



ANIS SEP - 1 AM 10: 19 AGENDA REPORT

Date:

TO: Sabrina B. Landreth City Administrator FROM: Katano Kasaine Treasurer

SUBJECT: Informational Report on PFRS' Investment Portfolio DATE: August 17, 2016

City Administrator Approval

RECOMMENDATION

Staff Recommends That The Council Accept An Informational Report On The Oakland Police And Fire Retirement System ("PFRS") Investment Portfolio As Of June 30, 2016.

EXECUTIVE SUMMARY

The attached Quarterly Performance report provided by the PFRS Investment Consultant, Pension Consulting Alliance, and (PCA) summarizes the performance of the PFRS investment portfolio for the quarter ended June 30, 2016 as **Attachment A**, herein. This report is being provided in accordance with the funding agreement between the City and the PFRS Board pursuant to the issuance of the Taxable Pension Obligation Bonds Series 2012 ("2012 POB").

During the most recent quarter, the PFRS Total Portfolio generated an absolute return of 2.3 percent, gross of fees, matching its policy benchmark. The portfolio underperformed its benchmark over the one- and three-year periods, while slightly outperforming over the five-year period. This is discussed in more detail in the "Investment Performance" section of this report.

	Quarter	1 Year	3 Year	5 Year
Total Portfolio ¹	2.3	(0.3)	6.5	6.0
Policy Benchmark ²	2.3	2.0	6.7	5.9
Excess Return	0.0	(2.3)	(0.2)	0.1
Reference: Median Fund ³	1.9	0.9	6.7	6.5
Reference: Total Net of Fees ⁴	2.2	(0.8)	6.1	5.6

Gross of Fees. Performance since 2005 includes securities lending.

² Evolving Policy Benchmark consists of 43% Russell 3000, 12% MSCI ACWI ex U.S., 20% BC Universal, 15% CBOE BXM and 10% CPI+3%.

Mellon Total Funds Public Universe.

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

BACKGROUND / LEGISLATIVE HISTORY

The Oakland Police and Fire Retirement System (the "PFRS") 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"). PFRS covers the City's sworn police and fire employees hired prior to July 1, 1976. PFRS was closed to new members on June 30, 1976. As of June 30, 2016, PFRS had 929 retired members and no active 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 12 external investment managers. 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 Taxable Pension Obligation Bonds, Series 1997 ("1997 POBs") and as a result deposited \$417 million into the System to pay the City's contributions through June 2011. In accordance with the funding agreement entered into at the time the 1997 POBs were issued, 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 and contributed \$45.5 million for the fiscal year (FY) ended June 30, 2012.

In July 2012, the City issued \$212.5 million of Taxable Pension Obligation Bonds, Series 2012 ("2012 POBs"). The City subsequently deposited \$210 million into the System and entered into a funding agreement with the PFRS Board. As a result, no additional contributions are required until July 1, 2017.

Per the City of Oakland Charter, PFRS retiree pay is connected to the current active Oakland Sworn officers pay. Incorporating the new recently approved Police Memorandum of Understanding, the System's Unfunded Actuarial Liability, as of June 30, 2015, is estimated to change to approximately \$288.17 million and the System Funded Ratio becomes 61.4 percent on a Market Value of Assets (MVA) basis. The next required City contribution is projected to be approximately \$43.45 million in fiscal year 2017/2018. The System's July 1, 2016 actuary valuation report will determine the City's 2017/2018 Contribution.

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, 2016, the System's membership was 929, which included 639 retirees and 290 beneficiaries as shown on Table 1.

Table 1 PFRS Membership as of June 30, 2016							
Membership	Membership POLICE FIRE TOTAL						
Retiree	392	247	639				
Beneficiary 153 137 290							
Total Membership545384929							

Portfolio Valuation

As of June 30, 2016, the PFRS' portfolio had an aggregate value of \$362.9 million. This represents a (\$7.4) million decrease in value over the guarter. During the previous one-year period, the PFRS' Total Portfolio decreased by (\$61.0) million, including (\$60.5) million in withdrawals to pay retiree pension payments during the same one-year period as shown in Table 2.

Investment Portfolio Valuation as of June 30, 2016*								
	June 30, 2016	March 31, 2016	Quarterly Change	Percentage Change	June 30, 2015	Annual Change	Percentage Change	
PFRS	\$362.9	\$370.3	(\$7.4)	(2.0%)	\$423.9	(\$61.0)	(14.4%)	

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

PFRS Investment Portfolio

Table 3					
PFRS Investment Portfolio					
as of June 30, 2016					
Investment Fair Value (000)					
Domestic Equities	\$	175,603			
International Equities		40,832			
Fixed Income		69,733			
Covered Calls		74,004			
Cash and Cash Equivalents		3,085			
Total Portfolio	\$	363,257			

Table 3 below shows PFRS' Investment Portfolio as of June 30, 2016.

PFRS Investment Performance

During the latest quarter ending June 30, 2016, the PFRS Total Portfolio generated a return of 2.3 percent, gross of fees, matching its benchmark. The Plan's Domestic Equity allocation also matched its benchmark by returning 2.6 percent, while the Plan's International Equity allocation underperformed its benchmark by (0.3 percent). The Plan's Fixed Income allocation outperformed its benchmark by 20 basis points, while the Covered Calls allocation underperformed its index by (20) basis points.

During the latest quarter, Domestic Equity's weighting increased by 5.8%, Fixed Income increased its weighting by 0.3 percent, and International Equity's weighting increased by 0.1 percent. Actual weighting for Covered Calls increased by 2.8 percent and Cash weighting was reduced by (0.1 percent). The larger than usual changes in asset weighting was due to the closure of the Real Return asset class towards the end of the quarter. At the April 27, 2016 Board meeting, the PFRS Board elected to defund the Real Return strategy. Those assets have since been reallocated with 50 percent to a PFRS domestic equity manager and 50 percent to the PFRS Covered Calls manager.

Relative to the actuarial expected rate of return, the PFRS Total Portfolio underperformed the actuarial expected rate for the one, three, and five-year time periods. The Actuarial Rate of Return was gradually lowered from 8.0 percent in FY 2008 to a blended rate of 6.50 percent in 2015. *Table 4* below compares PFRS Total Portfolio performance to other pension funds and benchmarks.

Table 4PFRS TOTAL FUND PERFORMANCEas of June 30, 2016

	Quarter	1 Year	3 Year	5 Year
PFRS Fund	2.29%	-0.33%	6.48%	5.98%
<u>Comparisons:</u>				
PFRS Actuarial Expected Rate of Return				
(blend) (a) (b)	1.63%	6.50%	6.58%	6.65%
Policy Target (blend) (c)	2.28%	1.96%	6.74%	5.86%
Median Fund (d)	1.86%	0.91%	6.73%	6.53%
CalPERS Investment Returns	2.04%	0.87%	7.14%	7.00%
CalSTRS Investment Returns	1.62%	1.63%	8.11%	7.93%
East Bay Mud Investment Returns	2.14%	1.33%	8.38%	8.24%
Colorado F&P Investment Returns	1.09%	0.57%	7.19%	6.95%

(a) 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% through 6/30/2014 and 6.50% currently.

(b) The quarterly actuarial expected rate of return is calculated based on the 6.50% annual return assumption.

(c) The Policy Benchmark consists of 48% Russell 3000, 12% MSCI ACWI ex U.S., 20% BC Universal, and 20% CBOE BXM.

(d) Mellon Total Fund Public Universe Fund.

FISCAL IMPACT

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

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 (PCA), City Attorney's Office and Controller's Bureau.

SUSTAINABLE OPPORTUNITIES

Economic: Whenever possible, the PFRS Board seeks to benefit the local Oakland based economy. In 2006, the PFRS 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.

ACTION REQUESTED OF THE CITY COUNCIL

Staff recommends that the Council accept this informational report on the Oakland Police and Fire Retirement System ("PFRS") Investment Portfolio as of June 30, 2016.

Respectfully submitted,

esair elmo

₭ATANO KASAINE Treasurer/ Plan Administrator

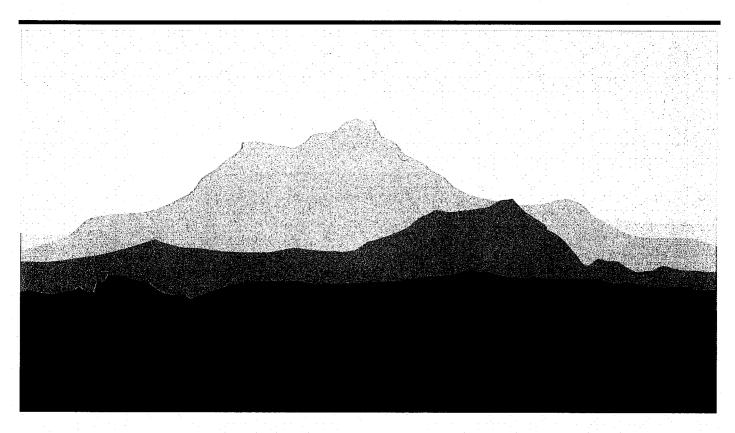
Prepared by: Téir Jenkins, Investment Officer Retirement Division

Attachments (1): Attachment A: PFRS Performance Report as of June 30, 2016

ATTACHMENT A: PFRS INVESTMENT PERFORMANCE AS OF JUNE 30, 2016







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Bothing horein is intended to rerver as investment advices a recommondation of any particular investment or type of investment, a suggestion of the merits of parchasing or selling securities, or an invitation chinducturoral to analogs in investment activity. TABLE OF CONTENTS

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- F INDIVIDUAL MANAGER PERFORMANCE

Appendix

TOTAL PORTFOLIO SUMMARY

As of June 30, 2016, the City of Oakland Police and Fire Retirement System (OPFRS) portfolio had an aggregate value of \$362.9 million. This represents a (\$7.4) million decrease in value, which includes (\$15) million in benefit payments, over the quarter. During the previous one-year period, the OPFRS Total Portfolio decreased by (\$61) million, including (\$60.5) million in withdrawals during the period.

Asset Allocation Trends

The asset allocation targets (see table on page 80) reflect those as of June 30, 2016. Target weightings reflect the Plan's evolving asset allocation (effective 3/31/2014).

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

Recent Investment Performance

During the most recent quarter, the OPFRS Total Portfolio generated an absolute return of 2.3%, gross of fees, matching its policy benchmark. The portfolio underperformed its benchmark over the fiscal YTD, 1-year, and 3-year period while slightly outperforming over the 5-year period.

The Total Portfolio outperformed the Median fund's return over the most recent quarter, while underperforming over all other periods measured. Performance differences with respect to the Median Fund continue to be attributed largely to differences in asset allocation.

ä	Quarter	Fiscal YTD	1 Year	3 Year	5 Year
Total Portfolio ¹	2.3	(0.3)	(0.3)	6.5	6.0
Policy Benchmark ²	2.3	2.0	2.0	6.7	5.9
Excess Return	0.0	(2.3)	(2.3)	(0.2)	0.1
Reference: Median Fund ³	1.9	0.9	0.9	6.7	6.5
Reference: Total Net of Fees ⁴	2.2	(0.8)	(0.8)	6.1	5.6

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

² Evolving Policy Benchmark consists of 48% Russell 3000, 12% MSCI ACWI ex U.S., 20% BC Universal, and 20% CBOE BXM

³ Mellon Total Funds Public Universe.

⁴ Net of fee returns are estimated based on OPFRS manager fee schedule (approximately 42 bps).

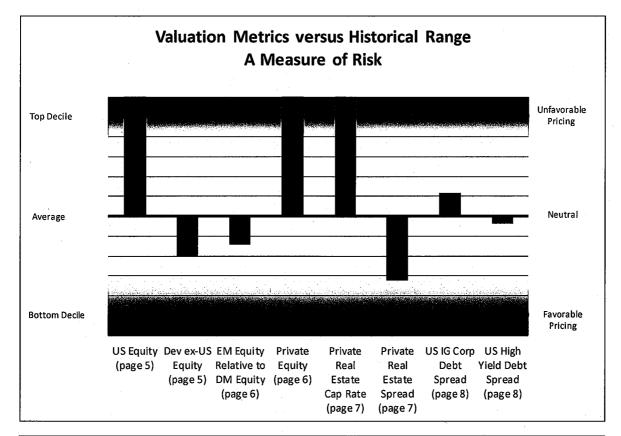
INVESTMENT MARKET RISK METRICS

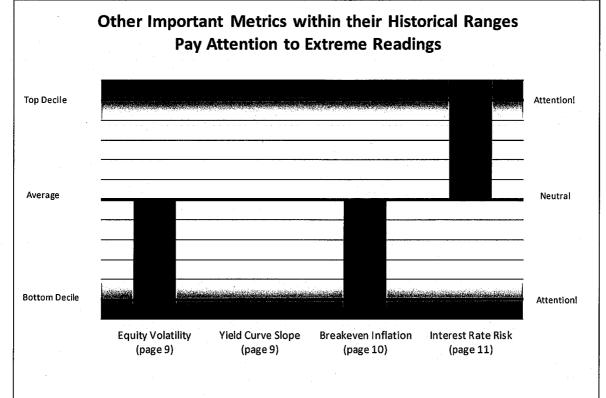
<u>Takeaways</u>

- After the Brexit scare, July saw risk markets rally hard globally and interest rates fall. The result was lots of noise, little movement.
- The 10-year Treasury interest rate ended the month below 1.5%, near all-time lows.
- U.S. public equity and private equity valuations remain extended.
- Private real estate valuations are historically high, but not relative to their financing, which tends to be driven by 10-year Treasury rates.
- Non-U.S. developed and emerging market valuations are historically cheap.
- Bond spreads tightened and are picking up some positive (tightening) momentum.
- 10-year breakeven inflation remains near 1.5%, (bottom decile territory), and commodity prices remain at decades-low levels inflation adjusted. (page 10)
- The PCA Market Sentiment Indicator remained **neutral** at the end of July (page 4), with spread narrowing momentum potentially pointing to a near-term flip to a positive signal.
- The yield curve flattened more (page 9), as the 10-year Treasury yield declined, and the 1-year yield hardly moved.
- Real yields (page 9) are revisiting negative levels seen in 2011 to 2013, indicating growth concerns, particularly outside the U.S.

PCA

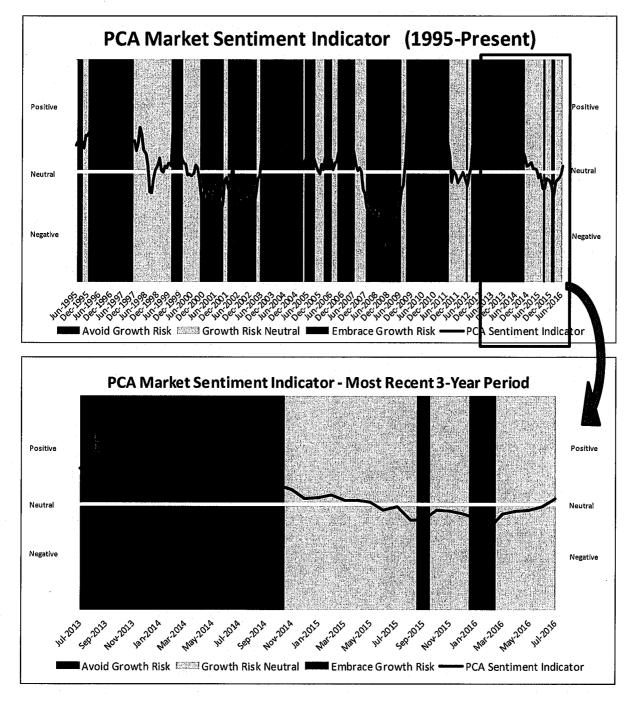
Risk Overview





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Market Sentiment



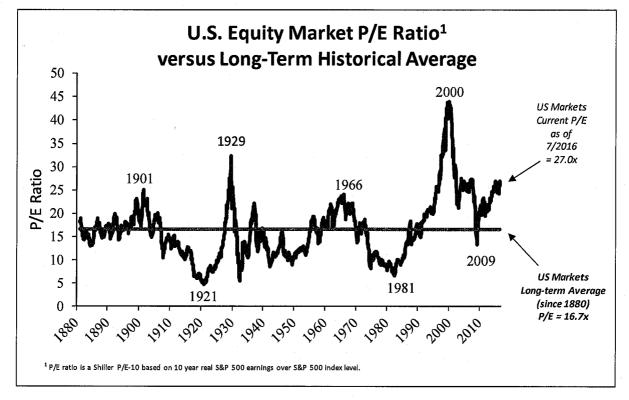
Information Behind Current Sentiment Reading

Bond Spread Momentum Trailing-Twelve Months	Negative	
Equity Return Momentum Trailing-Twelve Months	Positive	
Agreement Between Bond Spread and Equity Spread Momentum Measures?	Disagree	
Growth Risk Visibility (Current Overall Sentiment)	Neutral	

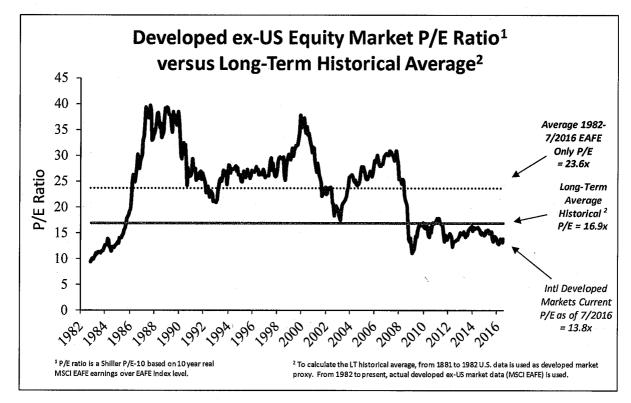
PCA

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Developed Equity Markets

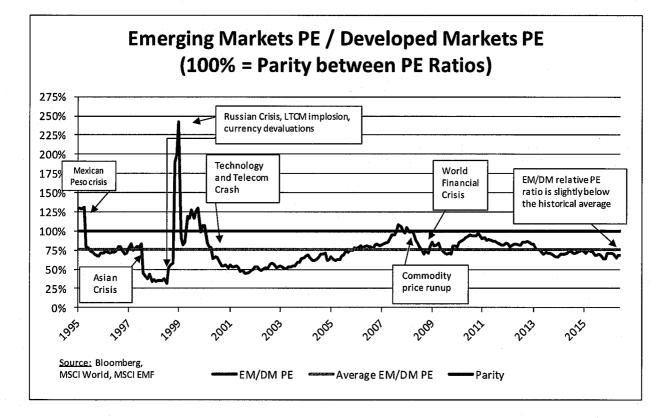


⁽Please note time scale difference)

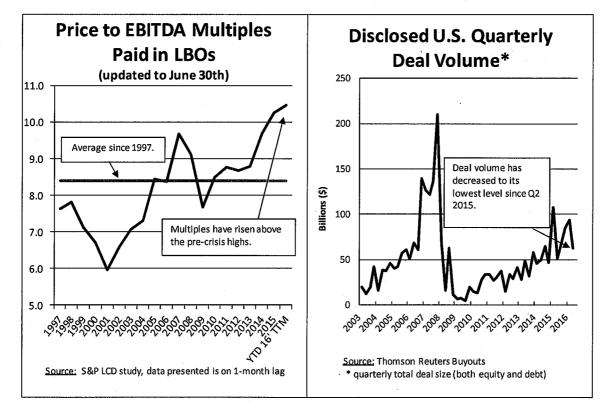


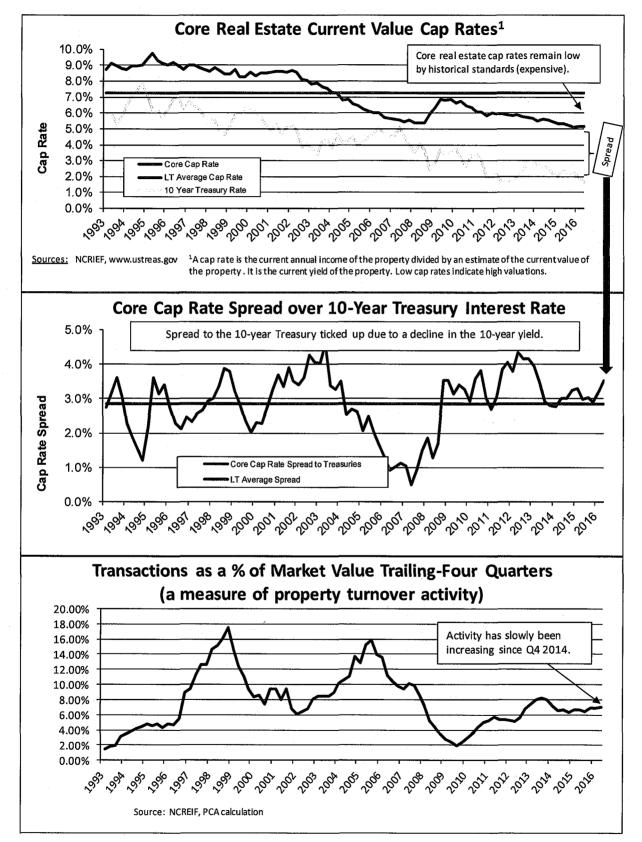
PCA

Emerging Market Equity Markets



US Private Equity

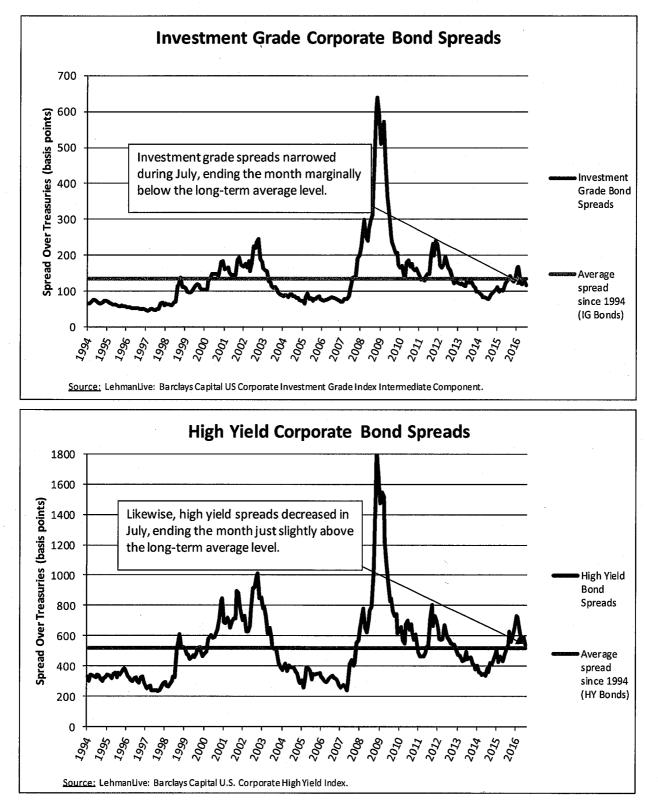




PCA

OPFRS Quarterly Report - 2Q 2016

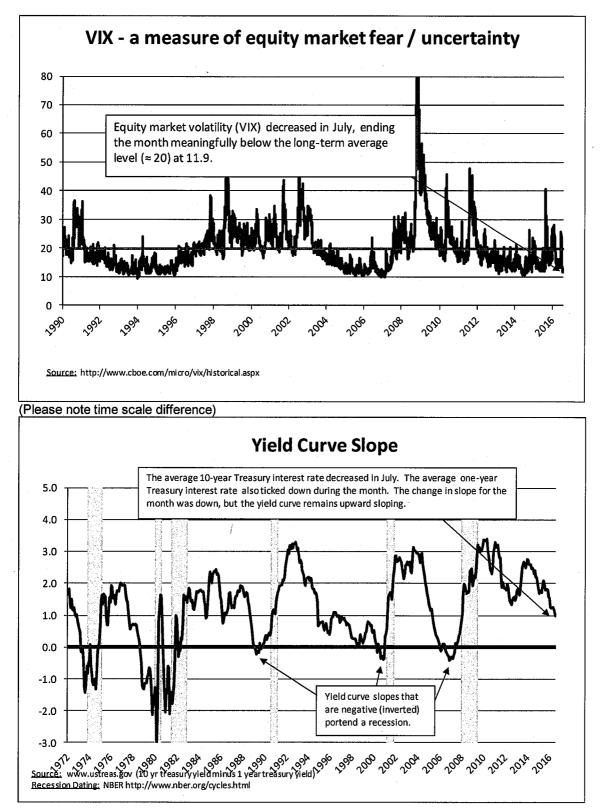
US Fixed Income



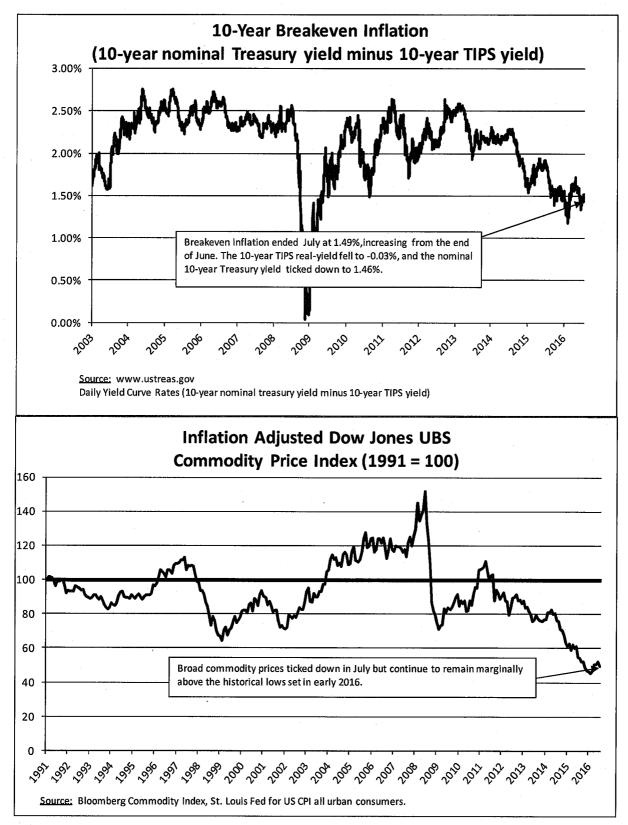
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PCA

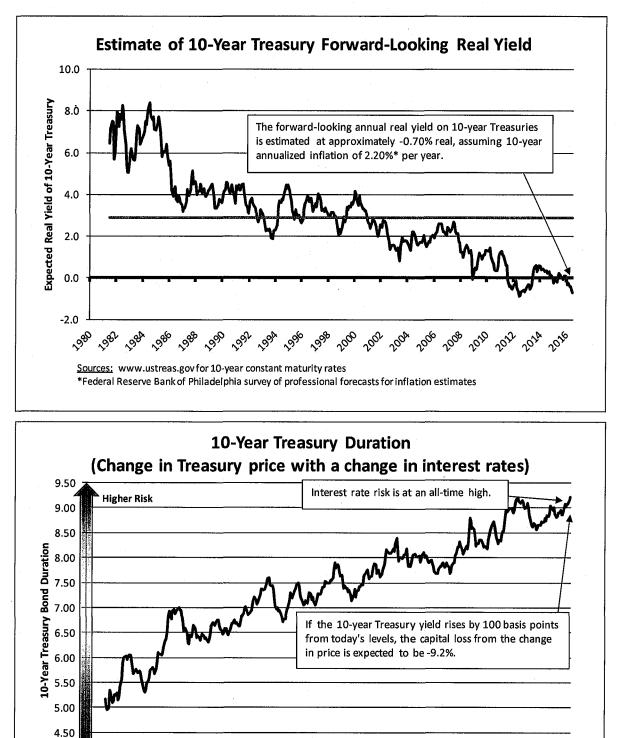
Other Market Metrics



Measures of Inflation Expectations



Measures of US Treasury Interest Rate Risk



4.00 ~9⁹⁰ 2002 ~?% ~?⁹⁶ 1997 2000 2004 2012 19⁹⁰ 1980 '3₂₂ 200° 200° 2010 Source: www.ustreas.gov for 10-year constant maturity rates, calculation of duration

Lower Risk

PCA

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2014 2016

ECONOMIC OVERVIEW

Overview: US GDP growth increased from the prior quarter (advanced estimate) but has slowed relative to quarterly growth from one-year ago (2.6% in 2Q 2015 vs. 1.2% in 2Q 2016). GDP growth during the second quarter was driven mostly by consumer spending on goods and services. The unemployment rate remained unchanged since the prior quarter at 4.9%. The seasonally adjusted Consumer Price Index for All Urban Consumers increased by 3.4% on an annualized basis in the quarter, its largest quarterly increase since the third quarter of 2012. Commodities continued to improve during the quarter and are now up 15.1% since the end of February. Global equities were slightly positive during the quarter returning 1.2% (MSCI ACWI) despite a volatile quarter end, resulting from the UK's "leave" vote in the Brexit referendum. The referendum result also put downward pressure on the British Pound, decreasing by -8.3% versus the US dollar during the quarter - almost all of which came in the last two weeks. Bond markets had a strong positive quarter as the BC Universal increased by 2.5% and yields fell.

Economic Growth

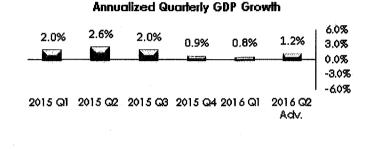
- Real GDP increased at an annualized rate of 1.2 percent in the second quarter of 2016.
- Consumer spending was the biggest contributor to real GDP growth in the quarter driven by spending on durable goods, nondurable goods, and services (mostly health care, housing, and health care).
- GDP growth gains were partially offset during the quarter by a decline in business and housing investments.

Inflation

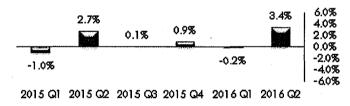
- The Consumer Price Index for All Urban Consumers (CPI-U) increased by 3.4 percent in the quarter on an annualized basis after seasonal adjustment.
- Quarterly percentage changes may be adjusted between data publications due to periodic updates in seasonal factors.
- Core CPI-U increased by 2.3 percent for the quarter on an annualized basis.
- Over the last 12 months, core CPI-U increased 2.2 percent after seasonal adjustment.

Unemployment

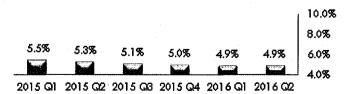
- The US economy gained approximately 442,000 jobs in the quarter.
- The unemployment rate remained at 4.9% at quarter end.
- The majority of jobs gained occurred in education and health services, health care and social assistance, and professional and business services. The majority of jobs lost occurred in goodsproducing, mining and logging, and construction.



CPI-U After Seasonal Adjustment



Unemployment Rate

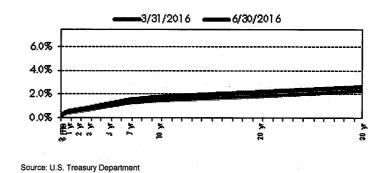


OPFRS Quarterly Report - 2Q 2016

Interest Rates & U.S. Dollar

- US Treasury yields fell on average over the quarter.
- The Federal Reserve has maintained the federal funds rate between 0.25 percent and 0.50 percent.
- The US dollar depreciated against the Yen by -8.0% and appreciated against the Pound and Euro by 7.3% and 2.4%, respectively.

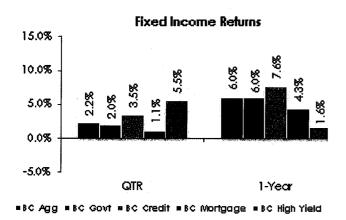
Treasury Yield Curve Changes



PCA

Fixed Income

- US bond markets delivered positive returns for the quarter with high yield, returning 5.5%, performing the best, while MBS performed the worst at 1.1%.
- Despite a strong second quarter, high yield continued to trail all other bond sectors over the trailing 1year period. Credit provided the strongest returns with 7.6%.

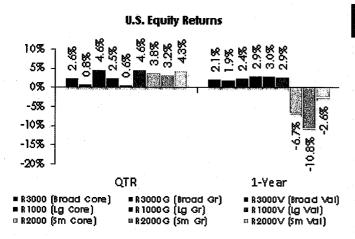


US Fixed Income Sector Performance (BC Aggregate Index)						
Sector	Weight	QTR	1 Year			
Governments*	40.7%	2.0%	6.0%			
Agencies	4.0%	1.3%	3.9%			
Inv. Grade Credit	25.4%	3.5%	7.6%			
MBS	27.7%	1.1%	4.3%			
ABS	0.6%	1.2%	2.7%			
CMBS	1.7%	2.2%	6.2%			

*U.S. Treasuries and Government Related

U.S. Equities

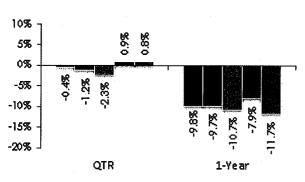
- During the quarter, value stocks were the top performers, while growth trailed all other styles. In terms of market capitalization, broad and large cap had the strongest returns each with 4.6%, but small cap stocks had the most consistent returns across styles.
- During the 1-year period, large cap stocks performed well, while small cap stocks trailed all other capitalizations. Value stocks proved to be reliable as they outperformed core and growth in both broad and small cap with returns of 2.4% and (2.6%), respectively.



US Equity Sector Performance (Russell 3000 Index)							
Sector	Weight	QTR	1 Year				
Information Tech	20.1%	2.5%	10.9%				
Financials	17.2%	-2.6%	-1.8%				
Health Care	13.7%	-5.1%	-4.1%				
Consumer Disc.	13.6%	3.0%	9.3%				
Industrials	10.9%	5.5%	3.6%				
Consumer Staple	9.2%	5.9%	13.2%				
Energy	6.1%	4.8%	-12.4%				
Utilities	3.5%	15.7%	17.9%				
Materials	3.2%	6.8%	-2.3%				
Telecomm. Serv.	2.5%	15.5%	18.6%				

International Equities

- International equities performed poorly over the quarter with the exception of the Pacific and Emerging Markets, which posted slightly positive returns of 0.9% and 0.8%, respectively.
- Over the 1-year period, international equities were negative across the board. The Pacific had the least negative results, while emerging markets performed the worst with (7.9%), and (11.7%), respectively.



International Equity Returns (in USD)

= MSCIACW EXUS. = MSCIEAPE = MSCIEurope = MSCIPacific = MSCIEM

International Equity Region Performance (in USD) (MSCI ACW Index ex US)						
Sector	Weight	QTR	1 Year			
Europe Ex. UK	31.3%	-3.0%	-10.0%			
Emerging Markets	22.7%	0.8%	-11.7%			
Japan	16.5%	1.0%	-8.6%			
United Kingdom	13.9%	-0.7%	-12.1%			
Pacific Ex. Jápan	8.7%	0.7%	-6.6%			
Canada	6.9%	3.6%	-5.5%			

Market Summary – Long-term Performance*

Indexes	Month	Quarter	1 Year	3 Years	5 Years	10 Years
Global Equity						
MSCI AC World Index	-0.6%	1.2%	-3.2%	6.6%	6.0%	4.8%
Domestic Equity			*****			
S&P 500	0.3%	2.5%	4.0%	11.7%	12.1%	7.4%
Russell 3000	0.2%	2.6%	2.1%	11.1%	11.6%	7.4%
Russell 3000 Growth	-0.4%	0.8%	1.9%	12.7%	12.0%	8.7%
Russell 3000 Value	0.8%	4.6%	2.4%	9.6%	11.1%	6.1%
Russell 1000	0.2%	2.5%	2.9%	11.5%	11.9%	7.5%
Russell 1000 Growth	-0.4%	0.6%	3.0%	13.1%	12.4%	8.8%
Russell 1000 Value	0.9%	4.6%	2.9%	9.9%	11.4%	6.1%
Russell 2000	-0.1%	3.8%	-6.7%	7.1%	8.4%	6.2%
Russell 2000 Growth	-0.5%	3.2%	-10.8%	7.7%	8.5%	7.1%
Russell 2000 Value	0.3%	4.3%	-2.6%	6.4%	8.2%	5.2%
CBOE BXM Index	1.2%	3.2%	4.0%	7.2%	7.0%	4.6%
International Equity					•	
MSCI AC World Index ex USA	-1.5%	-0.4%	-9.8%	1.6%	0.6%	2.3%
MSCI EAFE	-3.3%	-1.2%	-9.7%	2.5%	2.2%	2.1%
MSCI Pacific	-1.3%	0.9%	-7.9%	2.4%	3.2%	1.9%
MSCI Europe	-4.4%	-2.3%	-10.7%	2.5%	1.6%	2.1%
MSCI EM (Emerging Markets)	4.1%	0.8%	-11.7%	-1.2%	-3.4%	3.9%
Fixed Income						
BC Universal	1.8%	2.5%	5.8%	4.2%	4.0%	5.3%
Global Agg Hedged	1.9%	2.5%	7.4%	5.2%	4.8%	5.0%
BC Aggregate Bond	1.8%	2.2%	6.0%	4.1%	3.8%	5.1%
BC Government	2.1%	2.0%	6.0%	3.5%	3.4%	4.7%
BC Credit Bond	2.3%	3.5%	7.6%	5.3%	5.2%	6.1%
BC Mortgage Backed Securities	0.8%	1.1%	4.3%	3.8%	3.0%	5.0%
BC High Yield	0.9%	5.5%	1.6%	4.2%	5.8%	7.6%
BC WGIL All Maturities - Hedged	4.4%	4.4%	7.7%	5.1%	4.5%	5.2%
Emerging Markets Debt	2.9%	4.7%	7.8%	6.0%	6.0%	7.7%
Real Estate						
NCREIF UNLAGGED	0.7%	2.0%	10.6%	11.6%	11.5%	7.4%
FTSE NAREIT All Equity Index	6.7%	7.4%	22.7%	13.1%	12.3%	7.0%
Commodily Index						
DJUBS	4.1%	12.8%	-13.4%	-10.6%	-10.8%	-5.6%

* Performance is annualized for periods greater than one year.

TOTAL PORTFOLIO REVIEW

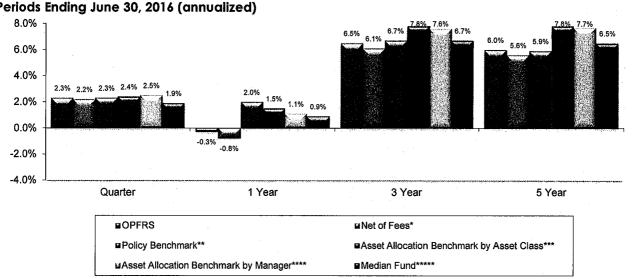
OPFRS Portfolio Performance

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, 2016, the OPFRS Total Portfolio generated a return of 2.3%, gross of fees, matching its benchmark. The Plan's Domestic Equity allocation also matched its benchmark by returning 2.6%, while the Plan's International Equity allocation underperformed its benchmark by (0.3%). The Plan's Fixed Income allocation outperformed its benchmark by 20 basis points, while the Covered Calls allocation underperformed its index by (20) basis points.

The Total Portfolio produced positive relative results versus the policy benchmark over the quarter but has produced negative results over the 1-, and 3-year periods while slightly outperforming over the 5-year period, gross of fees. Relative to the Median Fund, The Total Portfolio outperformed over the quarter but underperformed over all other periods measured. Performance differences with respect to the Median Fund continue to be attributed largely to differences in asset allocation.



Periods Ending June 30, 2016 (annualized)

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

The Evolving Policy Benchmark consists of 48% Russell 3000, 12% MSCI ACWI ex U.S., 20% BC Universal, and 20% CBOE BXM.

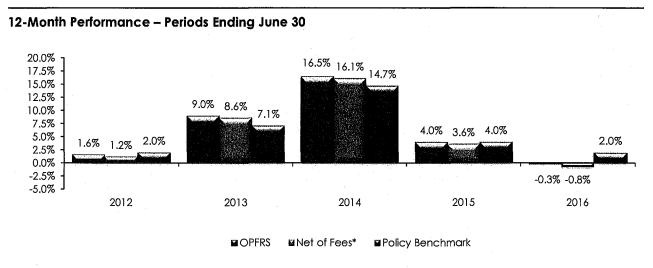
* Median Fund is the Mellon Total Public Funds Universe.

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 returns of individual manager benchmarks, based on managers' actual allocations:

| PCA

Absolute performance results have been positive in four of the last five 12-month periods ending June 30. The Plan also outperformed or matched its policy benchmark in three out of the last 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 \$362.9 million as of June 30, 2016. During the latest quarter, the portfolio decreased by (\$7.4) million, including (\$15.0) million in net benefit payments. Over the latest year, the portfolio decreased by (\$61.0) million, including (\$60.5) million in net benefit payments.

Investment Portfolio Valuation as of June 30, 2016*								
	June 30,	March 31,	Quarterly	Percentage	June 30,	Annual	Percentage	
	2016	2016	Change	Change	2015	Change	Change	
OPFRS	\$362.9	\$370.3	(\$7.4)	(2.0%)	\$423.9	(\$61.0)	(14.4%)	

*The calculations listed above represent change in dollar value and <u>not</u> investment returns.

Actual vs. Target Allocations

With respect to policy targets, the portfolio ended the latest quarter **overweight Domestic Equity**, **Covered Calls**, **and Cash**, **while underweight International Equity and Fixed Income**. Target weightings reflect the Plan's evolving asset allocation (effective 3/31/2014).

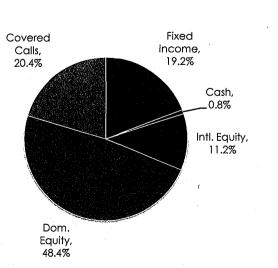
As of June 30, 2016				
Segment	<u> Actual \$(000)</u>	<u>Actual %*</u>	<u>Target %</u>	Variance
Total Investment Portfolio	363,258	100.0%	100.0%	
Domestic Equity	175,603	48.4%	48.0%	0.4%
Large Cap Equity	127,164	35.0%	34.0%	1.0%
Mid Cap Equity	30,255	8.3%	8.0%	0.3%
Small Cap Equity	18,184	5.0%	6.0%	-1.0%
International Equity	40,832	11.2%	12.0%	-0.8%
Total Equity	216,435	59.6%	60.0%	-0.4%
Fixed Income	69,733	19.2%	20.0%	-0.8%
Covered Calls	74,004	20.4%	20.0%	0.4%
Cash	3,085	0.8%	0.0%	0.8%

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

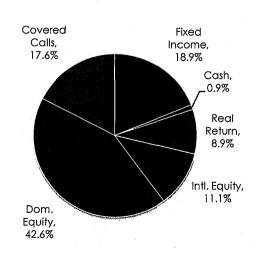
During the latest quarter, Domestic Equity's weighting increased by 5.8%, Fixed Income increased its weighting by 0.3%, and International Equity's weighting increased by 0.1%. Actual weighting for Covered Calls increased by 2.8% and Cash weighting was reduced by (0.1%). The larger than usual changes in asset weighting was due to the closure of the Real Return asset class towards the end of the quarter.

Investment Portfolio Actual Asset Allocation Comparison

June 30, 2016



March 31, 2016



Asset Class Performance

The **Domestic Equity** asset class matched its benchmark by returning 2.6% over the most recent quarter. Over the 1-, 3-, and 5-year periods, the Domestic Equity portfolio underperformed its benchmark by (120), (20), and (30) basis points, respectively.

The **International Equity** portfolio underperformed its policy benchmark by (30) and (20) basis points during the most recent quarter and 1-year periods, respectively, while outperforming the benchmark over the 3- and 5-year periods by 1.0% and 0.6%, respectively.

The **Fixed Income** asset class outperformed its benchmark by 20 basis points over the most recent quarter, and underperformed by (70) basis points over the 1-year period. Over the longer-term, the Fixed Income portfolio underperformed its benchmark by (20) basis points over the 3-year period, while matching its benchmark over the 5-year period.

The **Covered Calls** asset class underperformed its index by (0.2%) over the quarter and outperformed the benchmark by 1.4% over the 1-year period.

Periods ending June 30, 2016

Asset Class	Quarter	1-Year	3-Year	5-Year
Total Investment Portfolio	2.3	-0.3	6.5	6.0
Policy Benchmark ¹	2.3	2.0	6.7	5.9 (
Public Equity Policy Benchmark ²	1.9 2.0	-1.3 -0.3	9.2 9.2	9.1 9.1
Domestic Equity	2.6	0.9	10.9	11.3
Blended Benchmark ⁴	2.6	2.1	11.1	11.6
Large Cap	2.4	3.0	11.4	11.8
Russell 1000	2.5	2.9	11.5	11.9
Mid Cap	4.0	2.1	11.8	10.5
Russell Midcap	3.2	0.6	10.8	10.9
Small Cap	1.1	-12.8	7.1	9.5
Russell 2000	3.8	-6.7	7.1	8.4
International Equity	-0.7	-10.0	2.6	1.2
Blended Benchmark ⁵	-0.4	-9.8	1.6	0.6
Fixed Income	2.7	5.1	4.0	4.0
BC Universal (blend)	2.5	5.8	4.2	4.0
Covered Calls	3.0	5.4		
CBOE BXM	3.2	4.0		

PCA

¹ The Evolving Policy Benchmark consists of 48% Russell 3000, 12% MSCI ACWI ex U.S., 20% BC Universal, and 20% CBOE BXM.

² The Public Equity benchmark consists of 80% Russell 3000 and 20% 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.

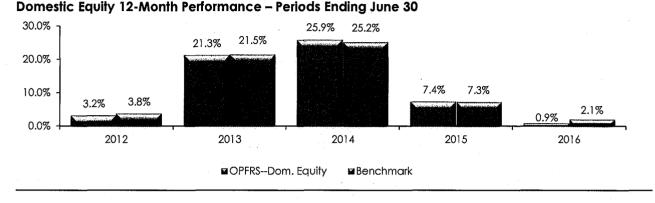
⁵ International Equity Benchmark consists of MSCI EAFE thru 12/31/04, and MSCI ACWI x U.S. thereafter.

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.

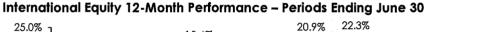
PCA

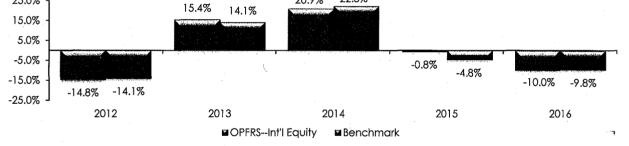
Asset Class Performance

The Domestic Equity portfolio outperformed the policy benchmark in two out of five of latest 12-month periods. The Plan finished the latest 12-month period, ending June 30, 2016, with a return of (0.9%), underperforming the policy benchmark by (1.2%).



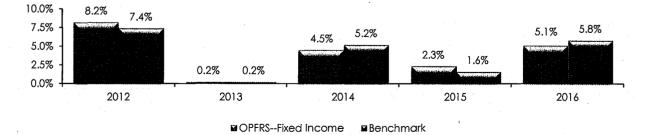
The International Equity portfolio outperformed the policy benchmark in two of the five latest 12-month periods. The Plan finished the latest 12-month period, ending June 30, 2016, with a return of (10.0%), underperforming the policy benchmark by (20) basis points.





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, 2016, with a return of 5.1%, underperforming the policy benchmark by (70) basis points.

Fixed Income 12-Month Performance – Periods Ending June 30



Manager Performance

Domestic I	Eauitv –	Periods	endina	June 30, 201	6

Manager	Mkt Value (\$000)	Asset Class	Quarter	1 YR	3 YR	5 YR	Since Inception*	Inception Date**
Northern Trust R1000 Index	70,553	Large Cap Core	2.3	2.9	11.5	11.8	12.8	5/2010
Russell 1000 Index			2.5	2.9	11.5	11.9	12.0	
SSgA Russell 1000 Value	28,027	Large Cap Value	4.5	3.0			3.1	10/2014
Russell 1000 Value Index			4.6	2.9			2.9	
SSgA Russell 1000 Growth	28,584	Large Cap Growth	0.6	3.0		· · ·	5.5	10/2014
Russell 1000 Growth Index			0.6	3.0			5.5	
Earnest	30,255	Mid Cap Core	4.0	2.1	11.8	10.5	7.9	3/2006
Russell MidCap			3.2	0.6	10.8	10.9	7.8	
NWQ	9,783	Small Cap Value	0.0	-3.3	9.8	12.1	6.4	1/2006
Russell 2000 Value Index			4.3	-2.6	6.4	8.1	5.1	
Lord Abbett	8,401	Small Cap Growth	2.4	-23.1	3.8	6.6	13.4	6/2010
Russell 2000 Growth Index	() ·		3.2	-10.8	7.7	8.5	13.7	

* 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 June 30, 2016, one of OPFRS' three active domestic equity managers outperformed its respective benchmark.

Northern Trust, the Plan's passive large cap core transition account, continues to perform in-line with its benchmark over all time periods measured. This performance is within expectations for a passive mandate.

SSgA Russell 1000 Value, the Plan's passive large cap value account, has continued to perform within expectations for a passive mandate.

SSgA Russell 1000 Growth, the Plan's passive large cap growth account, has continued to perform within expectations for a passive mandate.

Earnest Partners, the Plan's mid cap core manager, completed the quarter with an 4.0% return, outperforming the Russell Midcap Index by 80 basis points. Over the latest 1- and 3-year periods, Earnest outperformed its benchmark by 1.5% and 1.0%, respectively, while underperforming over the 5-year period by (40) basis points.

NWQ, the Plan's small cap value manager, underperformed the Russell 2000 Value Index by (4.3%) over the latest quarter. Over the 1-year period, NWQ underperformed its benchmark by (0.7%) while outperforming over the 3- and 5-year periods by 3.4% and 4.0%, respectively.

Lord Abbett, the Plan's small cap growth manager, underperformed the Russell 2000 Growth Index by (80) basis points over the quarter. Over the 1-year period, Lord Abbett heavily underperformed its benchmark by (12.3%) while also underperforming over the 3- and 5-year periods by (3.9%) and (1.9%), respectively.

International Equity – Periods ending June 30, 2016

Manager	Mkt Value (\$000)	Asset Class	Quarter	1 YR	3 YR	5 YR	Since Inception*	Inception Date**
SSgA	11,728	International	-1.3	-9.9	2.4	2.0	6.6	7/2002
MSCI EAFE Index			-1.2	-9.7	2.5	2.1	6.7	
Hansberger	14,874	International	0.8	-9.8	2.7	1.0	3.2	1/2006
MSCI ACWI x US			-0.4	-9.8	1.6	0.6	3.2	
Fisher	14,230	International	-1.8	-10.5	2.6	1.0	1.3	3/2011
MSCI ACWI x US		-	-0.4	-9.8	1.6	0.6	0.6	<u></u>

* 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, 2016, one of OPFRS' two active International Equity managers outperformed its benchmark.

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, outperformed the MSCI ACWI x US Index during the quarter by 1.2%. The portfolio matched its benchmark over the 1-year period while outperforming over the 3- and 5-year periods by 1.1% and 0.4%, respectively.

Fisher, one of OPFRS' active international equity managers, underperformed the MSCI ACWI x US Index by (1.4%) during the quarter. Over the latest 1-year period, Fisher trailed its benchmark target by (70) basis points, but outperformed over the 3- and 5-year periods by 1.0% and 0.4%, respectively.

Fixed Income – Periods ending June 30, 2016

Manager	Mkt Value (\$000)	Asset Class	Quarter	1 YR	3 YR	5 YR	Since Inception	Inception Date ***
Reams	22,421	Core Plus	2.9	6.4	4.1	4.8	6.1	1/1998
BC Universal Index (blend)*	<u></u>		2.5	5.8	4.2	4.0	5.3	
T. Rowe Price	39,357	Core	2.5	6.4	4.5	4.0	4.1	5/2011
BC Aggregate Index			2.2	6.0	4.1	3.8	3.8	
DDJ	7,911	H.Y. / B.L.	3.8	-2.2	··		0.5	1/2015
BofAML US HY Master II			5.9	1.7			2.5	

* 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, 2016, two of OPFRS' three active Fixed Income managers outperformed their benchmarks.

Reams, the Plan's core plus fixed income manager, produced a quarterly return of 2.9%, outperforming the BC Universal (blend) Index by 40 basis points. During the latest 1-year period, the portfolio beat its. benchmark by 60 basis points while trailing its benchmark by (10) basis points over the 3-year period. Reams outperformed its benchmark over the 5-year period by 80 basis points.

T. Rowe Price, the Plan's core fixed income manager, produced a quarterly return of 2.5%, outperforming the BC Aggregate Index by (30) basis points. The portfolio outperformed its benchmark over both the 1-, 3-, and 5-year periods by 40, 40, and 20 basis points, respectively.

DDJ, the Plan's High Yield & Bank Loan manager, underperformed its benchmark, the BofAML US High Yield Master II index, by (2.1%) over the most recent quarter, and underperformed over the 1-year period by (3.9%).

Covered Calls - Periods ending June 30, 2016

Manager	Mkt Value (\$000)	Asset Class	Quarter	1 YR	3 YR	5 YR	Since Inception	Inception Date ***
Parametric	74,004	Covered Calls	3.0	5.4			6.1	3/2014
CBOE BXM			3.2	4.0			4.8	

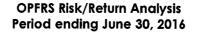
** Performance is calculated based on the first full month of performance since funding.

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

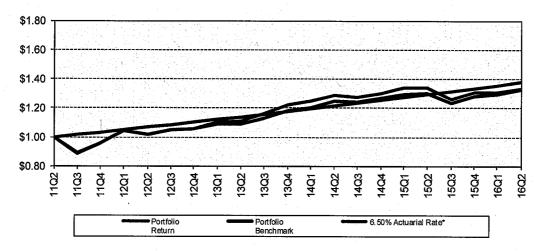
During the latest three-month period ending June 30, 2016, OPFRS' Covered Calls manager underperformed its benchmark.

Parametric, the Plan's Covered Calls manager, produced a quarterly return of 3.0%, underperforming its benchmark by (20) basis points. Over the most recent 1-year period, the portfolio has outperformed its benchmark by 1.4%.

PCA

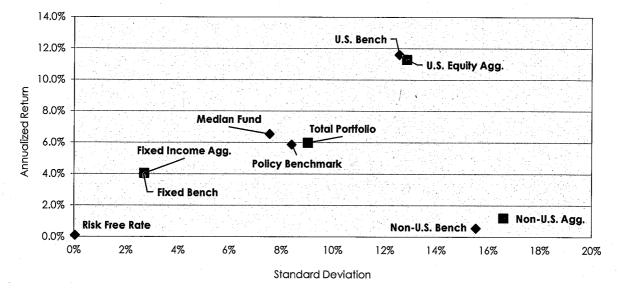


Growth of a Dollar Past 5 Years



* The actuarial expected rate of return was 8% through 6/30/2009, 7.5% through 6/30/2010, 7% through 6/30/2011, 6.75% through 6/30/2014, and 6.5% currently

Five-Year Annualized Risk/Return



OPFRS Quarterly Report - 2Q 2016

City of Oakland Police & Fire Retirement, Asset Allocation as of June 30, 2016

Manager	Style	Market Value \$(000)	Target	Actual ¹	Difference
Total Plan		\$363,258	100.0%	100.0%	0.0%
Public Equity		\$216,435	60.0%	59.6%	-0.4%
Domestic Equity		\$175,603	48.0%	48.3%	0.3%
Large Cap Equity					
Northern Trust	Large Cap Core	70,553	19.2%	19.4%	0.2%
SSgA Russell 1000 Value	Large Cap Value	28,027	7.4%	7.7%	0.3%
SSgA Russell 1000 Growth	Large Cap Growth	28,584	7.4%	7.9%	0.5%
Mid Cap Equity					
Earnest Partners	Mid Cap Core	30,255	8.0%	8.3%	0.3%
Small Cap Equity					
NWQ	Small Cap Value	9,783	3.0%	2.7%	-0.3%
Lord Abbett	Small Cap Growth	8,401	3.0%	2.3%	-0.7%
International Equity		\$40,832	12.0%	11.2%	-0.89
SSgA	International	11,728	3.6%	3.2%	-0.4%
Hansberger	International	14,874	4.2%	4.1%	-0.1%
Fisher	International	14,230	4.2%	3.9%	-0.3%
Fixed Income		\$69,733	20.0%	19.2%	-0.8%
Reams	Core Plus	22,421	8.0%	6.2%	-1.89
T. Rowe Price	Core	39,357	10.0%	10.8%	0.8%
DDJ	High Yield/Bank Loans	7,911	2.0%	2.2%	0.2%
Transition (Reams) ³	Transition Portfolio	44	0.0%	0.0%	·
Covered Calls		\$74,004	20.0%	20.4%	0.4%
Parametric (Eaton Vance)	Active/Replication	74,004		20.4%	_
Real Return		\$1	0.0%	0.0%	0.0%
Wellington	Multi Asset	1	—	0.0%	
Total Cash ²		\$3,085	0.0%	0.8%	0.8%

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

2. Preliminary estimated balance Includes cash balance with City Treasury and Torrey Pines Bank as of 6/30/2016.

3. Includes a residual \$43,605 in the Reams transition account.

PCA

MANAGER MONITORING / PROBATION LIST

Monitoring/Probation Status

As of June 30, 2016 Return vs. Benchmark since Corrective Action

Portfolio	Status	Concern	Months Since Corrective Action	Performance^ Since Corrective Action	Date of Corrective Action*
Hansberger	On Watch	Organizational	25	-3.9%	5/28/2014
MSCI ACWI ex-US			25	-6.2%	e
DDJ Capital	On Watch	Organizational	1	0.3%	5/25/2016
BofAML US High Yield M2	16 (1) <u>1</u>	1- <u></u>	1	1.1%	

^ 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 annizd return < bench annizd 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.

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Oakland Police & Fire Performance Summary and Universe Rankings Period Ending June 30, 2016

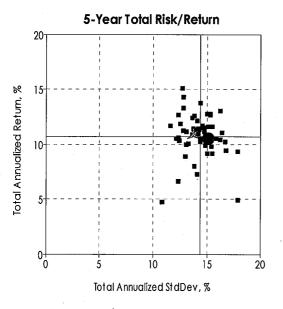
	Quarter 1	I-Year	3-Year	5-Year
Maximum	3.6	6.0	9.3	9.5
Percentile 25	2.1	1.7	7.3	7.3
Median	1,9	0.9	6.7	6.5
Percentile 75	1.6	-0.3	5.8	5.8
Minimum	0.2	-3.4	0.6	0.4
Number of Portfolios	131	122	114	106
Oakland Police & Fire Total				
Return	2.3	-0.3	6.5	6.0
Quartile Rank	1st	3rd	3rd	3rd

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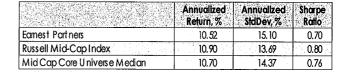
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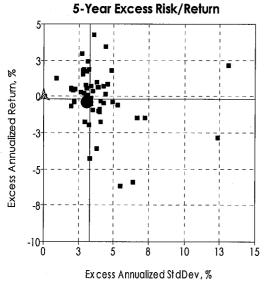
Source: Mellon Total Public Funds Universe All performance is shown **gross of fees**.

Oakland Mid Cap Core Manager Comparisons as of June 30, 2016



Earnest Partners	🛎 Russell Mid-Cap Index
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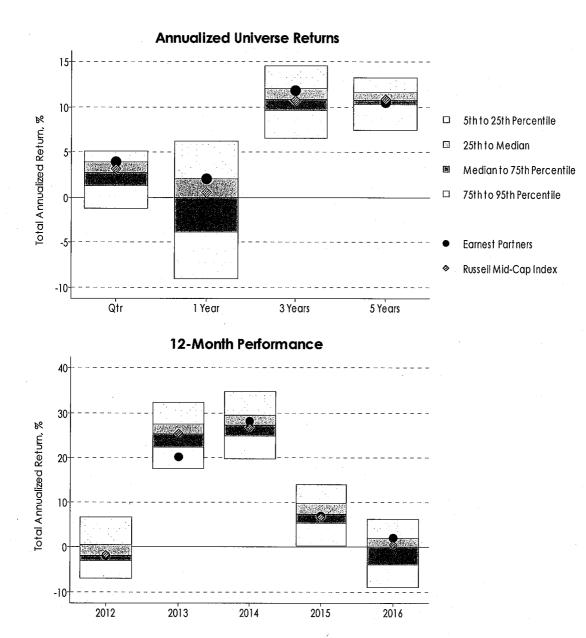




	Annualized Excess Return, %	Annualized Excess SiDev, %	Sharpe Ratio, Excess
Earnest Partners	-0.39	3.07	-0.13
Russell Mid-Cap Index	0.00	0.00	NA
Mid Cap Core U niverse Median	-0.21	3.33	-0.05

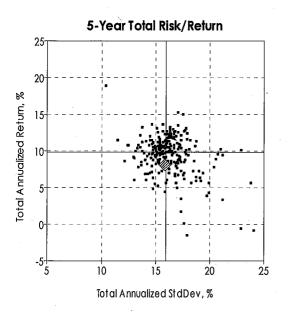
Earnest Partners

▲ Russell Mid-Cap index



Oakland Mid Cap Core Manager Comparisons as of June 30, 2016

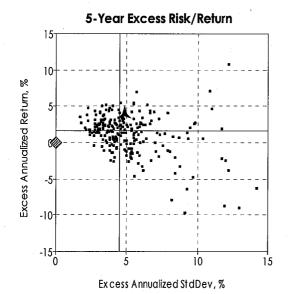
Oakland Small Cap Value Manager Comparisons as of June 30, 2016



Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
12.08	16.37	0.74
8.15	15.84	0.51
9.81	15.96	0.62
	Retum, % 12.08 8.15	Refum, % Std Dev, % 12.08 16.37 8.15 15.84

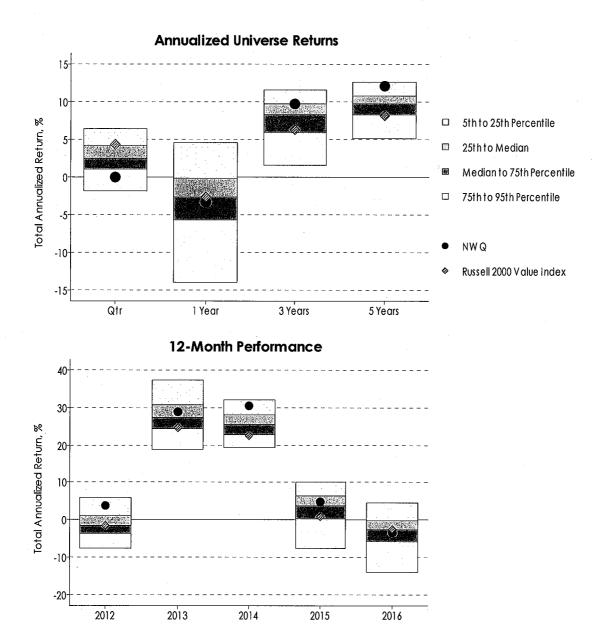
ANW Q

Q 🛛 🕸 Russell 2000 Value Index



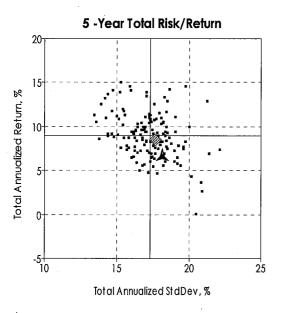
	Annualized Excess Return, %	Annualized Excess SiDev, %	Sharpe Ratio, Excess
NW Q	3.94	4.83	0.81
Russell 2000 Value Index	0.00	0.00	NA
Small Cap Value Universe Median	1.67	4.49	0.41

▲ NW Q



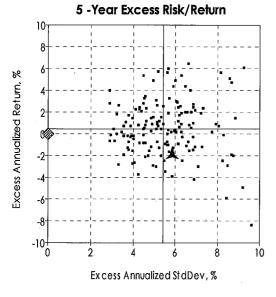
Oakland Small Cap Value Manager Comparisons as of June 30, 2016

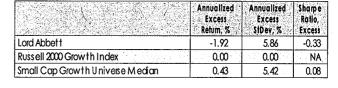
Oakland Small Cap Growth Manager Comparisons as of June 30, 2016





	Annvalized Return, %	Annualized StdDev, %	Sharpe Ratio
Lord Abbett	6.60	18.17	0.36
Russell 2000 Growth Index	8.51	17.68	0.48
Small Cap Growth Universe Median	8.94	17.31	0.51



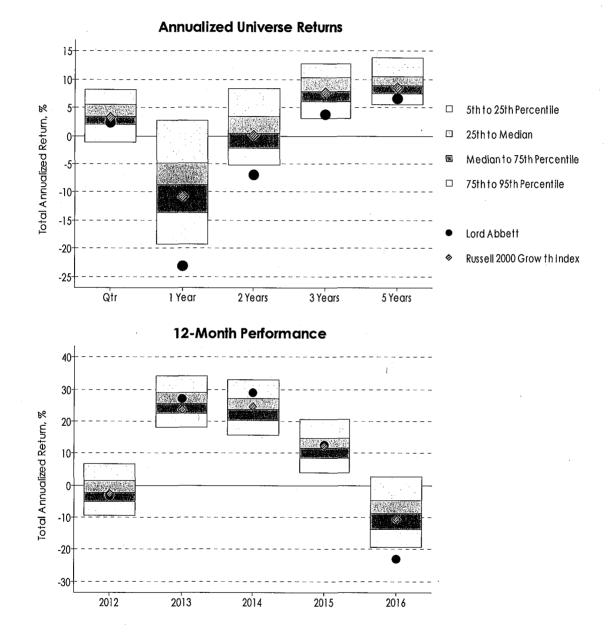


▲ Lord Abbett

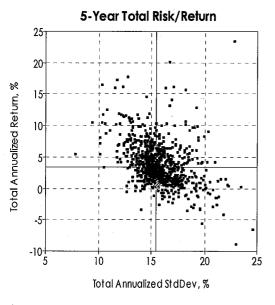
♦ Russell 2000 Grow th Index



Oakland Small Cap Growth Manager Comparisons as of June 30, 2016

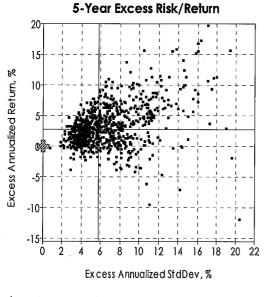


Oakland International Equity Manager Comparisons as of June 30, 2016



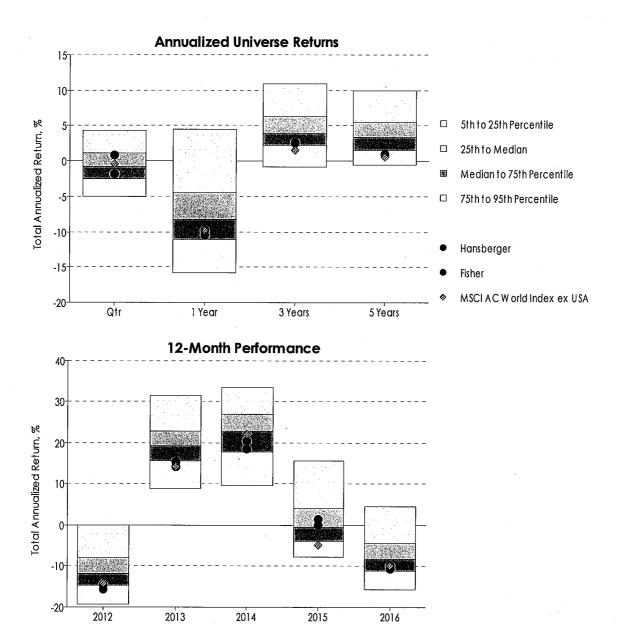
▲ Hansberger ◆ Fisher ※ MSCI AC W orld Index ex USA

	Annualized Return, %	Annualized StdDev, %	Sharp e Ratio
Hansberger	1.04	17.26	0.06
Fisher	0.98	17.26	0.06
MSCI AC W orld Index ex USA	0.56	15.53	0.04
International Equity Universe Median	3.34	15.45	0.21



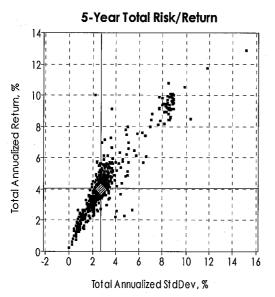


	Annualized Excess Return, %	Annualized Excess SiDev, %	Sharpe Ratio, Excess
Hansberger	0.48	4.09	0.12
Fisher	0.42	3.91	0.11
MSCI AC W orld Index ex USA	0.00	0.00	NA
International Equity Universe Median	2.78	5.72	0.50

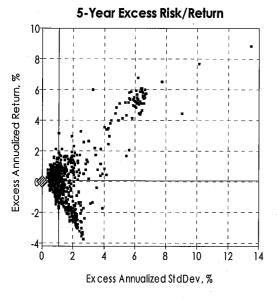


Oakland International Equity Manager Comparisons as of June 30, 2016

Oakland Core Plus Fixed Income Manager Comparisons as of June 30, 2016







🔺 Reams	Oakland BC Universal Blend	
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	Annualized Return, %	Annualized StdDev, %	Sharpe Ratio
Reams	4.82	2.89	1.67
Oakland BC U niversal Blend	4.01	2.69	1.49
U.S. F.I. Manager Universe Median	4.06	2.71	1.54

	Annualized Excess Return, %	Annualized Excess StDev, %	Sharpe Ratio, Excess
Reams	0.81	1.20	0.67
Oakland BC Universal Blend	0.00	0.00	NA
U.S. F.I. Manager Universe Median	0.05	1.08	0.06

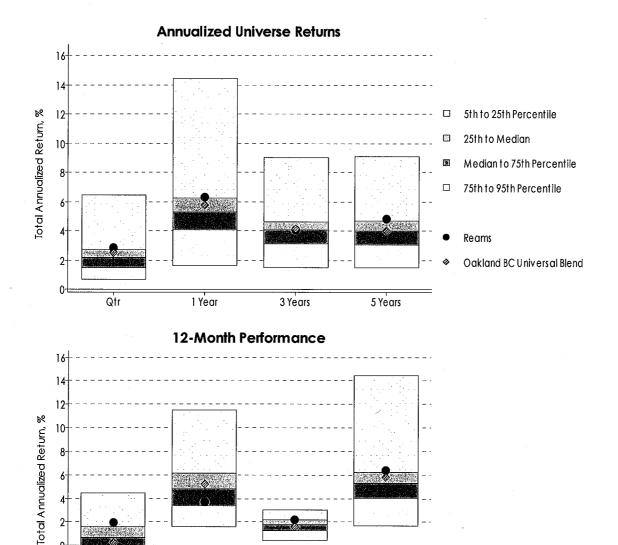
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2013

2014

PCA

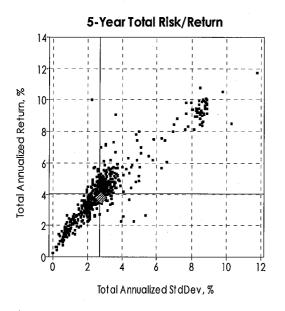




2015

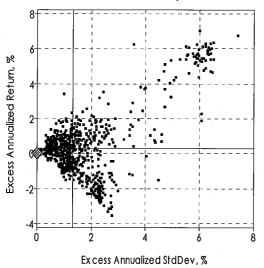
2016

Oakland Core Fixed Income Manager Comparisons as of June 30, 2016





5-Year Excess Risk/Return





	Annualized Retvm, %	Annualized StdDev; %	Sharpe Ratio
T. Rowe Price	4.03	2.67	1.51
BC Aggregate Bond	3.76	277	1.36
U.S. F.I. Manager Universe Median	4.06	2,71	1.54

	Annualized Excess Return, %	Annualized Excess SIDev, %	Sharpe Ratio, Excess
T. Rowe Price	0.27	0.61	0.45
BC Aggregate Bond	0.00	0.00	NA
U.S.F.I. Manager Universe Median	0.30	1.30	0.29

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2012

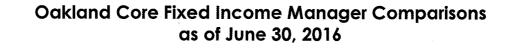
2013

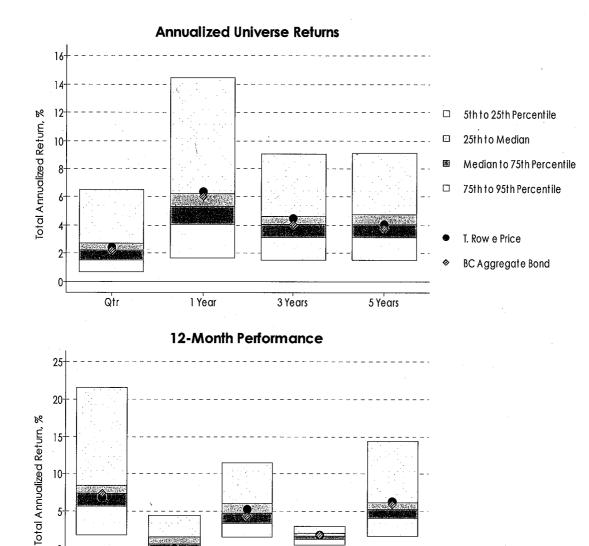
2014

2015

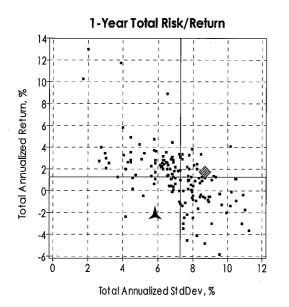
2016

PCA



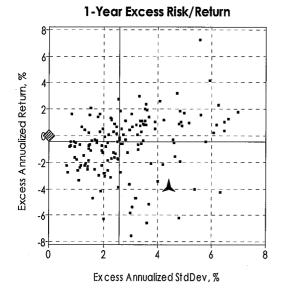


Oakland HY/BL Fixed Income Manager Comparisons as of June 30, 2016



in the second	Return, %	StdDev, %	Ratio
DDJ .	-2.16	5.89	-0.37
The BofA Merill Lynch US High Yield Index	1.71	8.67	0.20
High Yield Universe Median	1.23	7.28	0,16

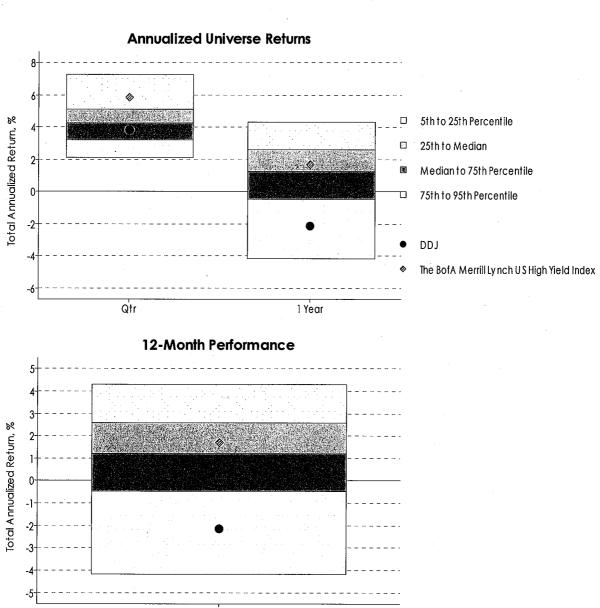
Annualized Sharpe



Sharpe Ratio, Excess Return, % Excess StDev, % Excess DDJ -3.87 4.41 -0.88 The BofA Merill Lynch US High Yield Index 0.00 0.00 NA High Yield Universe Median -0.48 2.59 -0.23

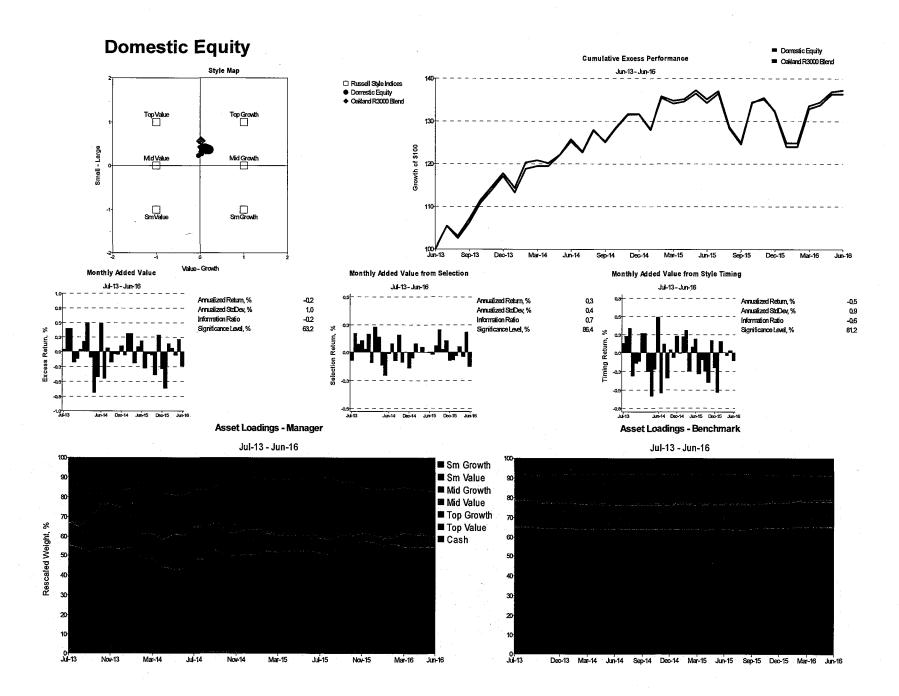
Annualized

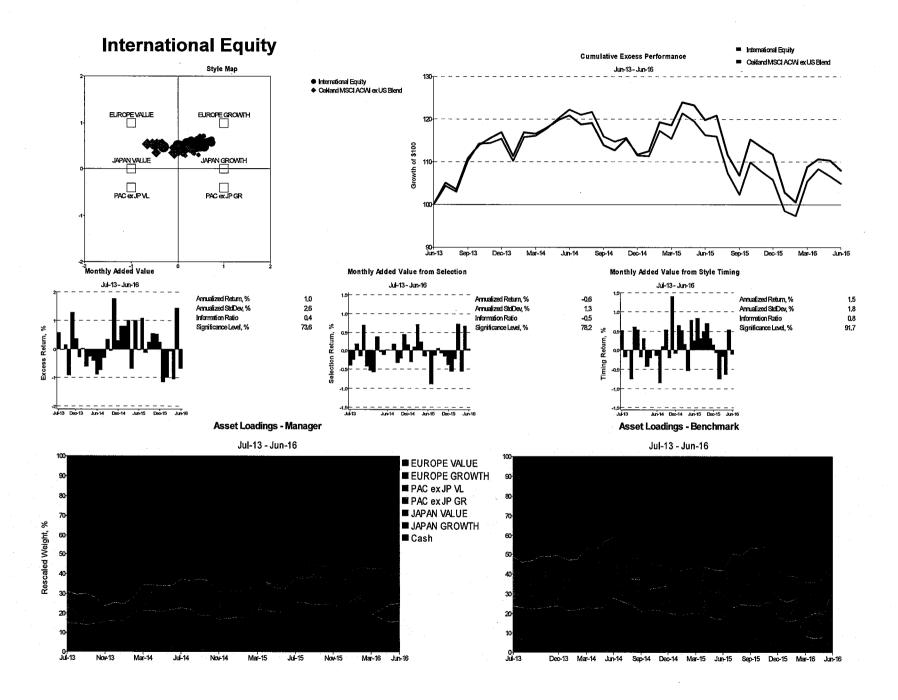
Annualized



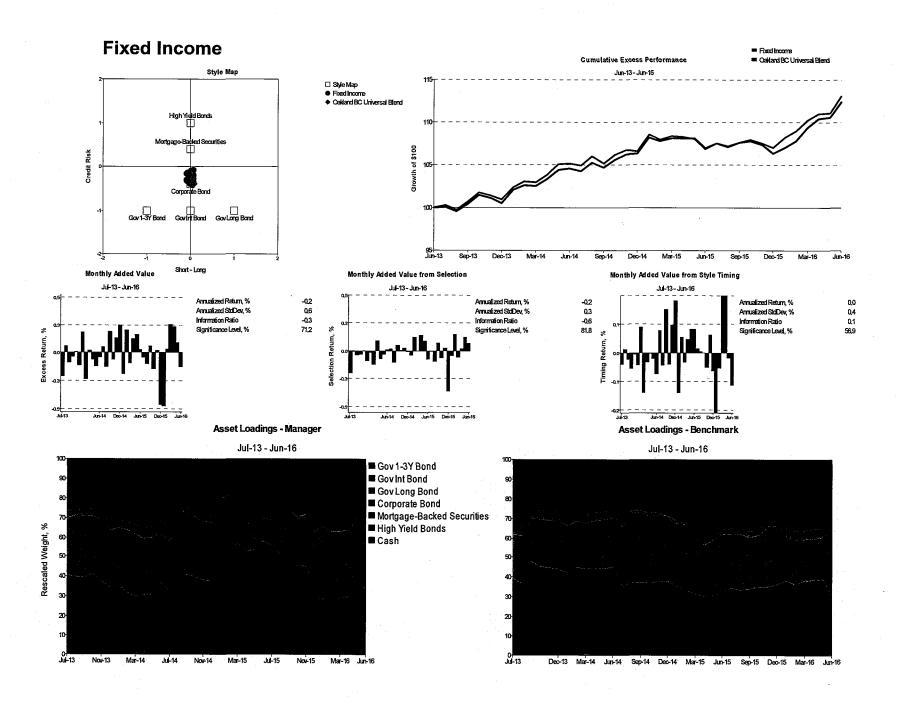
Oakland HY/BL Fixed Income Manager Comparisons as of June 30, 2016

2015 - 2016





45



Appendix

PCA

<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 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.

<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 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.

<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.

OPFRS Quarterly Report – 2Q 2016

Benchmark Definitions

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.

CBOE BXM: measures the performance of a hypothetical buy-write strategy on the S&P 500 Index.

CPI + 3%: measures changes in the price level of the Consumer Price Index (CPI) with the addition of an additional 300 basis points. The CPI is a sample estimate which tracks the price level changes of a market basket of consumer goods and services purchased by households.

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.

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.

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.

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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