

# **INVESTMENT REPORT**

## **TENNESSEE CONSOLIDATED RETIREMENT SYSTEM**

**First Quarter  
Fiscal Year 2014 - 2015**

**July 1, 2014 – September 30, 2014**

**Prepared for:  
Board of Trustees**

**December 12, 2014**

## Investment Advisory Council

Pursuant to T.C.A. Section 8-37-108, the state treasurer shall appoint, with the advice and consent of the board of trustees, an investment advisory council, consisting of five (5) persons who, at the time of their appointment, shall have at least five (5) years' professional experience as portfolio manager, economist, or as investment advisor in any field for which investments of Tennessee consolidated retirement system funds are authorized. The state treasurer and the chief investment officer for the Tennessee consolidated retirement system shall be ex officio, non-voting members of the council.

The TCRS investment staff consults at least semi-annually with the Advisory Council on a formal basis for strategy and guidance, and on an informal basis as needed.

The current members are as follows:

<u>Council Member</u>	<u>Expiration of Term</u>	<u>Appointed Term</u>
<b>Frederick S. Crown, Jr., CFA</b> 124 Longwood Place Nashville, TN 37215 Phone: 615-347-0343 E-mail: <a href="mailto:crownfl@gmail.com">crownfl@gmail.com</a>	June 30, 2017	5 year
<b>Susan Logan Huffman, CFA</b> Managing Director Reliant Investment Management, LLC 1715 Aaron Brenner Drive, Suite 504 Memphis, TN 38120 Phone: 901-843-0600 / Fax: 901-843-0325 E-mail: <a href="mailto:shuffman@reliantllc.com">shuffman@reliantllc.com</a>	June 30, 2016	5 year
<b>George B. Stadler, CFA</b> 95 White Bridge Road, Suite 414 Nashville, TN 37205 Phone: 615-416-3455 cell E-mail: <a href="mailto:george@hmscm.com">george@hmscm.com</a>	June 30, 2015	5 year
<b>Carol Womack, Principal</b> Diversified Trust Company 3102 West End Avenue, Suite 600 Nashville, TN 37203 Phone: 615-386-7302 E-mail: <a href="mailto:cwomack@diversifiedtrust.com">cwomack@diversifiedtrust.com</a>	June 30, 2015	3 year

# TENNESSEE CONSOLIDATED RETIREMENT SYSTEM

First Quarter  
Fiscal Year 2014-2015

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## TABLE OF CONTENTS

## Page

Minutes of June 5, 2014 IAC Meeting .....	1
Portfolio Overview.....	5
Equity Portfolio.....	7
Fixed Income Portfolio .....	19
Real Estate Portfolio .....	27
Private Equity Portfolio .....	29
Strategic Lending Portfolio.....	33
Derivative and Currency Activity.....	36
Operations Report .....	41

## **Minutes from the Investment Advisory Council Meeting June 5, 2014**

Mr. Michael Brakebill, Chief Investment Officer, convened the meeting at 10:00 a.m. CT in the 13<sup>th</sup> Floor conference room of the Andrew Jackson State Office Building. Investment Advisory Council (IAC) members present included Mr. Fred Crown, Ms. Susan Huffman, Mr. George Stadler and Ms. Carol Womack. Investment Staff members present included Michael Brakebill, Albert Chang, Derrick Dagnan, Carrie Green, Kushal Gupta, Matthew Haitas, Arthur Henderson, Roger Henry, Michael Keeler, Thomas Kim, Grant Leslie, Tim McClure, Matthew McGanity, Rhonda Myers, Andy Palmer, JP Rachmaninoff, Rachel Roberts, Jim Robinson, Jennifer Selliers, Whit Shofner, and Roy Wellington.

Mr. George Stadler, Chairperson of the IAC, called the meeting to order and began by proposing that the minutes from the previous IAC meeting on March 24, 2014 be adopted. There were no questions regarding the minutes and Ms. Susan Huffman made a motion to adopt. The motion was seconded by Mr. Crown and unanimously approved. Mr. Stadler turned the meeting over to Mr. Brakebill to discuss current initiatives and to provide a review of investment performance.

Mr. Brakebill began his discussion by providing a brief overview of Fund performance. He noted that the Fund continues to perform well, totaling \$42.2 billion at the end of May, up from \$41.1 billion at the end of March. As of March 2014, the Fund generated an absolute (relative) return of 2.5% (-0.1%) for the quarter, 10% (+0.2%) on a 1-year basis, 9.7% (+0.8%) on a 3-year basis, and 13.1% (0.0%) on a 5-year basis. From a tactical allocation standpoint, the Fund remains neutral given the recent run up in equities.

Mr. Brakebill noted that the Investment Division remains busy organizationally. From a personnel standpoint, a trader, fixed income and mid cap position are all currently open. Two summer interns recently began working in the department and Grant Leslie has been hired to work with Daniel Crews and Carrie Green in Private Equity.

Staff members have been active with due diligence activities in Private Equity, Securities Lending and Real Estate as well as various process improvement and compliance enhancements. The Investment Division has issued request for proposals (RFP) for both a Custodian and a Real Estate Consultant. Finally, the Group is working on the TN Promise Program. Mr. Brakebill then asked Michael Keeler to discuss equities.

The Equity team is looking to construct a tactical asset allocation model and is also investigating the prospects of an active micro-cap strategy. Michael Giggie is backing up Carrie Green and Derrick Dagnan on managing the S&P 500 and 600 index funds.

Mr. Keeler then moved the discussion to performance, noting that Domestic Equities outperformed the S&P 1500 Index, largely due to a mild overweight in small and mid-cap stocks

and good relative performance in the Sector Fund. The Group reduced its small and mid-cap exposure in the current quarter to accommodate funding for the strategic lending and private equity portfolios and is currently overweight large cap stocks. Mr. Keeler then asked Kushal Gupta to discuss Quant Fund performance.

Kushal Gupta indicated that the Quant Fund had underperformed 0.3% on a relative basis (+0.4% on an absolute basis) during the quarter, largely due to elevated geopolitical concerns and Janet Yellen's guidance stumble that hit high momentum names hard and boosted performance of low multiple stocks. Mr. Gupta ended his discussion saying that the team had increased its tracking error modestly for the Quant fund this quarter to better diversify and to increase the potential for excess returns. At that point, Mr. Keeler asked Mr. Wellington to discuss Sector Fund performance.

Mr. Wellington began his comments by pointing out that the Sector Fund continues to be positioned for the middle of economic expansion. During the first quarter, the Sector Fund outperformed its S&P 500 benchmark by 0.7% and saw particularly good stock picking in overweight sectors like Industrials and Information Technology. The team continues to build exposure to good stock ideas and avoid loading up on stocks that move together. Mr. Wellington then handed the discussion back to Mr. Keeler to discuss Mid-Cap Fund performance.

Mr. Keeler noted that the Mid Cap Fund outperformed the S&P Mid-Cap 400 return by 0.7% during the quarter with good stock selection in the Consumer Staples, Technology and Industrial sectors somewhat offset by stock selection difficulties in the Health Care and Materials sectors. Mr. Keeler then asked Mr. Wellington to discuss International Equity performance.

Mr. Wellington mentioned that International Equity managers as a group fell short of meeting their benchmarks for the quarter largely due to being underweight Europe and European financials in particular. European banks had good performance on signs of support from the European Central Bank and not due to any signs of actual loan or income growth. Mr. Wellington and Mr. Brakebill noted that TCRS staff has met and remain comfortable with all of the managers that have trailed in the past year. Mr. Keeler then passed the discussion to Andy Palmer to discuss fixed income.

Mr. Palmer began by discussing how the team is responding to changing markets and indicated that the Group is looking at ETF bond and emerging market strategies that could boost alpha. The Staff is also working to develop a model to analyze country-specific risk to help identify good return opportunities globally. Mr. Palmer mentioned that Albert Chang has been actively working on mortgage-backed securities and that the TIPS portfolio matched the benchmark during the quarter. At the conclusion of Mr. Palmer's comments, Mr. Brakebill asked JP Rachmaninoff to discuss the Real Estate portfolio.

Mr. Rachmaninoff began by reviewing portfolio performance, indicating that for the 1-year period the TCRS portfolio modestly underperformed the NCREIF Property Index, the Fund's

current benchmark. He also indicated that over the 3-year, 5-year and 10-year periods, the underperformance was wider, primarily due to three individual investments, one of which was 100% vacant due to the move out of the single tenant occupant. Mr. Brakebill then reminded the Committee members that he continues to have concerns about the potential for an inherent bias in the NPI as a benchmark. Mr. Rachmaninoff indicated that he hoped to devote more time evaluating alternative benchmarks once the new real estate consultant agreement was in place. Mr. Rachmaninoff concluded by mentioning that good progress continues to be made in moving towards the strategic diversification targets for the TCRS portfolio through both commingled fund investments and direct separate account investments. He indicated that three separate account investments were in the pipeline. In addition, two commingled fund commitments were closed in the second quarter; one being a NYC value add office strategy and the second a national value add multifamily strategy. Mr. Brakebill then asked Carrie Green to discuss the Private Equity portfolio.

Mrs. Green reviewed quarterly performance and expected performance for the Private Equity program, including an update on current funds in the pipeline for 2014. Mr. Brakebill noted that the Private Equity exposure remains small today but continues to build as commitments are made and drawn down. Mr. Leslie discussed private equity market conditions at a high level, addressing industry fundraising, investment and distribution statistics. Most notably, for calendar year 2013, the global private equity industry had its best fundraising year since 2008, and buyout sponsors distributed more capital than they invested. For the first quarter of 2014, venture capital fundraising in the U.S. accelerated meaningfully as domestic venture capitalists had a particularly strong quarter in generating liquidity for investors while domestic buyout sponsors generally decelerated their pace of fundraising, investing, and distributing capital to investors. Mr. Brakebill then asked Derrick Dagnan to provide an update on Strategic Lending.

Mr. Dagnan provided an update on the high yield bond and loan market and the status of several new relationships that have recently begun. In addition, Mr. Dagnan also discussed existing managers. Mr. Dagnan noted that the Strategic Lending group is now focused more on portfolio monitoring. Mr. Brakebill then asked Tim McClure to provide an update on Trading and Operations.

Mr. McClure gave an update on trading and operations for the quarter. Mr. McClure noted that a process is underway to recruit a new equity trader. Mr. McClure mentioned that there were several new projects underway for his group including, replacing the mainframe system for the LGIP program, developing a new compliance report for the cash trades, and developing a new system to automate the collateral pledge and release process for public deposits. Trade volume for the quarter was down slightly compared to the previous quarter. Mr. McClure then introduced Roger Henry to discuss Securities Lending.

Mr. Henry provided a brief summary covering the Securities Lending program, which began on January 30, 2014. As of May 12, 2014, TCRS Securities Lending earnings totaled \$4.2 million

and the average on loan balance since inception was \$2.2 billion with a spread of 66 bps. He then stated that emerging market equities have been the top earner at 44% of the total earnings followed by domestic equities at -26%, international equities at -17%, and fixed income at -13%. Mr. Henry noted that the top five borrowing counterparties were J.P. Morgan, Citigroup, Credit Suisse, Morgan Stanley, and Goldman Sachs. Mr. Henry completed his summary by stating that overall, the Securities Lending program was operating very well and running very smooth. He then gave an updated TCRS earnings total of \$5.6 million as of June 6, 2014. Mr. Henry stated that considering the updated earnings figure, TCRS is on track to hit the annual earnings projection of \$11 million.

At that point, Mr. Brakebill made concluding remarks. Members of the Investment Advisory Council had no additional questions and Chairman Stadler asked for a motion to adjourn. Mr. Fred Crown motioned to adjourn the meeting and the motion was seconded by George Stadler and unanimously approved. The meeting adjourned at 11:55 a.m. CT.

# Performance Review

## September 2014

### Absolute comparison

- 1 quarter return of -0.7%
- 1 year return of 11.3% (median fund did 9.1%)
- 3 year return of 12.7% (median fund did 12.6%)
- 5 year return of 10.2% (median fund did 10.1%)
- 7 year return of 5.4% (median fund did 4.7%)

### Benchmark (relative) comparison

- Qtr return matched allocation index
- 1 year return beat allocation index by 0.4%
- 3 year return beat allocation index by 0.5%
- 5 year return beat allocation index by 0.6%

### Peer comparison

- 1 quarter return ranked at 11% (0% = best)
- 1 year return ranked at 3% (0% = best)
- 3 year return ranked at 49% (0% = best)
- 5 year return ranked at 47% (0% = best)
- 7 year return of 5.4% is 21% (0% = best) (median fund did 4.7%)

### Risk Adjusted Returns (Sharpe Ratio)

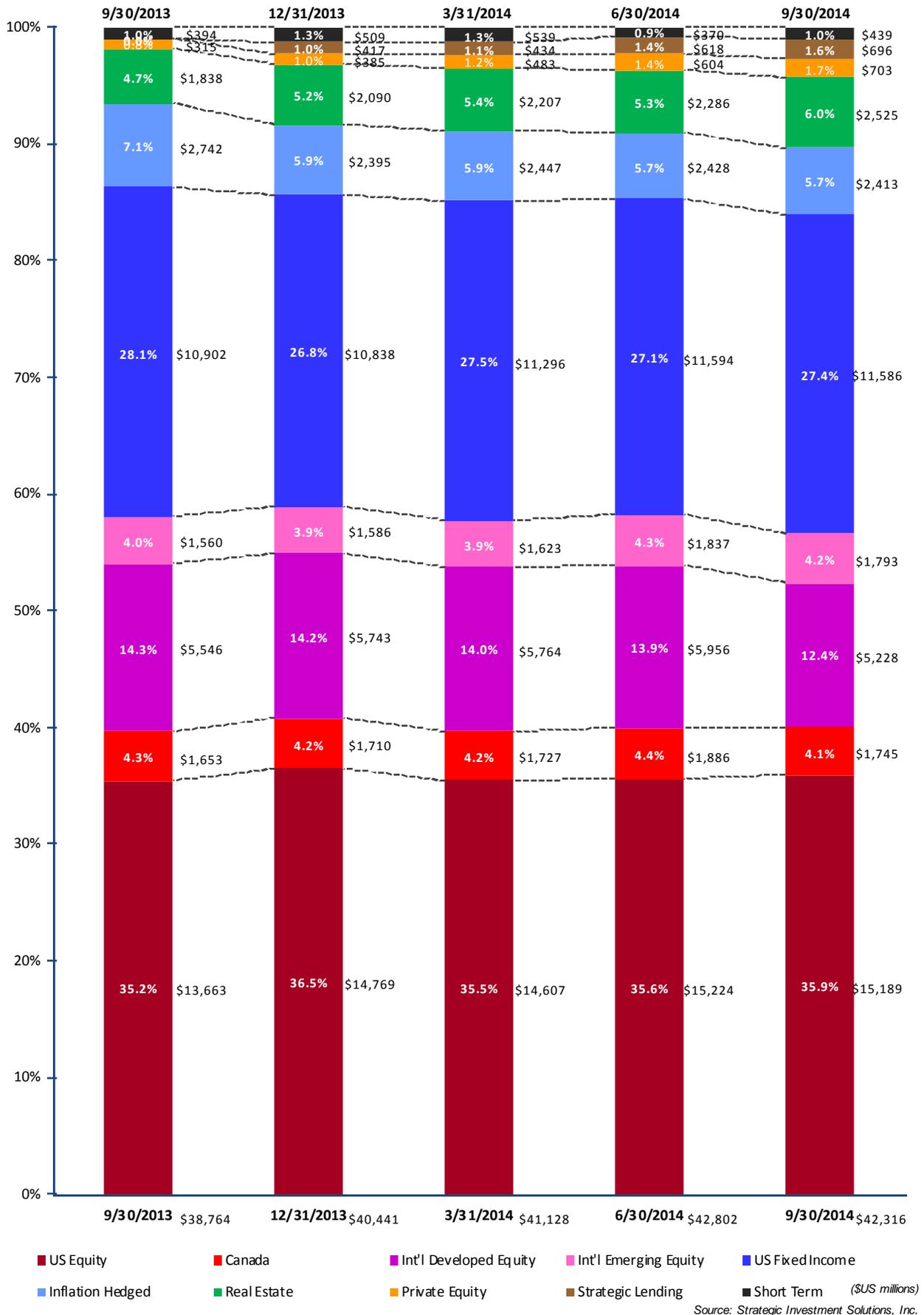
The Sharpe ratio measures the amount of return generated per unit of risk taken.

TCRS beat 72% of peers as measured via the Sharpe ratio for the trailing 3 year period and 87% for the trailing five year period.

# Key Initiatives

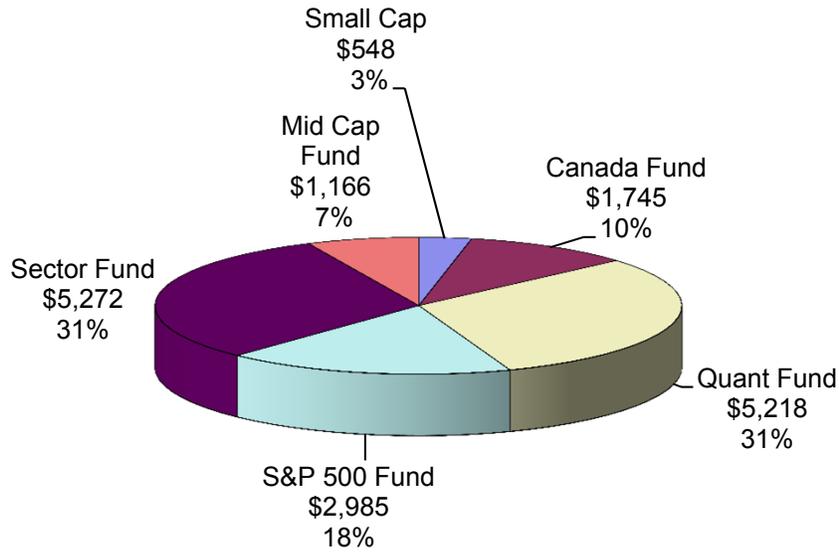
## September 2014

- **People**
  - Recruiting for a fixed income portfolio manager or analyst
  - Recruiting for a real estate portfolio manager
  - Recruiting for the summer intern program
  
- **Process**
  - Trading processes
  - Legal processes for PE, SL, RE
  - Custodial transition
  - Private equity consultant RFP
  - General consulting RFP
  - Alternative asset relationship management system RFP
  - International manager selection and engagement process
  - Investment policy update
  - Unitization/hybrid plan
  
- **Portfolio**
  - Tactical allocation
  - Securities lending
  - Private equity fund additions
  - Strategic lending fund additions
  - Real estate property and fund additions

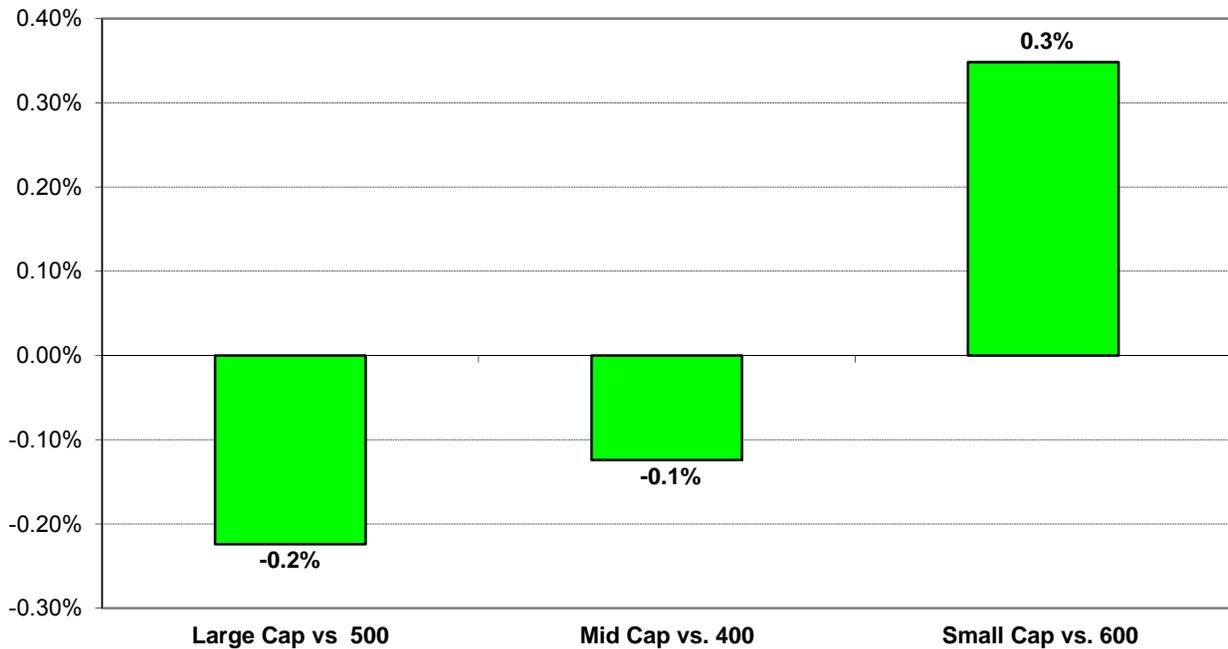


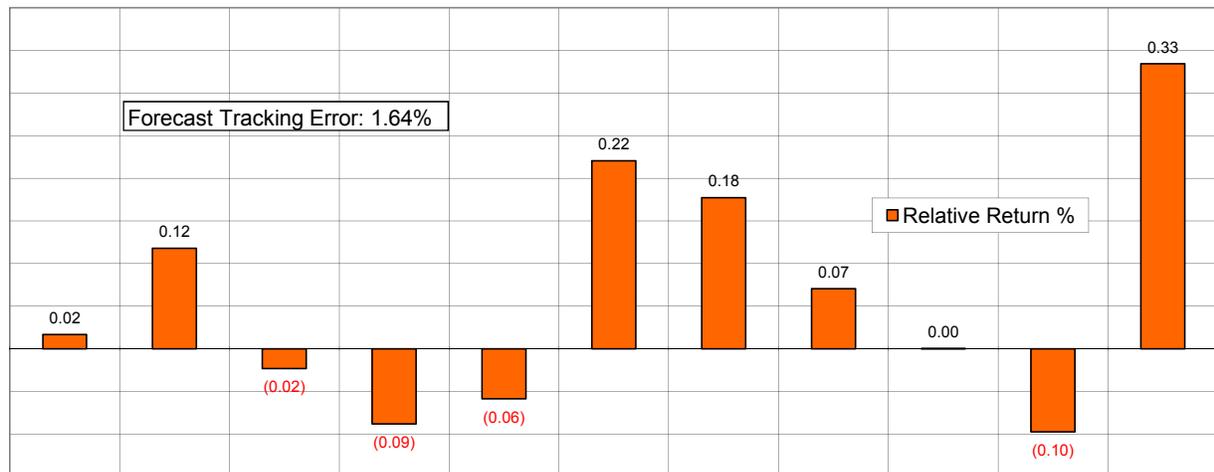
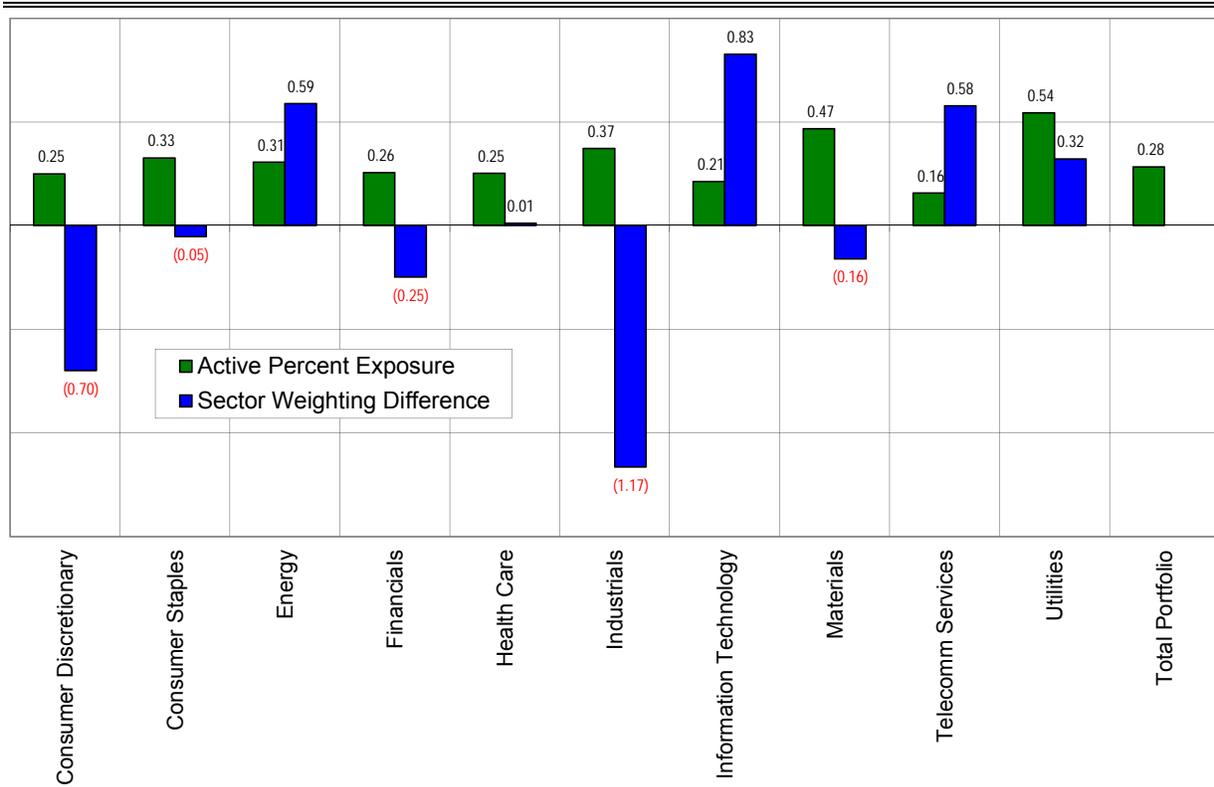
**Domestic Equity Portfolio Overview**  
Michael Keeler, CFA

**TCRS North American Equity Funds**



**TCRS Cap Weights vs. S & P 1500 Composite**



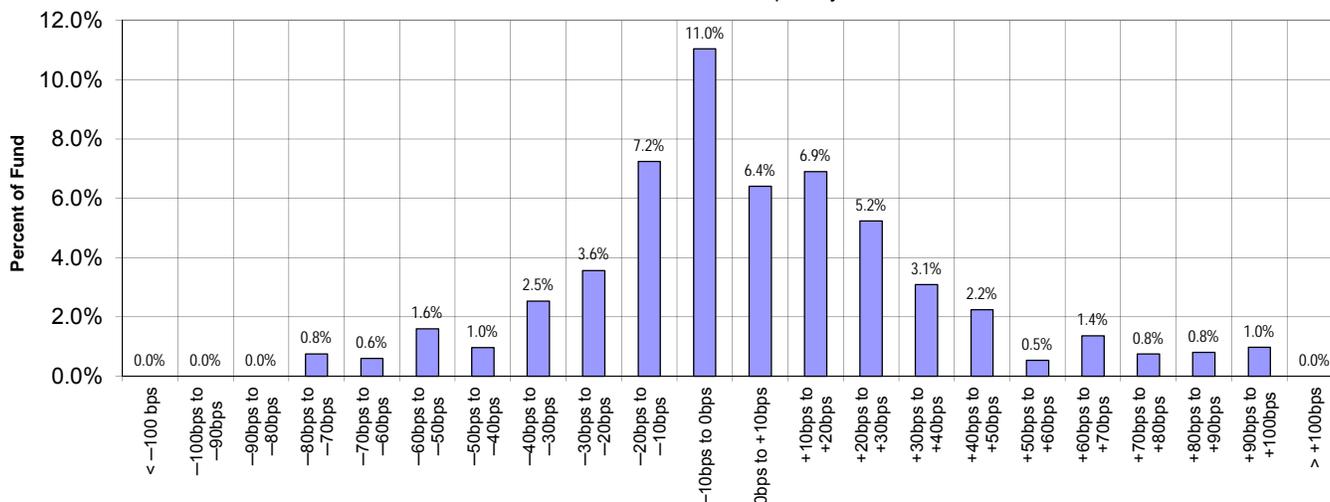


U.S. stocks continued their upward trajectory again this quarter and posted small gains in the third quarter of the year. The large-cap S&P 500 TR index (up 1.12% for the quarter) beating both the small-cap S&P 600 TR index (down -6.72%) and the mid-cap S&P 400 TR index (down -3.99%) substantially. The largest 50 stocks in the S&P 500 outperforming the remaining 450 by over three percent points. The biggest contributing sector to calendar Q3 performance was Health Care (up 5.46%), followed by Technology (up 4.77%) and Telecom (up 3.07%). Energy (down -8.62%) was the worst performing sector for the period. Stocks that contributed most positively to S&P 500 index return in the third quarter were Sigma-Aldrich Corp (SIAL), Monster Beverage Corp (MNST) and Gilead Sciences (GILD); stocks which detracted most were Diamond Offshore (DO), Transocean (RIG) and Owen-Illinois Inc (OI).

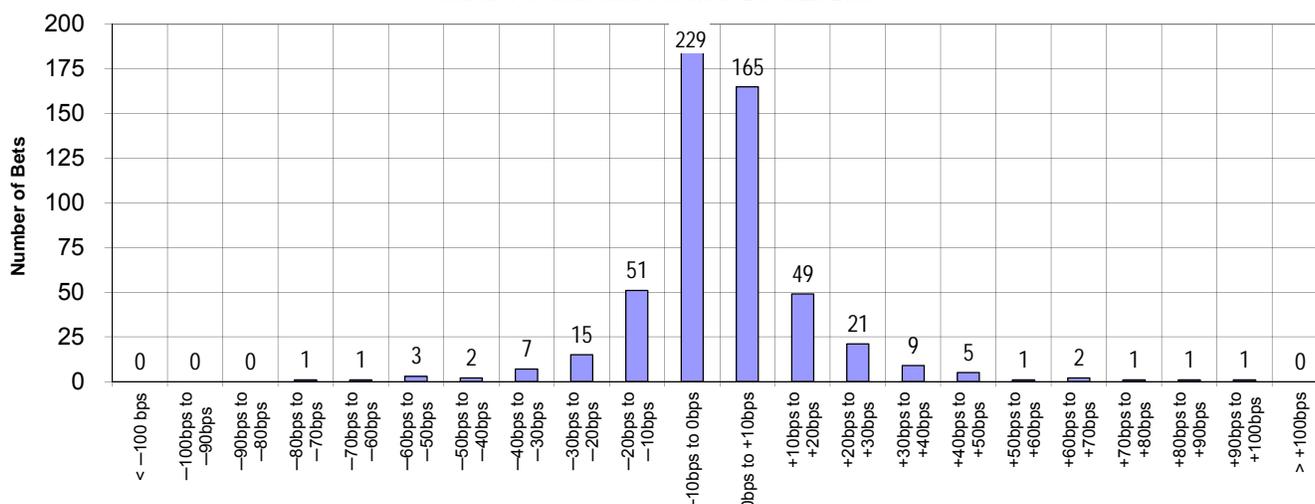
The VIX was up over 40% in 3Q-the biggest quarterly jump in three years-making volatility the best performing asset class in both 3Q and September. Historically, large-cap high quality stocks have fared best in rising volatility environments, and we saw that play out this quarter. Additionally, returns-based quality factors such as high ROE, ROA and ROC were the best-performing factors in this quarter. Not surprisingly the small size numbering among the worst-performing factors.

The quant fund outperformed in the quarter and the portfolio had a 34 bps over-performance versus the benchmark. We still have the same provisions as the last quarter to neutralize the risks. The Quant Fund's tracking error is at 1.64%.

Active Bets in Fund vs. S&P500, Grouped by Bet Sizes



Number of Individual Stocks in Bet Size Bins

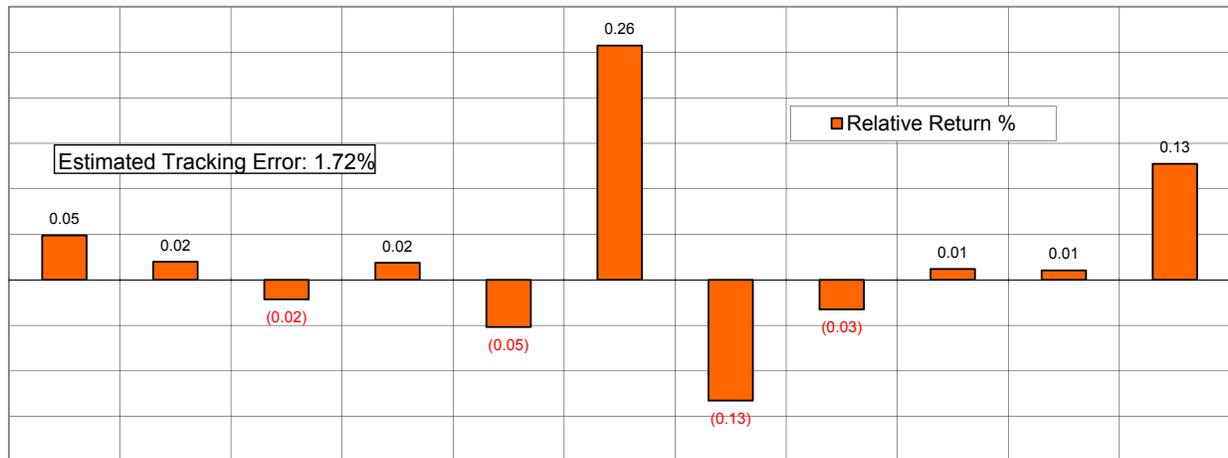
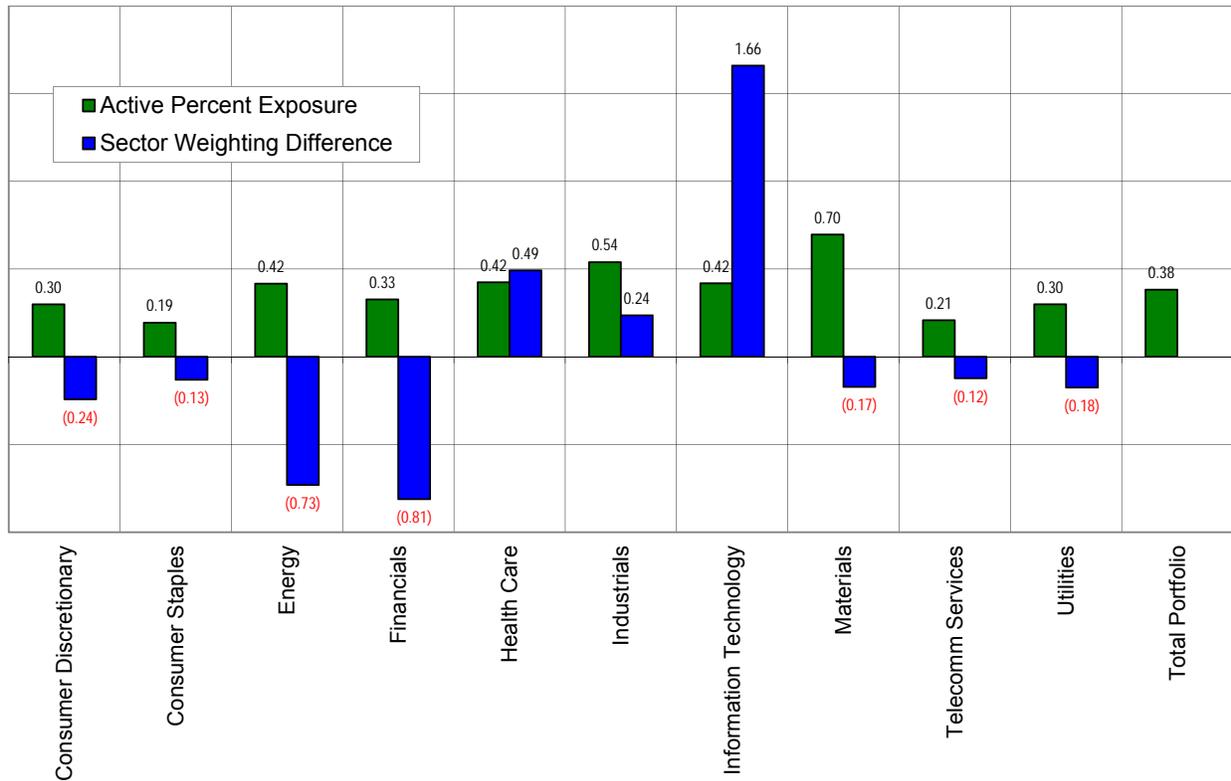


Largest Overweights by Stock in Fund

Ticker	Description	Bps Over
AAPL	Apple Inc.	98
ANET	Arista Networks, Inc.	81
MO	Altria Group, Inc.	75
LYB	LyondellBasell Industries NV	70
COV	Covidien Plc	67
VZ	Verizon Communications Inc.	54
DFS	Discover Financial Services	48
AMP	Ameriprise Financial, Inc.	48
PSX	Phillips 66	47
ADM	Archer-Daniels-Midland Company	41
EOG	EOG Resources, Inc.	40
NOC	Northrop Grumman Corporation	38
BEN	Franklin Resources, Inc.	38
UNP	Union Pacific Corporation	37
LO	Lorillard, Inc.	36
FB	Facebook, Inc. Class A	33
LMT	Lockheed Martin Corporation	33
AEP	American Electric Power Company,	31
PCLN	Priceline Group Inc	31
CI	Cigna Corporation	30

Largest Underweights by Stock in Fund

Ticker	Description	Bps Under
KO	Coca-Cola Company	-76
PM	Philip Morris International Inc.	-60
GE	General Electric Company	-56
MCD	McDonald's Corporation	-53
UTX	United Technologies Corporation	-51
BMY	Bristol-Myers Squibb Company	-48
CVX	Chevron Corporation	-48
WMT	Wal-Mart Stores, Inc.	-40
IBM	International Business Machines Co	-39
MSFT	Microsoft Corporation	-37
EBAY	eBay Inc.	-37
LLY	Eli Lilly and Company	-36
ABT	Abbott Laboratories	-36
AGN	Allergan, Inc.	-30
SPG	Simon Property Group, Inc.	-29
DHR	Danaher Corporation	-26
COF	Capital One Financial Corporation	-26
BA	Boeing Company	-25
EMR	Emerson Electric Co.	-25
CSCO	Cisco Systems, Inc.	-25

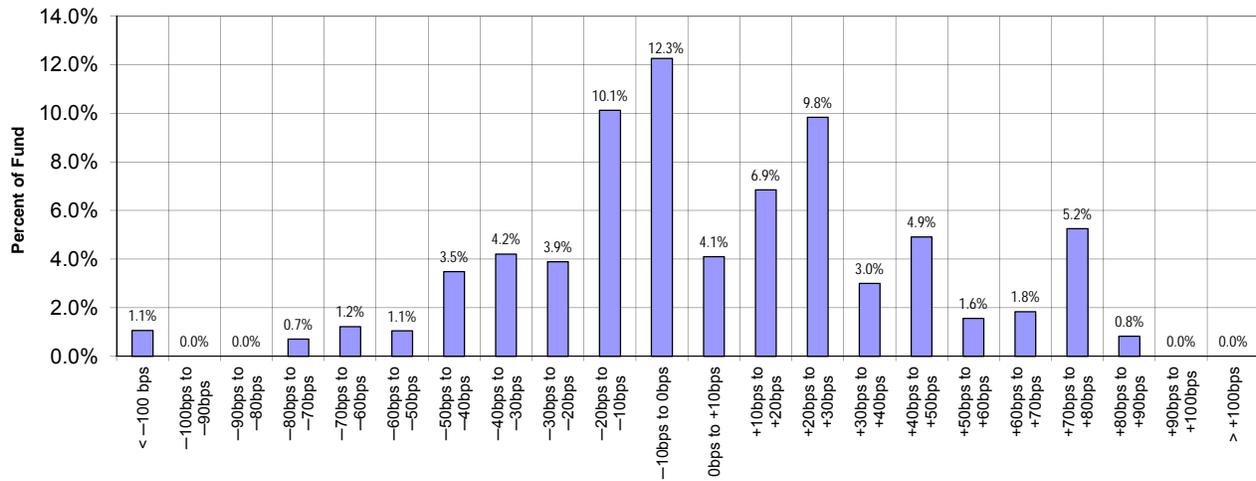


The equity market was supported by economic growth in the United States, good earnings and continued low inflation. This was offset by slow performance in Japan, China and Europe plus escalating trade sanctions between much of the developed world and Russia. The shaky foreign sector and remarkably restrained inflation did little to budge the Fed: QE3 ended on schedule and the data dependent June 2015 rate hike seems on track for June 2015 despite the data. Everyone is tired of the financial crisis by now and is anxious to leave it to history if only wages would show some life. The return of the United States as the developed world's economic powerhouse when the rest of the world appears to be faltering has brought renewed vigor to our currency. The 7.7% appreciation in the dollar index means the modest advance in the S&P 500 looks to be about +9% to the rest of the world. A very good quarter.

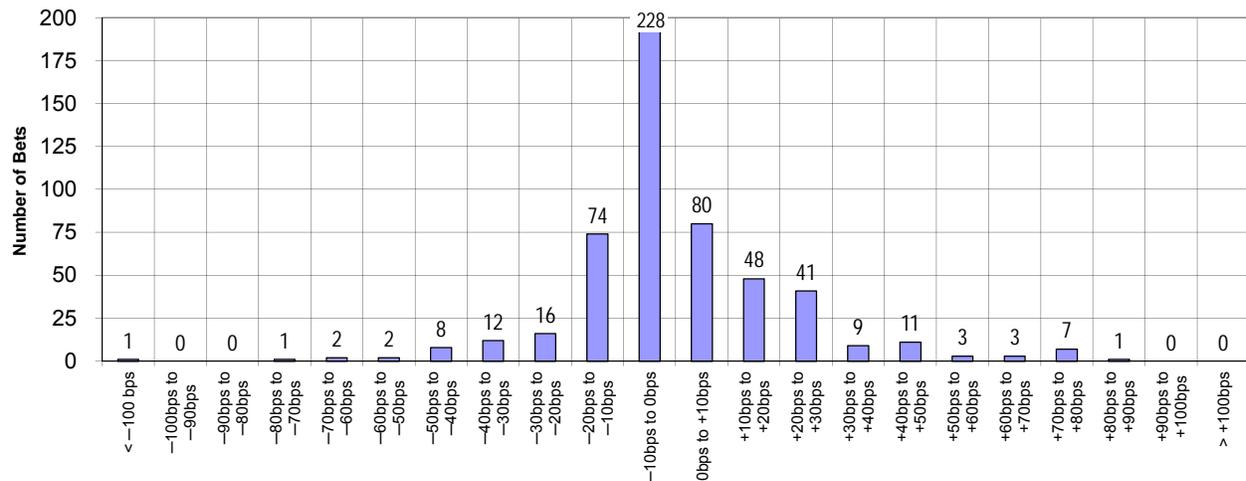
The Sector Fund maintained an overweight to Information Technology and Industrials for exposure to economic growth and added to Health Care (blue bars). Some of the stocks that had worked well in the past, particularly in Technology and Energy, gave some back in the quarter. When we traded, it was too late; we would have done better if we had not traded at all.

It paid to be selective in Industrials. Weak inflation led by soft commodity prices held back capital expenditures in mining and agriculture, e.g.. CAT. Non-residential construction and transportation are leading the economy and this was reflected by sector leaders URI and LUV. Technology was held back by some prior performers, esp. fingerprint security firm SYNA. The Sector Fund was also impacted by a small holding in the surprise bankruptcy of Apple supplier GTAT which gave up half of its value in 3Q, the rest in the first week of 4Q.

Active Bets in Fund vs. S&P500, Grouped by Bet Sizes



Number of Individual Stocks in Bet Size Bins



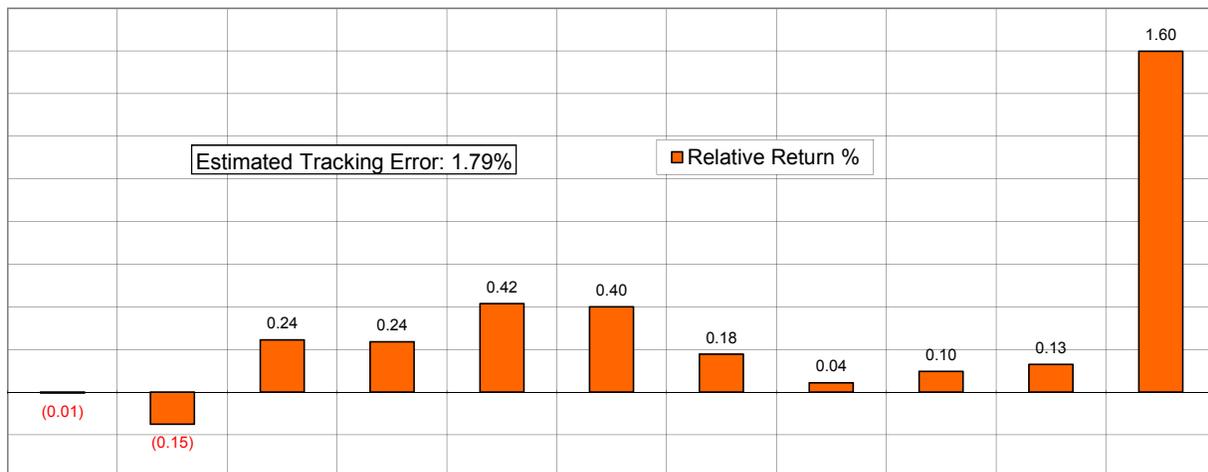
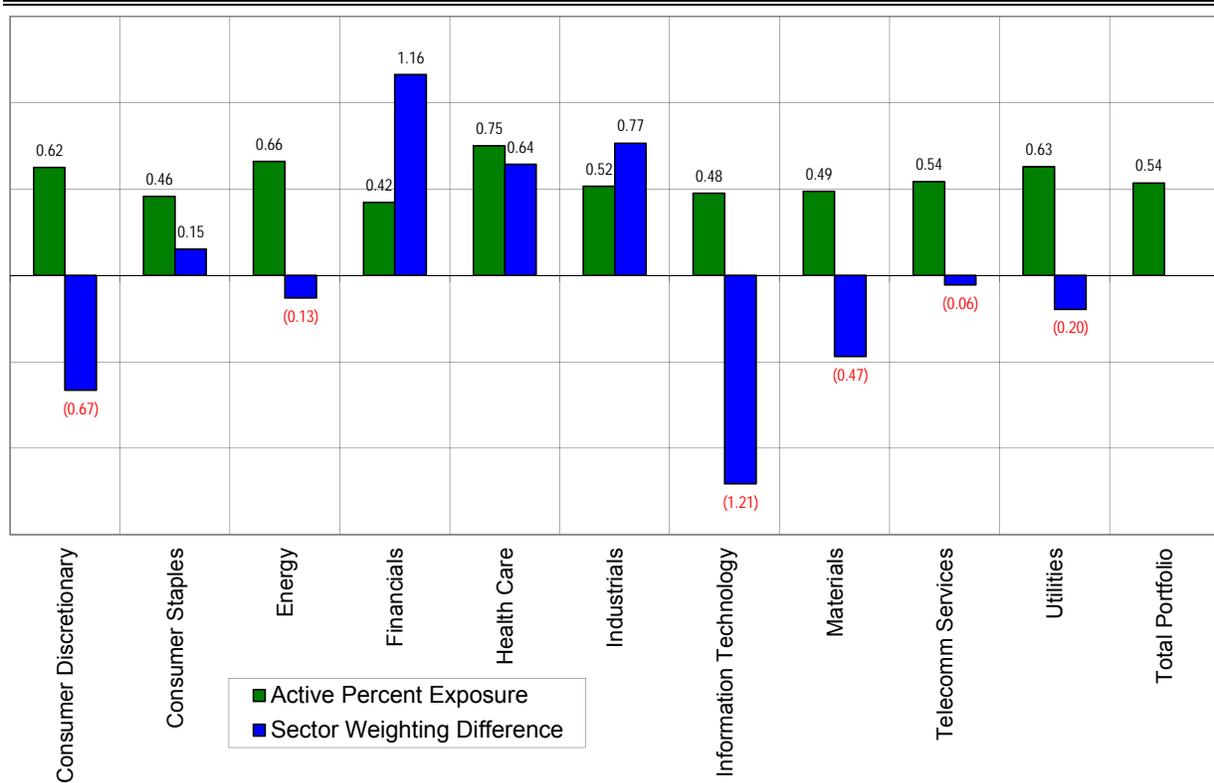
Largest Overweights by Stock in Fund

Ticker	Description	Bps Over Index Wt
MU	Micron Technology, Inc.	83
AVGO	Avago Technologies Limited	78
AAPL	Apple Inc.	78
NXPI	NXP Semiconductors NV	75
ACT	Actavis Plc	74
SYNA	Synaptics Incorporated	73
SNDK	SanDisk Corporation	73
LYB	LyondellBasell Industries NV	73
EOG	EOG Resources, Inc.	62
LUV	Southwest Airlines Co.	62
PWR	Quanta Services, Inc.	60
AMAT	Applied Materials, Inc.	55
VMW	Vmware, Inc. Class A	51
BMJ	Bristol-Myers Squibb Company	51
DAL	Delta Air Lines, Inc.	50
MDT	Medtronic, Inc.	49
ALXN	Alexion Pharmaceuticals, Inc.	48
HAL	Halliburton Company	47
MWV	MeadWestvaco Corporation	45
FB	Facebook, Inc. Class A	45

Largest Underweights by Stock in Fund

Ticker	Description	Bps Under
MSFT	Microsoft Corporation	-106
CVX	Chevron Corporation	-71
AMGN	Amgen Inc.	-61
INTC	Intel Corporation	-61
CSCO	Cisco Systems, Inc.	-54
UTX	United Technologies Corporation	-51
BA	Boeing Company	-49
T	AT&T Inc.	-46
BIIB	Biogen Idec Inc.	-45
PFE	Pfizer Inc.	-43
ORCL	Oracle Corporation	-43
OXY	Occidental Petroleum Corporation	-43
GE	General Electric Company	-41
JNJ	Johnson & Johnson	-40
UPS	United Parcel Service, Inc. Class B	-39
HPQ	Hewlett-Packard Company	-38
DD	E. I. du Pont de Nemours and Comp	-37
EBAY	eBay Inc.	-37
LLY	Eli Lilly and Company	-36
ABT	Abbott Laboratories	-36

Mid Cap Fund  
Mike Keeler, CFA

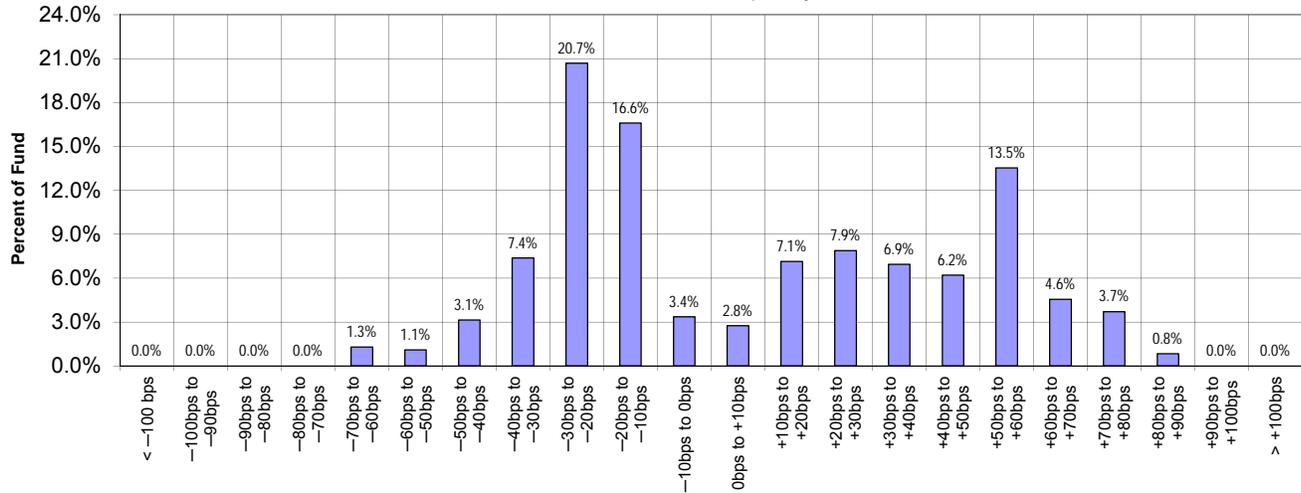


The Mid Cap team's business cycle analysis currently indicates we are in a mid to late expansion, primarily characterized by rising inflation expectations and the Fed moving to neutral from expansive. The slow but reasonably steady improving economic trend continued through the summer and into the autumn months with the consumer and housing data slackening while the industrial side of the economy perked up considerably.

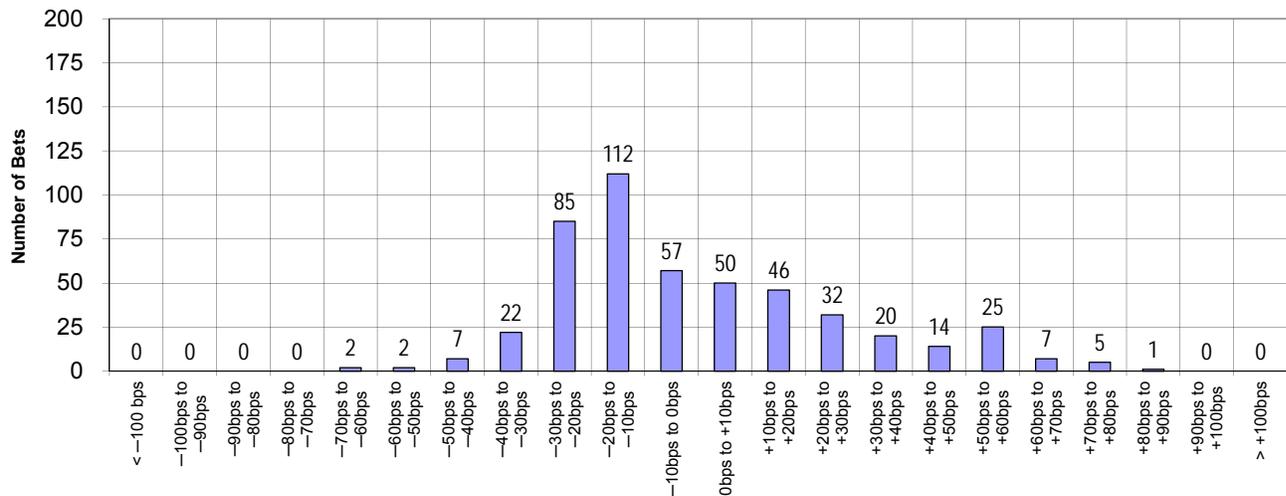
Stock prices seem vulnerable to sustained weakness in Europe and China, a sharp turn in Fed policy, side effects of an increasingly strong dollar as well as unquantifiable/unpredictable factors like ISIS, Ebola, or potential escalation of the recent protests in Hong Kong.

The Mid Cap Fund outperformed the S & P Mid Cap 400 return during the quarter. Good stock selection in the Pharmaceutical industry and Capital Goods sector was somewhat offset by poor stock selection in the Consumer Staples Sector. Stock selection accounted for 94% of the excess return against the benchmark.

Active Bets in Fund vs. S&P400, Grouped by Bet Sizes



Number of Individual Stocks in Bet Size Bins



Largest Overweights by Stock in Fund

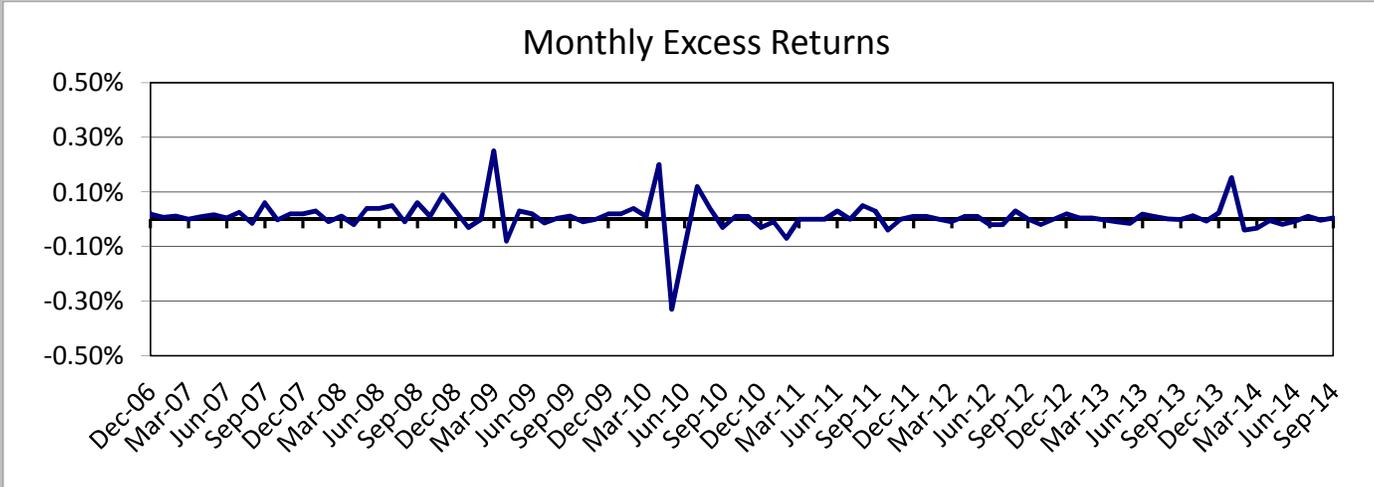
Ticker	Description	Bps Over
UTHR	United Therapeutics Corporation	84
AFG	American Financial Group, Inc.	79
CNC	Centene Corporation	74
CSC	Computer Sciences Corporation	73
SAIC	Science Applications International C	73
CMA	Comerica Incorporated	72
EW	Edwards Lifesciences Corporation	69
CFR	Cullen/Frost Bankers, Inc.	68
BR	Broadridge Financial Solutions, Inc.	67
UNM	Unum Group	65
UGI	UGI Corporation	63
R	Ryder System, Inc.	63
URI	United Rentals, Inc.	61
OCR	Omnicare, Inc.	59
RE	Everest RE Group, Ltd.	59
RJF	Raymond James Financial, Inc.	58
NDAQ	NASDAQ OMX Group, Inc.	58
PWR	Quanta Services, Inc.	58
MSCI	MSCI Inc.	58
CFN	CareFusion Corporation	57

Largest Underweights by Stock in Fund

Ticker	Description	Bps Under
SLXP	United Therapeutics Corporation	-65
HSIC	Henry Schein, Inc.	-64
ENDP	Endo International Plc	-57
LKQ	LKQ Corporation	-52
COO	Cooper Companies, Inc.	-49
MTD	Mettler-Toledo International Inc.	-48
JAH	Jarden Corporation	-47
OII	Oceaneering International, Inc.	-46
EQIX	Equinix, Inc.	-42
CYH	Community Health Systems, Inc.	-41
DRC	Dresser-Rand Group Inc.	-41
RPM	RPM International Inc.	-40
HOLX	Hologic, Inc.	-38
TRMB	Trimble Navigation Limited	-37
X	United States Steel Corporation	-37
MD	MEDNAX, Inc.	-36
PL	Protective Life Corporation	-36
STLD	Steel Dynamics, Inc.	-35
EGN	Energen Corporation	-34
HAIN	Hain Celestial Group, Inc.	-34

Index Fund vs. S&P 500

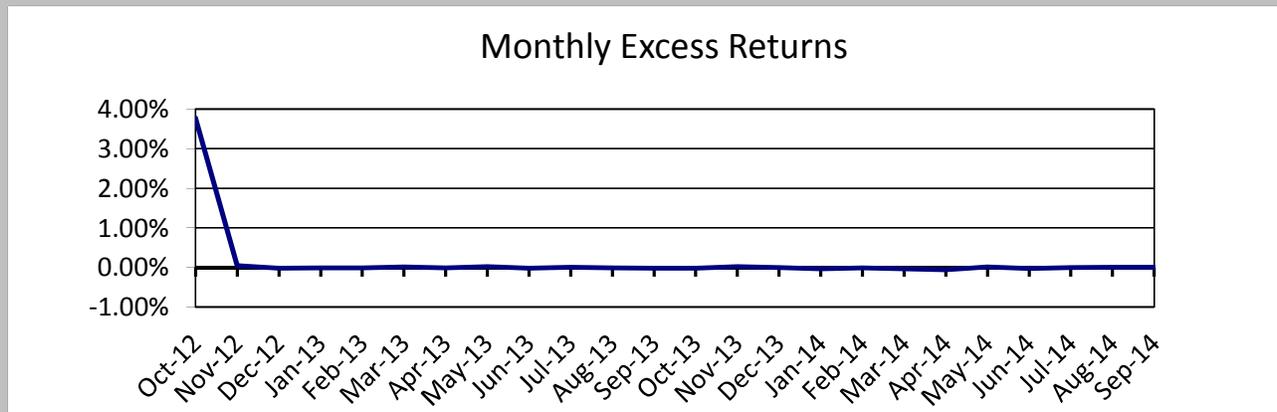
Assets as of September 2014:



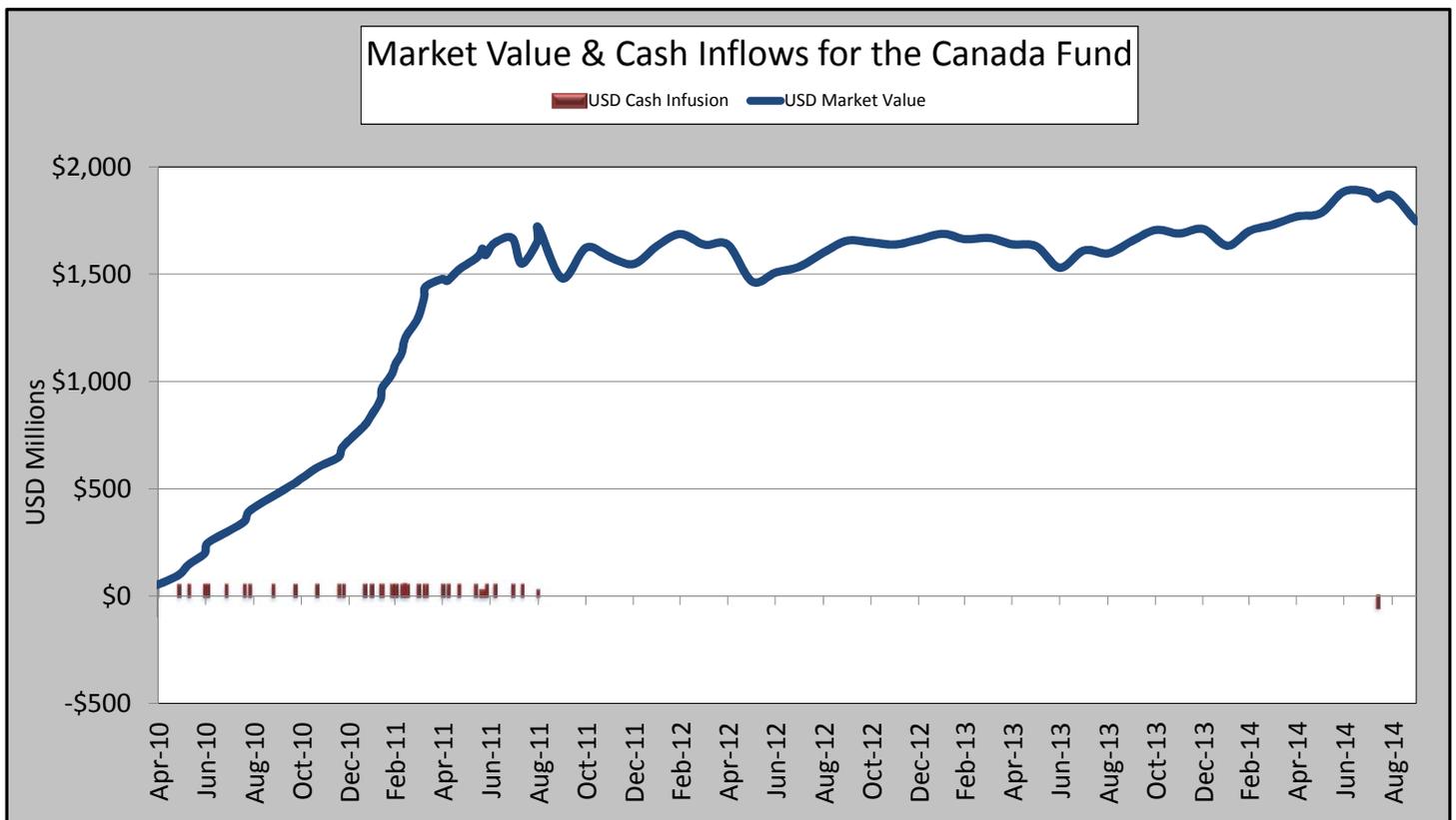
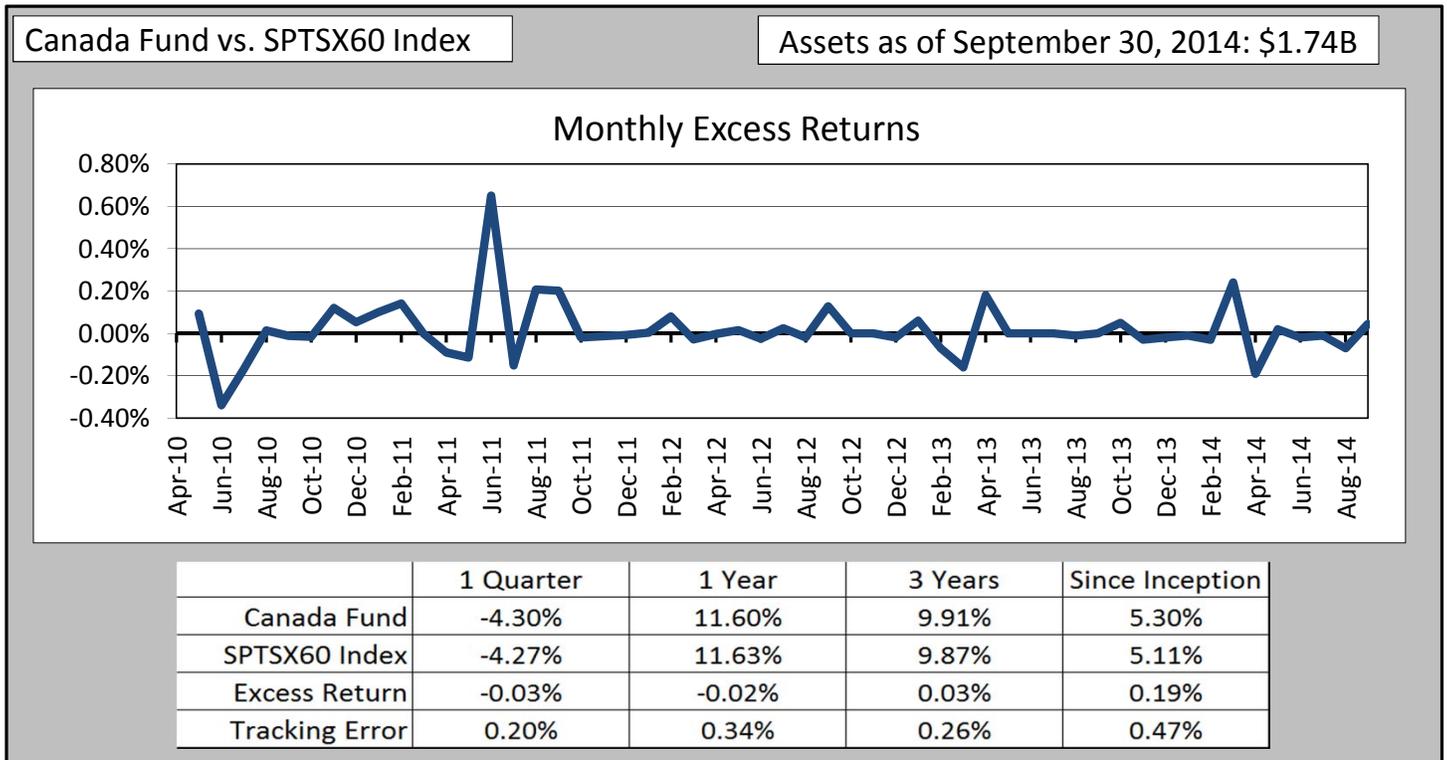
	1 Quarter	1 Year	3 Years	Since Inception
Index Fund	1.1%	19.8%	23.0%	7.4%
S&P 500	1.1%	19.7%	23.0%	7.3%
Excess Return	0.0%	0.1%	0.0%	0.1%
Tracking Error	0.02%	0.17%	0.11%	0.20%

Small Cap Fund vs. S&P 600

Assets as of September 2014:



	1 Quarter	1 Year	3 Years	Since Inception
Small Cap Fund	-6.71%	5.6%	N/A	20.11%
S&P 600	-6.73%	5.7%	N/A	17.93%
Excess Return	0.02%	-0.1%	N/A	2.18%
Tracking Error	0.03%	0.09%	N/A	2.67%



Manager Performance Comparison - International Equity

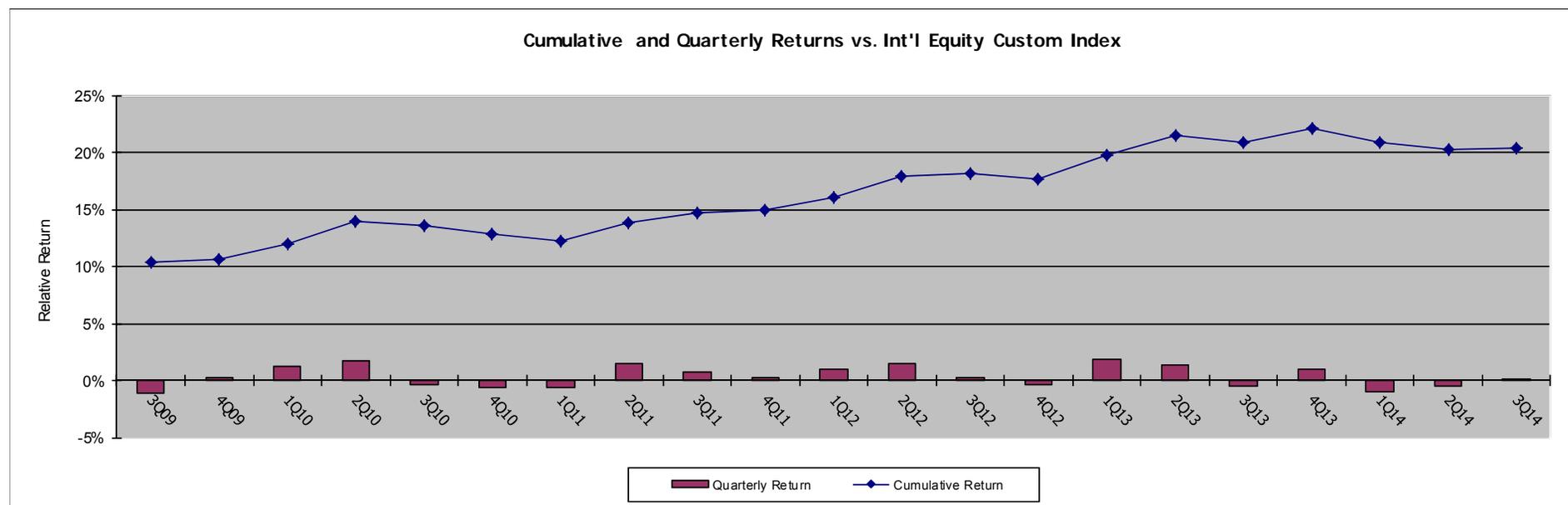
As of September 30, 2014

Manager Returns For The Quarter Ending September 30, 2014

Manager	Manager Return	Benchmark	Benchmark Return
American Century	-7.23	MSCI EAFE Small Cap	-7.82
Baring Asset Mgmt	-6.52	MSCI EAFE	-5.88
Emerging Market ETF	-4.27	MSCI Emg Mkts Net Custom	-3.86
GE Asset Mgmt	-7.21	MSCI Europe	-7.00
Marathon	-6.20	MSCI EAFE net	-5.88
Pacific Indexed Portfolio <sup>1</sup>	-2.87	MSCI Pacific net	-3.64
PanAgora Asset Mgmt	-5.37	MSCI EAFE	-5.88
Pyramis Global	-8.16	MSCI EAFE Small Cap	-7.82
TT International	-4.56	MSCI EAFE	-5.88
Walter Scott	-4.08	MSCI EAFE net <sup>2</sup>	-5.88
International Equity	-5.40	Int'l Equity Custom <sup>3</sup>	-5.46

Manager Returns For Five Years Ending September 30, 2014

Manager	Manager Return	Benchmark	Benchmark Return
American Century	12.75	MSCI EAFE Small Cap	8.91
Baring Asset Mgmt	8.07	MSCI EAFE	6.56
Emerging Market ETF		MSCI Emg Mkts Net Custom	
GE Asset Mgmt	6.71	MSCI Europe	6.90
Marathon	9.74	MSCI EAFE net	6.56
Pacific Indexed Portfolio <sup>1</sup>	5.32	MSCI Pacific net	6.12
PanAgora Asset Mgmt	9.20	MSCI EAFE	6.56
Pyramis Global	9.99	MSCI EAFE Small Cap	8.91
TT International	7.74	MSCI EAFE	6.56
Walter Scott	9.33	MSCI EAFE net <sup>2</sup>	6.56
International Equity	8.00	Int'l Equity Custom <sup>3</sup>	5.71



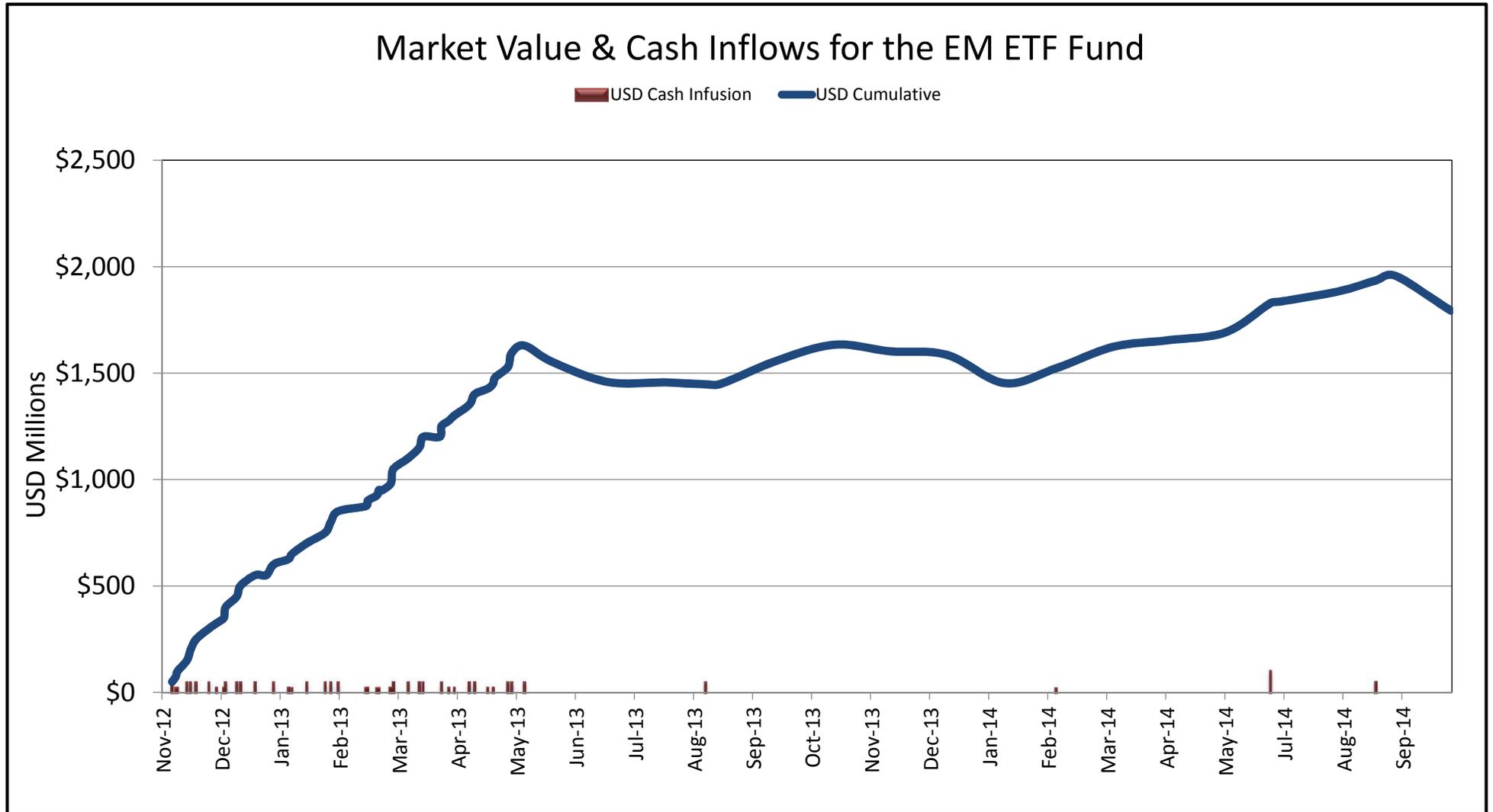
<sup>1</sup> Effective as of 9/4/10, internally managed by TCRS staff. Amundi Pacific terminated.

<sup>2</sup> Effective 3/1/09. Benchmark is linked to MSCI Europe Index.

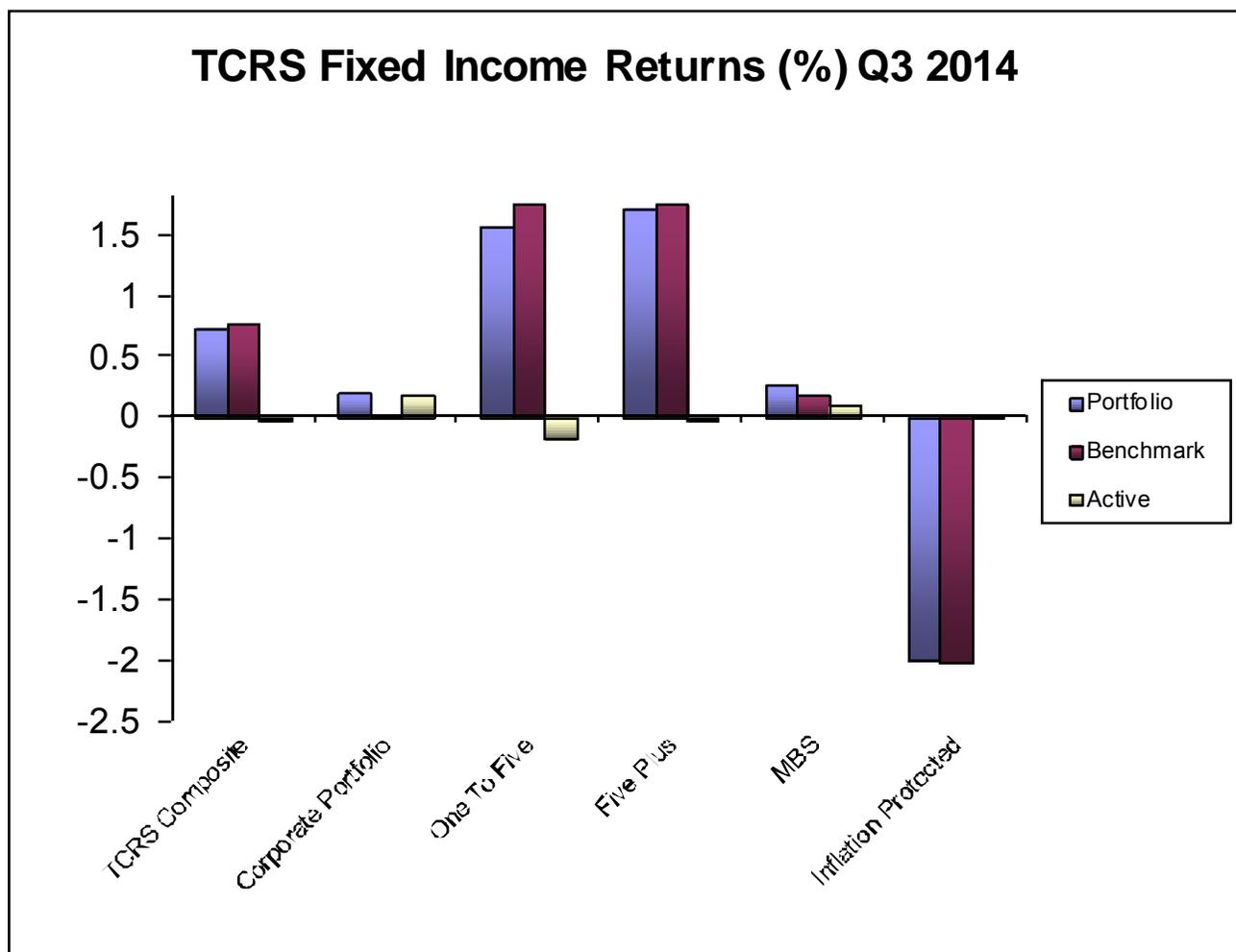
<sup>3</sup> Effective 1/1/13, benchmark is 72.22% MSCI EAFE IMI net/ 27.78% MSCI Emerging Mkts net; linked to 100% MSCI IMI net.

Emerging Markets ETF Fund  
Kushal Gupta, CFA, CAIA

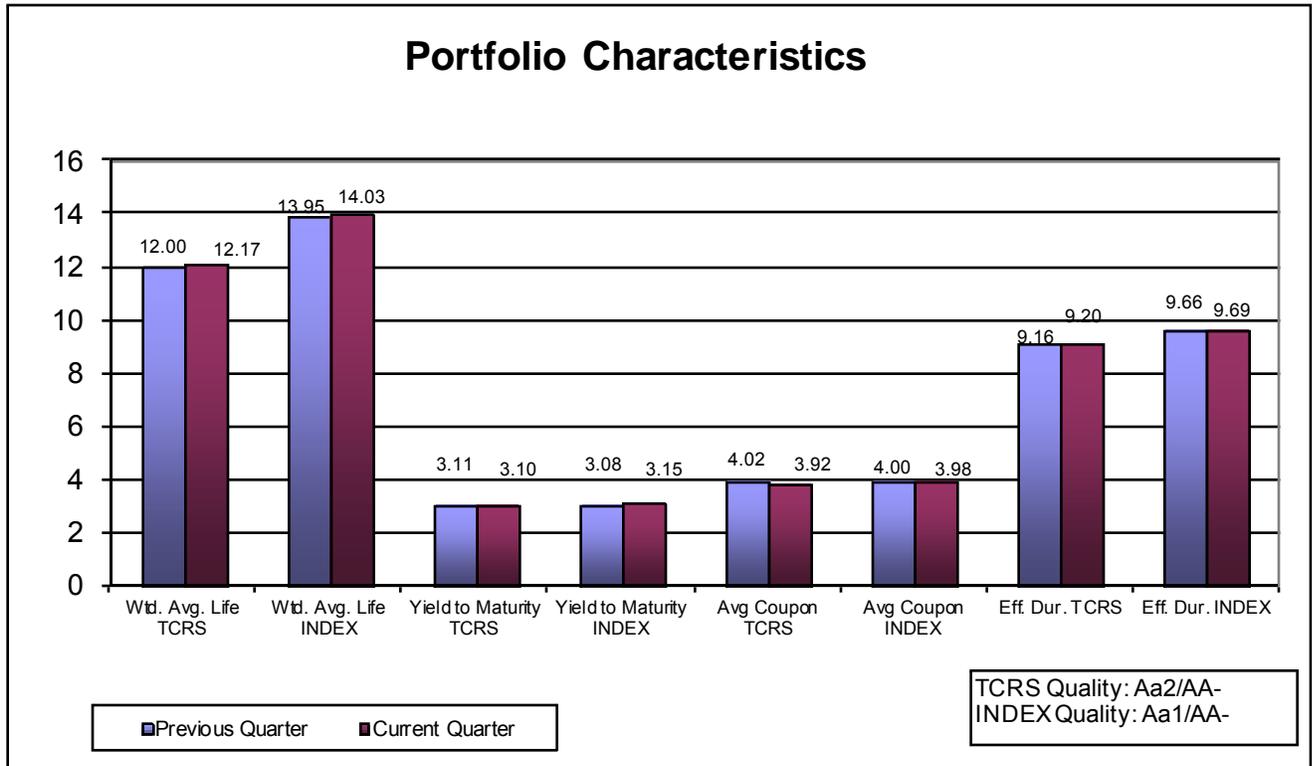
Assets as of September 30, 2014: \$1.79B



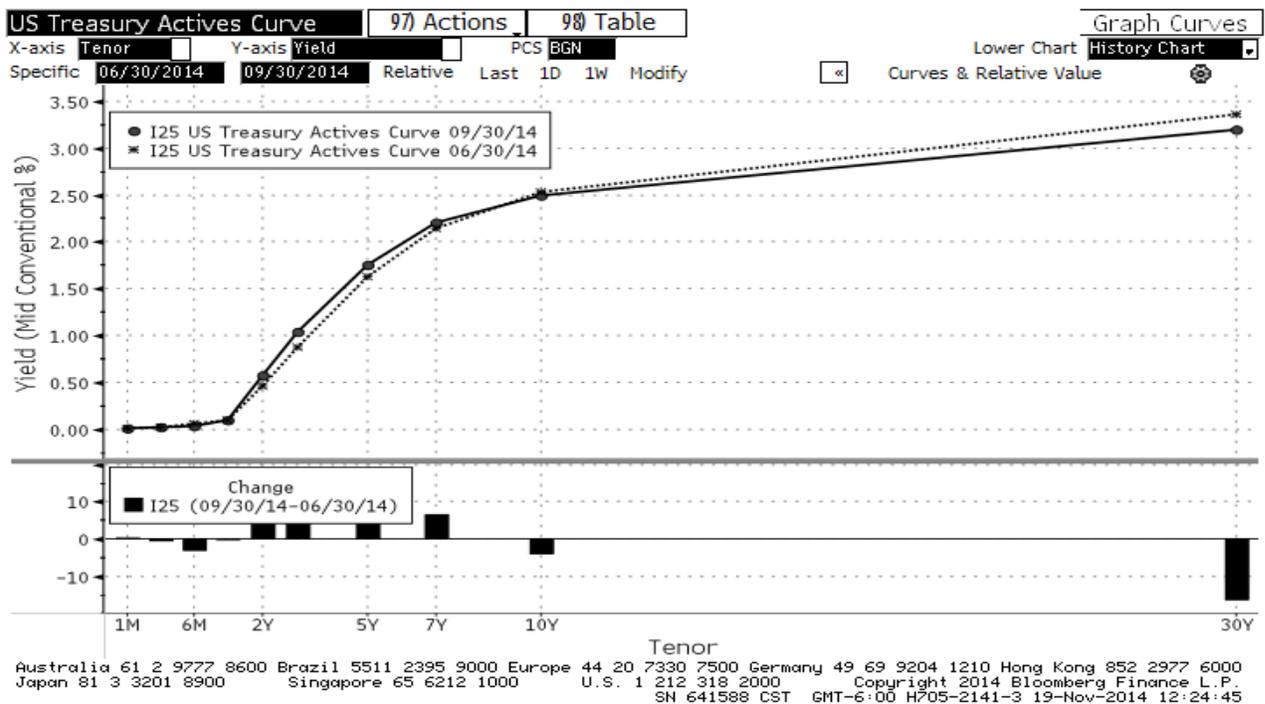
Portfolio	Value (Yield Book) (\$MMs)	Portfolio Return	Benchmark Return	Active Return
TCRS Domestic Fixed Income Composite	\$11,655	0.74	0.76	(0.03)
Corporate Portfolio	\$3,707	0.20	0.02	0.18
Government One To Five Years	\$2,045	1.57	1.75	(0.18)
Government Five Plus Years	\$2,135	1.71	1.75	(0.04)
Mortgage Portfolio	\$3,718	0.27	0.18	0.09
TCRS Inflation Protected Securities	\$2,386	(2.00)	(2.02)	0.02



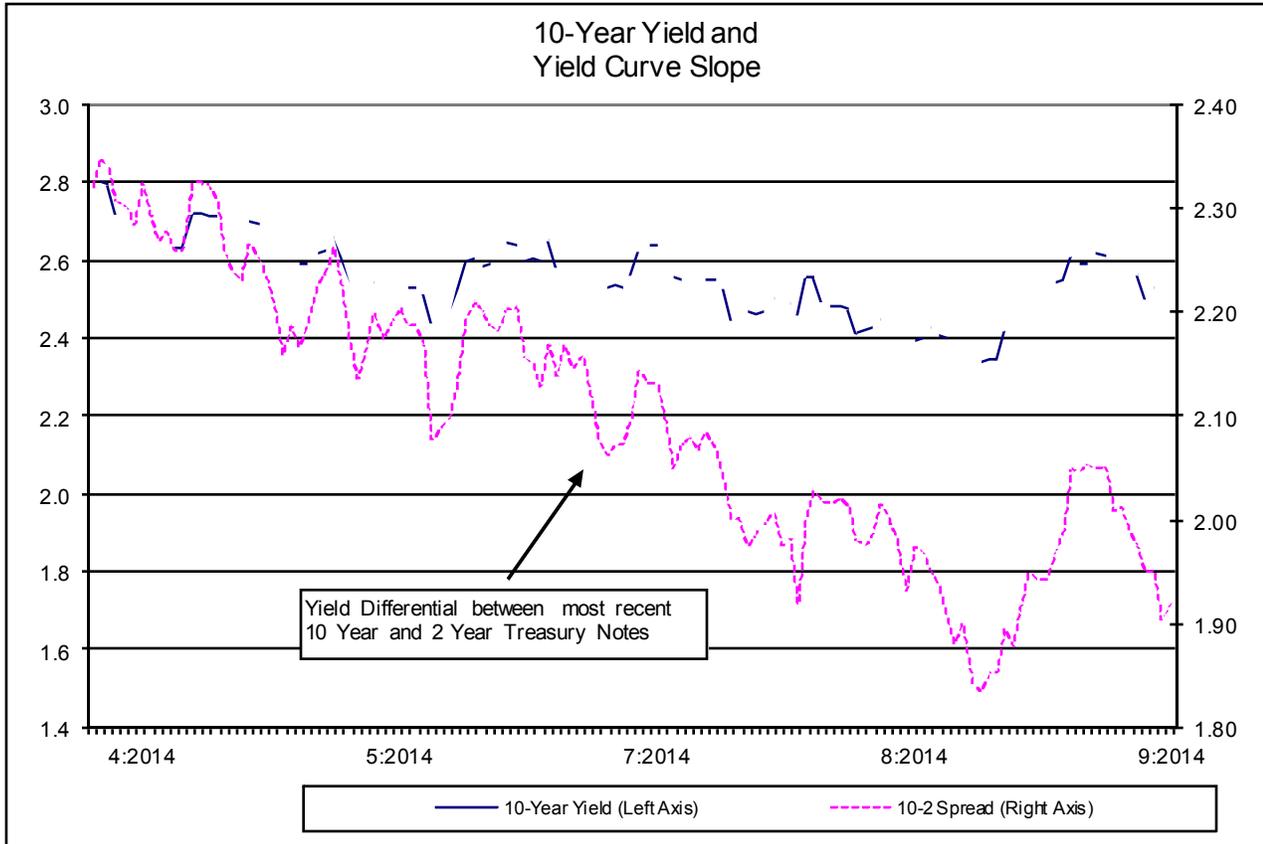
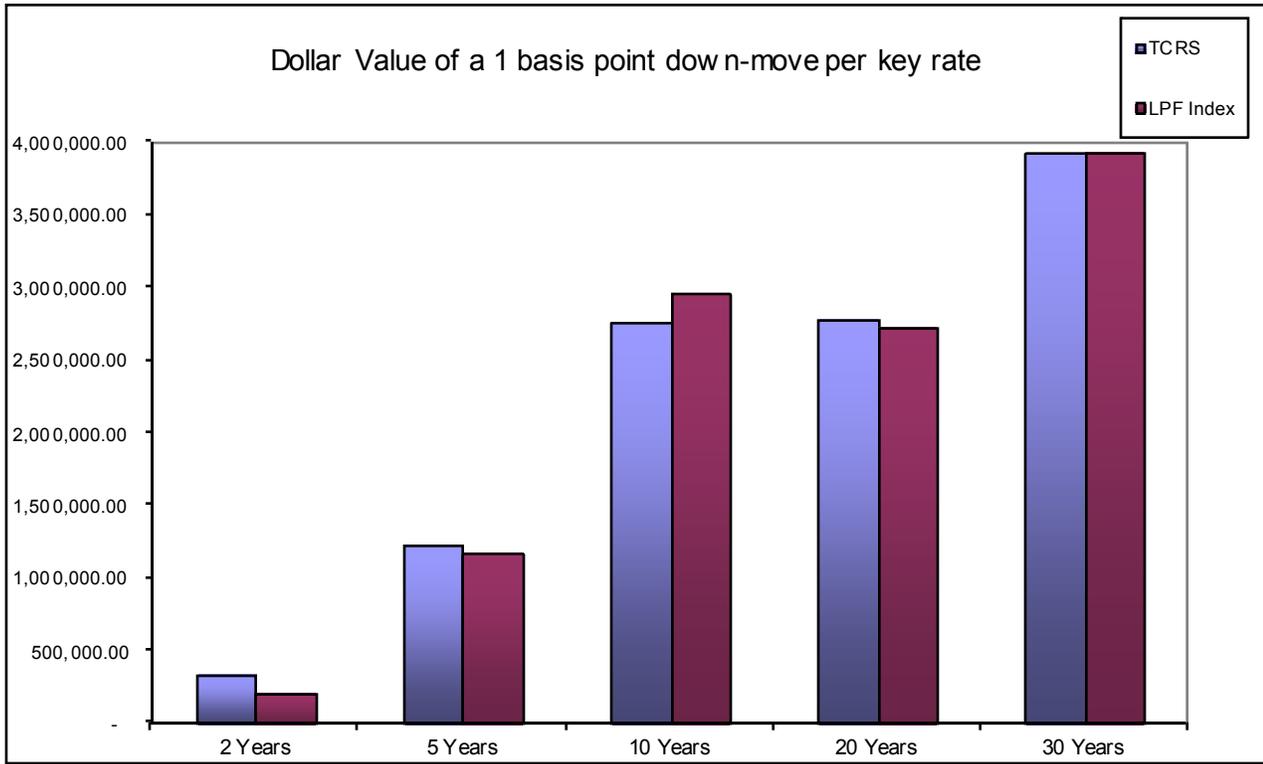
*Characteristics were stable from quarter to quarter*



*The Yield Curve flattened*



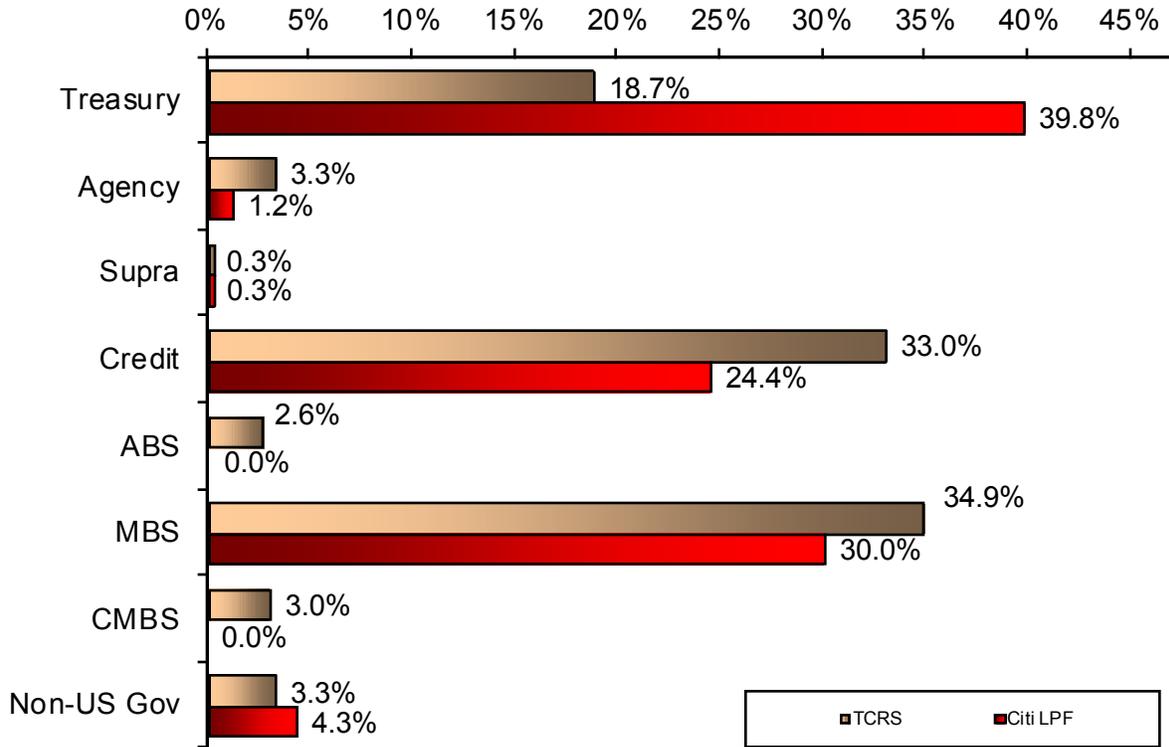
*Curve positioning reflects our view that the Federal Reserve will begin to raise overnight interest rates in 2015*



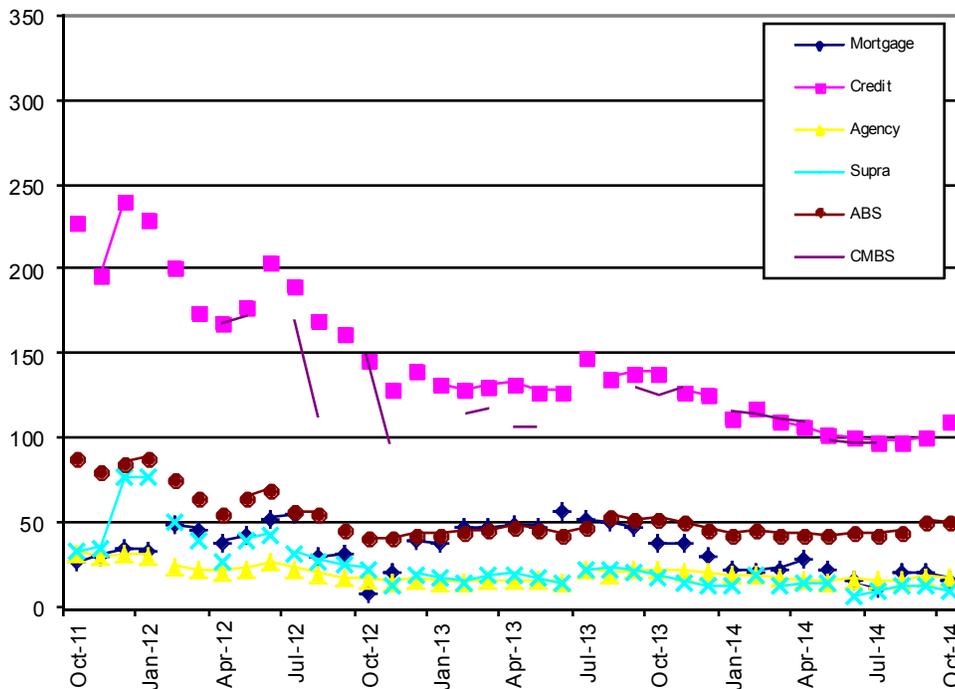
source: Bloomberg

*Spreads generally tightened during the quarter. Exposure reflects a slight preference for credit risk over MBS risk as the Fed tapers MBS purchases.*

Sector Allocation v. Index  
(% market value)



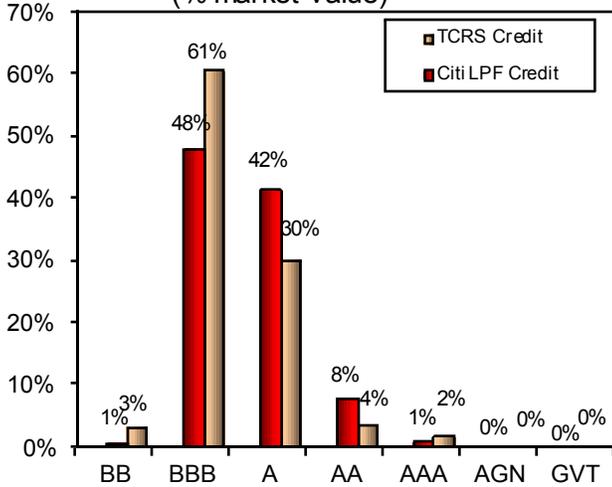
Spread to Treasuries by Asset Class  
(in basis points, index data)



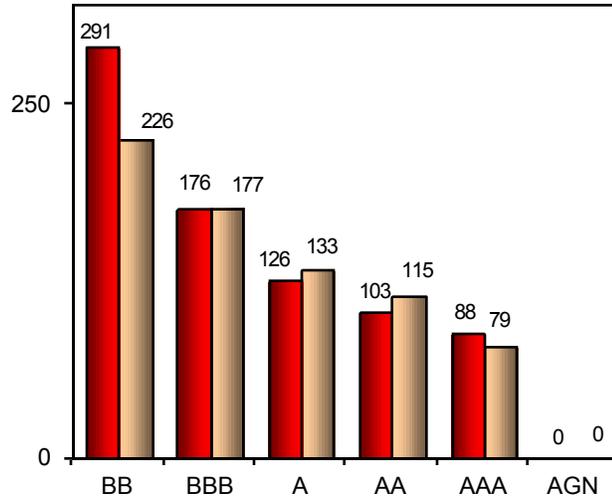
*Credit Spreads widened during the quarter.*

*Credit allocations reflect lower quality holdings. However, spreads reflect a higher relative risk in higher quality issuers.*

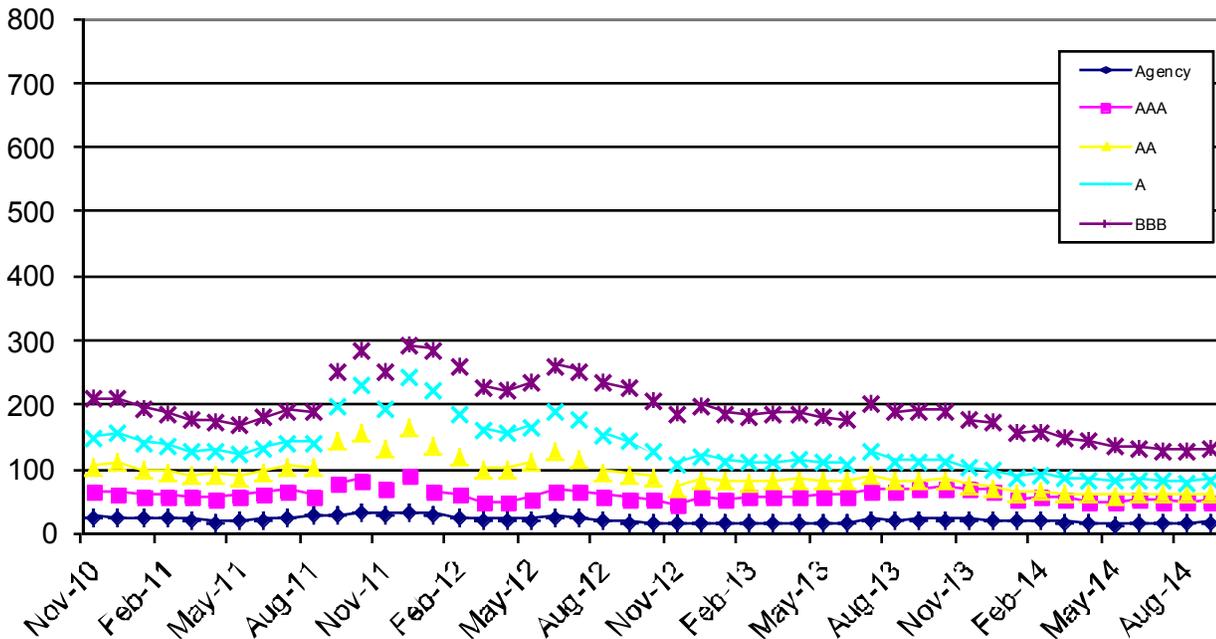
Credit Allocation v. Index  
(% market value)



OAS by Credit Allocation



Spread to Treasury by Credit Rating  
(in basis points, index data)

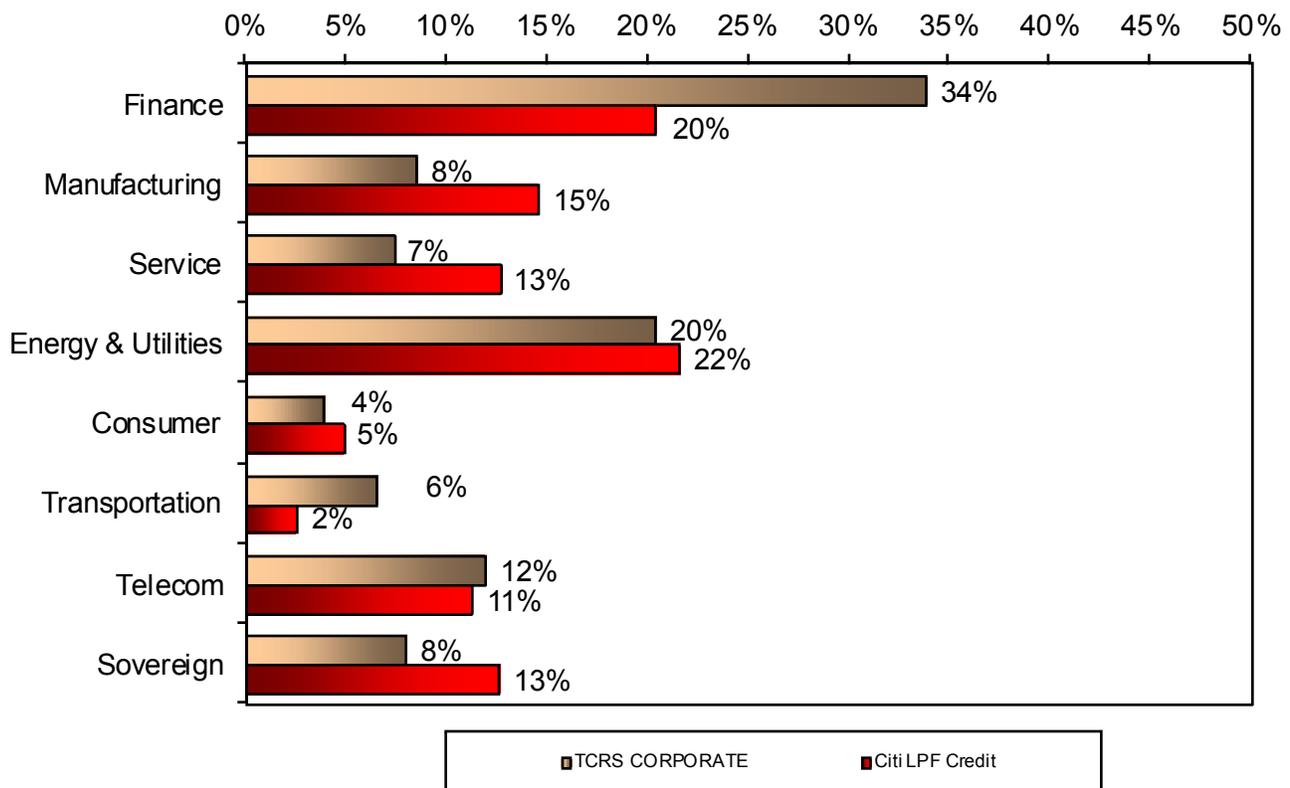


source: Yield Book

<b>Top 5 Credit Holdings (by Market Value)</b>	MktVal	% MktVal
PETROLEOS MEXICANOS	26,469	0.2
JPMORGAN CHASE & CO	24,852	0.2
CROWN CASTLE TOWERS LLC	23,742	0.2
GOLDMAN SACHS GROUP INC	23,208	0.2
VERIZON COMMUNICATIONS INC	23,087	0.2

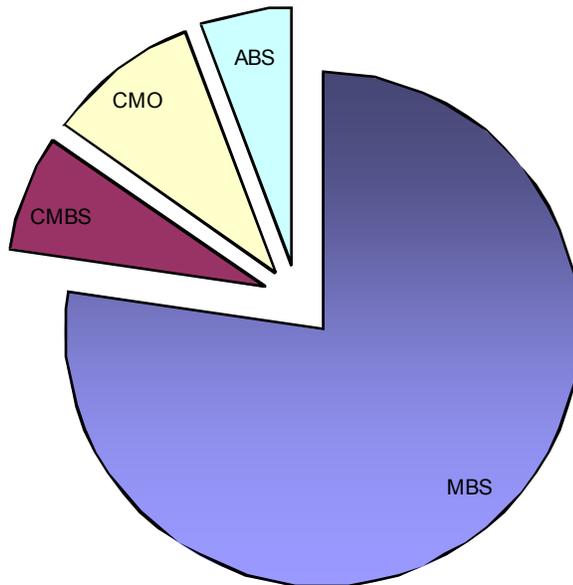
<b>Top 5 Credit Holdings (by Dollar Duration)</b>	\$ Duration	% \$ Duration
VERIZON COMMUNICATIONS INC	33.97	0.3
GOLDMAN SACHS GROUP INC	32.95	0.3
VERIZON COMMUNICATIONS INC	32.32	0.3
GUARDIAN LIFE INSURANCE CO	27.68	0.3
AMERICAN WATER CAP CORP	26.95	0.2

**Sector Allocation v. Index**  
(% market value)



	Market Value (\$MM - Yield Book)	TCRS % of portfolio	CITI	Difference
<b>Agency Mortgage Backed Securities</b>	\$3,632,439	31.2	29.9	1.2
<b>GNMA</b>				
15-Yr	\$23,187	0.2	0.1	0.1
30-Yr	\$729,858	6.3	8.1	-1.8
<b>FNMA</b>				
10-, 15- & 20-Yr	\$397,995	3.4	2.8	0.7
30-Yr	\$1,652,596	14.2	11.4	2.8
<b>FHLM</b>				
15-Yr	\$87,261	0.8	1.5	-0.8
30-Yr	\$680,726	5.8	6.1	-0.3
<b>Agency Hybrid</b>	\$60,816	0.5	0.0	0.5
<b>Commercial Mortgage Backed Securities</b>	\$342,388	2.9	0.0	2.9
<b>CMO and Non Agency Passthroughs</b>	\$449,144	3.9	0.0	3.9
<b>Asset Backed Securities</b>	\$269,477	2.3	0.0	2.3
<b>Total Securitized Product</b>	<b>\$4,693,448</b>	<b>40.3</b>	<b>30.0</b>	<b>10.3</b>

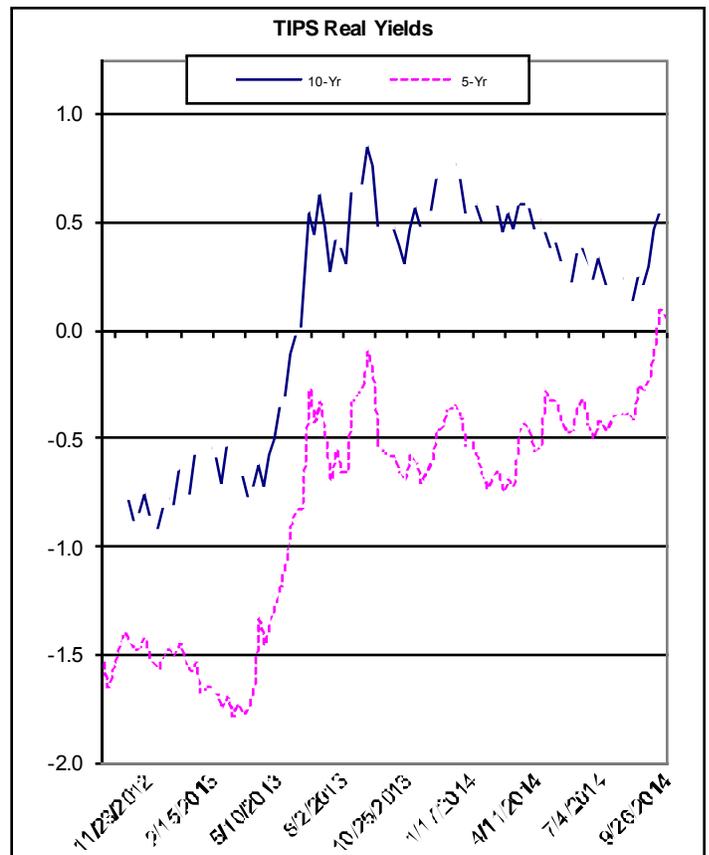
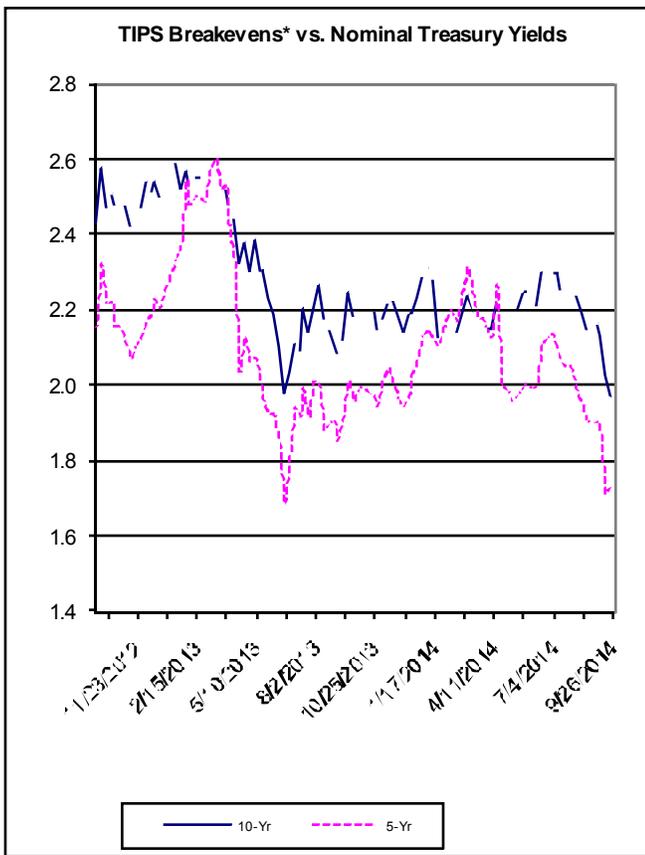
Percent of Securitized Product



Portfolio Value (Yield Book): \$2,386,403,346  
 Portfolio Return: -2.00%  
 Citigroup ILSI Index: -2.02%  
**Active Return: 0.02%**

**% Market Value by Duration**

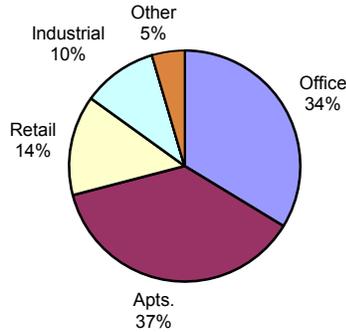
	TCRS	CITI	Difference
0-2	0.0%	0.0%	0.0%
2-4	1.5%	1.7%	-0.2%
4-6	3.1%	3.2%	-0.1%
6-8	5.5%	5.6%	-0.1%
8-10	7.1%	7.3%	-0.1%
10+	12.5%	11.4%	1.1%



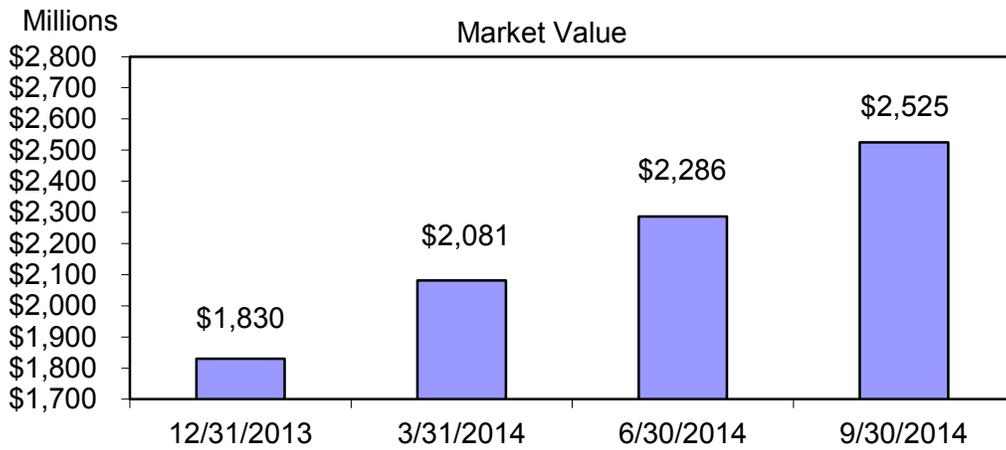
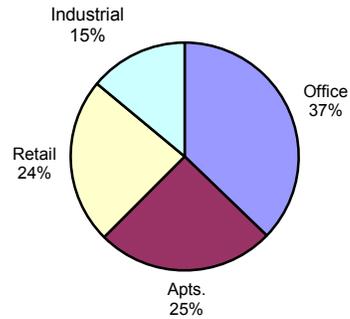
\* The "breakeven" rate is the expected rate of inflation at which investment in TIPS yield the same return as investment in Treasuries

Source: Bloomberg

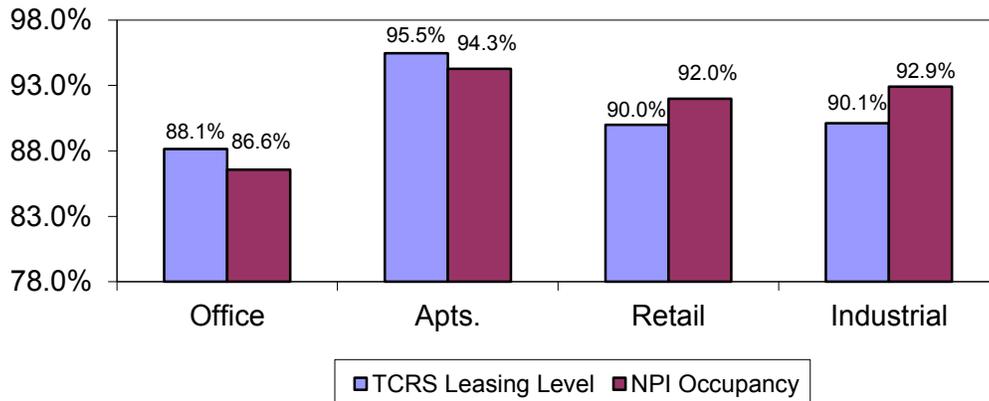
**TCRS By Property Type**



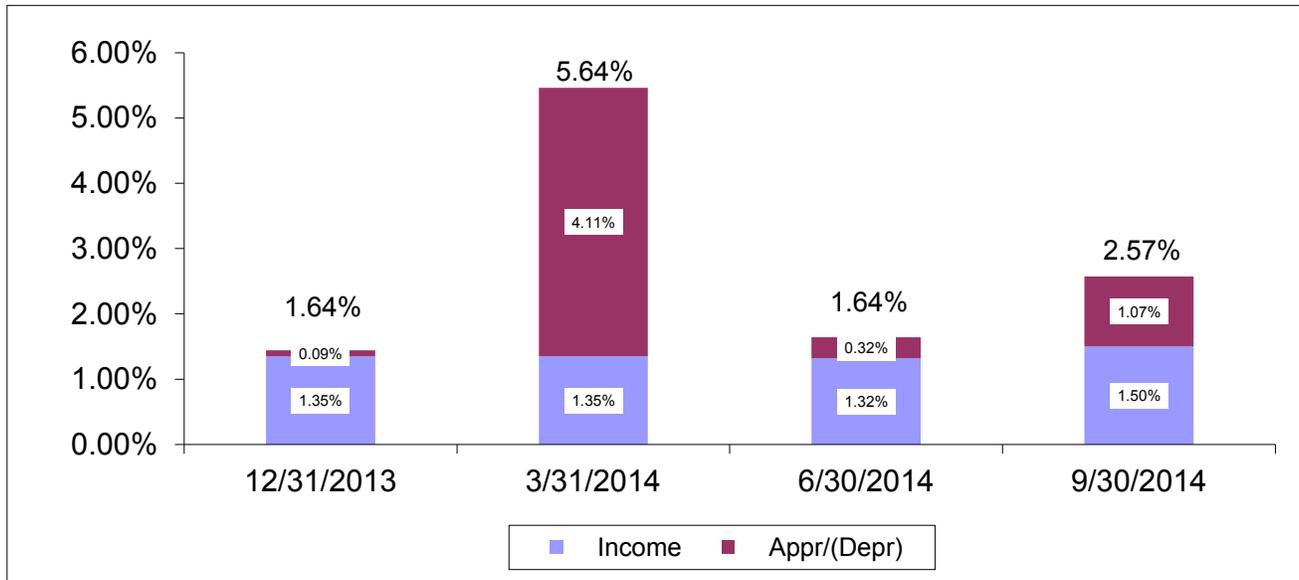
**NPI By Property Type**



**Occupancy**



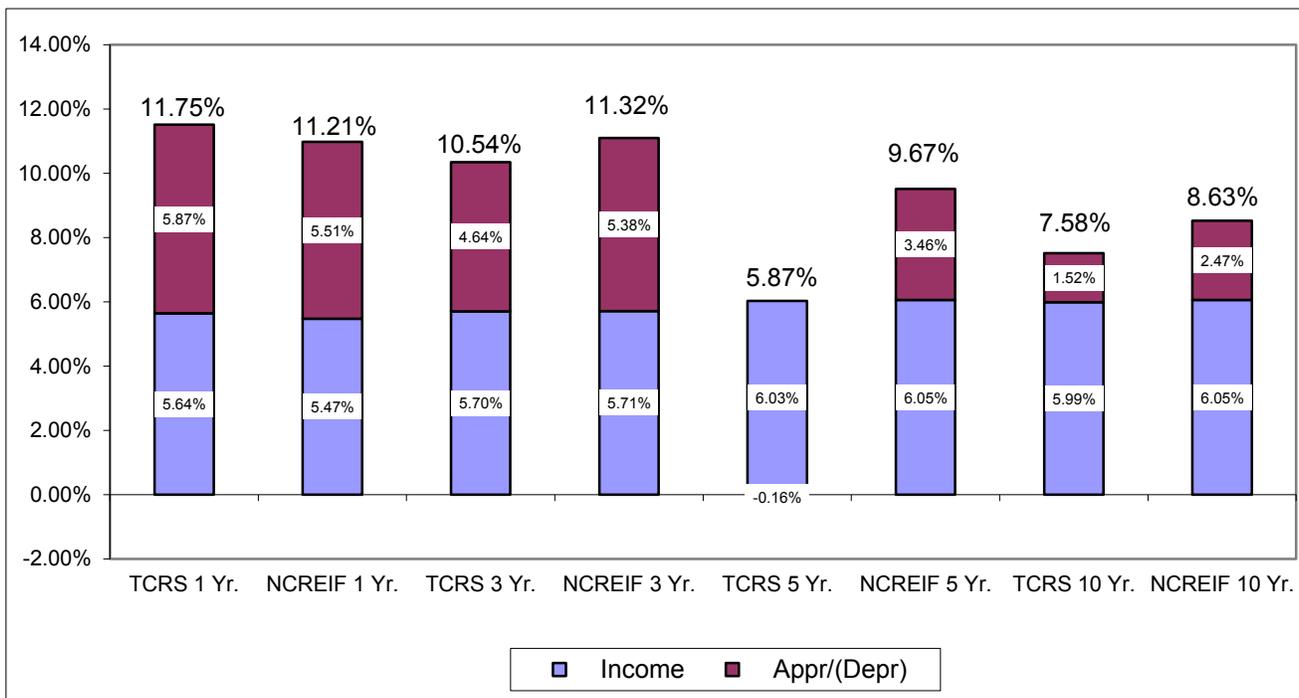
The NPI is the National Property Index of the National Council of Real Estate Investment Fiduciaries (the index used for US core properties).



All returns shown above are reported one quarter in arrears

Budgeted Annual Income Return for calendar year 2014 (excluding funds)

5.08%



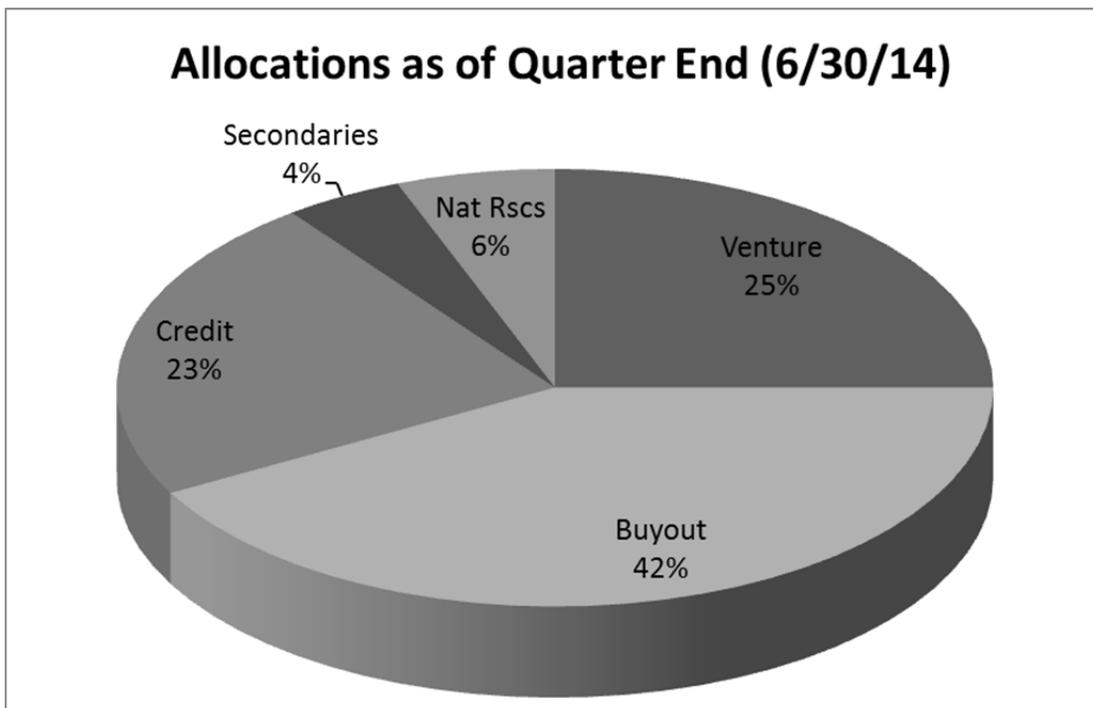
All returns shown above are reported one quarter in arrears

**Tennessee Consolidated Retirement System**  
 Private Equity Program  
 Fiscal 1Q 2015 Update  
 Daniel Crews, CFA CAIA

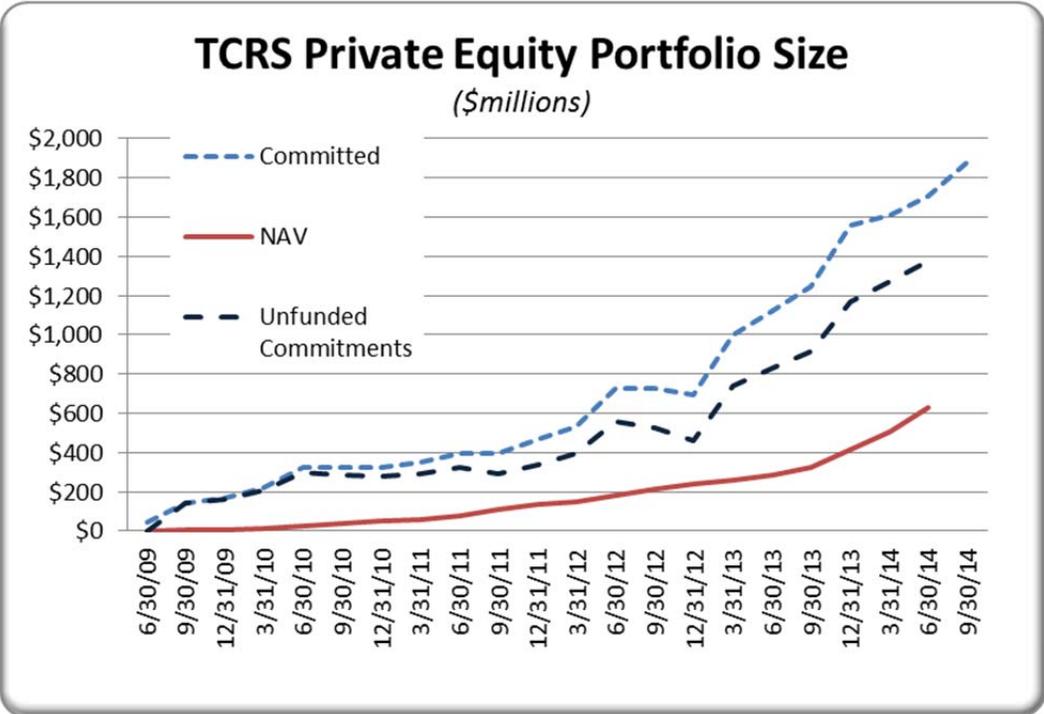
We have finalized our fiscal 4Q2014 results (the period ending 6/30/14), and are pleased to report that the program continues to demonstrate positive momentum. Buyouts, Venture Capital, Natural Resources, and Secondaries all contributed to strong gains in the quarter.

<i>Trailing IRR</i>	<b>Quarter</b>	<b>Trailing 1 Year</b>	<b>Since Inception</b>
Buyout	4.6%	25.0%	15.5%
Credit	2.0%	13.7%	13.4%
Venture	7.9%	32.5%	20.0%
Natural Resources	<u>7.1%</u>	<u>38.1%</u>	<u>15.7%</u>
<b>TCRS PE Overall</b>	<b>5.5%</b>	<b>25.6%</b>	<b>16.6%</b>
<i>S&amp;P 500 + 3%</i>	5.9%	27.0%	22.7%

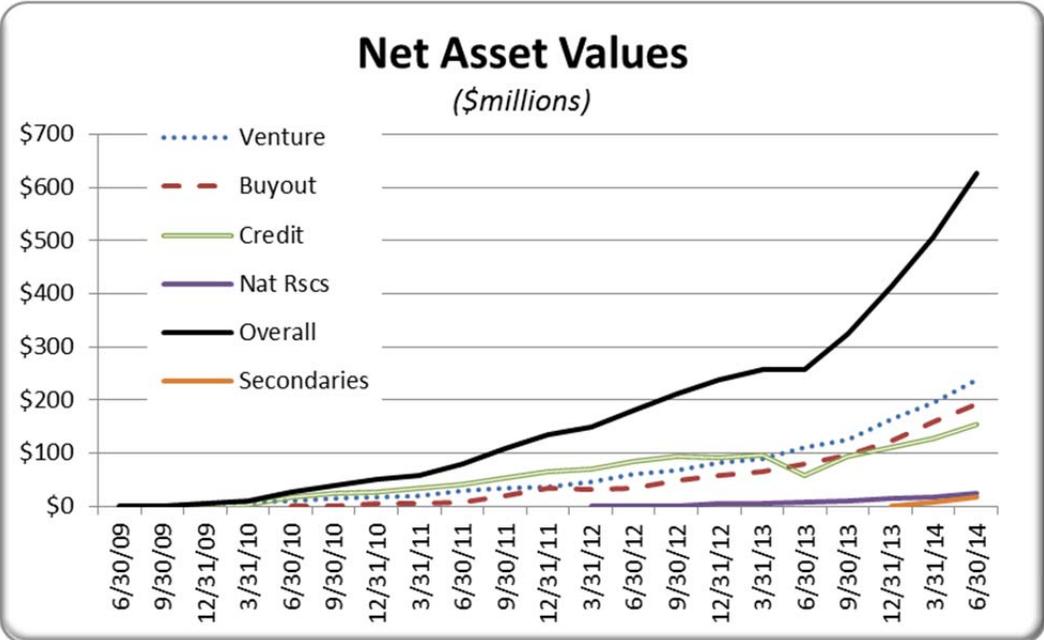
The following chart shows the allocations to the sub-asset classes based on commitments through the end of June, 2014. As of now, the portfolio is very close to its neutral target weights for each segment of the portfolio.



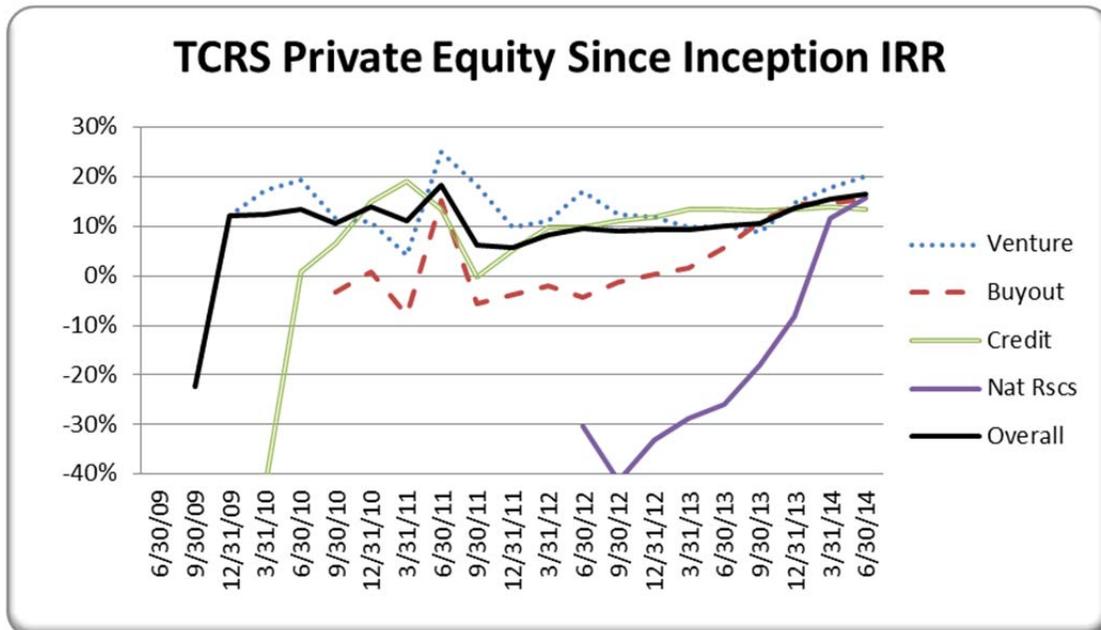
The next chart shows the overall size and growth of the TCRS portfolio in terms of commitments, unfunded commitments, and net asset value.



The chart below illustrates the net asset value of each subcategory since the program’s inception. As expected, NAVs have accelerated significantly as the portfolio begins to reflect gains from early commitments.



As shown in the chart below, the overall since-inception IRR continues to rise in tandem with private markets. All sub-sector allocations are contributing meaningfully to the portfolio at this point.



### Looking Forward

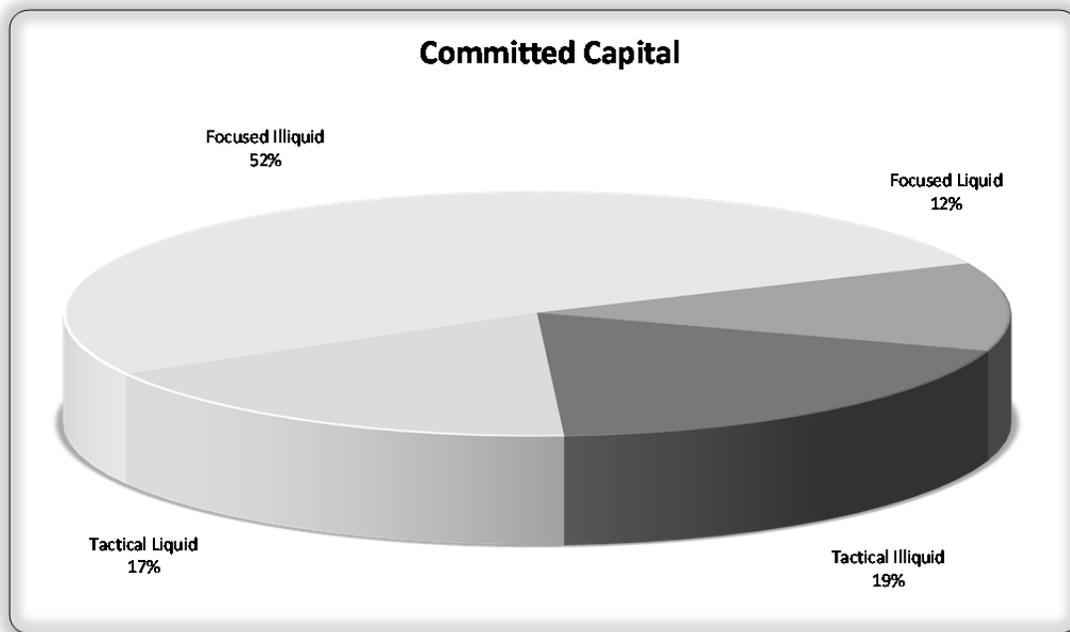
In the current and approaching quarters we continue to make progress on acquiring an internal Contact Resource Management (CRM) and Portfolio Management software package for managing the private equity program. We continue to evaluate whether it might makes sense to change the private equity performance benchmark. And, finally, we are working with Cambridge to formalize our pro forma pipeline for 2015.

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**Tennessee Consolidated Retirement System**  
Strategic Lending Portfolio  
Fiscal Q1 2015 Update  
Andrew Palmer, CFA

During fiscal 2014, Staff made significant progress in establishing the Strategic Lending Portfolio. The portfolio aims to opportunistically invest in both liquid and illiquid below-investment grade strategies focused on high yield bonds, leveraged loans, private debt, structured products and other unique cash flow-producing investments. Conceptually, Staff aims to capture market inefficiencies by balancing investments between focused and tactical managers that primarily specialize in liquid or illiquid investments.

As of September, TCRS had allocated \$1.7 billion with \$700 million being invested in seven separate accounts and four co-mingled funds. The seven separate accounts amount to \$1.4 billion of the allocated capital and can be cancelled on short notice and \$300 million is committed to four less liquid lock-up vehicles.



**Market Outlook**

During the fiscal first quarter of 2015, the liquid U.S. below-investment grade market showed signs of stress, posting total returns of -1.9% in the bond market

and -0.3% for the loan market. The increased volatility was driven by equity market weakness and a sell-off in oil and energy related companies. Credit availability remains high, as the pace of new issuance mirrored the robust 2013 experience. Default rates have ticked up as expected, driven by the TXU bankruptcy. It is important to note that the issuance of covenant light loans now represent over 50% of new loan issues and CCC bond issuance now mirrors the rate of issuance in 2007. Likewise, in the private debt market, leverage ratios have begun to increase and larger private borrowers are demanding covenant light deals. Since, the end of fiscal 2014, investors have removed capital from the high yield market, and underwriting standards for both private and public new issues in the U.S. and EU have tightened. That being said, default rates remain low and liquid markets are bouncing back from sell-offs.

While the liquid below-investment grade market is frothy in the U.S. and Europe, the story remains more constrained in the middle market U.S. private debt and European debt markets, where banking regulations have limited capital availability. In calendar 2014 through 2015, Staff believes investors can earn an illiquidity premium and more attractive risk-adjusted returns by investing in U.S. and EU middle market private debt.

### **Recent Developments**

During the first quarter of the fiscal year, TCRS committed \$75 million to one commingled fund focused on global mining project finance. At this time, a number of smaller potential commitments are being contemplated.

### **Future Activity**

Recently, Staff has focused more on portfolio monitoring, process, procedures, and other operating tasks. Over the next two quarters, the investment pace may increase.

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# TCRS Equity Derivative Report

## Domestic Stock Index Futures Roy Wellington, CFA

No Activity

# Domestic Fixed Income Derivatives Report

Andrew C. Palmer, CFA

## Domestic Fixed Income Derivatives Transaction Log

ACCT	SOLD	BOUGHT	NET	EXPIRATION	CONTRACT	TYPE	STRIKE
<b>Begin</b>							
			-2150		<b>CBOT 10 T-NOTE 14 Sep 0</b>		
			2275		CBOT T-BONDS 14 Sep 0		
			4169		<b>CBOT ULTRABOND 14 Sep 0</b>		
			2310		CBOT 5YR TNOTE 14 Sep 0		
<b>TRADE SUMMARY BY ACCOUNT</b>							
<b>5+ Gov't (1381)</b>							
	-	375	375		CBOT T-BONDS 14 Dec 0		
	375	-	(375)		CBOT T-BONDS 14 Sep 0		
	300	1,405	1,105		CBOT ULTRABOND 14 Dec 0		
	1,320	-	(1,320)		CBOT ULTRABOND 14 Sep 0		
<b>1-5 Gov't (1368)</b>							
	-	1,575	1,575		CBOT 10T-NOTE 14 Dec 0		
	2,150	-	(2,150)		CBOT 10T-NOTE 14 Sep 0		
	2,810	-	(2,810)		CBOT 5YR TNOTE 14 Dec 0		
	500	2,810	2,310		CBOT 5YR TNOTE 14 Sep 0		
	-	2,250	2,250		CBOT T-BONDS 14 Dec 0		
	2,250	250	(2,000)		CBOT T-BONDS 14 Sep 0		
	-	3,169	3,169		CBOT ULTRABOND 14 Dec 0		
	3,419	250	(3,169)		CBOT ULTRABOND 14 Sep 0		
<b>Overlay (1371)</b>							
<b>Corporate (1365)</b>							
	100	-	(100)		CBOT 10T-NOTE 14 Dec 0		
	100	100	-		CBOT 10T-NOTE 14 Sep 0		
	100	-	(100)		CBOT T-BONDS 14 Dec 0		
	-	100	100		CBOT T-BONDS 14 Sep 0		
	520	325	(195)		CBOT ULTRABOND 14 Dec 0		
	250	570	320		CBOT ULTRABOND 14 Sep 0		
<b>End</b>							
			1,475		CBOT 10T-NOTE 14 Dec 0		
			(2,810)		CBOT 5YR TNOTE 14 Dec 0		
			2,525		CBOT T-BONDS 14 Dec 0		
			4,079		CBOT ULTRABOND 14 Dec 0		

# Domestic Fixed Income Derivatives Report

Andrew C. Palmer, CFA

## Domestic Fixed Income Derivatives Transaction Log

### SUMMARY OF LAST QUARTER'S ACTIVITY:

#### **CONTRACTS IN USE:**

10-year Futures  
Long Bond Futures  
Ultra-Long Futures  
5-year Futures

#### **STRATEGIES:**

Used Ultra-Long, Long Bond, Ten-Year Futures and Five-Year Futures to manage interest rate exposures in the 1-5 Gov't portfolio and the Corporate portfolio.

Employed Ten-Year, Thirty-Year and Ultra Futures contracts in 5+ Gov't portfolio to replicate the duration profile of the index without using physical Treasury notes.

#### **EFFICACY:**

Futures positions performed as expected. The replication strategy produced returns similar to the LPF Government Index and the duration adjustment transactions produced the expected impact on interest rate sensitivity.

### PROPOSED STRATEGIES FOR CURRENT QUARTER:

Use Ultra-Long, Long Bond, Ten-Year Futures and Five-Year Futures to manage interest rate exposures in the 1-5 Gov't portfolio, the 5+ Government Portfolio and the Corporate portfolio.

Use Ultra-Long Bond Futures, Bond Futures, Five-Year Futures and Ten-Year Futures to offset the duration impact of a strategic overweight to the MBS portfolio and Credit portfolios.

Use Ultra-Long, Long Bond and Ten-Year Futures along with cash equivalents to replicate the duration profile of the LPF Government Index without using physical Treasury notes.

Employ Ultra-Long, Long Bond, Ten-Year and Five-Year Futures in the Corporate portfolio to offset the duration impact of timing differences in individual corporate bond trades.

Buying out-of-the-money calls or puts on long and intermediate Treasuries to hedge big movements in rates.

TCRS Currency Derivative Report

Currency Forwards Activity  
Albert Chang

2014 2nd Quarter Activity

NO ACTIVITY

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## Tennessee Consolidated Retirement System

Operations Update  
Fiscal Q1 2015 Update  
Tim McClure, CTP

Trading – There were 1,582 purchases totaling over 54.1 million shares with a market value of \$2.98 billion, and 1,593 sales totaling over 57.4 million shares with a market value of \$2.71 billion.

Trading costs analysis for the quarter indicated there was a cost of 15.2 basis points when comparing the cost of the trade to the entry price, and a cost of .5 basis points when comparing the cost of the trade to the daily VWAP. These costs are similar to those of the Abel Noser universe, which were 12.9 basis points and 1.4 basis points, respectively.

Operations – On September 2, 2014, State Street Bank replaced Northern Trust as the custodian bank for TCRS. Conversions with custodian banks are typically complicated, challenging, and time-consuming. The team did an excellent job staying on top of the transfer of securities, cash movement from both banks, and all other aspects of the conversion process. However, staff is still responding to items involved in the conversion process.

Securities Lending – The TCRS securities lending program began using Deutsche Bank as its securities lending agent on January 30, 2014. Deutsche Bank continues to employ an intrinsic value lending strategy which focuses on lower rebate rates, higher lending spreads and lower dependency on reinvestment earnings. As of September 30, 2014, TCRS earnings since inception totaled \$11.9 million (\$5 million of that was earned third quarter 2014). All cash collateral continues to be invested in indemnified repurchase agreements.

The average on loan balance since inception was \$3.4 billion with a spread of 59 bps (the average for third quarter was \$4.4 billion with spread of 51 bps). Emerging Market Equities attributed the most to overall earnings, making up 37% of the total (31% third quarter), followed by Domestic Equities at 32% (41% third quarter), Fixed Income at 17% (22% third quarter), and International Equities at 14% (6% third quarter).

The top 5 borrowing counterparties are JP Morgan representing 17% of the total on loan balance, SG Americas (15%), Morgan Stanley (12%), Citigroup (10%) and Credit Suisse (9%).

	<b>Jan 30, 2014 – Sep 30, 2014</b>	<b>Jul 1, 2014 – Sep 30, 2014</b>
TCRS Earnings	11.9M	5M
Lending	7.5M	2.7M
Reinvest	4.4M	2.3M
Avg On Loan	3.4B	4.4B
Spread	59 BPS	51 BPS
Emerging Market Equities	37%	31%
Domestic Equities	32%	41%
Fixed Income	17%	22%
International Equities	14%	6%

