

AGENDA REPORT

# TO: HENRY L. GARDNER INTERIM CITY ADMINISTRATOR

FROM: Katano Kasaine

SUBJECT: Informational Report on PFRS' Investment Portfolio **DATE:** August 22, 2014

City Administrator	Q	Date	1/1
Approval	$\bowtie$	8 22	Ψ

# 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 June 30, 2014.

# EXECUTIVE SUMMARY

The attached report provided by the PFRS Investment Consultant summarizes the performance of the PFRS investment portfolio for the quarter ended June 30, 2014. 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 ("2012 POB").

# **OUTCOME**

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

# BACKGROUND/LEGISLATIVE HISTORY

The Oakland Police and Fire Retirement System is a closed defined benefit plan established by the City of Oakland's (the "City") Charter. PFRS 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. All of the members of the System are retired. As of June 30, 2014, the System had 1,006 members.

The System's investment portfolio is governed by the investment policy set by the PFRS Board. The PFRS Board sets an investment policy that authorizes investments in a variety of domestic and international equity and fixed income securities. The System's portfolio is currently

managed by ten external investment managers, except for the one iShares accounts which is managed internally. The majority of the portfolio is held in custody at Northern Trust. In accordance with the City Charter, the PFRS 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 PFRS were suspended from February 25, 1997 to June 30, 2011. The City of Oakland resumed contributing to PFRS effective July 1, 2011. The City of Oakland contributed \$45,507,996 in the fiscal year ended June 30, 2012.

In July 2012 the City issued \$212,540,000 Taxable Pension Obligation Bonds, Series 2012. The City subsequently deposited \$210 million in Pension Obligation Bond proceeds into the System and entered into a funding agreement with the System Board. As a result of a funding agreement, no additional contributions are required until July 1, 2017.

Based on the most recent PFRS Actuarial Study dated July 1, 2013, the PFRS Fund is 69.5% funded and had an Unfunded Actuarial Liability of \$215 million. With the deposited POB proceeds of \$210 million, the funded status increased from 40.8% funded as of July 1 2012 to 69.5% as of July 1 2013. The next required City contribution is projected to be approximately \$35.6 million in FY 2017/2018.

#### ANALYSIS

#### PFRS Membership

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 June 30, 2014, the System's membership was 1,006, which included 701 retirees and 305 beneficiaries.

Table 1   PFRS Membership   as of June 30, 2014						
Membership	POLICE	FIRE	TOTAL			
the second se						
Retiree	420	281	701			
Retiree Beneficiary	420 161	281 144	701 305			

### PFRS Investment Portfolio

In July 2012, the City of Oakland deposited \$210 million in POB proceeds. These proceeds were used to fund new asset classes, fund existing investments as well as pay monthly retiree pension payments. As a result of the 2012 POBs, the value of the investment portfolio as of July 31, 2012 was \$481 million. As of June 30, 2014, the total PFRS investment portfolio value was approximately \$470 million. During the past twenty-four months (July 31, 2012 - June 30, 2014), the portfolio only decreased by \$4 million, despite approximately \$116 million in withdrawals to pay retiree benefit payments over the same 2 year period. Table 2 below shows the PFRS Investment Portfolio as of June 30, 2014.

Table 2PFRS Investment Portfolioas of June 30, 2014				
Investment	Fair Value			
Equities	\$220,538,064			
Fixed Income	88,011,758			
International Equities	60,681,782			
Real Return	46,458,158			
Covered Calls	46,204,215			
Cash Equivalents	4,191,617			
Total Portfolio	\$466,085,594			

### **PFRS** Investment Performance

Over the one year period ending June 30, 2014, the PFRS Total Portfolio generated a return of 16.507%, gross of fees, outperforming both its policy benchmark target of 14.60% and its Actuarial Expected Rate of Return of 6.75%. The Portfolio has outperformed the policy benchmark over the 1, 3, and 5 year time periods, gross of fees.

Relative to the Actuarial Expected Rate of Return, the Total Portfolio outperformed the actuarial expected rate for the 1, 3 and 5-year time periods. The Actuarial Rate of Return was gradually lowered from 8.0% in FY 2008 to 6.75% in FY 2012.

	Quarter	1 Year	3 Year	5 Year
PFRS Fund	3.50%	16.50%	8.90%	13.10%
<u>Comparisons:</u>				
PFRS Actuarial Expected Rate				
of Return (blend) (c) (d)	1.70%	6.75%	6.80%	7.20%
Policy Target (blend) (b)	3.90%	14.60%	7.80%	12.00%
Median Fund (a)	3.90%	17.20%	10.00%	13.10%
CalPERS Investment Returns	4.70%	18.40%	10.40%	12.50%
CalSTRS Investment Returns	4.00%	18.70%	11.20%	13.70%
East Bay Mud Investment Returns	3.60%	19.90%	11.80%	15.00%
Colorado F&P Investment Returns	4.00%	16.10%	9.70%	13.00%

(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 of return is calculated based on the 6.75% annual return assumption

#### Asset Allocation

At its September 26, 2012 meeting, the PFRS Board conducted an asset allocation strategy review. The PFRS Board elected to adjust the strategic investment allocations for the Retirement Plan. The new approved allocation is presented in the table below. The most significant change is the inclusion of new Covered Calls and Real Return classes that will each represent ten percent (10%) of the strategic allocation policy for both portfolios long-term. The PFRS Board also elected to include a five percent (5%) allocation to Private Equity, pending educational reviews of the asset class in 2014. After Request for Proposal (RFP) processes, the PFRS Board recently hired Eaton Vance as a new Covered Calls Investment Manager and Wellington Management Company LLP as the new Real Return Manager. At the April 30, 2014 meeting, the PFRS Board decided to no longer pursue an investment in Private Equity and to seek other investment opportunities to fulfill the 5% Private Equity allocation.

Asset Class	12/31/2012 Target Portfolio %	Long-Term Target Allocation %
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 brokers 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,

Ketano Kesnini

KATANO KASAINE Treasurer

Prepared by: Téir Jenkins, Retirement Systems Accountant Retirement Division

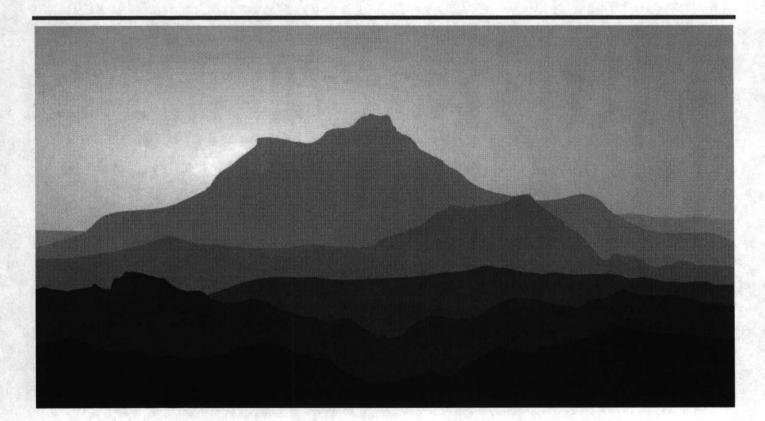
Attachment: Appendix A: PFRS Performance Report as of June 30, 2014

# APPENDIX A – PFRS' INVESTMENT PERFORMANCE REPORT as of 06/30/2014

PC/



OAKLAND POLICE & FIRE RETIREMENT SYSTEM QUARTERLY PERFORMANCE REPORT



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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 merils of purchasing or selling securities, or an invitation or inducement to engage in investment activity.

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PCA

F INDIVIDUAL MANAGER PERFORMANCE

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#### TOTAL PORTFOLIO SUMMARY

As of June 30, 2014, the City of Oakland Police and Fire Retirement System (OPFRS) portfolio had an aggregate value of \$468.2 million. This represents a (\$2.2) million decrease in value over the quarter. During the previous one-year period, the OPFRS Total Portfolio increased by \$12.5 million, including (\$60) million in withdrawals during the period.

#### Asset Allocation Trends

The asset allocation targets (see table on page 19) reflect those as of June 30, 2014. Target weightings reflect the Plan's evolving asset allocation (effective 3/31/2014).

With respect to policy targets, the portfolio ended the latest quarter slightly overweight Domestic and International Equity, while underweight Fixed Income and Covered Calls. The Real Return asset class matched its target weighting.

#### **Recent Investment Performance**

During the most recent quarter, the OPFRS Total Portfolio generated a positive absolute return of 3.5%, gross of fees, trailing its policy benchmark by (40) basis points. With the exception of the latest quarter, the portfolio has outperformed its policy benchmark over all time periods measured.

The Total portfolio's return has trailed the Median Fund's return over the quarter, 1-, and 3-year time periods, while matching the Median Fund return 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	Fiscal YTD	1 Year	3 Year	5 Year
Total Portfolio <sup>1</sup>	3.5	16.5	16.5	8.9	13.1
Policy Benchmark <sup>2</sup>	3.9	14.6	14.6	7.8	12.0
Excess Return	(0.4)	1.9	1.9	1.1	1.1
Reference: Median Fund <sup>3</sup>	3.9	17.2	17.2	10.2	13.1
Reference: Total Net of Fees <sup>4</sup>	3.3	16.1	16.1	8.3	12.5

<sup>1</sup> Gross of Fees. Performance since 2005 includes securities lending.

<sup>2</sup> Evolving Policy Benchmark consists of 48% Russell 3000, 12% MSCI ACWI ex U.S., 20% BC Universal, 10% CBOE BXM and 10% CPI+3%.

<sup>3</sup> Mellon Total Funds Public Universe.

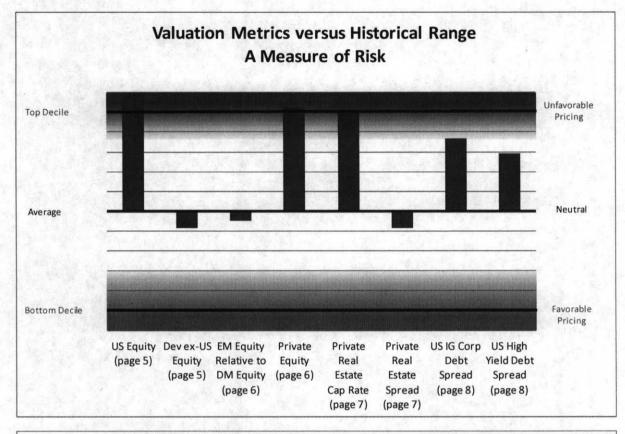
<sup>4</sup> Net of fee returns are estimated based on OPFRS manager fee schedule.

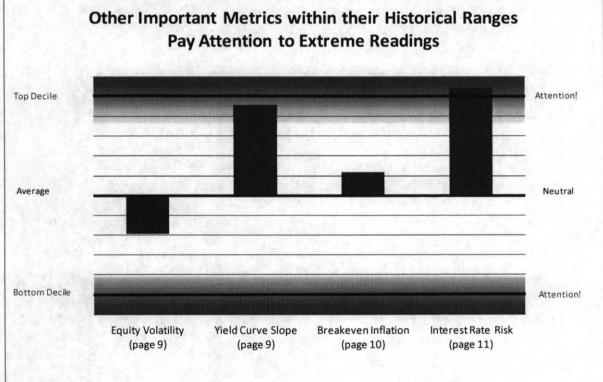
#### INVESTMENT MARKET RISK METRICS

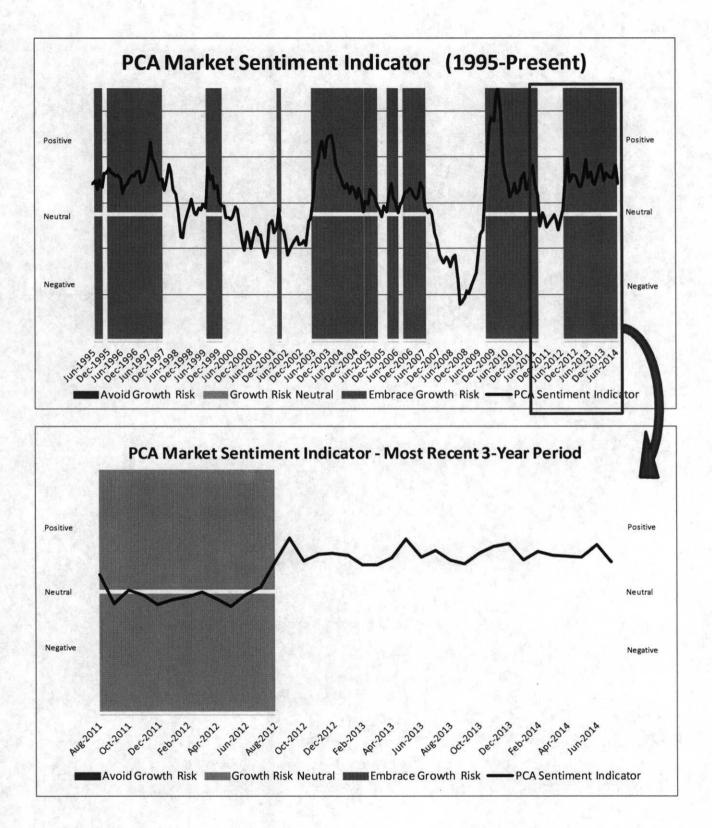
#### Takeaways

- US equity prices continued deeper into top decile valuation territory, concurrent with equity volatility (VIX) at bottom decile (low) levels.
- In addition, interest rate risk is also in top decile territory. The 10-year Treasury yield ended June at 2.5%, where it started the month.
- Credit spreads continued to tighten, but are not yet at top decile levels.
- Private real estate cap rates are near top decile levels (5.6%), with spreads to the 10year Treasury marginally wider than average levels.
- Non-US equity valuations are below long-term averages. Emerging market equities remain cheap historically, relative to developed markets.
- The slope of the yield curve remains steep, indicating expectations for higher future rates (versus cash rates today).
- Inflation expectations, as priced by the breakeven inflation calculation from the TIPS and Treasury bond markets, point to low and even more stable inflation.
- The PCA Market Sentiment Indicator ("PMSI") continued to read green.
- With a positive US jobs report and a positive Chinese manufacturing report on July 3rd, positive economic momentum continues to be in evidence.

#### **Risk Overview**





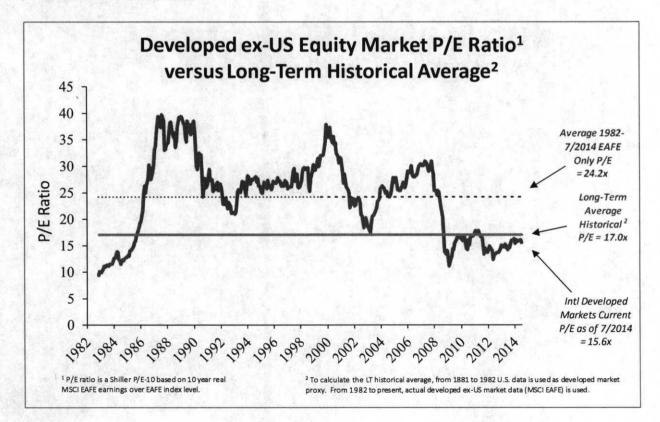


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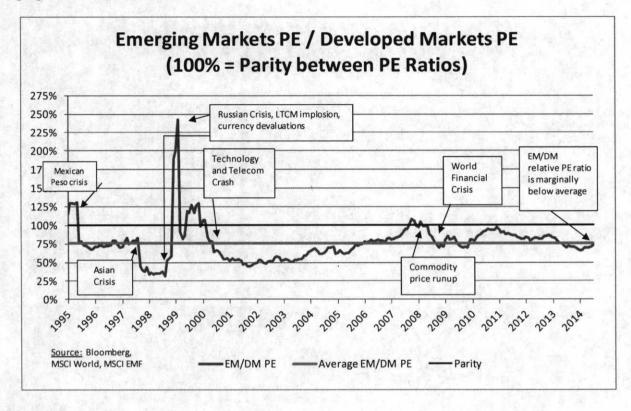
**Developed Equity Markets** 



<sup>(</sup>Please note time scale difference)



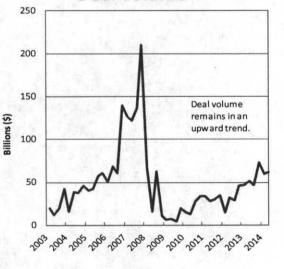
**Emerging Market Equity Markets** 



**US Private Equity** 



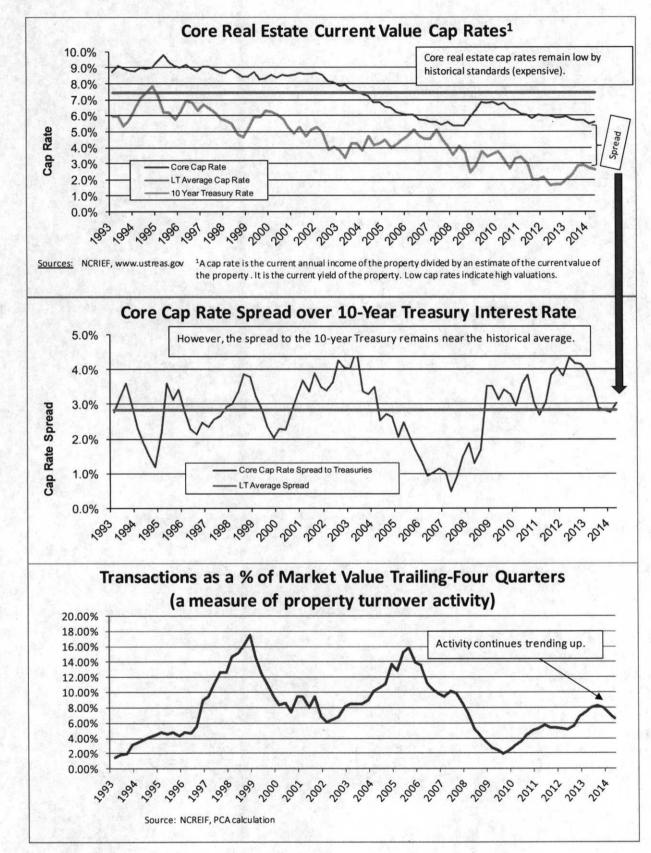
Disclosed U.S. Quarterly Deal Volume\*



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

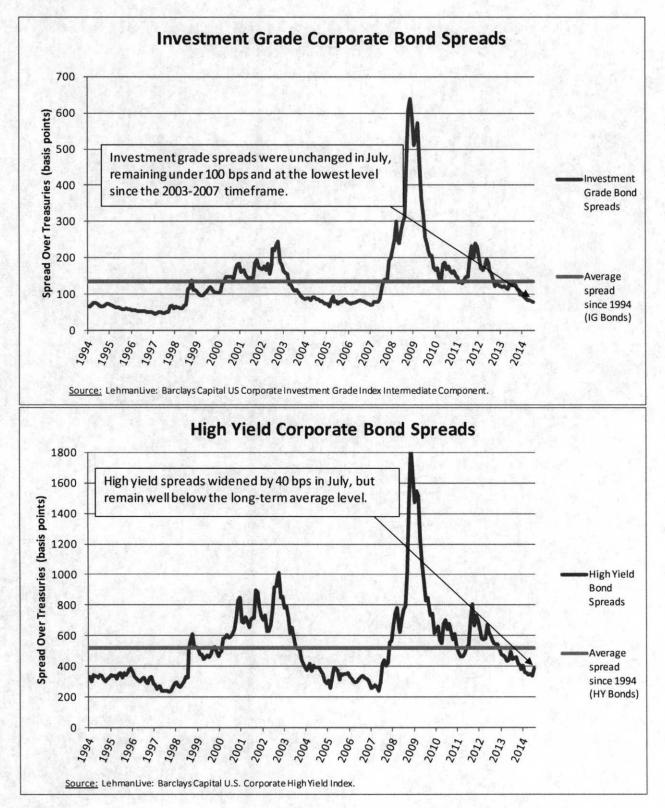
# PCA

Private Real Estate Markets



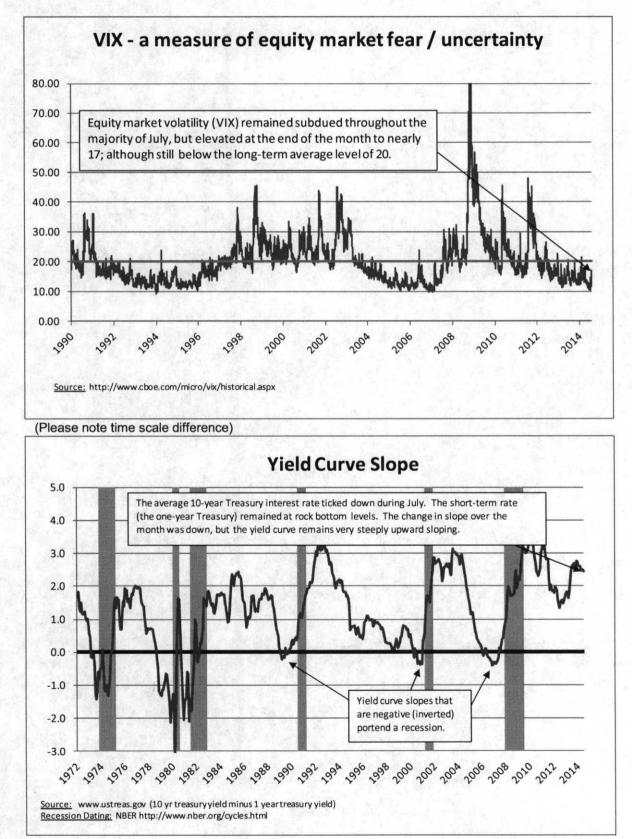
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**US Fixed Income** 

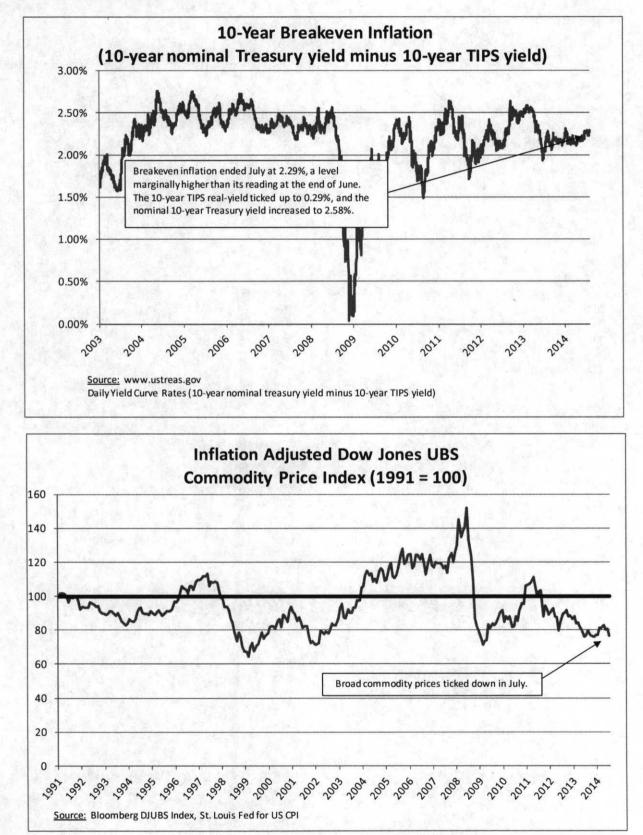


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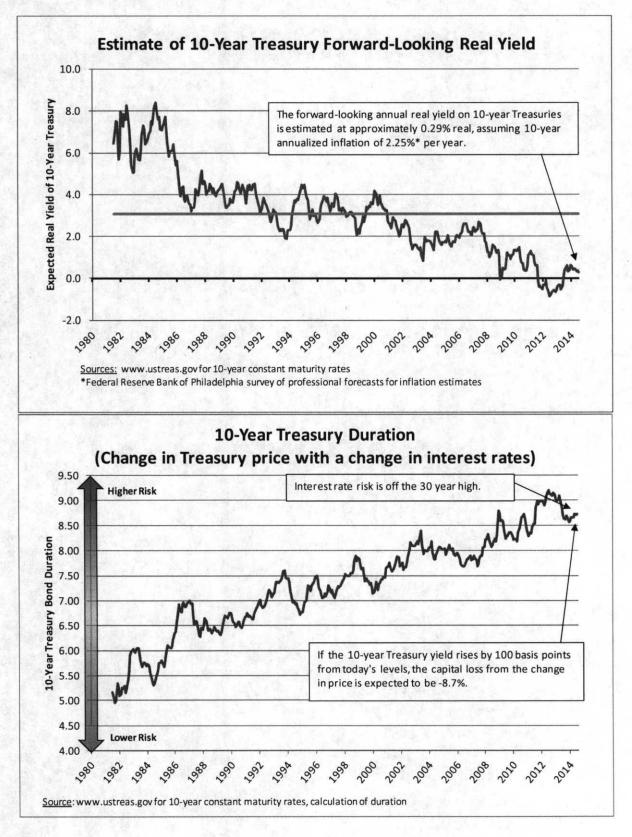
Other Market Metrics



Measures of Inflation Expectations



Measures of US Treasury Interest Rate Risk





#### ECONOMIC OVERVIEW

After a relatively slow start to the quarter, equity markets continued their upward climb while largely ignoring geopolitical events such as Russia's seizure of Crimea, disintegration in Iraq, and violence in the Middle East. Economic data continued to come in benign. GDP exceeded expectations during the quarter, increasing at an annualized rate of 4.0% fueled most notably by upturns in exports, private nonfarm inventory, and consumer spending. Unemployment fell by 0.6% to 6.1% as 793,000 jobs were added during the quarter. With various economic indicators showing some improvement, the Fed has continued to scale back its monthly bond purchases and indicated they will remain patient in their approach to raising interest rates. Inflation increased over the trailing 12-month period to just over 2.0% for the first time since 2011 but is still at relatively low levels. Returns for developed Non-US equity markets were led by Canada and produced strong results across the board. Emerging market equities also increased during the quarter, benefiting from a growing US economy and continued stimulus in Europe and Japan. US bond markets delivered positive returns during the quarter led by longer duration bonds and supported by falling long-term interest rates.

Economic Growth

- Real GDP increased at an annualized rate of 4.0 percent in the second quarter of 2014 after decreasing at an annualized rate of (2.1) percent in the first quarter of 2014.
- An upturn in exports, private nonfarm inventory investment, and consumer spending, were the main drivers for GDP growth during the quarter.
- State and local government spending, residential investment and business investment also benefited GDP during the quarter.

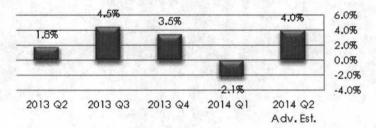
Inflation

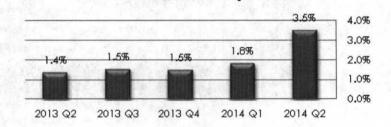
- The Consumer Price Index for All Urban Consumers (CPI-U) increased by 3.5 percent in the quarter on an annualized basis, after seasonal adjustment.
- Quarterly percent changes may be adjusted between data publications due to periodic updates in seasonal factors.
- Core CPI-U increased by 2.5 percent for the quarter on an annualized basis.
- Over the last 12 months, CPI-U increased 2.1 percent before seasonal adjustment.

#### Unemployment

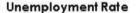
- The US economy gained 793,000 jobs in the quarter.
- The official unemployment rate dropped to 6.1% at guarter end.
- The majority of jobs gained occurred in professional and business services, food services & drinking places, and health care.

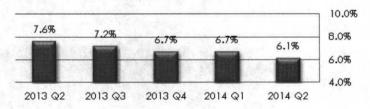
**Annualized Quarterly GDP Growth** 





**CPI-U After Seasonal Adjustment** 



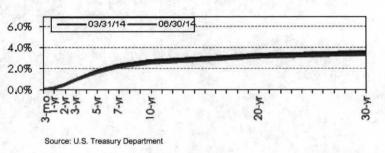




#### Interest Rates & U.S. Dollar

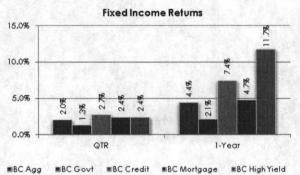
- US Treasury yields decreased over the quarter.
- The Federal Reserve has maintained the federal funds rate between 0.00% and 0.25% since December 2008.
- The US dollar depreciated against the Yen and Sterling by (1.8%) and (2.7%), respectively, while appreciating against the Euro by 0.6%.
- As of quarter end rates remained near low historic levels.

#### **Treasury Yield Curve Changes**



#### Fixed Income

- US bond markets delivered positive returns during the quarter led by longer duration bonds and supported by falling long-term interest rates.
- The Barclays Aggregate index posted its strongest quarterly return since the second quarter of 2012.

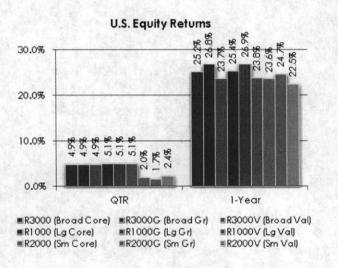


U.S. Fixed Income Sector Performance (BC Aggregate Index)						
Sector	Weight	QTR	1 Year			
Governments*	39.7%	1.3%	2.1%			
Agencies	5.4%	1.2%	2.6%			
Inv. Grade Credit	23.3%	2.7%	7.4%			
MBS	28.9%	2.4%	4.7%			
ABS	0.5%	0.8%	1.8%			
CMBS	2.2%	1.3%	4.2%			

\*U.S. Treasuries and Government Related

## U.S. Equities

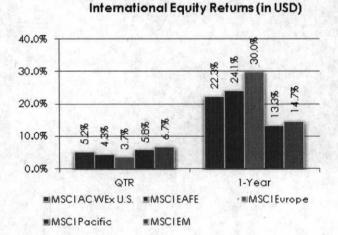
- After a relatively slow start to the quarter, US equities continued to climb and produce strong trailing 1year results of 20 plus percent.
- During the quarter, value and growth indices produced similar returns throughout large & mid-cap stocks. All sectors produced strong positive results during the quarter and trailing 1-year period.



Sector	Weight	QTR	1 Year
Information Tech.	18.3%	5.7%	32.1%
Financials	17.3%	2.4%	18.6%
Health Care	13.0%	4.3%	30.7%
Consumer Disc.	12.5%	3.2%	21.2%
Industrials	11.6%	3.4%	28.9%
Energy	9.8%	12.2%	30.8%
Consumer Staples	8.2%	4.7%	16.2%
Materials	3.9%	5.1%	31.3%
Utilities	3.2%	7.8%	22.2%
Telecomm. Serv.	2.2%	3.9%	8.2%

#### International Equities

• Led by Canada, developed international equity markets returned strong results during the quarter. Emerging markets equity also performed well with their best returns in six quarters.



International Equity Region Performance (in USD) (MSCI ACW Index ex U.S.)						
Sector	Weight	QTR	1 Year			
Europe Ex. UK	32.6%	2.6%	31.7%			
Emerging Markets	21.3%	6.7%	14.7%			
United Kingdom	15.3%	6.1%	26.6%			
Japan	14.5%	6.7%	10.1%			
Pacific Ex. Japan	8.7%	4.4%	19.0%			
Canada	7.6%	10.1%	27.2%			

Market Summary – Long-term Performance\*

Indexes	1 Year	3 Year	5 Year	10 Year	20 Yea
Global Equity					
MSCI All Country World	23.6%	10.9%	14.9%	8.0%	7.6%
Domestic Equity					
S&P 500	24.6%	16.6%	18.8%	7.8%	9.8%
Russell 3000	25.2%	16.5%	19.3%	8.2%	9.9%
Russell 3000 Growth	26.8%	16.1%	19.3%	8.3%	9.0%
Russell 3000 Value	23.7%	16.7%	19.3%	8.0%	10.3%
Russell 1000	25.4%	16.6%	19.3%	8.2%	10.0%
Russell 1000 Growth	26.9%	16.3%	19.2%	8.2%	9.2%
Russell 1000 Value	23.8%	16.9%	19.2%	8.0%	10.3%
Russell 2000	23.6%	14.6%	20.2%	8.7%	9.8%
Russell 2000 Growth	24.7%	14.5%	20.5%	9.0%	8.1%
Russell 2000 Value	22.5%	14.6%	19.9%	8.2%	11.0%
CBOE BXM	14.1%	9.1%	10.5%	5.2%	8.1%
International Equity					
MSCI All Country World ex US	22.3%	6.2%	11.6%	8.2%	6.3%
MSCI EAFE	24.1%	8.6%	12.3%	7.4%	5.9%
MSCI Pacific	13.3%	7.3%	9.7%	6.0%	2.0%
MSCI Europe	30.0%	9.3%	13.7%	8.2%	8.9%
MSCI EM (Emerging Markets)	14.7%	-0.1%	9.6%	12.3%	6.6%
Fixed Income					
BC Universal Bond	5.2%	4.2%	5.6%	5.3%	6.4%
BC Global Agg – Hedged	7.4%	2.6%	4.6%	5.1%	6.0%
BC Aggregate Bond	4.4%	3.7%	4.9%	4.9%	6.2%
BC Government	2.1%	2.9%	3.5%	4.4%	5.8%
BC Credit Bond	7.4%	5.9%	7.6%	5.8%	6.9%
BC Mortgage Backed Securities	4.7%	2.8%	3.9%	4.9%	6.1%
BC High Yield Corporate Bond	11.7%	9.5%	14.0%	9.0%	8.2%
BC WGILB - Hedged	4.4%	3.8%	5.3%	5.1%	NA
BC Emerging Markets	10.2%	7.4%	10.8%	9.5%	10.9%
Real Estate					
NCREIF (Private RE)	11.2%	11.3%	9.7%	8.6%	9.5%
NAREIT (Public RE)	13.7%	12.0%	22.9%	8.8%	10.5%
Commodity Index					
DJ-UBS Commodity	8.2%	-5.2%	2.0%	0.9%	4.6%
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\* Performance is annualized for periods greater than one year.

#### TOTAL PORTFOLIO REVIEW

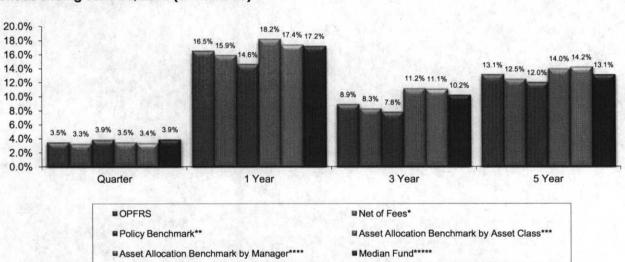
#### **OPFRS Portfolio Performance**

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 June 30, 2014, the OPFRS Total Portfolio generated a return of 3.5%, gross of fees, underperforming its benchmark target. The Plan's Domestic and International Equity asset classes, as well as the Plan's Fixed Income asset class, all trailed their respective benchmarks.

The Total Portfolio produced positive relative results versus the policy benchmark over the 1-, 3-, and 5year time periods, but produced negative relative results over the latest quarter, gross of fees. Relative to the Median Fund, the Total Portfolio trailed the median fund for the quarter, 1-, and 3-year time periods, but matched the median fund over the 5-year period. Relative performance with respect to the Median Fund can be largely attributed to differences in asset allocation.



#### Periods Ending June 30, 2014 (annualized)

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

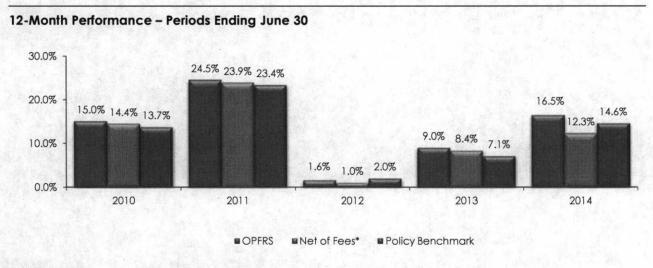
\*\*\*\* Asset Allocation Benchmark by Manager consists of weighted average return of individual manager benchmarks, based on managers' actual allocations.

\*\*\*\*\* Median Fund is the Mellon Total Public Funds Universe.

<sup>\*\*</sup> The Evolving Policy Benchmark consists of 48% Russell 3000, 12% MSCI ACWI ex U.S., 20% BC Universal, 10% CBOE BXM and 10% CPI+3%.

<sup>\*\*\*</sup> Asset Allocation Benchmark by Asset Class is calculated using actual weightings of the broad asset classes.

Absolute performance results have been positive in each of the last five 12-month periods ending June 30. The Plan also outperformed its policy benchmark in four out of five 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 \$468.2 million as of June 30, 2014. During the latest quarter, the portfolio decreased by (\$2.2) million. Over the latest year, the portfolio increased by \$12.5 million, including (\$60) million in net benefit payments.

nvestmen	t Portfolio Valuc	tion as of June 3	30, 2014*				
	June 30,	March 31,	Quarterly	Percentage	June 30,	Annual	Percentage
1 Salar	2014	2014	Change	Change	2013	Change	Change
OPFRS	\$468.2	\$470.4	(\$2.2)	(0.4%)	\$455.7	\$12.5	2.7%

\*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 overweight Domestic and International Equity while underweight Fixed Income and Covered Calls. The Real Return asset class matched its target weighting. Target weightings reflect the Plan's evolving asset allocation (effective 3/31/2014).

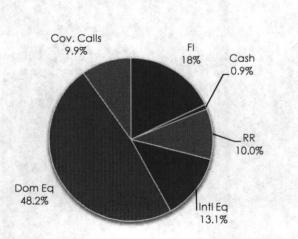
As of June 30, 2014					
Segment	Actual \$(000)	Actual %*	Target %	Variance	
Total Investment Portfolio	468,243	100.0%	100.0%		
Domestic Equity	225,594	48.2%	48.0%	0.2%	
Large Cap Equity	160,658	34.3%	34.0%	0.3%	
Mid Cap Equity	36,734	7.8%	8.0%	-0.2%	
Small Cap Equity	28,202	6.0%	6.0%	0.0%	
International Equity	61,232	13.1%	12.0%	1.1%	
Total Equity	286,826	61.3%	60.0%	1.3%	
Fixed Income	84,247	18.0%	20.0%	-2.0%	
Covered Calls	46,254	9.9%	10.0%	-0.1%	
Real Return	46,816	10.0%	10.0%	0.0%	
Cash	4,100	0.9%	0.0%	0.9%	

\* In aggregate, asset class allocations equal 100% of total investment portfolio. Differences due to rounding.

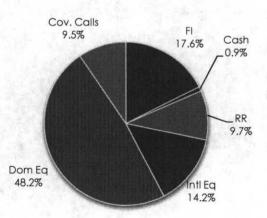
During the latest quarter, the actual weighting of Domestic Equity and Cash remained unchanged while Fixed Income, Covered Calls, and Real Return increased their weighting by 0.4%, 0.4%, 0.3%, respectively. International Equity was the only asset class to decrease its weighting as it fell by 1.1%.

#### Investment Portfolio Actual Asset Allocation Comparison

June 30, 2014



#### March 31, 2014



#### Asset Class Performance

The **Domestic Equity** asset class underperformed the policy benchmark by (70) basis points over the most recent quarter and by (10) basis points over the 3-year period. The fund outperformed over the 1-, and 5-year periods by 70 and 60 basis points, respectively.

The **International Equity** portfolio underperformed its policy benchmark by (160) basis points during the most recent quarter. Over the latest 1-, 3-, and 5-year periods, the International Equity portfolio underperformed its policy benchmark by (140), (30), and (50) basis points, respectively.

The **Fixed Income** asset class underperformed its policy benchmark by (20) basis points for the quarter and by (70) basis points over the 1-year period. The Fixed Income portfolio outperformed over the 3- and 5-year time periods by 10 and 40 basis points, respectively.

#### Periods ending June 30, 2014

Asset Class	Quarter	1-Year	3-Year	5-Year
Total Investment Portfolio	3.5	16.5	8.9	13.1
Policy Benchmark <sup>1</sup>	3.9	14.6	7.8	12.0
Public Equity	4.1	24.8	13.9	17.9
Policy Benchmark <sup>2</sup>	5.0	24.5	14.0	17.5
Domestic Equity	4.2	25.9	16.4	19.9
Blended Benchmark <sup>4</sup>	. 4.9	25.2	16.5	19.3
Large Cap	4.7	24.9	16.5	19.0
Russell 1000	5.1	25.4	16.6	19.3
Mid Cap	3.6	28.2	14.8	20.8
Russell Midcap	5.0	26.9	16.1	22.1
Small Cap	2.0	29.8	18.5	24.9
Russell 2000	2.0	23.6	14.6	20.2
International Equity	3.6	20.9	5.9	11.1
Blended Benchmark <sup>5</sup>	5.2	22.3	6.2	11.6
Fixed Income	2.0	4.5	4.3	6.0
BC Universal (blend)	2.2	5.2	4.2	5.6

The Evolving Policy Benchmark consists of 40% Russell 3000, 10% MSCI ACWI ex U.S., 17% BC Universal, and 33% tbills.

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

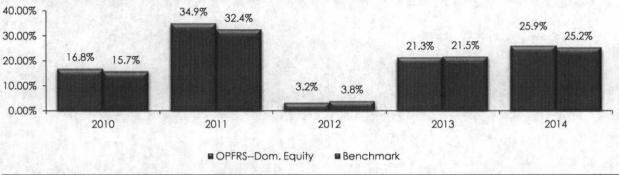
<sup>4</sup> Domestic Equity Benchmark consists of S&P 500 thru 3/31/98, 29% R1000, 57% R1000V, 14% RMC from 4/1/98 - 12/31/04, and Russell 3000 from 1/1/05 to the present.

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

<sup>6</sup> 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.

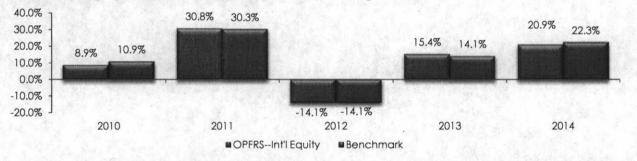
#### Asset Class Performance

The Domestic Equity portfolio outperformed the policy benchmark in three out of five of latest 12-month periods. The Plan finished the latest 12-month period ending June 30, 2014, with a return of 25.9%, outperforming the policy benchmark by 0.7%.



#### Domestic Equity 12-Month Performance – Periods Ending June 30

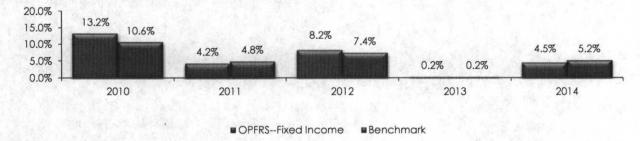
The International Equity portfolio outperformed or matched the policy benchmark in three of the five latest 12-month periods. The Plan finished the latest 12-month period ending June 30, 2014, with a return of 20.9%, underperforming the policy benchmark by (60) basis points.



#### International Equity 12-Month Performance – Periods Ending June 30

The Fixed Income portfolio outperformed or matched the policy benchmark in three of the last five 12month periods. The Plan finished the latest 12-month period ending June 30, 2014, with a return of 4.5%, underperforming the policy benchmark by (70) basis points.

#### Fixed Income 12-Month Performance – Periods Ending June 30



#### Manager Performance

Manager	Mkt Value (\$000)	Asset Class	Quarter	1 YR	3 YR	5 YR	Since Inception*	Inception Date**
Northern Trust R1000 Index	103,633	Large Cap Core	5.0	25.2	16.5		16.6	5/2010
Russell 1000 Index			5.1	25.4	16.6		15.5	
Barrow Hanley	35,399	Large Cap Value	3.8	22.6	15.8	18.1	7.0	9/2005
Russell 1000 Value Index			5.1	23.8	16.9	19.2	7.1	-
Earnest	36,734	Mid Cap Core	3.6	28.2	14.8	20.8	8.7	3/2006
Russell MidCap	11 - 11 - 11 - 11		5.0	26.9	16.1	22.1	8.8	
NWQ	13,725	Small Cap Value	3.9	30.6	20.4	25.7	7.8	1/2006
Russell 2000 Value Index			2.4	22.5	14.6	19.9	6.6	-
Lord Abbett	14,477	Small Cap Growth	0.4	29.1	16.7		25.1	6/2010
Russell 2000 Growth Index			1.7	24.7	14.5	-	21.1	

#### Domestic Equity - Periods ending June 30, 2014

\* 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 June 30, 2014, one of OPFRS' four active domestic equity managers outperformed their respective benchmarks.

**Nothern Trust**, the Plan's passive large cap core transition account has performed roughly in-line with its benchmark over all time periods measured. This performance is within expectations for a passive mandate.

**Barrow Hanley**, OPFRS' large cap value manager, finished the quarter returning 3.8%, underperforming the Russell 1000 Value Index by (130) basis points. The portfolio trailed its benchmark by (120) basis points over the latest 1-year period and trailed by (110) over both the latest 3-, and 5-year periods.

**Earnest Partners**, the Plan's mid cap core manager, completed the quarter with an 3.6% return, underperforming the Russell Midcap Index by (140) basis points. Over the latest 1-year period, Earnest outperformed its benchmark by 130 basis points and trailed its benchmark over both the 3- and 5-year time periods by (1.3%).

**NWQ**, the Plan's small cap value manager, outperformed the Russell 2000 Value Index by 150 basis points over the latest 3-month period. Over the 1-year period, NWQ outperformed its benchmark by 8.1%. Over both the 3- and 5-year periods, NWQ outperformed its benchmark by 5.8%.

Lord Abbett, the Plan's small cap growth manager, underperformed the Russell 2000 Growth Index by (130) for the quarter. Over the 1- and 3-year periods, Lord Abbett has outperformed by 4.4% and 2.2%, respectively.

#### International Equity – Periods ending June 30, 2014

Manager	Mkt Value (\$000)	Asset Class	Quarter	1 YR	3 YR	5 YR	Since Inception*	Inception Date**
SSgA	18,293	International	4.3	23.9	8.4	12.5	9.1	7/2002
MSCI EAFE Index			4.3	24.1	8.6	12.3	9.1	-
Hansberger	20,940	International	3.3	18.5	4.8	10.4	5.1	1/2006
MSCI ACWI X US			5.2	22.3	6.2	11.6	5.8	
Fisher	21,999	International	3.4	20.6	5.5		5.6	4/2011
MSCIACWIXUS			5.2	22.3	6.2		5.9	

\* 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 June 30, 2014, both of OPFRS' two active International Equity managers underperformed their benchmarks.

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

**Hansberger**, one of OPFRS' active international equity managers, underperformed the MSCI ACWI x US Index during the quarter by (1.9%). During the latest 1-year period, the portfolio returned 18.5%, trailing its benchmark by (3.8%). During the latest 3- and 5-year periods, the portfolio underperformed its benchmark by (140) and (120) basis points, respectively.

**Fisher**, one of OPFRS' active international equity managers, underperformed the MSCI ACWI x US Index by (1.8%) during the quarter. Over the latest 1-year period, Fisher trailed its benchmark target by (1.7%) with a return of 20.6% while also underperforming over the 3-year period by (70) basis points.

#### Fixed Income - Periods ending June 30, 2014

Manager	Mkt Value (\$000)	Asset Class	Quarter	1 YR	3 YR	5 YR	Since Inception	Inception Date ***
Reams	31,298	Core Plus	1.5	3.7	5.2	7.0	6.3	1/1998
BC Universal Index (blend)*			2.2	5.2	4.2	5.6	5.5	
T. Rowe Price	52,866	Core	2.3	5.3	4.0		4.1	5/2011
BC Aggregate Index	-		2.0	4.4	3.7		3.9	

\* 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 June 30, 2014, one of OPFRS' two active Fixed Income managers outperformed its respective benchmark.

**Reams**, the Plan's core plus fixed income manager, produced a quarterly return of 1.5%, underperforming the BC Universal (blend) Index by (70) basis points. During the latest 1-year period, the portfolio trailed its benchmark by (1.5%) while outperforming the benchmark over the 3- and 5-year periods by 1.0% and 1.4%, respectively.

**T. Rowe Price**, the Plan's core fixed income manager, produced a quarterly return of 2.3%, outperforming the BC Aggregate Index by 30 basis points. Over the most recent 1- and 3-year periods, the fund outperformed its benchmark by 90 and 30 basis points, respectively.

#### Covered Calls & Total Real Return – Periods ending June 30, 2014

Manager	Mkt Value (\$000)	Asset Class	Quarter	1 YR	3 YR	5 YR	Since Inception	Inception Date ***
Parametric	46,254	Covered Calls	3.5				2.9	3/2014
CBOE BXM			3.1				2.9	
Wellington	46,816	Total Real Return	2.6				3.2	1/2014
CPI + 3%			1.7	-		-	1.9	

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

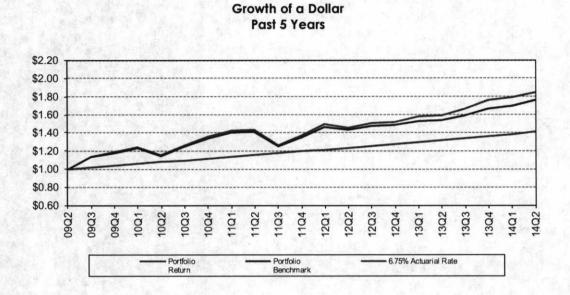
\*\*\* Inception date reflects the month when portfolio received initial funding.

During the latest three-month period ending June 30, 2014, OPFRS' Covered Calls and Real Return managers both outperformed their respective benchmarks.

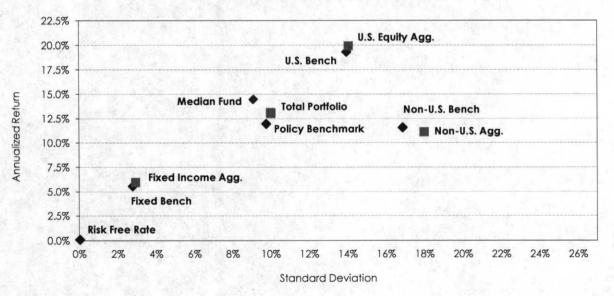
**Parametric**, the Plan's Covered Calls manager, produced a quarterly return of 3.5%, outperforming the CBOE BXM Index by 40 basis points.

Wellington, the Plan's Total Real Return manager, produced a quarterly return of 2.6%, outperforming its CPI + 3% benchmark by 90 basis points.

#### OPFRS Risk/Return Analysis Period ending June 30, 2014



Five-Year Annualized Risk/Return



# City of Oakland Police & Fire Retirement, Asset Allocation as of 6/30/14

Manager	Style	Market Value \$(000)	Target	Actual <sup>1</sup>	Difference
Total Plan		\$468,243	100.0%	100.0%	0.0%
Public Equity		\$286,826	60.0%	61.3%	1.3%
Domestic Equity Large Cap Equity		\$225,594	48.0%	48.2%	0.2%
Northern Trust	Large Cap Core	103,633	19.2%	22.1%	2.9%
Barrow Hanley	Large Cap Value	35,399	7.4%	7.6%	0.2%
Russell 1000 Growth Index	Large Cap Growth	21,626	7.4%	4.6%	-2.8%
Mid Cap Equity Eamest Partners	Mid Cap Core	36,734	8.0%	7.8%	-0.2%
Small Cap Equity					
NWQ	Small Cap Value	13,725	3.0%	2.9%	-0.1%
Lord Abbett	Small Cap Growth	14,477	3.0%	3.1%	0.1%
International Equity		\$61,232	12.0%	13.1%	1.1%
SSgA	International	18,293	3.6%	3.9%	0.3%
Hansberger	International	20,940	4.2%	4.5%	0.3%
Fisher Fixed Income	International	21,999 <b>\$84,247</b>	4.2% 20.0%	4.7% <b>18.0%</b>	0.5% - <b>2.0</b> %
Reams	Core Plus	31,298	9.0%	6.7%	-2.3%
T. Rowe Price	Core	52,866	11.0%	11.3%	0.3%
Transition (Reams)	Transition Portfolio	83	0.0%	0.0%	
Covered Calls		\$46,254	10.0%	9.9%	-0.1%
Parametric (Eaton Vance)	Active/Replication	46,254	-	9.9%	
Real Return		\$46,816	10.0%	10.0%	0.0%
Wellington		46,816	-	10.0%	
Total Cash <sup>2</sup>		\$4,100	0.0%	0.9%	0.9%

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

2. Includes cash balance with City Treasury and Torrey Pines Bank as of 5/31/2014.

#### MANAGER MONITORING / PROBATION LIST

# Monitoring/Probation Status

#### As of June 30, 2014 Return vs. Benchmark since Corrective Action

Portfolio	Status	Concern	Months Since Corrective Action	Performance^ Since Corrective Action	Date of Corrective Action*
None			-	-	
N/A					

^ 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

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

All critelized basis.

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

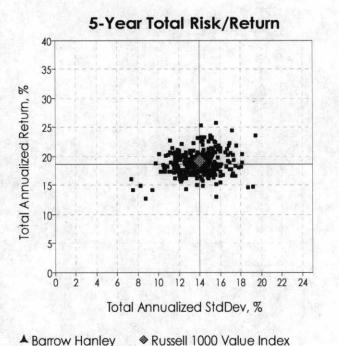
# Oakland Police & Fire Performance Summary and Universe Rankings Period Ending June 30, 2014

	Quarter	1- Year	3-Year	5-Year
Maximum	6.6	26.2	13.5	16.2
Percentile 25	4.2	18.2	10.7	13.8
Median	3.9	17.2	10.2	13.1
Percentile 75	3.3	15.5	9.1	12.1
Minimum	0.6	0.2	-0.1	2.2
Number of Portfolios	106	104	92	87
Oakland Police & Fire Total				
Return	3.5	16.5	8.9	13.1
Quartile Rank	3rd	3rd	3rd	2nd

Notes:

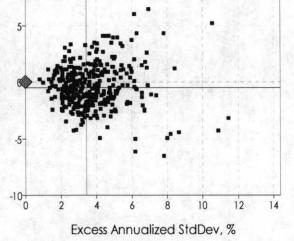
Source: Mellon Total Public Funds Universe All performance is shown **gross of fees**. PCA

## Oakland Large Cap Value Manager Comparisons as of June 30, 2014



	Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
Barrow Hanley	18.14	13.82	1.31
Russell 1000 Value Index	19.23	14.00	1.37
LC Value Universe Median	18.74	13.96	1.36

5-Year Excess Risk/Return 10-Excess Annualized Return, % 5

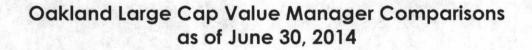


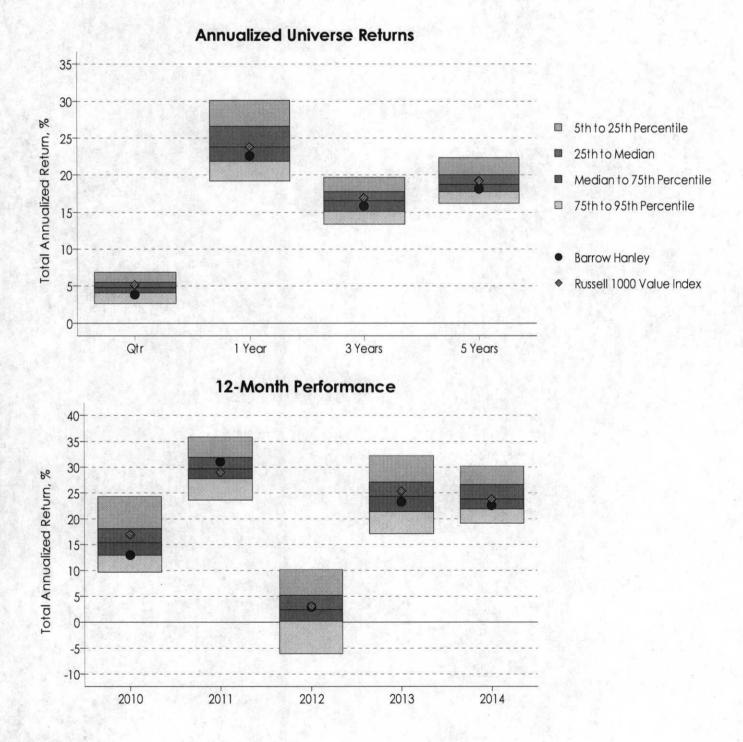
Russell 1000 Value Index

▲ Barrow Hanley

Annualized Annualized Sharpe Ratio, Excess Excess StDev, % Excess Return, % 2.81 -0.39 Barrow Hanley -1.09 Russell 1000 Value Index 0.00 0.00 NA LC Value Universe Median -0.49 3.44 -0.15

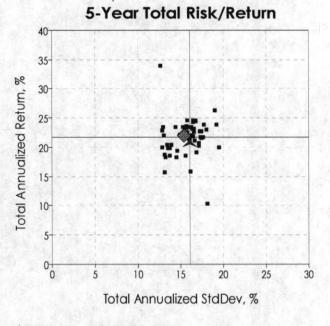






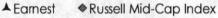
Annualized Sharpe

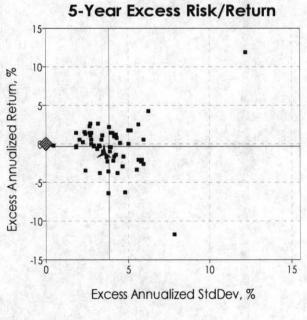
## Oakland Mid Cap Core Manager Comparisons as of June 30, 2014

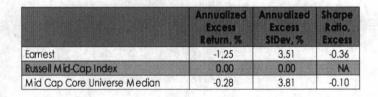


	Reiuill, /o	Sidberry 70	
Earnest	20.83	16.08	1.29
Russell Mid-Cap Index	22.07	15.43	1.43
Mid Cap Core Universe Median	21.79	16.08	1.36

Annualized



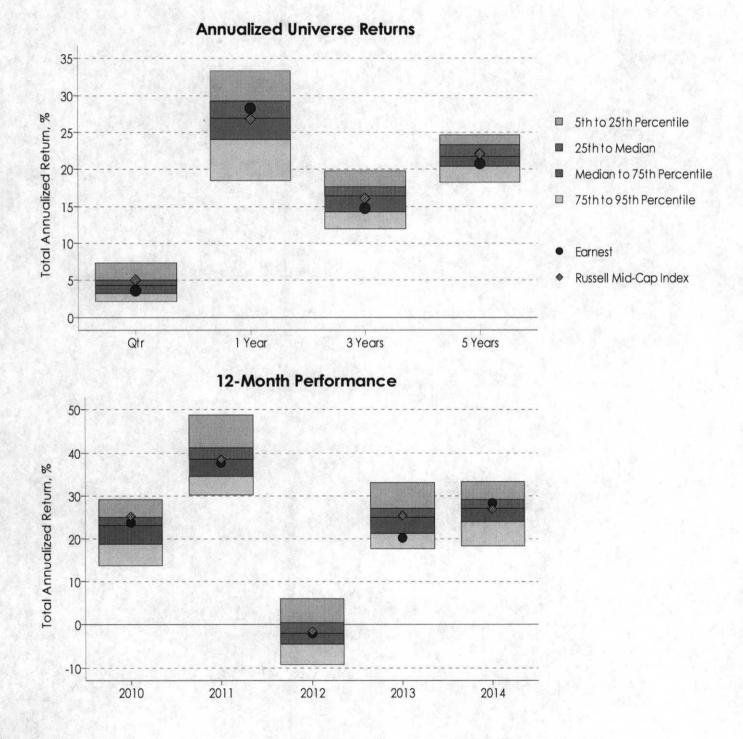




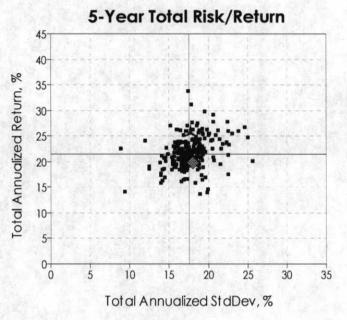
▲ Earnest

Russell Mid-Cap Index

## Oakland Mid Cap Core Manager Comparisons as of June 30, 2014

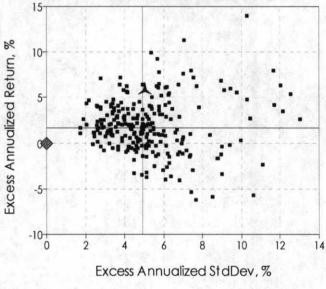


## Oakland Small Cap Value Manager Comparisons as of June 30, 2014



	Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
NWQ	25.69	17.78	1.44
Russell 2000 Value Index	19.88	18.08	1.10
Small Cap Value Universe Median	21.57	17.51	1.23

5-Year Excess Risk/Return

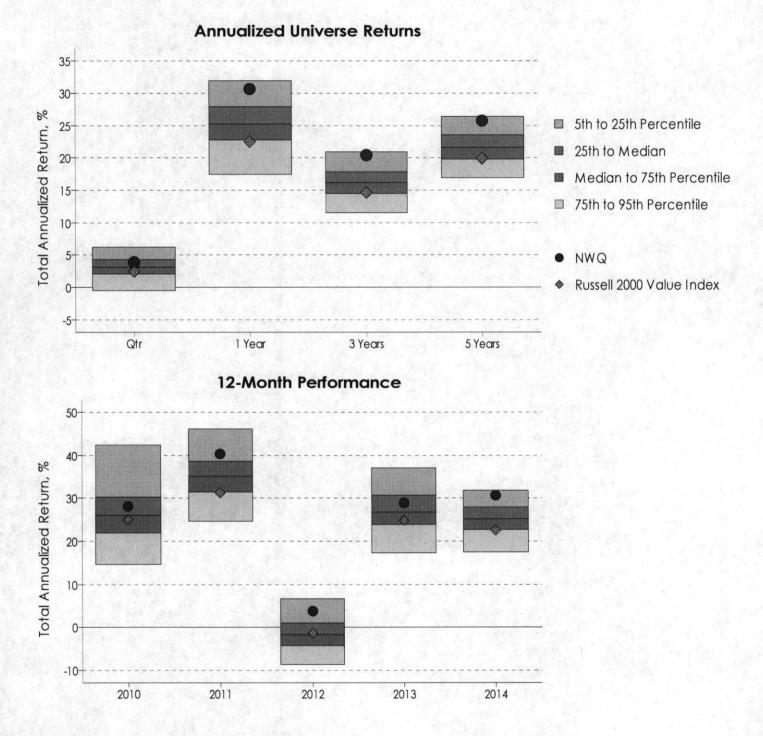


	Annualized Excess Return, %	Annualized Excess StDev, %	Sharpe Ratio, Excess
NWQ	5.81	5.04	1.15
Russell 2000 Value Index	0.00	0.00	NA
Small Cap Value Universe Median	1.69	4.90	0.40

ANWQ OF

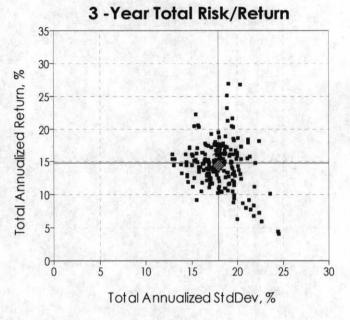
Russell 2000 Value Index

## Oakland Small Cap Value Manager Comparisons as of June 30, 2014



#### 33

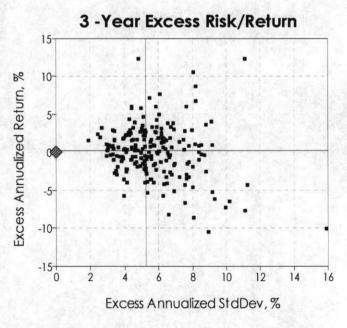
## Oakland Small Cap Growth Manager Comparisons as of June 30, 2014

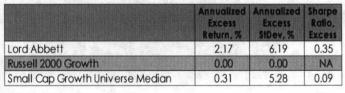


	Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
Lord Abbett	16.66	18.03	0.92
Russell 2000 Growth	14.49	17.94	0.81
Small Cap Growth Universe Median	14.80	17.95	0.83

PCA



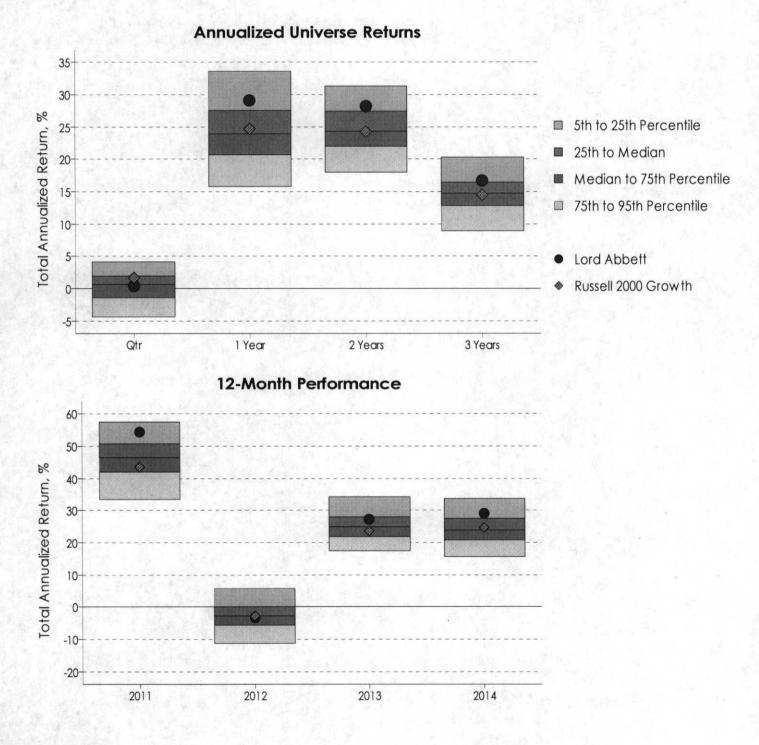




### ▲ Lord Abbett

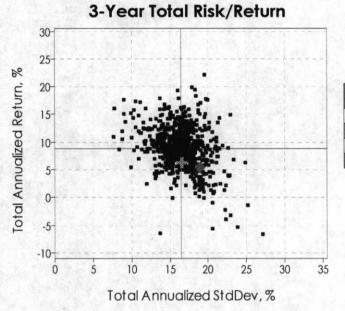
Russell 2000 Growth

## Oakland Small Cap Growth Manager Comparisons as of June 30, 2014



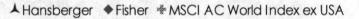
35

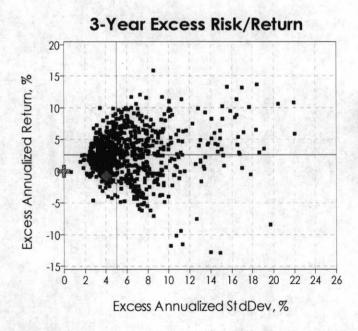
## Oakland International Equity Manager Comparisons as of June 30, 2014



	Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
Hansberger	4.80	18.71	0.26
Fisher	5.47	18.92	0.29
MSCI AC World Index ex USA	6.21	16.54	0.38
International Equity Universe Median	8.81	16.51	0.53

PCA

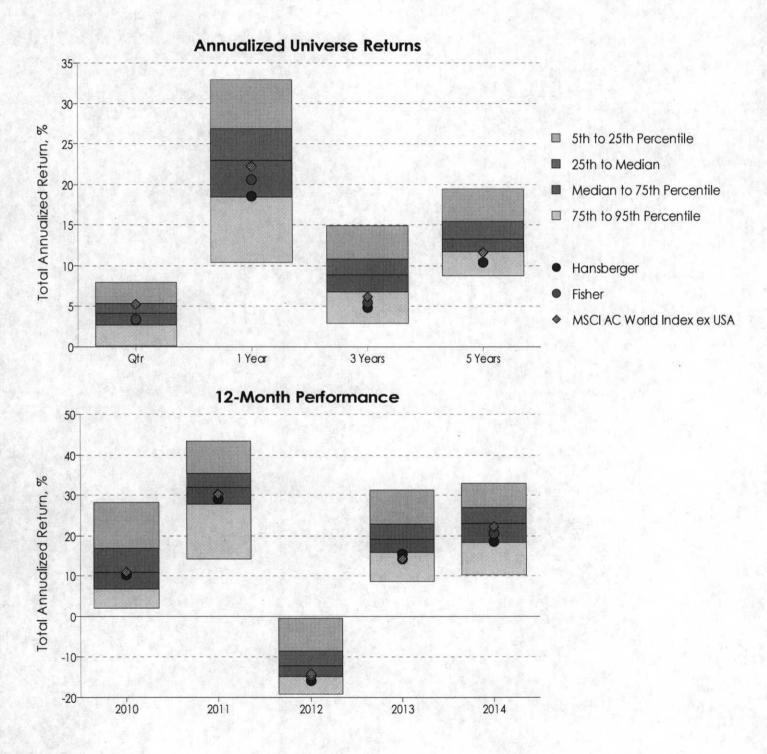




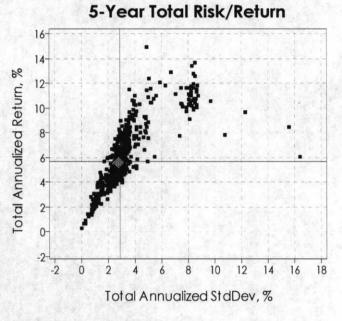
	Annualized Excess Return, %	Annualized Excess StDev, %	Sharpe Ratio, Excess
Hansberger	-1.41	4.46	-0.32
Fisher	-0.74	4.05	-0.18
MSCI AC World Index ex USA	0.00	0.00	NA
International Equity Universe Median	2.60	5.06	0.52

▲ Hansberger ◆ Fisher ♥ MSCI AC World Index ex USA

Oakland International Equity Manager Comparisons as of June 30, 2014

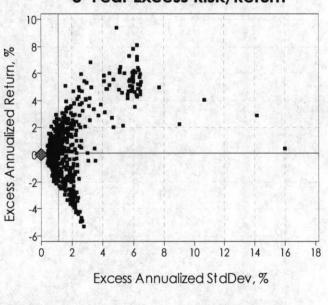


## Oakland Fixed Income Manager Comparisons as of June 30, 2014



	Return, %	StdDev, %	Ratio
Reams	6.99	2.98	2.35
Oakland BC Universal Blend	5.58	2.78	2.00
U.S. Fixed Income Universe Median	5.70	2.91	2.02

▲ Reams ◆ Oakland BC Universal Blend

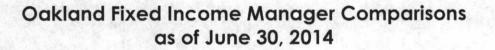


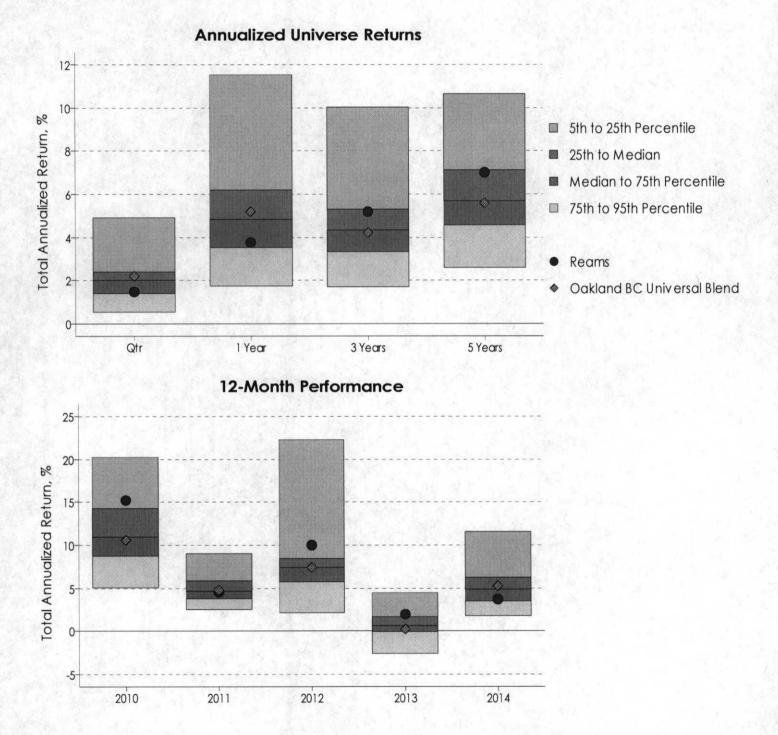
	Annualized Excess Return, %	Annualized Excess StDev, %	Sharpe Ratio, Excess
Reams	1.41	1.36	1.04
Oakland BC Universal Blend	0.00	0.00	NA
U.S. Fixed Income Universe Median	0.12	1.11	0.14

5-Year Excess Risk/Return

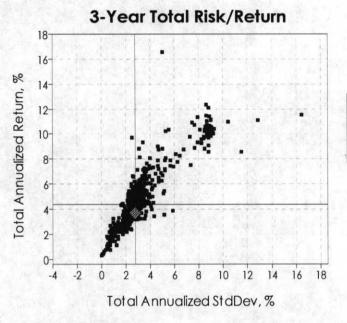
▲ Reams

Oakland BC Universal Blend





## **Oakland Fixed Income Manager Comparisons** as of June 30, 2014



	Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
T Rowe Price	3.98	2.74	1.45
BC Aggregate Bond	3.66	2.77	1.32
U.S. Fixed Income Universe Median	4.35	2.76	1.59

▲T Rowe Price ●BC Aggregate Bond

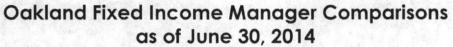
10-8-Excess Annualized Return, % 6-4 2 -2 -4 0 6 8 10 12 14 16 2 4 Excess Annualized StdDev, %

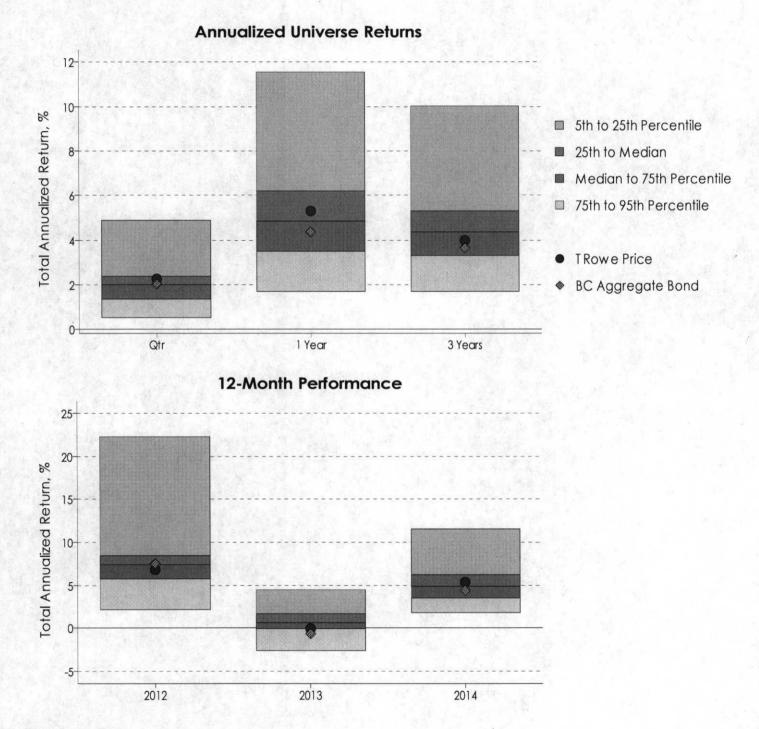
	Annualized Excess Return, %	Annualized Excess StDev, %	Sharpe Ratio, Excess
T Rowe Price	0.32	0.72	0.44
BC Aggregate Bond	0.00	0.00	NA
U.S. Fixed Income Universe Median	0.68	1.32	0.61

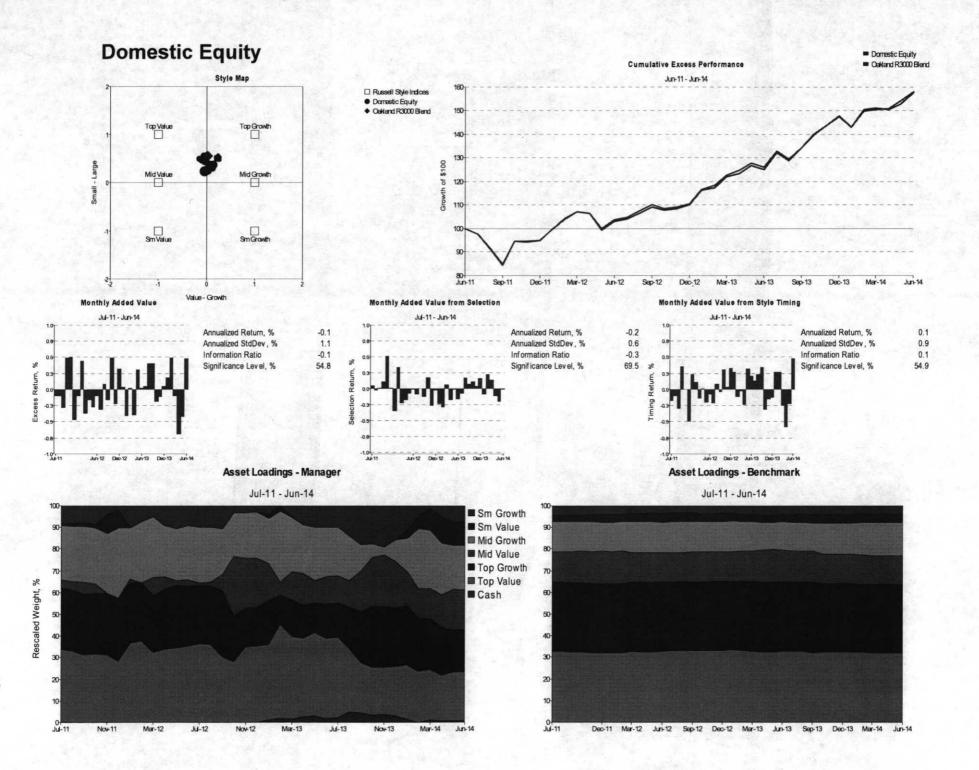
3-Year Excess Risk/Return

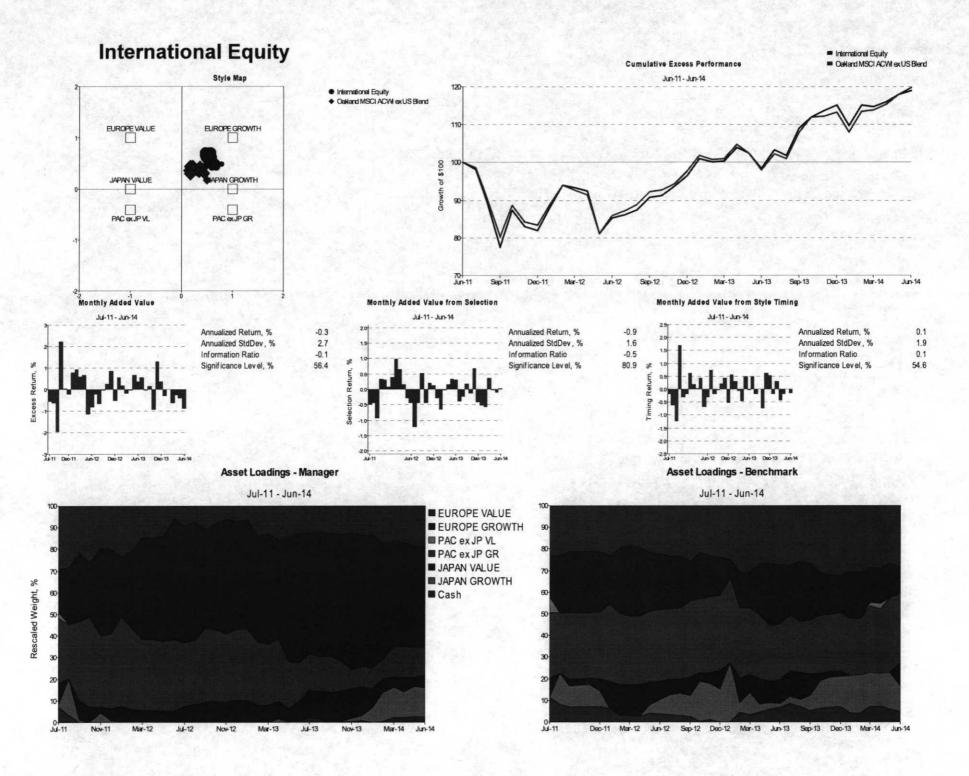
▲T Rowe Price

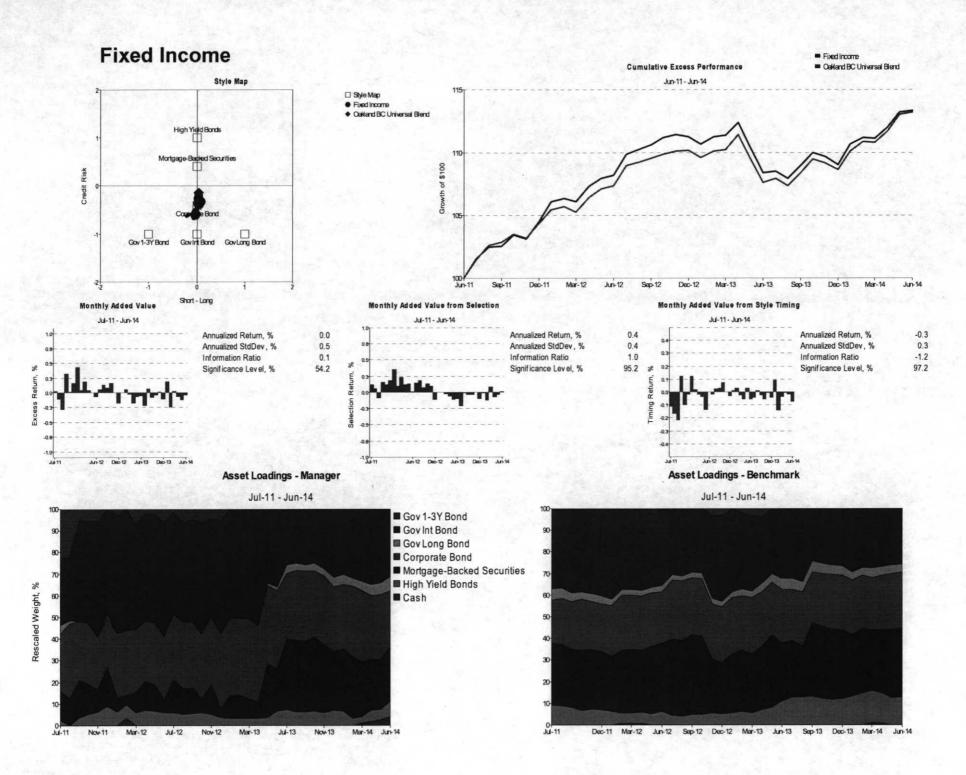
BC Aggregate Bond











# Appendix

#### Alpha

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 exces s 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 port folio outperforms a given index.

#### Beta

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 t he market return.

#### Bottom-up

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

## Glossary

#### 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 r eturn 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 explaine d 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.

#### Turnover

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. **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 guarterly 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.

#### **Emerging Market Equity Markets:**

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 to 1979, 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.

PC/

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.

#### OPFRS Quarterly Report - 2Q 2014

#### 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.

PC/

#### 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.

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