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AGENDA REPORT

TO: DEANNA J. SANTANA CITY ADMINISTRATOR

FROM: Katano Kasaine

SUBJECT: Informational Report on PFRS' Investment Portfolio DATE: March 19, 2013

City Administrator Date HAAA Approval COUNCIL DISTRICT: City-Wide

RECOMMENDATION

Staff recommends that the Council accept this informational report on the Oakland Police and Fire Retirement System ("PFRS") Investment Portfolio as of December 31, 2012.

EXECUTIVE SUMMARY

The attached report provided by the PFRS Investment Consultant summarizes the performance of the PFRS investment portfolio for the quarter ended December 31, 2012. This report is being provided in accordance with the funding agreement between the City and the PFRS Board pursuant to the issuance of the 2012 Pension Obligation Bonds.

OUTCOME

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This is an informational report with no direct fiscal impact or outcome.

BACKGROUND/LEGISLATIVE HISTORY

The Oakland Police and Fire Retirement System ("the System") is a closed defined benefit plan established by the City of Oakland's ("the City") Charter. The System is governed by a board of seven trustees ("the PFRS Board"). The System covers the City's sworn police and fire employees hired prior to July 1, 1976. The Plan was closed to new members on June 30, 1976. There is only one remaining active member; all other members are retirees and beneficiaries. As of December 31, 2012, the System had 1,062 members.

The System's investment portfolio is controlled by the investment policy set by the PFRS Board. The Board sets an investment policy that authorizes investments in a variety of domestic and

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international equity and fixed income securities. The System's portfolio is currently managed by eleven external investment managers, except for the bond iShares which are managed internally. The majority of the portfolio is held in a Trust at The Bank of New York-Mellon. In accordance with the City Charter, the Board makes investment decisions in accordance with the prudent person standard as defined by applicable court decisions and as required by the California Constitution.

In March 1997, the City issued Pension Obligation Bonds ("POBs") and as a result deposited \$417 million into the Plan to pay the City's contributions through June 2011. In accordance with the funding agreement entered into at the time the POBs were issued in 1997, City payments to the Plan were suspended from February 25, 1997 to June 30, 2011. The City resumed contributing to the Plan effective July 1, 2011. The City contributed \$45,507,996 in the year ended June 30, 2012.

As of July 1, 2011 (the date of the System's last actuarial valuation), the unfunded actuarial accrued liability was approximately \$426.8 million.

In July 2012, the City issued additional Series 2012, Pension Obligation Bonds ("2012 POBs") and contributed \$210 million to the System, which lowered the unfunded liability from the \$426.8 million unfunded amount to an estimated amount of \$216 million. A new actuarial valuation report will need to be performed to determine the new unfunded actuarial accrued liability after the 2012 POBs deposit (the next actuarial report will be completed in April 2013). As a result of a funding agreement entered into between the System's Board and the City of Oakland, no additional contributions are required until July 1, 2017.

In addition, the City recently prevailed in a preliminary lawsuit against the PFRS Board requiring the Board to adjust the pay of the PFRS' Police members. This judgment is currently being appealed by the Retired Oakland Police Officers Association. If the City prevails on the appeal, there will be a reduction in the total PFRS Police member's prospective pay of approximately \$2 million per year. The Board will also have to retroactively adjust for approximately three years. These reductions will also need to be reflected in the future PFRS actuarial valuation report.

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ANALYSIS

<u>PFRS Membership</u>

The City Charter establishes plan membership, contribution, and benefit provisions. The System serves the City's sworn employees hired prior to July 1, 1976 who have not transferred to the California Public Employees' Retirement System ("CalPERS"). As of December 31, 2012, the System's membership was 1,062, which included 1 active member, 740 retirees and 321 beneficiaries.

Table 1 PFRS Membership as of December 31, 2012							
Membership POLICE FIRE TOTAL							
Retiree	436	304	740 [.]				
Beneficiary	168	· 153	321				
Active <u>1</u> 0 1							
Total Membership 605 457 1,062							

PFRS Investment Portfolio

As of the quarter ended December 31, 2012, the PFRS portfolio had an aggregate value of \$470.3 milhon. This amount includes the City's deposit of \$210 million in 2012 POB proceeds made during the quarter. The 2012 POB assets are currently invested in a conservative fixed income transition fund.

Table 2PFRS hivestment Portfolioas of December 31, 2012			
Investment		Fair Value	
Fixed Income	\$	265,581,542	
Equities		153,457,811	
International Equities		46,921,943	
Cash Equivalents	4,304,979		
Total Portfolio	\$	470,266,275	

<u>PFRS Investment Performance</u>

During the latest quarter ending December 31, 2012, the PFRS Total Portfolio generated a return of 1.0%, gross of fees, outperforming its benchmark target. The Plan's Fixed Income asset class matched its benchmark while both International and U.S. equity asset classes outperformed their respective benchmarks for the quarter. The PFRS quarterly performance includes the City's deposit of S210 million 2012 POB proceeds which are temporarily invested in a conservative fixed income transition fund. (Excluding the 2012 POB proceeds, the PFRS portfolio returned 1.6% for the quarter ending December 31st and 13.6% for a 12 month period.)

The Total Portfolio produced positive relative results over all time periods measured, gross of fees. Relative to the Median Fund, the total portfolio trailed the median for the quarter and 1-year periods but outperformed for the 3-year and 5-year periods. Relative performance with respect to the Median Fund can be largely attributed to differences in asset allocation.

Table 3 PFRS TOTAL FUND PERFORMANCE as of December 31, 2012						
	Quarter	1 Year	3 Year	5 Year		
PFRS Fund	1.0%	11.0%	8.6%	3.0%		
<u>Comparisons:</u>						
PFRS Actuarial Expected Rate of						
Return (blend) (c) (d)	1.69%	6.75%	7.00%	7.44%		
Policy Target (blend) (b)	0.60%	10.10%	7.90%	2.40%		
Median Fund (a)	2.00%	13.00%	9.00%	2.90%		
CalPERS Investment Returns	2.70%	13.30%	8.80%	1.00%		
CalSTRS Investment Returns	2.30%	13.40%	9.40%	1.10%		
East Bay Mud Investment Returns	1.70%	14.20%	9.40%	2.60%		
Colorado F&P Investment Returns	2.40%	12.30%	9.10%	2.20%		
QTR: Excluding this fund the Total Por	tfolio Quarterly	Performance	would have be	een 1.7%		
(a) Mellon Total Fund Public Universe						
(b) The Evolving Policy Benchmark consi	sts of 20% Russe	ll 3000, 7% M	SCI ACWI ex I	U.S., 18%		
BC Universal, and 55% t-bills.	BC Universal, and 55% t-bills.					
(c) The actuarial expected rate of return was 8% through 6/30/2009, 7.5% through 6/30/2010, 7% through 6/30/2011 and 6.75% currently						
(d) The quarterly actuarial expected rate o	f return is calcula	ted based on th	ie 6.75% annua	l return		
assumption						

Pension Obligation Bonds

In July 2012, the City of Oakland issued a Pension Obligation Bond ("POB") to help fund the PFRS portfolio. These assets are temporarily invested in a short-term transition account managed by one of PFRS current fixed income managers and largely consist of high quality, short-duration fixed income assets. The rollout of these assets will be done in conjunction with the broader goals of moving to the new long-term asset allocation. The primary drivers of the evaluation process consisted of capital preservation, liquidity, management and transition costs, and flexibility of the investment to meet long-term asset allocation goals. Over the next 12-18 months, the proceeds from the POB will be strategically rolled out into the broader investment portfolio. On January 30, 2013, the Board authorized an initial roll out of \$28 million from the POB proceeds to the large cap domestic equity portfolios.

Table 4 PFRS Initial POB Proceed Distribution					
Investment	Fair Value as of 1/31/2013	Initial P OB Roll out	Fair Value as of 2/28/2013		
Fixed Lucome	\$260,086,748	(\$28,000,000)	\$227,464,004*		
Domestic Equities International	161,937,366	28,000,000	191,337,510		
Equities	49,091,180		48,671,382		
Cash Equivalents 4,157,049 4,225,8					
Total Portfolio	\$475,272,344		\$471,698,703		

* Includes an additional withdrawal of \$5.1 million for the purpose of paying Retiree monthly pension payments

Long-Term Asset Allocation

At its September 26th meeting, the PFRS Board conducted an asset allocation strategy review. During this discussion, the Board reviewed various investment strategy options and, subsequently, adopted a new long-term investment policy allocation for the Retirement Plan.

In summary, the PFRS Board elected to adjust the strategic investment allocations for the Retirement Plan. The most significant change is the inclusion of new Covered Calls and Real Return classes that will each represent ten percent of the strategic allocation policy for both portfolios long-temi. The PFRS Board also elected to include a five percent allocation to Private Equity, pending educational reviews of the asset class in 2013. These new classes are expected to be funded over the next 12-18 months. The table below represents the policy allocations as of December 31, 2012 and the new asset allocation.

Asset Class	12/31/2012 Target Portfolio %	New Long-Term
Fixed Income	30	20
Real Return	0	10
Covered Calls	0	10
Domestic Equity	53	43
International Equity	17	12
Private Equity	0	5

PUBLIC OUTREACH/INTEREST

This item did not require any additional public outreach other than the required posting on the City's website.

COORDINATION

This report was prepared in coordination with the PFRS' Investment Consultant, Pension Consulting Alliance (PCA), City Attorney's Office and Budget Office.

COST SUMMARY/IMPLICATIONS

Since this is an informational report, there are no budget implications associated with the report.

SUSTAINABLE OPPORTUNITIES

Economic: Whenever possible, the PFRS Board seeks to benefit the local Oakland based economy. In 2006, the Board, along with staff, created the PFRS Local Broker provision. This provision mandates that the PFRS Investment Managers consider using Oakland based broker for all trades conducted on behalf of the fund based on best execution. This program aims to regenerate some of the commissions generated by the System into the Oakland economy.

Environmental: There are no environmental opportunities associated with this report.

Social Equity: There are no social equity opportunities associated with this report.

For questions regarding this report, please contact Katano Kasaine, Treasurer, at (510) 238-2989.

Respectfully submitted,

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KATANO KASAINE Treasurer

Prepared by: Téir Jenkins, Retirement Systems Accountant Retirement Division

Attachment: Appendix A: PFRS Performance Report as of December 31, 2012

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APPENDIX A – PFRS' INVESTMENT PERFORMANCE REPORT as of 12/31/2012



City of Oakland Police and Fire Retirement System

Quarterly Report Executive Summary

December 31, 2012

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Nothing herein is intended to serve as investment advice, a recommendation of any particular investment or type of investment, a suggestion of the merits of purchasing or selling securities, or an invitation or inducement to engage in investment activity.

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INTRODUCTION

As of December 31, 2012, the City of Oakland Police and Fire Retirement System (OPFRS) portfolio had an aggregate value of \$470.3 million. This represents an (\$11.0) million decrease in value over the quarter. During the previous one-year period, the OPFRS Total Portfolio increased by \$204.4 million, including (\$41.4) million in withdrawals during the period.

Asset Allocation Trends

The asset allocation targets (see table on page 19) reflect those as of December 31, 2012. Target weightings reflect the Plan's current asset allocation (effective 10/1/2007).

With respect to policy targets, the portfolio ended the latest quarter **underweight Domestic and** International Equity while overweight Fixed Income.

Recent Investment Performance

During the most recent quarter, the OPFRS Total Portfolio generated a positive absolute return of 1.0%, gross of fees. The Plan outperformed its policy benchmark by 40 basis points. The portfolio has outperformed its policy benchmark over all time periods.

The Total Portfolio has produced a negative return relative to the Median Fund for the quarter, 1-year, and 3-year time periods while producing positive returns over the 5-year time period, gross of fees. Performance differences with respect to the Median Fund can be attributed largely to differences in asset allocation.

	Quarter	1 Year	3 Year	5 Year
Total Portfolio ¹	1.0	11.0	8.6	3.0
Policy Benchmark ²	0.6	10.1	7.9	2.4
Excess Return	0.4	0.9	0.7	0.6
Reference: Median Fund ³	2.0	13.0	9.0	2.9
Reference: Total Net of Fees ⁴	0.4	10.4	8.0	2.4



¹ Gross of Fees. Performance since 2005 includes securities lending.

² Evolving Policy Benchmark consists of 20% Russell 3000, 7% MSCI ACWI ex U.S., 18% BC Universal, and 55% tbills.

³ Mellon Total Funds Public Universe.

⁴ Net of fee returns are estimated based on OPFRS manager fee schedule.

Investment Market Risk Metrics

<u>Takeaways</u>

- Markets continued to be in a risk seeking mode, even prior to the fiscal cliff deal in January.
- Equity market volatility (VIX) remained near or below average (<20), and fell significantly following the fiscal cliff deal at the onset of 2013.</p>
- Credit spreads are below long-term averages, with investment grade spreads lower than anytime since the summer of 2007.
- While valuations of growth exposed assets are cheap relative to bonds, they are only neutral relative to their historical valuation levels.
- The PCA Market Sentiment Indicator "PMSI" continued to read green in December.

The positive sentiment indication results from:

- 1. positive returns to US stocks year-over-year, and
- 2. narrowing of credit spreads year-over-year.
- Interest rate risk remains high:
 - The 10-year Treasury yield ended December at 1.78%, rising further in the first days of January to above 1.90%.
 - Bond sensitivity to interest rates (duration) remains near 30 year highs, and real yields are at all time lows (negative out to nearly 20 years for government issues).





OPFRS







Developed Equity Markets





Emerging Market Equity Markets



US Private Equity





Source: Thomson Reuters Buyouts * quarterly total deal size (both equity and debt)

Source: S&P LCD study

Private Real Estate Markets





US Fixed Income



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Other Market Metrics



VIX - a measure of equity market fear / uncertainty

Source: http://www.cboe.com/micro/vix/historical.aspx

(Please note time scale difference)



Yield Curve Slope

Source: www.ustreas.gov (10 yr treasury yield minus 1 year treasury yield) Recession Dating: NBER http://www.nber.org/cycles.html



Measures of Inflation Expectations





Measures of US Treasury Interest Rate Risk



10-Year Treasury Duration (Change in Treasury price with a change in interest rates)



Source: www.ustreas.gov for 10-year constant maturity rates, calculation of duration



Quarterly Report

Overview: After a positive third quarter, U.S. equities produced mixed results to wrap up the year as Hurricane Sandy, the presidential election, and concerns regarding the "fiscal cliff" weighed on the markets. Following the end of the quarter, an agreement was reached by lawmakers to make a detour around the cliff. Strong signs of recovery in the U.S. housing market continued as sales of new and existing homes increased. Economic data from most regions indicated sustained moderate improvements, resulting in positive reactions by global equities. The Fed continued its accommodative monetary policy through additional bond purchases, as well as through suppressed interest rates. Despite Europe moving to the background, a new deal was reached with Greece, effectively bringing more bailout funds and allowing the country to stay in the Euro.

Economic Growth

- Real GDP decreased at an annualized rate of (0.1) percent in the fourth quarter of 2012, falling from 3.1 percent in the third quarter of 2012.
- Inventory investment turned down, mainly due to declines in the manufacturing industries. Federal government spending fell significantly due to a downturn in defense spending, as well.
- Positive movements included business investment turning up as spending on equipment and software rebounded, and an uptick in consumer spending driven mainly by financial services, autos and parts.

Inflation

- The Consumer Price Index for All Urban Consumers (CPI-U) declined by (0.7) percent in the quarter on an annualized basis, after seasonal adjustment.
- Quarterly percent changes may be adjusted between data publications due to periodic updates in seasonal factors.
- Core CPI-U increased by 1.6 percent for the quarter on an annualized basis.
- Over the last 12 months, CPI-U increased 1.7 percent before seasonal adjustment.

Unemployment

- The U.S. economy gained 472,000 jobs in the quarter.
- The official unemployment rate was essentially unchanged from the third quarter at 7.8%.
- The majority of jobs gained occurred in health care, professional and business services, and retail trade.

Interest Rates & U.S. Dollar

- U.S. Treasury yields slightly increased over the quarter.
- The Federal Reserve has maintained the federal funds rate between 0.00% and 0.25% since December 2008.
- The U.S. dollar depreciated against the Euro and the Sterling by 2.6% and 0.5%, respectively, while appreciating against the Yen by 11.3%.
- Subsequent to quarter end, rates remained near low historic levels.

Annualized Quarterly GDP Growth





Unemployment Rate



Treasury Yield Curve Changes





Fixed Income

- The bond markets provided mixed results during the quarter, and were again led by high yield, which produced the best performance over the quarter and trailing one-year periods.
- The Governments and MBS sectors produced slightly negative returns over the quarter while all other sectors increased slightly. All sectors remained positive over the one-year period.



U.S. Fixed Income Sector Performance (BC Aggregate Index)						
Sector	Weight	QTR	1 Year			
Governments*	40.4%	-0.1%	2.0%			
Inv. Grade Credit	21.5%	1.0%	9.4%			
Agencies	6.3%	0.2%	2.4%			
MBS	29.6%	-0.2%	2.6%			
ABS	0.4%	0.2%	3.7%			
CMBS	1.8%	1.2%	9.7%			



U.S. Equities

- Like the bond markets, the U.S. stock market provided mixed results over the fourth quarter while staying positive for the year.
- Investors remained relatively cautious during the quarter while U.S. Consumer Confidence decreased to near July levels.
- During the quarter, value indices outperformed growth throughout all market capitalizations.
- Six of ten sectors produced negative returns during the quarter as only Financials, Consumer Discretionary, Industrials, and Materials produced positive returns. All ten sectors produced positive returns for the trailing one-year period.



U.S. Equity Sector Performance (Russell 3000 Index)						
Sector	Weight	QTR	1 Year			
Information Tech	18.2%	-4.7%	14.0%			
Financials	16.8%	4.9%	26.2%			
Consumer Disc	12.5%	2.9%	24.8%			
Health Care	11.8%	-0.6%	19.4%			
Industrials	11.3%	5.3%	17.2%			
Energy	9.9%	-2.6%	3.9%			
Consumer Staples	9.3%	-1.4%	10.9%			
Materials	4.1%	3.5%	17.5%			
Utilities	3.4%	-2.4%	2.1%			
Telecom Svc	2.7%	-5.5%	18.8%			



International Equities

- International equity markets produced positive returns during the fourth quarter and over the trailing one-year period. Canada produced the lowest return over the quarter.
- During the quarter financial markets in Europe showed improved signs of stabilization, as yields continued to decline in the most distressed countries in a steady response to the ECB government bond buying program.
- Emerging markets trailed developed markets over the quarter, but only lagged the MSCI Europe over the trailing oneyear period.



International Equity Region Performance (in USD) (MSCI ACW Index ex U.S.)						
Sector	Weight	QTR	1 Year			
Emerging Markets	24.2%	5.9%	17.4%			
Europe Ex. UK	29.2%	8.6%	22.5%			
Japan	13.7%	5.8%	8.4%			
Pacific Ex. Japan	9.6%	6.1%	24.7%			
United Kingdom	15.4%	4.2%	15.3%			
Canada	7.9%	0.9%	9.9%			

Market Summary – Long-term Performance*

Indexes	1 Year	3 Year	5 Year	10 Year	20 Year
Global Equity					
MSCI All Country World	16.8%	7.2%	-0.6%	8.7%	7.5%
Domestic Equity					
S&P 500	16.0%	10.9%	1.7%	7.1%	8.2%
Russell 3000	16.4%	11.2%	2.0%	7.7%	8.3%
Russell 3000 Growth	15.2%	11.5%	3.2%	7.7%	7.0%
Russell 3000 Value	17.5%	10.9%	0.8%	7.5%	9.1%
Russell 1000	16.4%	11.1%	1.9%	7.5%	8.3%
Russell 1000 Growth	15.3%	11.4%	3.1%	7.5%	7.1%
Russell 1000 Value	17.5%	10.9%	0.6%	7.4%	9.1%
Russell 2000	16.3%	12.2%	3.6%	9.7%	8.4%
Russell 2000 Growth	14.6%	12.8%	3.5%	9.8%	6.2%
Russell 2000 Value	18.1%	11.6%	3.5%	9.5%	10.2%
CBOE BXM	5.2%	5.6%	1.1%	5.6%	8.0%
International Equity					
MSCI All Country World ex US	17.4%	4.3%	-2.4%	10.2%	7.2%
MSCI EAFE	17.9%	4.0%	-3.2%	8.7%	6.5%
MSCI Pacific	14.6%	4.7%	-1.8%	8.3%	3.4%
MSCI Europe	19.9%	3.9%	-3.7%	9.0%	8.7%
MSCI EM (Emerging Markets)	18.6%	5.0%	-0.6%	16.9%	8.8%
Fixed Income					
BC Universal Bond	5.5%	6.7%	6.2%	5.6%	6.5%
BC Global Agg – Hedged	5.7%	5.2%	5.3%	4.8%	6.3%
BC Aggregate Bond	4.2%	6.2%	5.9%	5.2%	6.3%
BC Government	2.0%	5.5%	5.2%	4.7%	6.1%
BC Credit Bond	9.4%	8.7%	7.7%	6.2%	7.0%
BC Mortgage Backed Securities	2.6%	4.7%	5.7%	5.1%	6.2%
BC High Yield Corporate Bond	15.8%	11.9%	10.3%	10.6%	8.2%
BC WGILB - Hedged	5.6%	7.3%	6.2%	6.1%	NA
BC Emerging Markets	17.9%	12.5%	10.3%	11.6%	11.7%
Real Estate					
NCREIF (Private RE)	10.5%	12.6%	2.1%	8.4%	8.9%
NAREIT (Public RE)	20.1%	18.0%	5.6%	11.0%	10.6%
Commodity Index					
DJ-UBS Commodity	-1.1%	0.1%	-5.2%	4.1%	5.4%

* Performance is annualized for periods greater than one year.



OPFRS PORTFOLIO PERFORMANCE

This section includes an overview of the performance of the OPFRS investment portfolio, as well as a detailed analysis of asset classes and specific mandates.

Portfolio Performance Overview

During the latest quarter ending December 31, 2012, the OPFRS Total Portfolio generated a return of 1.0%, gross of fees, outperforming its benchmark target. The Plan's Fixed Income asset class matched its benchmark while both International and U.S. equity asset classes outperformed their respective benchmarks for the quarter.

The Total Portfolio produced positive relative results over all time periods, gross of fees. Relative to the Median Fund, the total portfolio trailed the median for all time periods except the 5-year period. Relative performance with respect to the Median Fund can be largely attributed to differences in asset allocation.



Periods Ending December 31, 2012 (annualized)



 ^{*} Net of fee returns are estimated based on OPFRS manager fee schedule.

^{**} The Evolving Policy Benchmark consists of 20% Russell 3000, 7% MSCI ACWI ex U.S., 18% BC Universal, and 55% tbills.

^{***} Asset Allocation Benchmark by Asset Class is calculated using actual weightings of the broad asset classes.

^{****} Asset Allocation Benchmark by Manager consists of weighted average return of individual manager benchmarks, based on managers' actual allocations.

^{*****} Median Fund is the Mellon Total Public Funds Universe.

Quarterly Report

Absolute performance results have been positive in four of the last five 12-month periods ending December 31. The Plan outperformed its policy benchmark in four of the periods, gross of fees.





*Net of fee returns are estimated based on OPFRS manager fee schedule

Portfolio Valuation

The OPFRS portfolio had an aggregate value of \$470.3 million as of December 31, 2012. During the latest quarter, the portfolio decreased by (\$11.0) million. Over the latest year, the portfolio increased by \$204.4 million, including (\$41.4) million in net benefit payments.

Investment Portfolio Valuation as of December 31, 2012*

	December 31,	September 30,	Quarterly	Percentage	December 31,	Annual	Percentage
	2012	2012	Change	Change	2011	Change	Change
OPFRS	\$470.3	\$481.3	(\$11.0)	-2.3%	\$265.9	\$204.4	56.5%

*The calculations listed above represent change in dollar value and not investment returns.

Actual vs. Target Allocations

With respect to policy targets, the portfolio ended the latest quarter **underweight Domestic and International Equity while overweight Fixed Income.** Target weightings reflect the Plan's current asset allocation (effective 10/1/2007).

As of December 31, 2012				
Segment	Actual \$(000)	Actual %*	Target %	Variance
Total Investment Portfolio	470,270	100.0%	100.0%	
Domestic Equity Large Cap Equity Mid Cap Equity Small Cap Equity	153,456 110,992 27,646 14,818	32.6% 23.6% 5.9% 3.2%	53.0% 38.4% 9.3% 5.3%	-20.4% -14.8% -3.4% -2.1%
International Equity	46,924	10.0%	17.0%	-7.0%
Total Equity	200,380	42.6%	70.0%	-27.4%
Fixed Income	265,580	56.5%	30.0%	26.5%
Real Estate	30	0.0%	0.0%	0.0%
Cash	4,280	0.9%	0.0%	0.9%
* In aggregate, asset class allocations equa	al 100% of total investment portf	olio. Differences due to roundi	ng.	

During the latest quarter, the actual weighting of Domestic Equity and International Equity both increased by 1.0% and 0.8%, respectively. Fixed Income decreased by (1.8%) and Cash decreased by (0.1%).

Investment Portfolio Actual Asset Allocation Comparison



September 30, 2012





Asset Class Performance

The **Domestic Equity** asset class outperformed the policy benchmark by 60 basis points over the current quarter, and underperformed by (40) basis points over the latest 1-year period. Over the latest 3-year period the asset class outperformed by 90 basis points, and by 60 basis points over the 5-year period.

The **International Equity** portfolio outperformed its policy benchmark by 0.6% during the quarter. Over the latest 1-year period, the International Equity portfolio outperformed its policy benchmark by 0.5% while underperforming by (70) basis points, over the 3-year period. Over the latest 5-year period, the International Equity portfolio underperformed the policy benchmark by (1.1%), on an annualized basis.

The **Fixed Income** asset class matched the performance of its policy benchmark the quarter and outperformed by 1.0% for the 1-year period. The Fixed Income portfolio has outperformed over the 3- and 5-year time periods by 40 basis points and 50 basis points, respectively.

Periods ending December 31, 2012

Asset Class	Quarter	1 Year	3 Year	5 Year
Total Investment Portfolio	1.0	11.0	8.6	3.0
<i>Policy Benchmark</i> ¹	<i>0.6</i>	<i>10.1</i>	<i>7.9</i>	2.4
Public Equity Policy Benchmark ² Domestic Equity Blended Benchmark ⁴ Large Cap Russell 1000 Mid Cap Russell Midcap Small Cap	2.1 1.6 0.8 0.2 0.2 0.1 4.1 2.9 -0.3	16.4 16.7 16.0 16.4 16.1 16.4 16.4 17.3 14.7	10.1 9.6 12.1 11.2 11.1 11.1 13.7 13.2 16.1	1.2 1.0 2.6 2.0 1.9 4.7 3.6 3.6
Russell 2000	1.9	16.3	12.2	3.6
International Equity	6.5	17.9	3.6	-3.5
<i>Blended Benchmark⁵</i>	<i>5.9</i>	<i>17.4</i>	<i>4.3</i>	<i>-2.4</i>
Fixed Income	0.6	6.5	7.1	6.7
BC Universal (blend) ⁶	<i>0.6</i>	<i>5.5</i>	<i>6.7</i>	<i>6.2</i>



¹ The Evolving Policy Benchmark consists of 20% Russell 3000, 7% MSCI ACWI ex U.S., 18% BC Universal, and 55% tbills.

² The Public Equity benchmark consists of 76% Russell 3000 and 24% MSCI ACWI ex U.S.

⁴ Domestic Equity Benchmark consists of S&P 500 thru 3/31/98, 29% R1000, 57% R1000V, 14% RMC from 4/1/98 - 12/31/04, and Russell 3000 from 1/1/05 to the present.

⁵ International Equity Benchmark consists of MSCI EAFE thru 12/31/04, and MSCI ACWI x U.S. thereafter.

⁶ Fixed Income Benchmark consists of BC Aggregate prior to 4/1/06, BC Universal prior to 7/1/2012, and a blend of 75%tbills, 25% BC Universal thereafter.

The Domestic Equity portfolio outperformed the policy benchmark in three of the five latest 12-month periods. The Plan finished the latest 12-month ending December 31, 2012 with a return of 16.0%, underperforming the policy benchmark by (40) basis points.



The International Equity portfolio outperformed the policy benchmark in two of the five latest 12-month periods. The Plan finished the latest 12-month period ending December 31, 2012 with a return of 17.9%, outperforming the policy benchmark by 0.5%.

International Equity 12-Month Performance – Periods Ending December 31



The Fixed Income portfolio outperformed the policy benchmark in four of the last five 12-month periods. The Plan finished the latest 12-month period ending December 31, 2012 with a return of 6.5%, outperforming the policy benchmark by 1.0%.





Manager Performance

Domestic Equity – F	Periods ending	December 31	, 2012
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Manager	Mkt Value (\$000)	Asset Class	Quarter	1 YR	3 YR	5 YR	Since Inception*	Inception Date**
Delaware	15,669	Large Cap Growth	-0.5	16.9	13.5	3.8	6.2	9/2006
Russell 1000 Growth Index			-1.3	15.3	11.4	3.1	5.3	
Northern Trust R1000 Index	68,870	Large Cap Core	0.1	16.4			11.3	5/2010
Russell 1000 Index			0.1	16.4			9.5	
Barrow Hanley	26,453	Large Cap Value	1.0	15.0	9.4	1.0	3.4	9/2005
Russell 1000 Value Index			1.5	17.5	10.9	0.6	3.4	
Earnest	27,646	Mid Cap Core	4.1	16.4	13.7	4.7	5.3	3/2006
Russell MidCap			2.9	17.3	13.2	3.6	4.8	
NWQ	6,975	Small Cap Value	4.2	18.1	17.2	3.3	3.2	1/2006
Russell 2000 Value Index			3.2	18.1	11.6	3.5	3.0	
Lord Abbett	7,843	Small Cap Growth	-4.0	11.3			18.1	6/2010
Russell 2000 Growth Index			0.4	14.6			16.7	

* Performance is calculated based on the first full month of performance since funding.

** Inception date reflects the month when portfolio received initial funding.

During the latest three-month period ending December 31, 2012, three of OPFRS' active domestic equity managers outperformed or matched their respective benchmarks.

Delaware, the Plan's active large cap growth manager, ended the quarter with a (0.5%) return, outperforming the Russell 1000 Growth Index's return by 80 basis points. Over the latest 1-year period, Delaware posted a strong 16.9% return, outperforming its benchmark by 1.6%. Over the latest 3- and 5-year periods, Delaware outperformed its benchmark by 2.1% and 0.7%, respectively.

Barrow Hanley, OPFRS' large cap value manager, finished the quarter returning 1.0%, underperforming the Russell 1000 Value Index by (0.5%). The portfolio underperformed its benchmark by (2.5%) over the latest 1-year period. Over the latest 5-year period, Barrow Hanley outperformed its benchmark by 40 basis points.

Earnest Partners, the Plan's mid cap core manager, completed the quarter with a 4.1% return, outperforming the Russell Midcap Index by 120 basis points. Over the latest 1-year period, Earnest underperformed its benchmark by (90) basis points and outperformed its benchmark over the 3-year period by 50 basis points. Over the 5-year period, Earnest outperformed its benchmark by 1.1%.

NWQ, the Plan's small cap value manager, outperformed the Russell 2000 Value Index by 1.0%, over the latest 3-month period. Over the latest 1-year period, NWQ matched its benchmark of 18.1%. Over the 3- and 5-year periods, NWQ outperformed its benchmark by 5.6% and underperformed by (20) basis points, respectively.

Lord Abbett, the Plan's small cap growth manager, underperformed the Russell 2000 Growth Index by (4.4%) for the quarter. Over the 1-year period, Lord Abbett has underperformed by (3.3%).



Manager	Mkt Value (\$000)	Asset Class	Quarter	1 YR	3 YR	5 YR	Since Inception*	Inception Date**
SSgA	12,004	International	6.6	17.7	4.5	-3.0	7.8	7/2002
MSCI EAFE Index			6.6	17.9	4.0	-3.2	7.8	
Hansberger	17,309	International	6.0	19.0	2.7	-3.5	3.4	1/2006
MSCI ACWI x US			5.9	17.4	4.3	-2.4	4.0	
Fisher	17,611	International	6.9	17.0			-0.9	4/2011
MSCI ACWI x US			5.9	17.4			-1.0	

* Performance is calculated based on the first full month of performance since funding.

** Inception date reflects the month when portfolio received initial funding.

During the latest three-month period ending December 31, 2012, both of OPFRS' two active International Equity managers outperformed their benchmark.

The **SSgA** account has performed roughly in-line with its benchmark over all other extended time periods. This performance is within expectations for a passive mandate.

Hansberger, one of OPFRS' active international equity managers, outperformed the MSCI ACWI x US Index by 0.1% during the quarter. During the latest 1-year period, the portfolio returned 19.0% besting its benchmark by 1.6%. During the latest 3- year period, the portfolio lagged its benchmark by (1.6%) per annum. Over the 5-year period, Hansberger underperformed its benchmark by (1.1%).

Fisher, one of OPFRS' active international equity managers, outperformed the MSCI ACWI x US Index by 100 basis points during the quarter. Over the latest 1-year period, Fisher underperformed its benchmark target by (0.4%).

Fixed Income – Periods ending December 31, 2012

Manager	Mkt Value (\$000)	Asset Class	Quarter	1 YR	3 YR	5 YR	Since Inception **	Inception Date ***
Reams	25,673	Core Plus	0.9	8.6	8.5	7.8	6.8	1/1998
BC Universal Index (blend)*			0.6	5.5	6.7	6.2	5.9	
T. Rowe Price	46,595	Core	0.4	5.4			6.3	5/2011
BC Aggregate Index			0.2	4.2			6.2	
BC TIPS (iShares)	7,757	TIPS	0.3	6.0			7.9	2/2010
BC U.S. TIPS Index			0.7	7.0			8.6	
Reams (Transition)	185,555	Transition						8/2012
90-day T-bill								

* Previously the benchmark for Reams was the BC Aggregate; this was changed to the BC Universal beginning 4/1/2006.

** Performance is calculated based on the first full month of performance since funding.

*** Inception date reflects the month when portfolio received initial funding.

During the latest three-month period ending December 31, 2012, both of OPFRS' two active Fixed Income managers outperformed their respective benchmark.

Reams, the Plan's core plus fixed income manager, produced a quarterly return of 0.9%, outperforming the BC Universal (blend) Index by 30 basis points. During the latest 1-year period, the portfolio outperformed its benchmark by 3.1%, issue selection has been a strong driver of relative performance. The portfolio topped its benchmark by 1.8% during the latest 3-year period, and 1.6% during the latest 5-year period, on an annualized basis.

T. Rowe Price, the Plan's core fixed income manager, produced a quarterly return of 0.4%, besting the BC Aggregate Index by 20 basis points.

iShares BC TIPS, the Plan's Treasury Inflation Protected Securities (TIPS) ETF, lagged the BC TIPS Index with a 0.3% return during the quarter. The portfolio also underperformed its benchmark over the 1 year period.

OPFRS --- Risk/Return Analysis Period ending December 31, 2012



Growth of a Dollar Past 5 Years

Five-Year Annualized Risk/Return





City of Oakland Police & Fire Retirement, Asset Allocation as of 12/31/12

Manager	Style	Market Value \$(000)	Target	Actual ¹	Difference
Total Plan		\$470,270	100.0%	100.0%	0.0%
Public Equity		\$200,380	70.0%	42.6%	-27.4%
Domestic Equity		\$153,456	53.0%	32.6%	-20.4%
Large Cap Equity					
Northern Trust	Large Cap Core	68,870	23.9%	14.6%	-9.2%
Barrow Hanley	Large Cap Value	26,453	9.3%	5.6%	-3.6%
Delaware	Large Cap Growth	15,669	5.3%	3.3%	-2.0%
Mid Cap Equity					
Earnest Partners	Mid Cap Core	27,646	9.3%	5.9%	-3.4%
Small Cap Equity					
NWQ	Small Cap Value	6,975	2.7%	1.5%	-1.2%
Lord Abbett	Small Cap Growth	7,843	2.7%	1.7%	-1.0%
International Equity		\$46,924	17.0%	10.0%	-7.0%
SSgA	International	12,004	4.3%	2.6%	-1.7%
Hansberger	International	17,309	6.4%	3.7%	-2.7%
Fisher	International	17,611	6.4%	3.7%	-2.6%
Fixed Income		\$265,580	30.0%	56.5%	26.5%
Reams	Core Plus	25,673	10.7%	5.5%	-5.2%
T. Rowe Price	Core	46,595	16.3%	9.9%	-6.4%
BC TIPS (iShares)	Inflation Linked	7,757	3.0%	1.6%	-1.4%
Transition (Reams)	Transition Portfolio	185,555		39.5%	
Real Estate		\$30			
Residential Mortgage	Real Estate	30			
Total Cash ²		\$4,280	0.0%	0.9%	0.9%
Torrey Pines Bank	Money Market	984	0.0%	0.2%	0.2%

1. In aggregate, asset class allocations equal to 100% of total investment portfolio.

2. Includes cash balance with City Treasury.



Monitoring/Probation Status

As of December 31, 2012 Return vs. Benchmark since Corrective Action

Portfolio	Status	Concern	Months Since Corrective Action	Performance^ Since Corrective Action	Date of Corrective Action*

^ Annualized performance if over one year.

* Approximate date based on when Board voted to either monitor a manager at a heightened level or place it on probation.

Investment Performance Criteria For Manager Monitoring/Probation Status

	Short-term	Medium-term	
Asset Class (rolling 12 mth periods)		(rolling 36 mth periods)	Long-term (60 + months)
Active Domestic Equity	Fd return < bench return – 3.5%	Fd annlzd return < bench annlzd return – 1.75% for 6 consecutive months	VRR < 0.97 for 6 consecutive months
Active International		Fd annlzd return < bench annlzd return – 2.0% for 6	VRR < 0.97 for 6
Equity	Fd return < bench return – 4.5%	consecutive months	consecutive months
			Fd annIzd return < bench annIzd return – 0.40% for 6
Passive International		Tracking Error > 0.45% for	consecutive months
Equity	Tracking Error > 0.50%	6 consecutive months	
		Fd annlzd return < bench annlzd return – 1.0% for 6	VRR < 0.98 for 6
Fixed Income	Fd return < bench return – 1.5%	consecutive months	consecutive months

All critelized basis.

VRR - Value Relative Ratio - is calculated as: manager cumulative return / benchmark cumulative return.



Oakland Police & Fire Performance Summary and Universe Rankings Period Ending December 31, 2012

Mellon Total Funds - Public Universe				
	<u>Quarter</u>	<u>1- Year</u>	<u>3-Year</u>	<u>5-Year</u>
	0.5	47.0		7.0
Maximum	3.5	17.2	15.4	7.2
Percentile 25	2.5	14.0	9.6	3.8
Median	2.0	13.0	9.0	2.9
Percentile 75	1.4	12.0	8.3	2.3
Minimum	-0.2	0.0	0.9	0.8
Number of Portfolios	112	108	99	97
Oakland Police & Fire Total				
Return	1.0	11.0	8.6	3.0
Quartile Rank	4th	4th	3rd	2nd

Notes: Source: Mellon Total Public Funds Universe All performance is shown gross of fees.



Oakland Large Cap Growth Manager Comparisons as of December 31, 2012



	Annualized	Annualized	Sharpe
	Return, %	StdDev, %	Ratio
Delaware	3.78	19.53	0.19
Russell 1000 Growth Index	3.12	19.32	0.16
LC Growth Universe Median	2.65	20.08	0.13



	Annualized	Annualized	Sharpe
	Excess	Excess	Ratio,
	Return, %	StDev, %	Excess
Delaware	0.66	4.58	0.14
Russell 1000 Growth Index	0.00	0.00	NA
LC Growth Universe Median	-0.47	4.26	-0.14











	Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
Barrow Hanley	0.97	19.28	0.05
Russell 1000 Value Index	0.59	20.18	0.03
LC Value Universe Median	1.36	19.64	0.07



	Annualized Excess Return. %	Annualized Excess StDev. %	Sharpe Ratio, Excess
Barrow Hanley	0.38	4.00	0.09
Russell 1000 Value Index	0.00	0.00	NA
LC Value Universe Median	0.77	4.42	0.19













	Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
Earnest	4.73	22.95	0.21
Russell Mid-Cap Index	3.57	22.92	0.16
Mid Cap Core Universe Median	4.61	22.38	0.21



	Annualized	Annualized	Sharpe
	Excess	Excess	Ratio,
	Return, %	StDev, %	Excess
Earnest	1.16	3.76	0.31
Russell Mid-Cap Index	0.00	0.00	NA
Mid Cap Core Universe Median	1.05	5.23	0.19







Oakland Small Cap Value Manager Comparisons as of December 31, 2012



	Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
NWQ	3.27	26.86	0.12
Russell 2000 Value Index	3.55	24.81	0.14
Small Cap Value Universe Median	5.46	24.23	0.22



	Annualized	Annualized	Sharpe
	Excess	Excess	Ratio,
	Return, %	StDev, %	Excess
NWQ	-0.27	8.41	-0.03
Russell 2000 Value Index	0.00	0.00	NA
Small Cap Value Universe Median	1.91	7.14	0.29











Oakland Small Cap Growth Manager Comparisons as of December 31, 2012



	Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
Lord Abbett	4.67	18.21	0.26
Russell 2000 Growth	5.48	19.50	0.28
Small Cap Growth Universe Median	6.91	19.33	0.35



Excess Annualized StdDev, %

	Annualized	Annualized Annualized	
	Excess	Excess	Ratio,
	Return, %	StDev, %	Excess
Lord Abbett	-0.81	5.28	-0.15
Russell 2000 Growth	0.00	0.00	NA
Small Cap Growth Universe Median	1.44	5.23	0.27

Lord Abbett	>	Russell 2000	Growth
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Oakland Small Cap Growth Manager Comparisons as of December 31, 2012



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Oakland International Equity Manager Comparisons as of December 31, 2012



	Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
Hansberger	-3.46	27.29	-0.13
MSCI AC World Index ex USA	-2.44	24.28	-0.10
International Equity Universe Median	-1.36	23.92	-0.06



	Annualized	Annualized	Sharpe
	Excess	Excess	Ratio,
	Return, %	StDev, %	Excess
Hansberger	-1.02	4.83	-0.21
MSCI AC World Index ex USA	0.00	0.00	NA
International Equity Universe Median	1.08	6.20	0.15



Oakland International Equity Manager Comparisons as of December 31, 2012









	Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
Reams	7.82	9.21	0.85
Oakland BC Universal Blend	6.19	3.71	1.67
U.S. Fixed Income Universe Median	6.56	3.77	1.70

▲ Reams ◇ Oakland BC Universal Blend



	Annualized	Annualized	Sharpe
	Excess	Excess	Ratio,
	Return, %	StDev, %	Excess
Reams	1.63	7.54	0.22
Oakland BC Universal Blend	0.00	0.00	NA
U.S. Fixed Income Universe Median	0.36	2.04	0.18

















Fixed Income







Glossary

<u>Alpha</u>

The premium an investment earns above a set standard. This is usually measured in terms of a common index (i.e., how the stock performs independent of the market). An Alpha is usually generated by regressing a security's excess return on the S&P 500 excess return.

Annualized Performance

The annual rate of return that when compounded t times generates the same t-period holding return as actually occurred from period 1 to period t.

Batting Average

Percentage of periods a portfolio outperforms a given index.

<u>Beta</u>

The measure of an asset's risk in relation to the Market (for example, the S&P 500) or to an alternative benchmark or factors. Roughly speaking, a security with a Beta of 1.5, will have moved, on average, 1.5 times the market return.

Bottom-up

A management style that deemphasizes the significance of economic and market cycles, focusing instead on the analysis of individual stocks.

Dividend Discount Model

A method to value the common stock of a company that is based on the present value of the expected future dividends.

Growth Stocks

Common stock of a company that has an opportunity to invest money and earn more than the opportunity cost of capital.

Information Ratio

The ratio of annualized expected residual return to residual risk. A central measurement for active management, value added is proportional to the square of the information ratio.

R-Squared

Square of the correlation coefficient. The proportion of the variability in one series that can be explained by the variability of one or more other series a regression model. A measure of the quality of fit. 100% R-square means perfect predictability.

Standard Deviation

The square root of the variance. A measure of dispersion of a set of data from its mean.

Sharpe Ratio

A measure of a portfolio's excess return relative to the total variability of the portfolio.

Style Analysis

A returns-based analysis using a multi-factor attribution model. The model calculates a product's average exposure to particular investment styles over time (i.e., the product's normal style benchmark).

Top-down

Investment style that begins with an assessment of the overall economic environment and makes a general asset allocation decision regarding various sectors of the financial markets and various industries.

Tracking Error

The standard deviation of the difference between the performance of a portfolio and an appropriate benchmark.

<u>Turnover</u>

For mutual funds, a measure of trading activity during the previous year, expressed as a percentage of the average total assets of the fund. A turnover rate of 25% means that the value of trades represented one-fourth of the assets of the fund.

Value Stocks

Stocks with low price/book ratios or price/earnings ratios. Historically, value stocks have enjoyed higher average returns than growth stocks (stocks with high price/book or P/E ratios) in a variety of countries.

Definition of Indices

Barclays Capital Universal: includes market coverage by the Aggregate Bond Index fixed rate debt issues, which are rated investment grade or higher by Moody's Investor Services, Standard and Poor's Corporation, or Fitch Investor's Service, in that order with all issues having at least one year to maturity and an outstanding par value of at least \$100 million) and includes exposures to high yield CMBS securities. All returns are market value weighted inclusive of accrued interest.

MSCI ACWI x US: MSCI ACWI (All Country World Index) Free excluding US (gross dividends): is a free-floating adjusted market capitalization index designed to measure equity performance in the global developed and emerging markets. As of April 2002, the index consisted of 49 developed and emerging market country indices.

MSCI EAFE (Europe, Australasia, Far East): is a free float-adjusted market capitalization index that is designed to measure developed market equity performance, excluding the US & Canada.

Russell 1000: measures the performance of the 1,000 largest securities in the Russell 3000 Index. Russell 1000 is highly correlated with the S&P 500 Index and capitalization-weighted.

Russell 1000 Growth: measures the performance of those Russell 1000 securities with a greater-than-average growth orientation. Securities in this index tend to exhibit higher price-to-book and price-earnings ratios, lower dividend yields and higher forecasted growth values than the Value universe.

Russell 1000 Value: measures the performance of those Russell 1000 securities with a less-than-average growth orientation. Securities in this index tend to exhibit lower price-to-book and price-earnings ratios, higher dividend yields and lower forecasted growth values than the Growth universe.

Russell MidCap: measures the performance of the smallest 800 companies in the Russell 1000 Index, as ranked by total market capitalization.

Russell 2000: measures the performance of the 2,000 smallest securities in the Russell 3000 Index. Russell 2000 is market capitalization-weighted.

Russell 2000 Growth: measures the performance of those Russell 2000 securities with a greater-than-average growth orientation. Securities in this index tend to exhibit higher price-to-book and price-to-earnings ratios.

Russell 2000 Value: measures the performance of those Russell 2000 securities with a less-than-average growth orientation. Securities in this index tend to exhibit lower price-to-book and price-to-earnings ratios.



RISK METRIC DESCRIPTION – Rationale for selection and calculation methodology

US Equity Markets:

Metric: P/E ratio = Price / "Normalized" earnings for the S&P 500 Index

To represent the price of US equity markets, we have chosen the S&P 500 index. This index has the longest published history of price, is well known, and also has reliable, long-term, published quarterly earnings. The price=P of the P/E ratio is the current price of the market index (the average daily price of the most recent full month for the S&P 500 index). Equity markets are very volatile. Prices fluctuate significantly during normal times and extremely during periods of market stress or euphoria. Therefore, developing a measure of earnings power (E) which is stable is vitally important, if the measure is to provide insight. While equity prices can and do double, or get cut in half, real earnings power does not change nearly as much. Therefore, we have selected a well known measure of real, stable earnings power developed by Yale Professor Robert Shiller known as the Shiller E-10. The calculation of E-10 is simply the average real annual earnings over the past 10 years. Over 10 years, the earnings shenanigans and boom and bust levels of earnings tend to even out (and often times get restated). Therefore, this earnings statistic gives a reasonably stable, slow-to-change estimate of average real earnings power for the index. Professor Shiller's data and calculation of the E-10 are available on his website at http://www.econ.yale.edu/~shiller/data.htm. We have used his data as the base for our calculations. Details of the theoretical justification behind the measure can be found in his book Irrational Exuberance [Princeton University Press 2000, Broadway Books 2001, 2nd ed., 2005].

Developed Equity Markets Excluding the US:

Metric: P/E ratio = Price / "Normalized" earnings for the MSCI EAFE Index

To represent the price of non-US developed equity markets, we have chosen the MSCI EAFE index. This index has the longest published history of price for non-US developed equities. The price=P of the P/E ratio is the current price of the market index (the average daily price of the most recent full month for the MSCI EAFE index). The price level of this index is available starting in December 1969. Again, for the reasons described above, we elected to use the Shiller E-10 as our measure of earnings (E). Since 12/1972, a monthly price earnings ratio is available from MSCI. Using this quoted ratio, we have backed out the implied trailing-twelve month earnings of the EAFE index for each month from 12/1972 to the present. These annualized earnings are then inflation adjusted using CPI-U to represent real earnings in US dollar terms for each time period. The Shiller E-10 for the EAFE index (10 year average real earnings) is calculated in the same manner as detailed above.

However, we do not believe that the pricing and earnings history of the EAFE markets are long enough to be a reliable representation of pricing history for developed market equities outside of the US. Therefore, in constructing the Long-Term Average Historical P/E for developed ex-US equities for comparison purposes, we have elected to use the US equity market as a developed market proxy, from 1881 to 1982. This lowers the Long-Term Average Historical P/E considerably. We believe this methodology provides a more realistic historical comparison for a market with a relatively short history.





Metric: Ratio of Emerging Market P/E Ratio to Developed Market P/E Ratio

To represent the Emerging Markets P/E Ratio, we have chosen the MSCI Emerging Market Free Index, which has P/E data back to January 1995 on Bloomberg. To represent the Developed Markets PE Ratio, we have chosen the MSCI World Index, which also has data back to January 1995 on Bloomberg. Although there are issues with published, single time period P/E ratios, in which the denominator effect can cause large movements, we feel that the information contained in such movements will alert investors to market activity that they will want to interpret.

US Private Equity Markets:

Metrics: S&P LCD Average EBITDA Multiples Paid in LBOs and US Quarterly Deal Volume

The Average Purchase Price to EBITDA multiples paid in LBOs is published quarterly by S&P in their LCD study. This is the total price paid (both equity and debt) over the trailing-twelve month EBITDA (earnings before interest, taxes, depreciation and amortization) as calculated by S&P LCD. This is the relevant, high-level pricing metric that private equity managers use in assessing deals. Data is published monthly.

US quarterly deal volume for private equity is the total deal volume in \$ billions (both equity and debt) reported in the quarter by Thomson Reuters Buyouts. This metric gives a measure of the level of activity in the market. Data is published quarterly.

U.S Private Real Estate Markets:

Metrics: US Cap rates and Annual US Real Estate Deal Volume

Real estate cap rates are a measure of the price paid in the market to acquire properties versus their annualized income generation before financing costs (NOI=net operating income). The date is published by NCREIF. We chose to use current value cap rate. These are capitalization rates from properties that were revalued during the quarter. While this data does rely on estimates of value and therefore tends to be lagging, (estimated prices are slower to rise and slow to fall than transaction prices), the data series goes back to1979, providing a long data series for valuation comparison. Data is published quarterly.

Annual US real estate deal volume is the total deal transaction volume in \$ billions (both equity and debt) reported by Real Capital Analytics during the trailing-twelve months. This metric gives the level of activity in the market. Data is published monthly.

Measure of Equity Market Fear / Uncertainty

Metric: VIX - Measure of implied option volatility for U.S. equity markets

The VIX is a key measure of near-term volatility conveyed by implied volatility of S&P 500 index option prices. VIX increases with uncertainty and fear. Stocks and the VIX are negatively correlated. Volatility tends to spike when equity markets fall.



Measure of Monetary Policy Metric: Yield Curve Slope

We calculate the yield curve slope as the 10 year treasury yield minus the 1 year treasury yield. When the yield curve slope is zero or negative, this is a signal to pay attention. A negative yield curve slope signals lower rates in the future, caused by a contraction in economic activity. Recessions are typically preceded by an inverted (negatively sloped) yield curve. A very steep yield curve (2 or greater) indicates a large difference between shorter-term interest rates (the 1 year rate) and longer-term rates (the 10 year rate). This can signal expansion in economic activity in the future, or merely higher future interest rates.

Definition of "extreme" metric readings

A metric reading is defined as "extreme" if the metric reading is in the top or bottom decile of its historical readings. These "extreme" reading should cause the reader to pay attention. These metrics have reverted toward their mean values in the past.

Credit Markets US Fixed Income:

Metric: Spreads

The absolute level of spreads over treasuries and spread trends (widening / narrowing) are good indicators of credit risk in the fixed income markets. Spreads incorporate estimates of future default, but can also be driven by technical dislocations in the fixed income markets. Abnormally narrow spreads (relative to historical levels) indicate higher levels of valuation risk, wide spreads indicate lower levels of valuation risk and / or elevated default fears. Investment grade bond spreads are represented by the Barclays Capital US Corporate Investment Grade Index Intermediate Component. The high yield corporate bond spreads are represented by the Barclays Capital US Corporate High Yield Index.

Measures of US Inflation Expectations

Metrics: Breakeven Inflation and Inflation Adjusted Commodity Prices

Inflation is a very important indicator impacting all assets and financial instruments. Breakeven inflation is calculated as the 10 year nominal treasury yield minus the 10 year real yield on US TIPS (treasury inflation protected securities). Abnormally low long-term inflation expectations are indicative of deflationary fears. A rapid rise in breakeven inflation indicates acceleration in inflationary expectations as market participants sell nominal treasuries and buy TIPs. If breakeven inflation continues to rise quarter over quarter, this is a signal of inflationary worries rising, which may cause Fed action and / or dollar decline.

Commodity price movement (above the rate of inflation) is an indication of anticipated inflation caused by real global economic activity putting pressure on resource prices. We calculate this metric by adjusted in the Dow Jones UBS Commodity Index (formerly Dow Jones AIG Commodity Index) by US CPI-U. While rising commodity prices will not necessarily translate to higher US inflation, higher US inflation will likely show up in higher commodity prices, particularly if world economic activity is robust.

These two measures of anticipated inflation can, and often are, conflicting.

Measures of US Treasury Bond Interest Rate Risk

Metrics: 10-Year Treasury Forward-Looking Real Yield and 10-Year Treasury Duration

The expected annualized real yield of the 10 year US Treasury Bond is a measure of valuation risk for US Treasuries. A low real yield means investors will accept a low rate of expected return for the certainly of receiving their nominal cash flows. PCA estimates the expected annualized real yield by subtracting an estimate of expected 10 year inflation (produced by the Survey of Professional Forecasters as collected by the Federal Reserve Bank of Philadelphia), from the 10 year Treasury constant maturity interest rate.

Duration for the 10-Year Treasury Bond is calculated based on the current yield and a price of 100. This is a measure of expected percentage movements in the price of the bond based on small movements in percentage yield. We make no attempt to account for convexity.



RISK METRICS DESCRIPTION – PCA Market Sentiment Indicator

What is the PCA Market Sentiment Indicator (PMSI)?

The PMSI is a measure meant to gauge the market's sentiment regarding economic growth risk. Growth risk cuts across most financial assets, and is the largest risk exposure that most portfolios bear. The PMSI takes into account the momentum (trend over time, positive or negative) of the economic growth risk exposure of publicly traded stocks and bonds, as a signal of the future direction of growth risk returns; either positive (risk seeking market sentiment), or negative (risk averse market sentiment).

How do I read the PCA Market Sentiment Indicator (PMSI) graph?

Simply put, the PMSI is a color coded indicator that signals the market's sentiment regarding economic growth risk. It is read left to right chronologically. A green indicator on the PMSI indicates that the market's sentiment towards growth risk is positive. A gray indicator indicates that the market's sentiment towards growth risk is neutral or inconclusive. A red indicator indicates that the market's sentiment towards growth risk is negative. The black line on the graph is the level of the PMSI. The degree of the signal above or below the neutral reading is an indication the signal's current strength.

How is the PCA Market Sentiment Indicator (PMSI) Constructed?

The PMSI is constructed from two sub-elements representing investor sentiment in stocks and bonds:

1.Stock return momentum: Return momentum for the S&P 500 Equity Index (trailing 12-months)

2.Bond yield spread momentum: Momentum of bond yield spreads (excess of the measured bond yield over the identical duration U.S. Treasury bond yield) for corporate bonds (trailing 12-months) for both investment grade bonds (75% weight) and high yield bonds (25% weight). The scale of this measure is adjusted to match that of the stock return momentum measure.

The black line reading on the graph is calculated as the average of the stock return momentum measure and the bonds spread momentum measure. The color reading on the graph is determined as follows: 1.If both stock return momentum and bond spread momentum are positive = GREEN (positive) 2.If one of the momentum indicators is positive, and the other negative = GRAY (inconclusive) 3.If both stock return momentum and bond spread momentum are negative = RED (negative)

What does the PCA Market Sentiment Indicator (PMSI) mean? Why might it be useful?

There is strong evidence that time series momentum is significant and persistent. In particular, across an extensive array of asset classes, the sign of the trailing 12-month return (positive or negative) is indicative of future returns (positive or negative) over the next 12 month period. The PMSI is constructed to measure this momentum in stocks and corporate bond spreads. A reading of green or red is agreement of both the equity and bond measures, indicating that it is likely that this trend (positive or negative) will continue over the next 12 months. When the measures disagree, the indicator turns gray. A gray reading does not necessarily mean a new trend is occurring, as the indicator may move back to green, or into the red from there. The level of the reading (black line) and the number of months at the red or green reading, gives the user additional information on which to form an opinion, and potentially take action.

Momentum is defined as the persistence of relative performance. There is a significant amount of academic evidence indicating that positive momentum (e.g., strong performing stocks over the recent past continue to post strong performance into the near future) exists over near-to-intermediate holding periods. See, for example, "Understanding Momentum," *Financial Analysts Journal*, Scowcroft, Sefton, March, 2005.