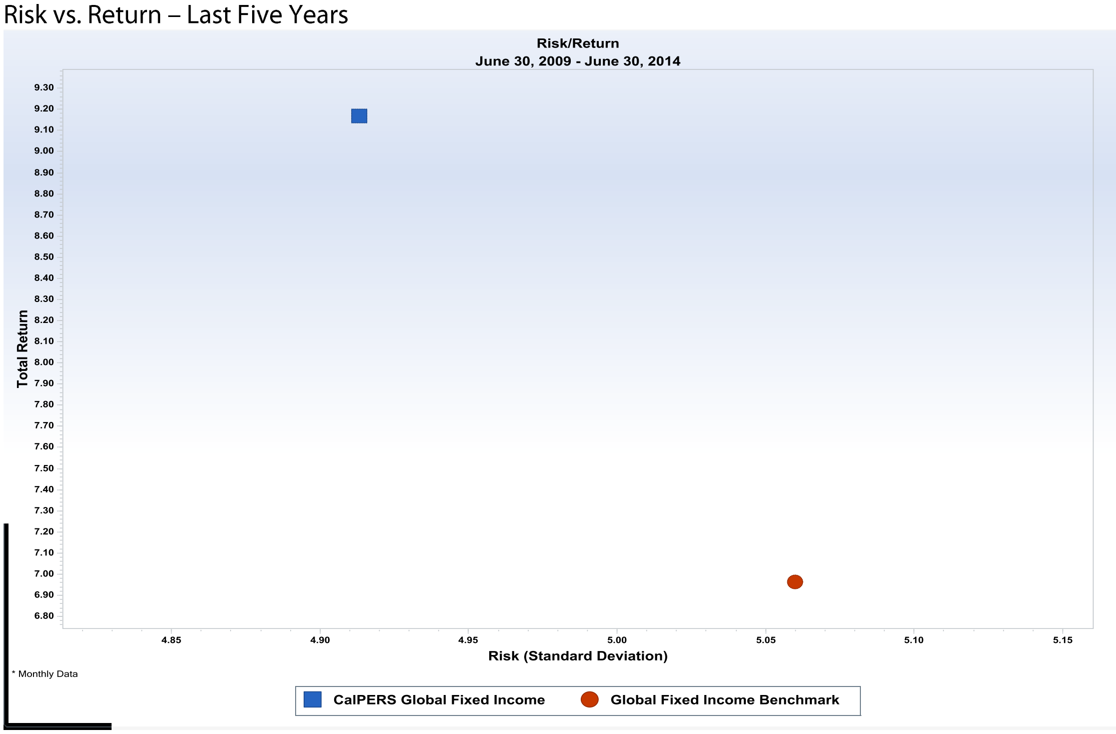
Risk vs. Return - Last 10 Years

Risk vs. Return – Last Five Years



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Up/Down Market Performance