

# **INVESTMENT REPORT**

## **TENNESSEE CONSOLIDATED RETIREMENT SYSTEM**

**Third Quarter  
Fiscal Year 2015 - 2016**

**January 1, 2016 – March 31, 2016**

**Prepared for:  
Board of Trustees**

**June 24, 2016**

## Investment Advisory Council

Pursuant to T.C.A. Section 8-37-108, the State Treasurer shall nominate, with the advice and consent of the Board of Trustees, the Investment Advisory Council, comprised of five senior investment professionals in the Tennessee investment community, who shall have at least five years professional experience as a portfolio manager, economist or an investment advisor in any field of which investments of TCRS funds are authorized. The term of appointment is for five years. Also, the treasurer may nominate two (2) additional members for the three year terms.

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> 5130 Ashland City Hwy Nashville, TN 37218 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

Third Quarter  
Fiscal Year 2015-2016

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# Performance Review

## March 2016

### Absolute comparison

- 1 quarter return of 2.3%
- 1 year return of -0.2% (median fund did -0.9%)
- 3 year return of 6.1% (median fund did 6.1%)
- 5 year return of 7.4% (median fund did 6.6%)
- 7 year return of 10.5% (median fund did 11.1%)

### Benchmark (relative) comparison

- Qtr return lagged allocation index by 1.0%
- 1 year return lagged allocation index by 0.6%
- 3 year return beat allocation index by 0.1%
- 5 year return beat allocation index by 0.4%

### Peer comparison

- 1 quarter return ranked at 7% (0% = best)
- 1 year return ranked at 36%
- 3 year return ranked at 52%
- 5 year return ranked at 13%
- 7 year return ranked at 67%

### Risk Adjusted Returns (Sharpe Ratio)

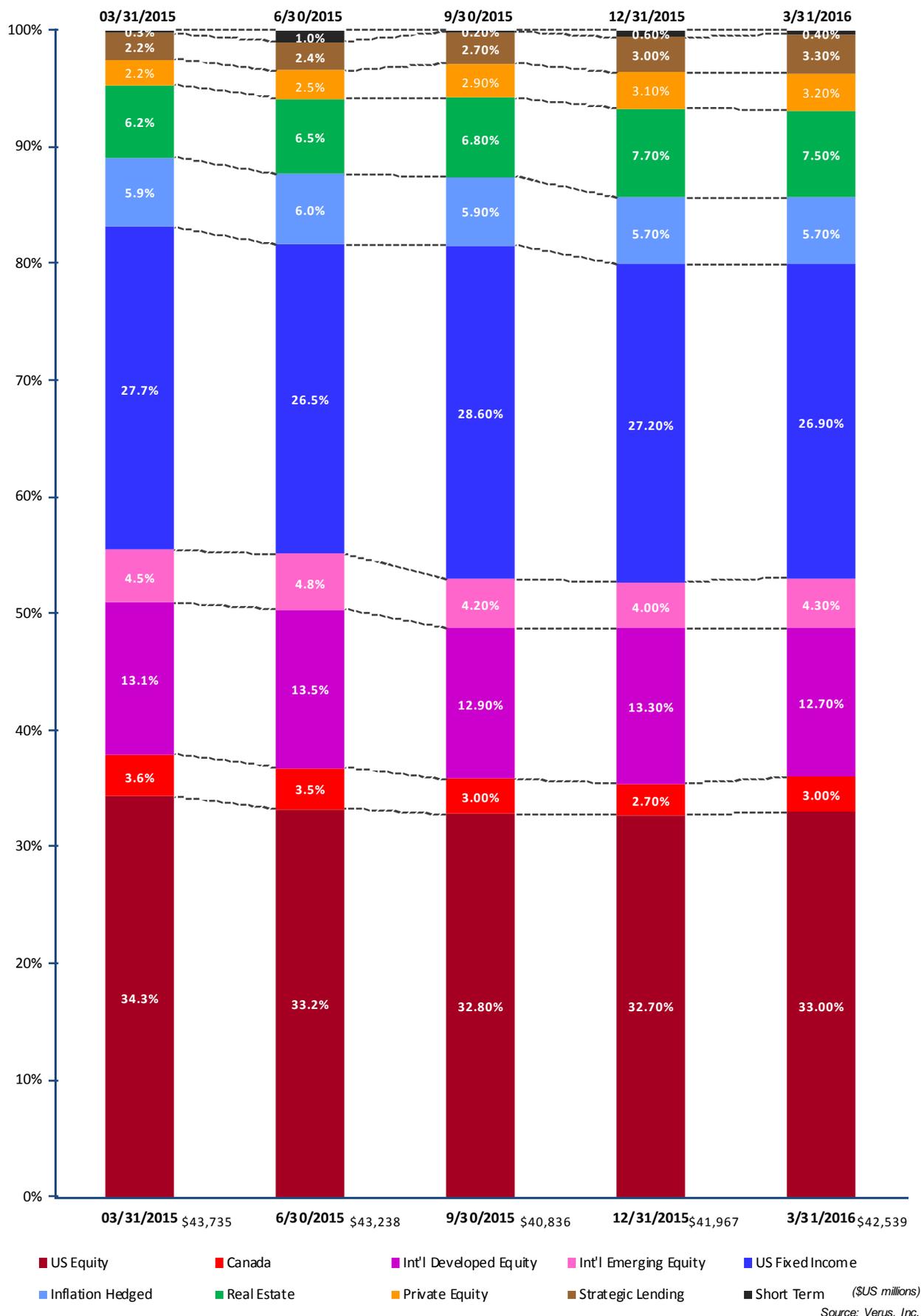
The Sharpe ratio measures the amount of return generated per unit of risk taken.

T CRS beat 53% of peers as measured via the Sharpe ratio for the trailing 3 year period and 85% for the trailing five year period.

# Key Initiatives

## March 2016

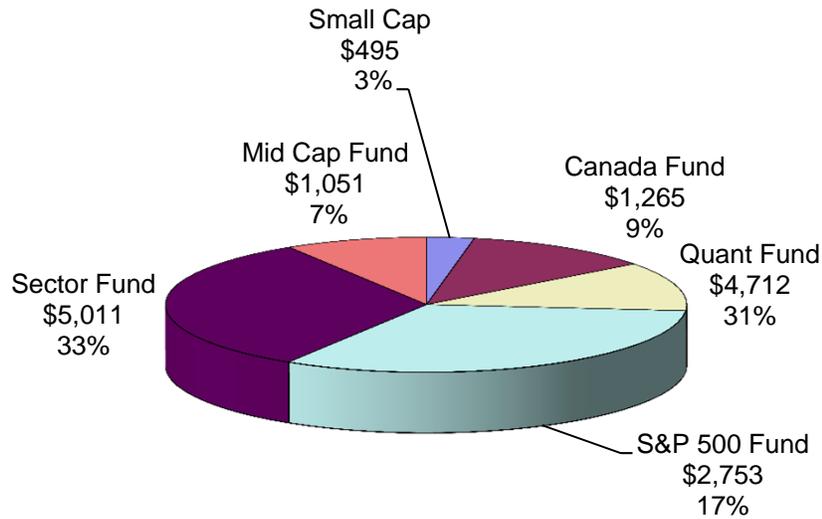
- **People**
  - Recruiting for a Fixed Income Portfolio Manager
  - Hired an Alternatives Investment Analyst
  - Recruiting for a Quantitative Analyst
  - Recruiting for a Strategic Lending Portfolio Manager
  
- **Process**
  - Verus operations review
  - Verus asset allocation study
  - International equity selection processes
  - Relationship management system implementation
  - Review custodial service requirements
  - Legislative initiatives
  - Policy, process, and guidelines adjustments
  
- **Portfolio**
  - Tactical allocation – underweight in Canada and EM
  - Strategic Allocation



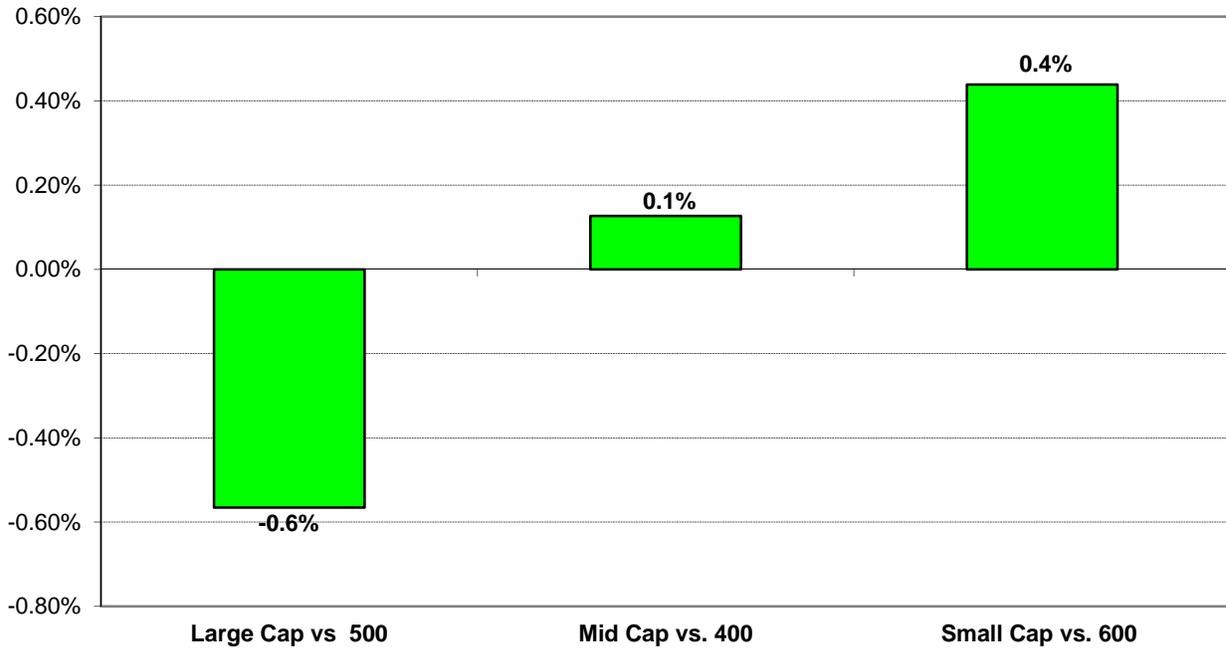
### Domestic Equity Portfolio Overview

Michael Keeler, CFA

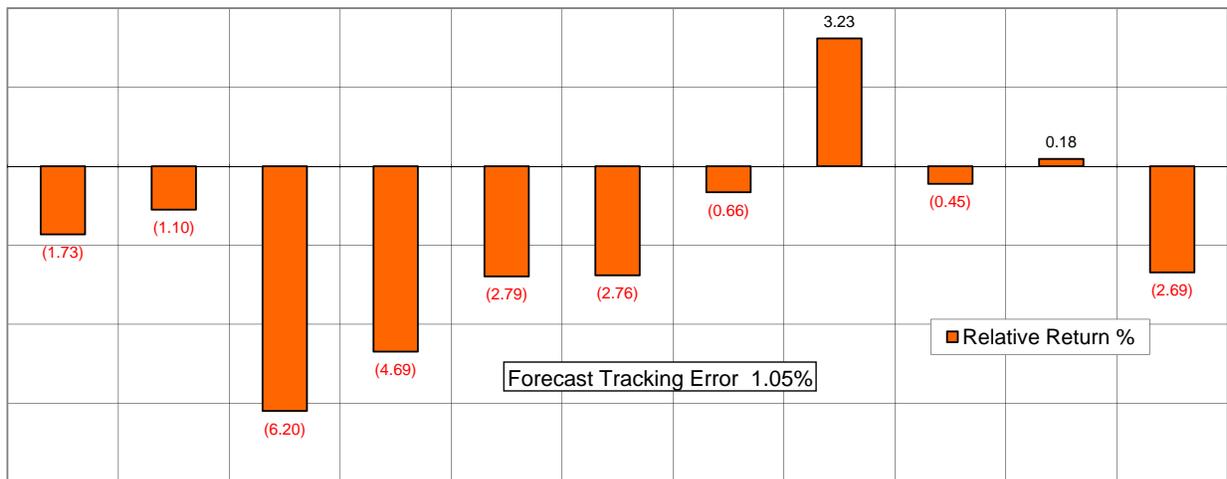
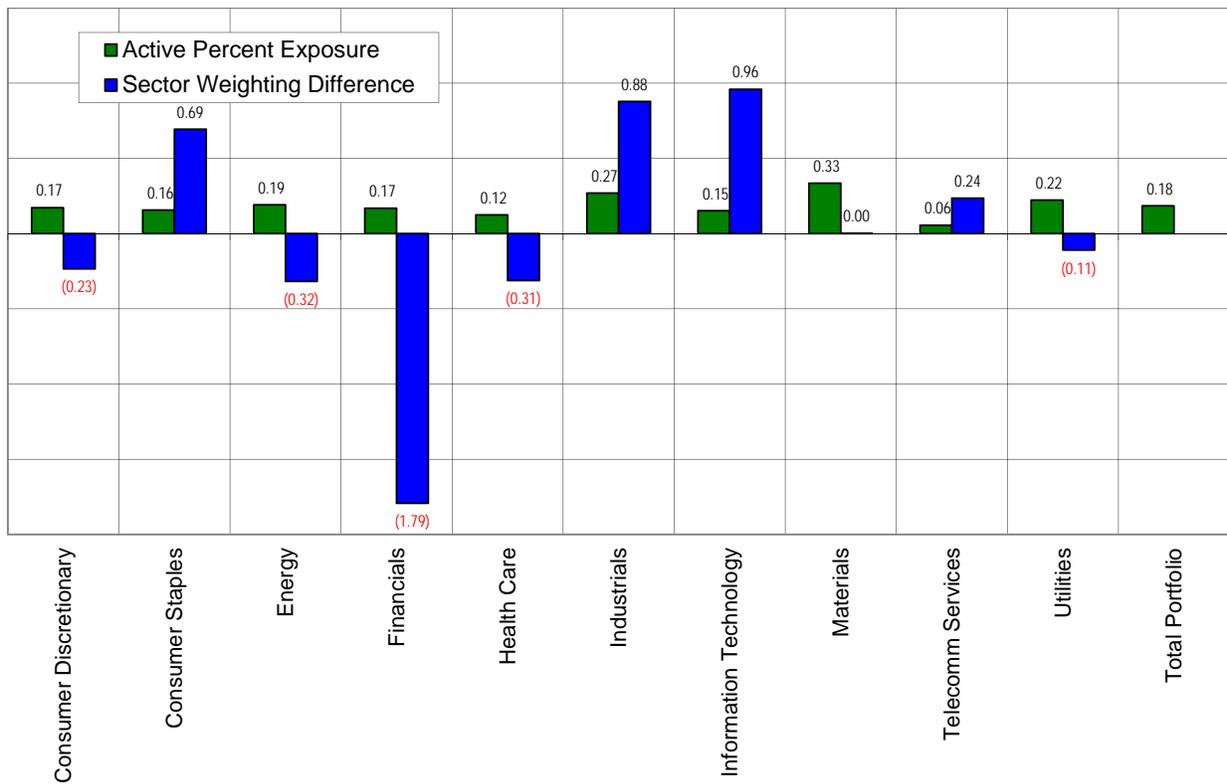
#### TCRS North American Equity Funds



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



Quant Fund  
Kushal Gupta, CFA, CAIA

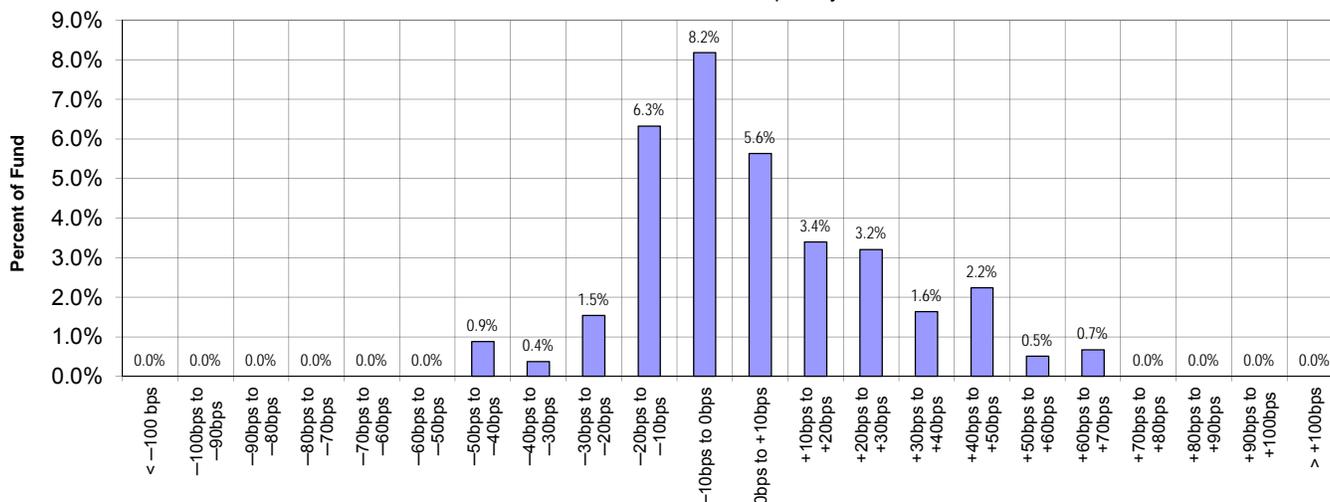


S&P 500 finished the first quarter of 2016 modestly higher, in spite of dropping over 10% mid-February. The far and away first quarter winner was the utilities sector with a total return of nearly 16%. This was clearly a case of investors seeking higher yields. The worst sector performer was the health care sector with 3.5% return.

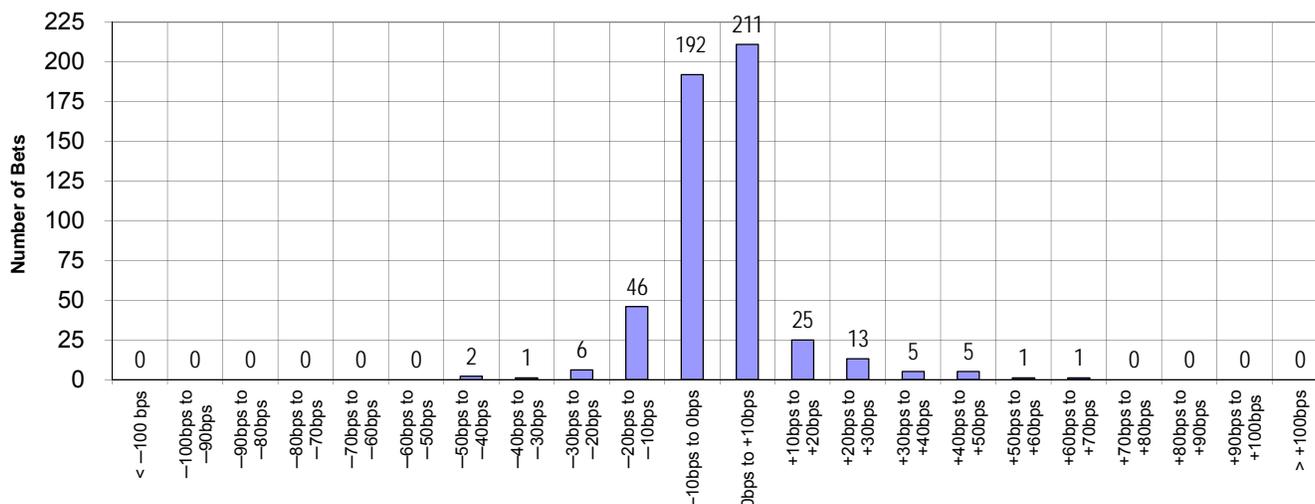
Despite better returns from the Russell value indices, the value factors of low price-to-earnings (P/E) and low price-to-book (P/B) generally continued to underperform in the quarter. The value indices did well because growth factors generally underperformed during this quarter. Higher-quality stocks generally did better in the quarter than lower-quality stocks. The yield on the 10-year Treasury bond fell 50 basis points during the quarter, and high-dividend stocks were strong performers.

Currently, the Quant Fund has a projected annualized tracking error of 1.05% and a projected beta of 1.01, both was reduced from the last quarter.

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



Number of Individual Stocks in Bet Size Bins

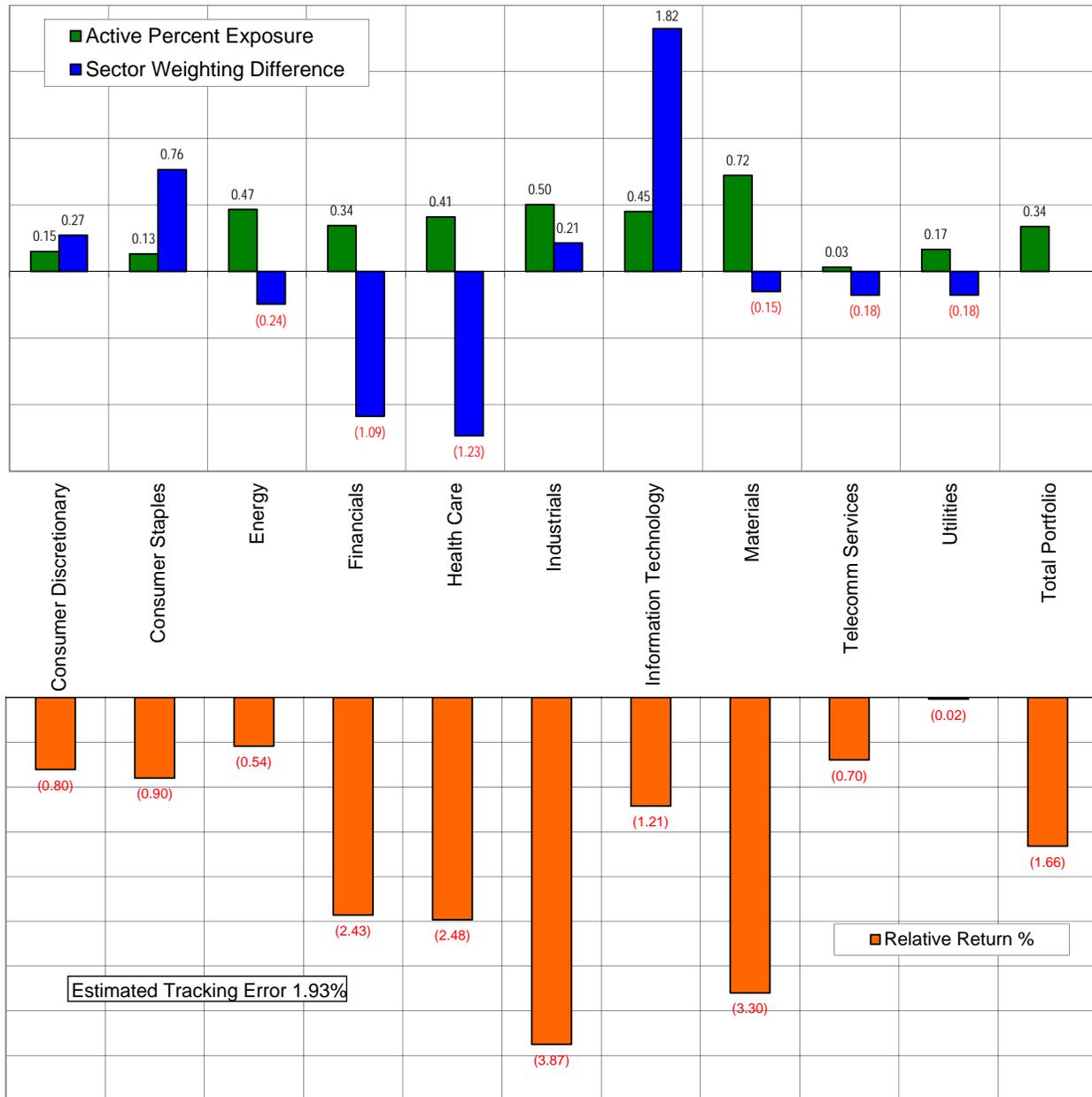


Largest Overweights by Stock in Fund

Ticker	Description	Bps Over
MO	Altria Group, Inc.	67
HON	Honeywell International Inc.	51
LUV	Southwest Airlines Co.	50
GILD	Gilead Sciences, Inc.	47
DAL	Delta Air Lines, Inc.	45
MPC	Marathon Petroleum Corporation	42
HD	Home Depot, Inc.	41
GOOG	Alphabet Inc. Class C	38
ATVI	Activision Blizzard, Inc.	34
NKE	NIKE, Inc. Class B	32
LYB	LyondellBasell Industries NV	30
LMT	Lockheed Martin Corporation	30
LRCX	Lam Research Corporation	29
SBUX	Starbucks Corporation	28
GOOGL	Alphabet Inc. Class A	26
PSA	Public Storage	25
NXPI	NXP Semiconductors NV	25
ABBV	AbbVie, Inc.	25
HPE	Hewlett Packard Enterprise Co.	25
VNQ	Vanguard REIT Index Fund	25

Largest Underweights by Stock in Fund

Ticker	Description	Bps Under
MRK	Merck & Co., Inc.	-46
QCOM	QUALCOMM Incorporated	-43
CVX	Chevron Corporation	-37
OXY	Occidental Petroleum Corporation	-29
EMC	EMC Corporation	-29
COP	ConocoPhillips	-28
BLK	BlackRock, Inc.	-24
ADP	Automatic Data Processing, Inc.	-23
DD	E. I. du Pont de Nemours and Comp	-21
WMT	Wal-Mart Stores, Inc.	-20
EMR	Emerson Electric Co.	-19
KHC	Kraft Heinz Company	-18
PX	Praxair, Inc.	-18
BA	Boeing Company	-18
TWX	Time Warner Inc.	-17
FOXA	Twenty-First Century Fox, Inc. Class	-17
CCI	Crown Castle International Corp	-16
APD	Air Products and Chemicals, Inc.	-16
BXLT	Baxalta, Inc.	-15
HUM	Humana Inc.	-15

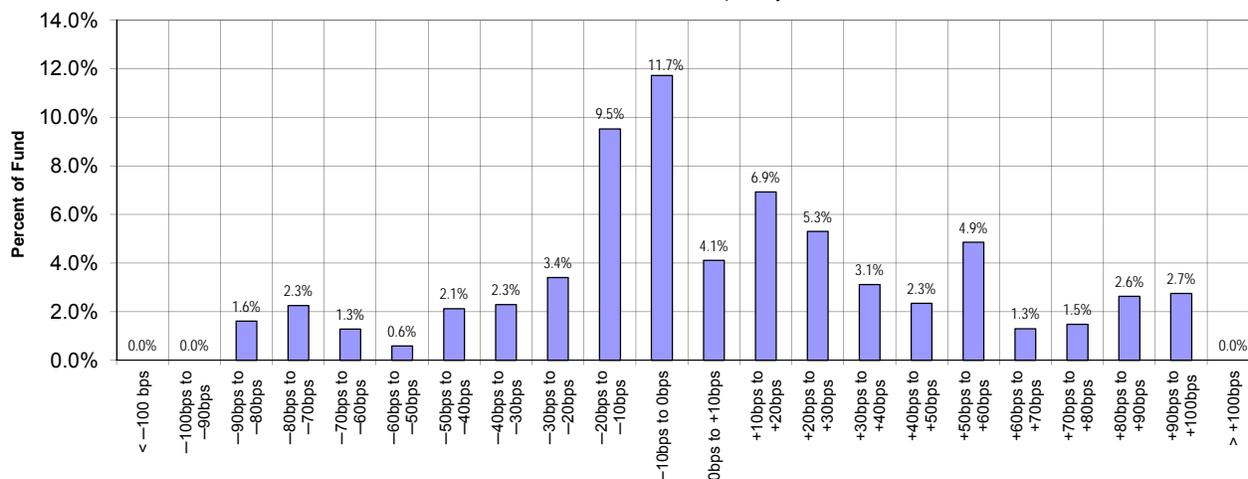


The Sector Fund is positioned for continued economic growth; this leads to the small overweight to Industrials and Information Technology. The economic growth view was challenged as the economy stalled in the first quarter of 2016. The Sector Fund responded by neutralizing its growth exposure with adds to Telecom and Consumer Staples and out of Industrials and Information Technology. Energy commodities bottomed in oversold territory as Chinese policy included a willingness to borrow to meet growth targets.

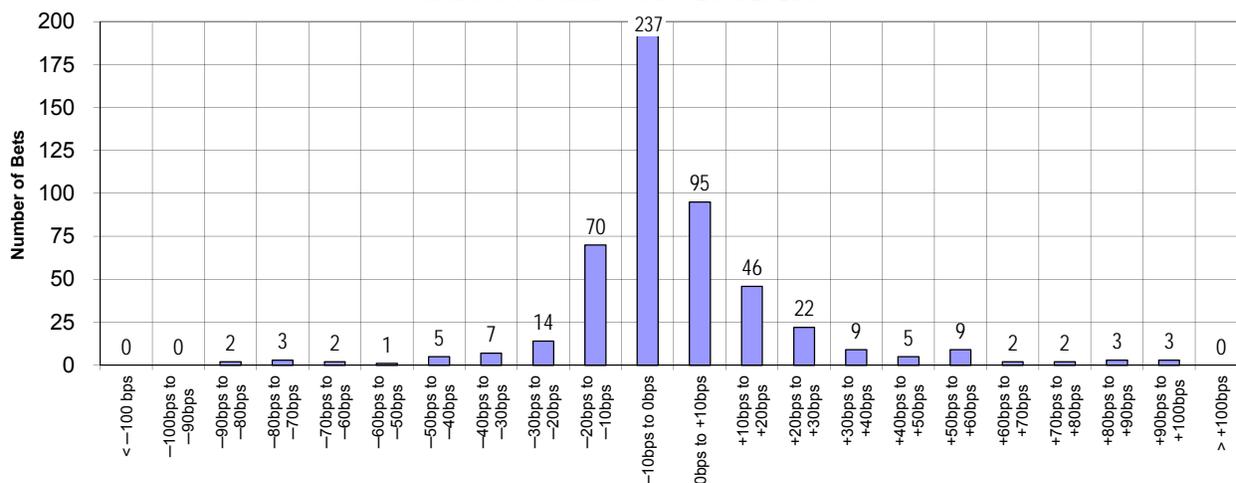
The Sector Fund continues to reassess its processes and positions. Eventually the market will express a sentiment other than fear, reward those businesses that grow through the cycle, and support value wherever it is found.

Some parts of the economy are not investing for growth: oil & gas, mining, many emerging markets. Capital goods companies like Caterpillar (not owned) continue to lose business and profits as customers file for bankruptcy. The stock rallied strongly as some of the bears were squeezed when Chinese GDP was reported. The continued deferral of interest rate hikes hurt our position in money center banks and lead others to park temporarily in Telecoms.

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



Number of Individual Stocks in Bet Size Bins



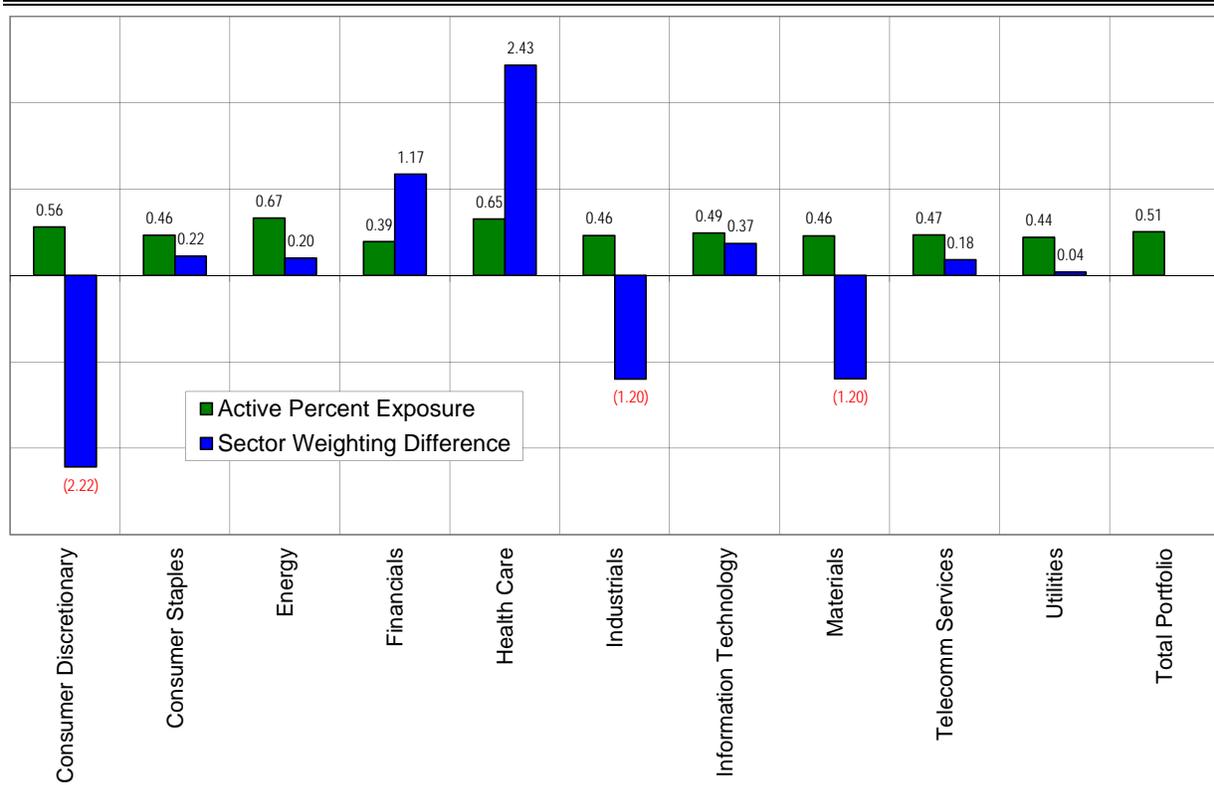
Largest Overweights by Stock in Fund

Ticker	Description	Bps Over Index Wt
NXPI	NXP Semiconductors NV	94
SWKS	Skyworks Solutions, Inc.	90
AAPL	Apple Inc.	90
SYNA	Synaptics Incorporated	88
SWN	Southwestern Energy Company	88
AVGO	Broadcom Limited	87
MU	Micron Technology, Inc.	74
QRVO	Qorvo, Inc.	74
CERN	Cerner Corporation	69
AMAT	Applied Materials, Inc.	62
LYB	LyondellBasell Industries NV	60
EQT	EQT Corporation	59
HON	Honeywell International Inc.	55
NOC	Northrop Grumman Corporation	53
UBNT	Ubiquiti Networks, Inc.	53
ITW	Illinois Tool Works Inc.	53
MMM	3M Company	51
LUV	Southwest Airlines Co.	50
SNDK	SanDisk Corporation	50
WFC	Wells Fargo & Company	50

Largest Underweights by Stock in Fund

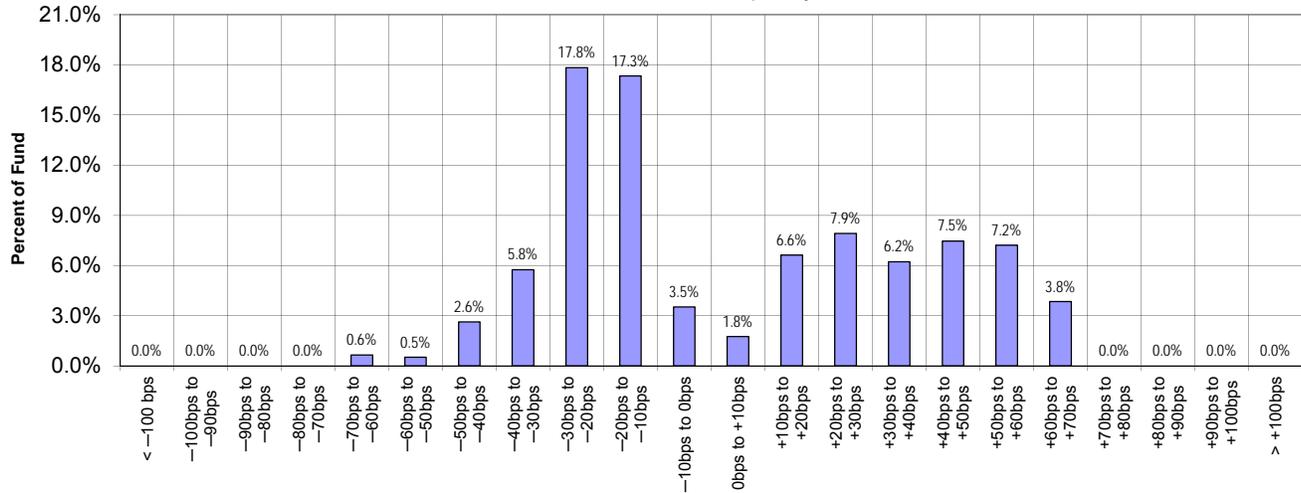
Ticker	Description	Bps Under
MSFT	Microsoft Corporation	-81
INTC	Intel Corporation	-81
CSCO	Cisco Systems, Inc.	-80
JNJ	Johnson & Johnson	-74
ORCL	Oracle Corporation	-72
MRK	Merck & Co., Inc.	-67
AMGN	Amgen Inc.	-63
CVX	Chevron Corporation	-60
IBM	International Business Machines Co	-44
BA	Boeing Company	-44
QCOM	QUALCOMM Incorporated	-43
BRK.B	Berkshire Hathaway Inc. Class B	-42
ACN	Accenture Plc	-40
PFE	Pfizer Inc.	-39
ABT	Abbott Laboratories	-34
TXN	Texas Instruments Incorporated	-32
DHR	Danaher Corporation	-32
XOM	Exxon Mobil Corporation	-31
DD	E. I. du Pont de Nemours and Comp	-31
CB	Chubb Limited	-31

Mid Cap Fund  
Mike Keeler, CFA

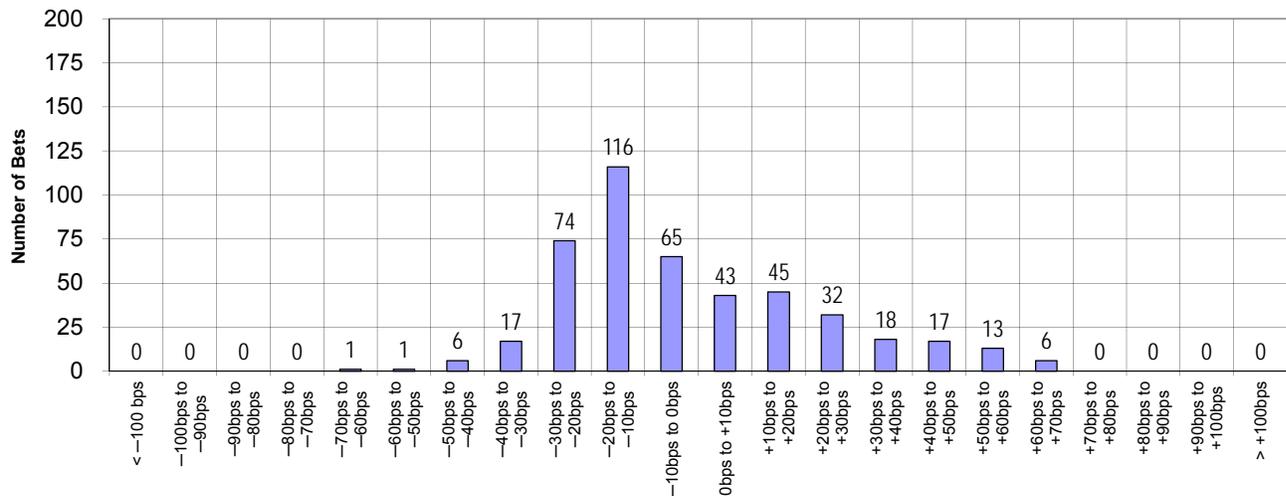


The Mid Cap Fund trailed the S & P Mid Cap 400 during the period as good stock selection in the Capital Goods and Technology sectors was overwhelmed by the negative effect of an underweight position and poor stock selection in the Materials sector as well as stock selection underperformance in the Consumer Discretionary sector. Industry Sector diversification accounted for roughly 40% of the performance shortfall vs. the benchmark while stock selection comprised the remaining portion.

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



Number of Individual Stocks in Bet Size Bins



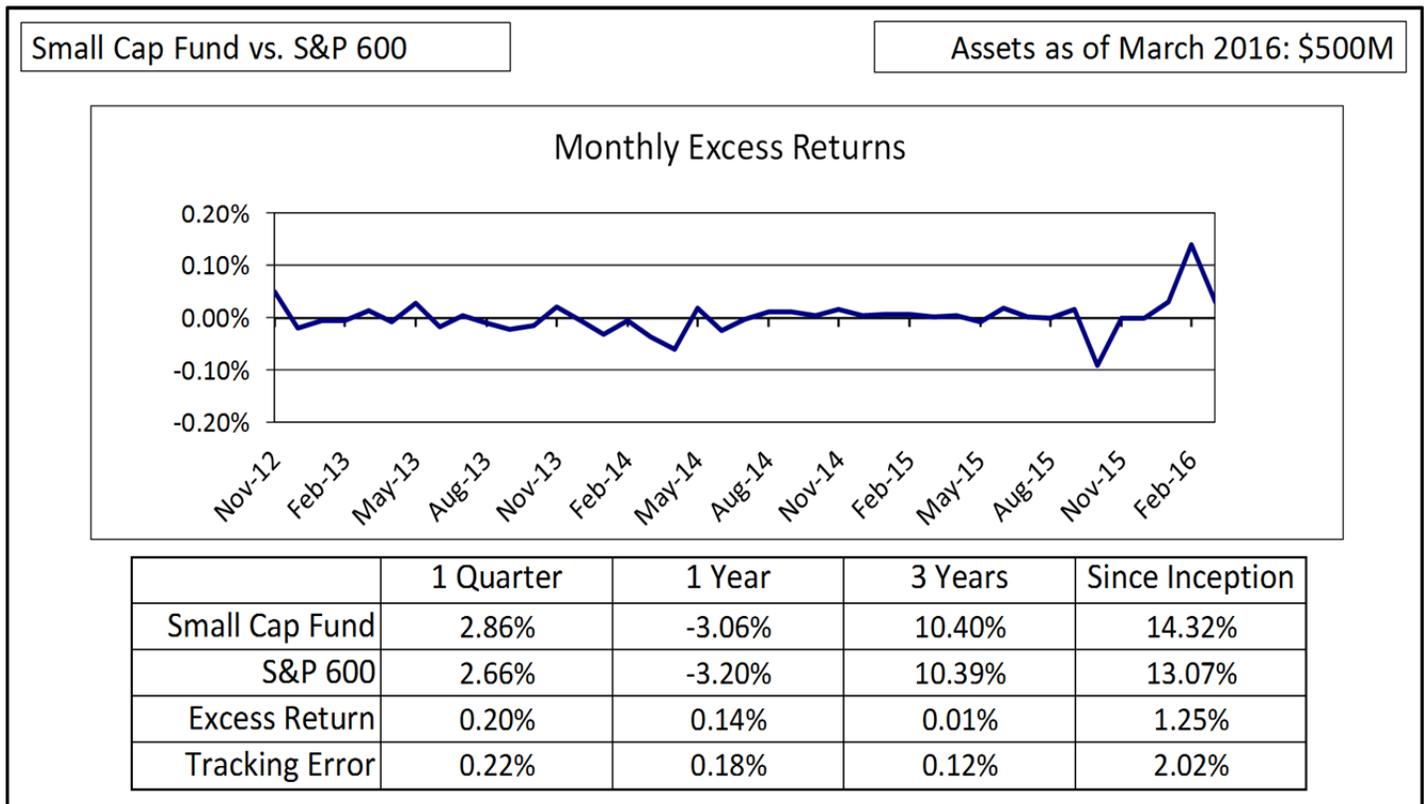
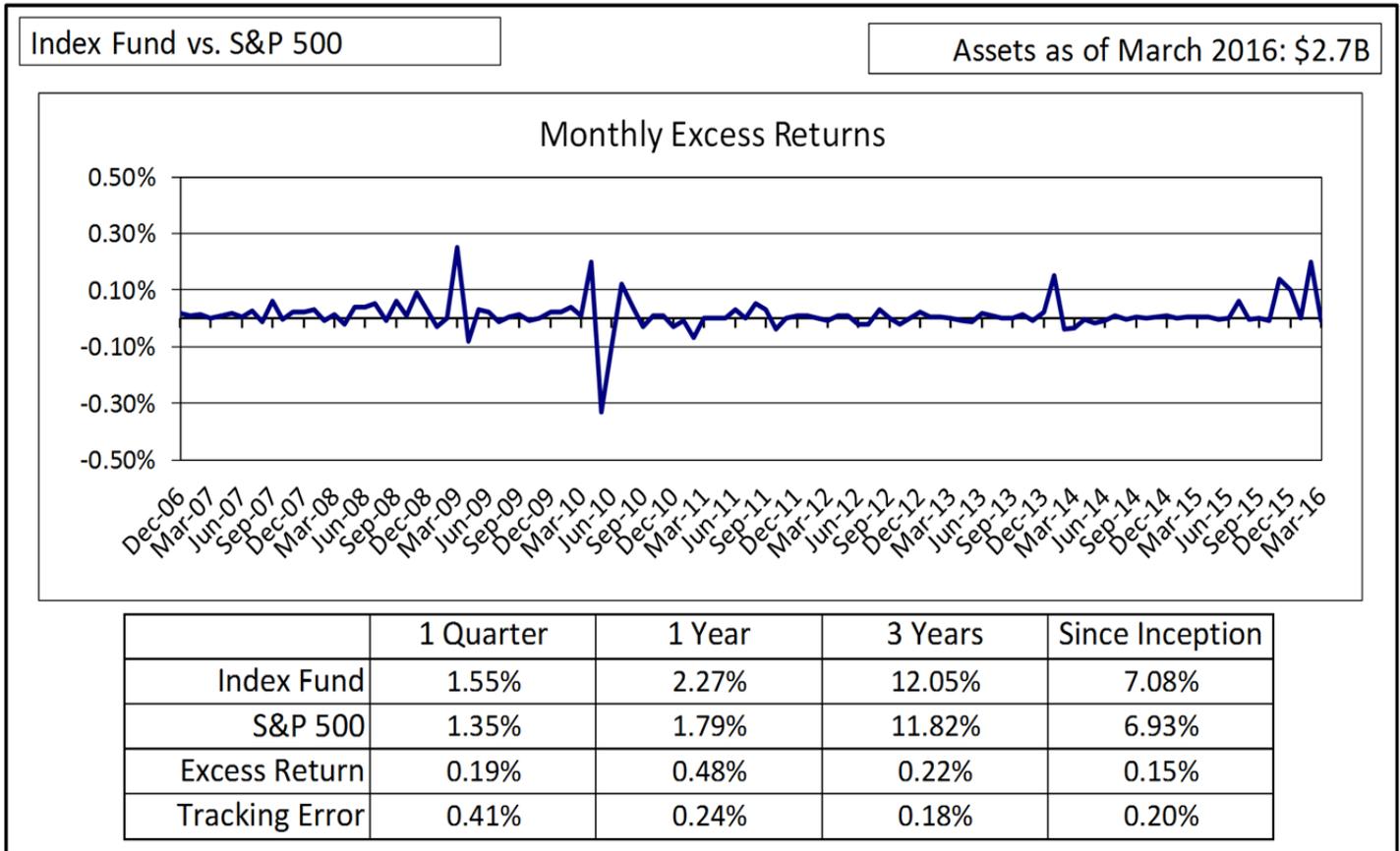
Largest Overweights by Stock in Fund

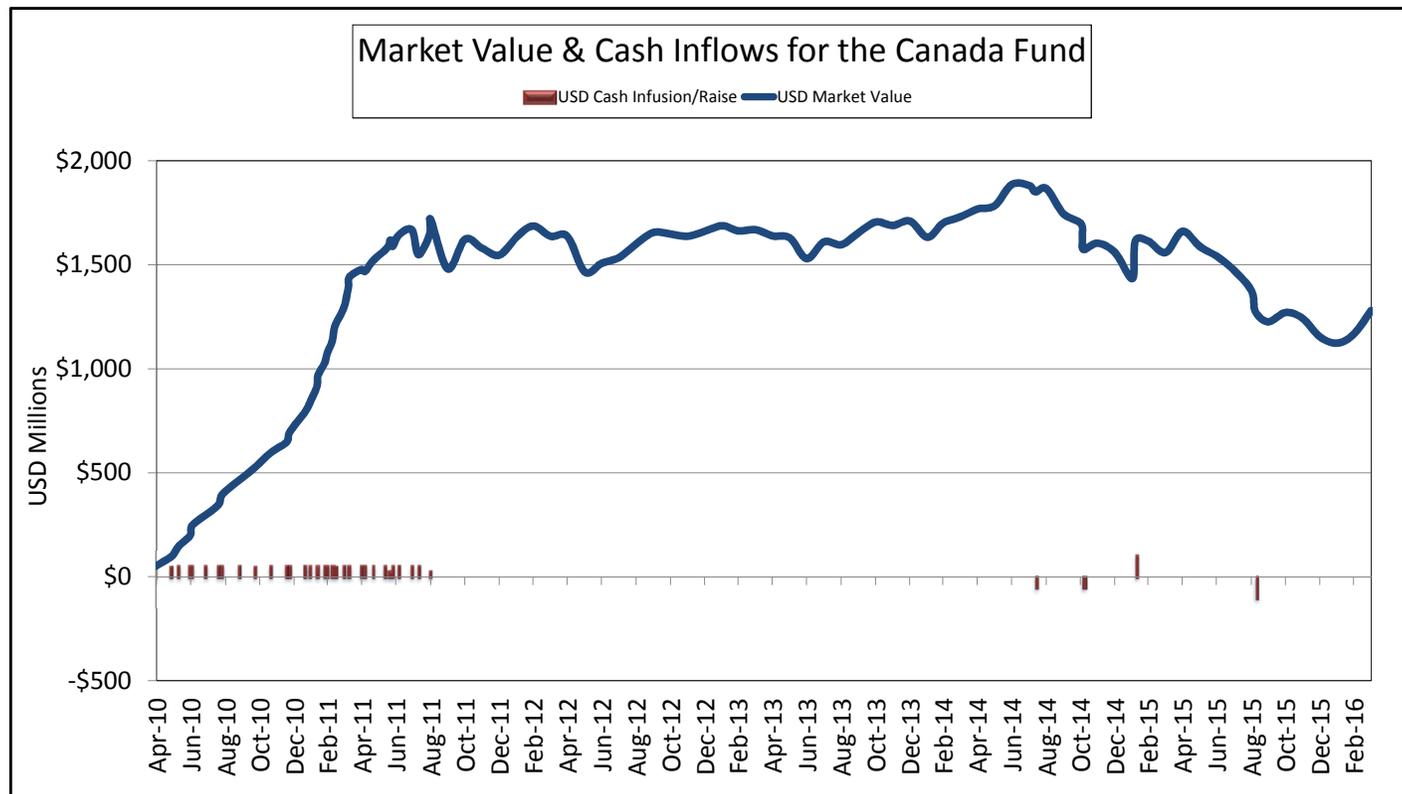
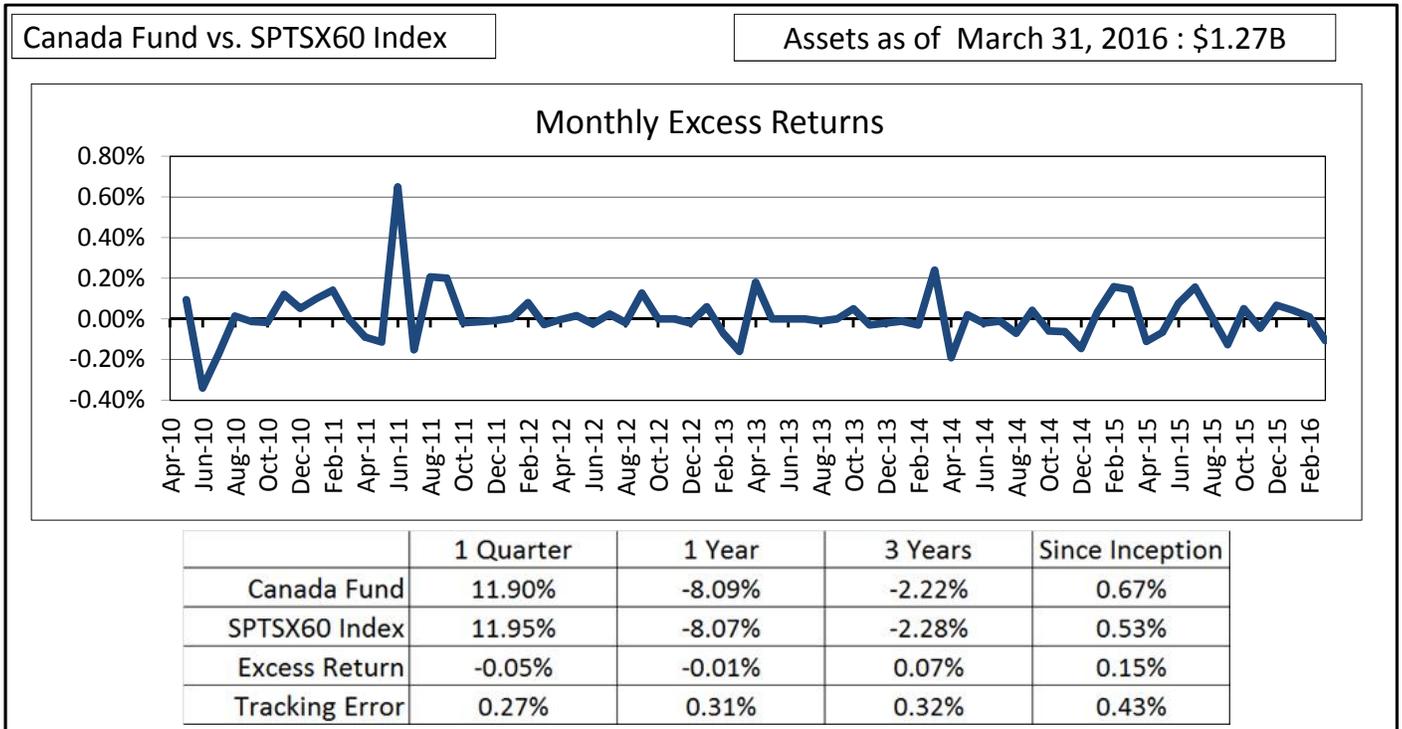
Ticker	Description	Bps Over
COHR	Coherent, Inc.	149
HOLX	Hologic, Inc.	115
CNC	Centene Corporation	84
HBI	Hanesbrands Inc.	78
MSCI	MSCI Inc.	77
LDOS	Leidos Holdings, Inc.	74
WAB	Westinghouse Air Brake Technolog	71
NDAQ	Nasdaq, Inc.	70
JAH	Jarden Corporation	66
AIZ	Assurant, Inc.	66
HII	Huntington Ingalls Industries, Inc.	65
CRL	Charles River Laboratories Internati	63
EXR	Extra Space Storage Inc.	62
UNM	Unum Group	62
SIGI	Selective Insurance Group, Inc.	59
CHD	Church & Dwight Co., Inc.	59
ALK	Alaska Air Group, Inc.	59
TSS	Total System Services, Inc.	59
UTHR	United Therapeutics Corporation	58
AFG	American Financial Group, Inc.	58

Largest Underweights by Stock in Fund

Ticker	Description	Bps Under
AYI	Acuity Brands, Inc.	-65
LKQ	LKQ Corporation	-51
ALB	Albemarle Corporation	-49
DPZ	Domino's Pizza, Inc.	-44
TFX	Teleflex Incorporated	-44
NVR	NVR, Inc.	-43
RPM	RPM International Inc.	-43
STE	STERIS Plc	-41
MAN	ManpowerGroup Inc.	-40
LNT	Alliant Energy Corporation	-39
ULTI	Ultimate Software Group, Inc.	-38
CRI	Carter's, Inc.	-37
IM	Ingram Micro Inc. Class A	-36
OA	Orbital ATK, Inc.	-35
ATR	Aptargroup, Inc.	-33
BMS	Bemis Company, Inc.	-33
SNPS	Synopsys, Inc.	-33
SCI	Service Corporation International	-33
CSC	Computer Sciences Corporation	-32
PNRA	Panera Bread Company Class A	-32

Passive Domestic Equity Funds  
Michael Giggie & Chris Denny



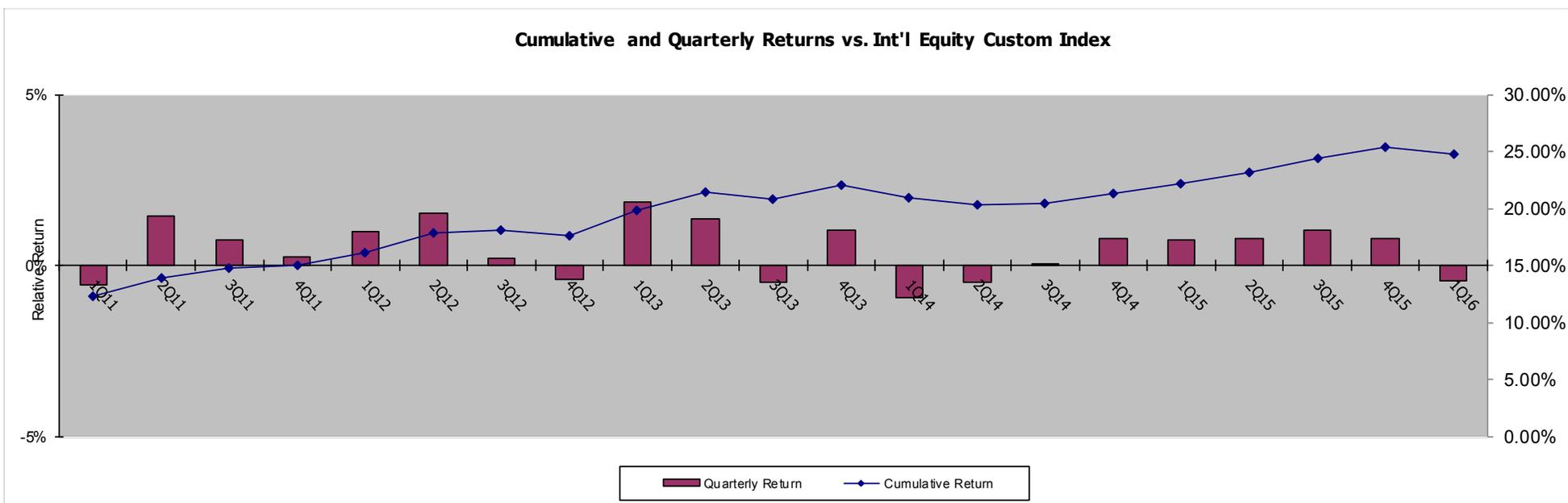


# International Equity

## Manager Performance Comparison

Period Ending: March 31, 2016

Manager Returns For The Quarter				Manager Returns For Five Years			
Manager	Manager Return	Benchmark	Benchmark Return	Manager	Manager Return	Benchmark	Benchmark Return
American Century	-2.54	MSCI EAFE Small Cap	-0.60	American Century	8.58	MSCI EAFE Small Cap	5.58
Baring Asset Mgmt	-3.76	MSCI EAFE	-3.01	Baring Asset Mgmt	3.25	MSCI EAFE	2.29
Emerging Market ETF	10.28	MSCI Emg Mkts Net Custom	9.32	Emerging Market ETF		MSCI Emg Mkts Net Custom	
FIAM	-0.41	MSCI EAFE Small Cap	-0.60	FIAM	7.47	MSCI EAFE Small Cap	5.58
GE Asset Mgmt	-2.59	MSCI Europe	-2.51	GE Asset Mgmt	2.50	MSCI Europe	2.07
Marathon	-3.30	MSCI EAFE net	-3.01	Marathon	6.02	MSCI EAFE net	2.29
Pacific Indexed Portfolio <sup>1</sup>	-4.70	MSCI Pacific net	-3.79	Pacific Indexed Portfolio <sup>1</sup>	2.57	MSCI Pacific net	2.81
PanAgora Asset Mgmt	-3.85	MSCI EAFE	-3.01	PanAgora Asset Mgmt	4.97	MSCI EAFE	2.29
TT International	-5.63	MSCI EAFE	-3.01	TT International	4.26	MSCI EAFE	2.29
Walter Scott	0.86	MSCI EAFE net <sup>2</sup>	-3.01	Walter Scott	4.98	MSCI EAFE net <sup>2</sup>	2.29
<b>International Equity</b>	<b>0.11</b>	<b>Int'l Equity Custom<sup>3</sup></b>	<b>0.57</b>	<b>International Equity</b>	<b>3.30</b>	<b>Int'l Equity Custom<sup>3</sup></b>	<b>1.07</b>



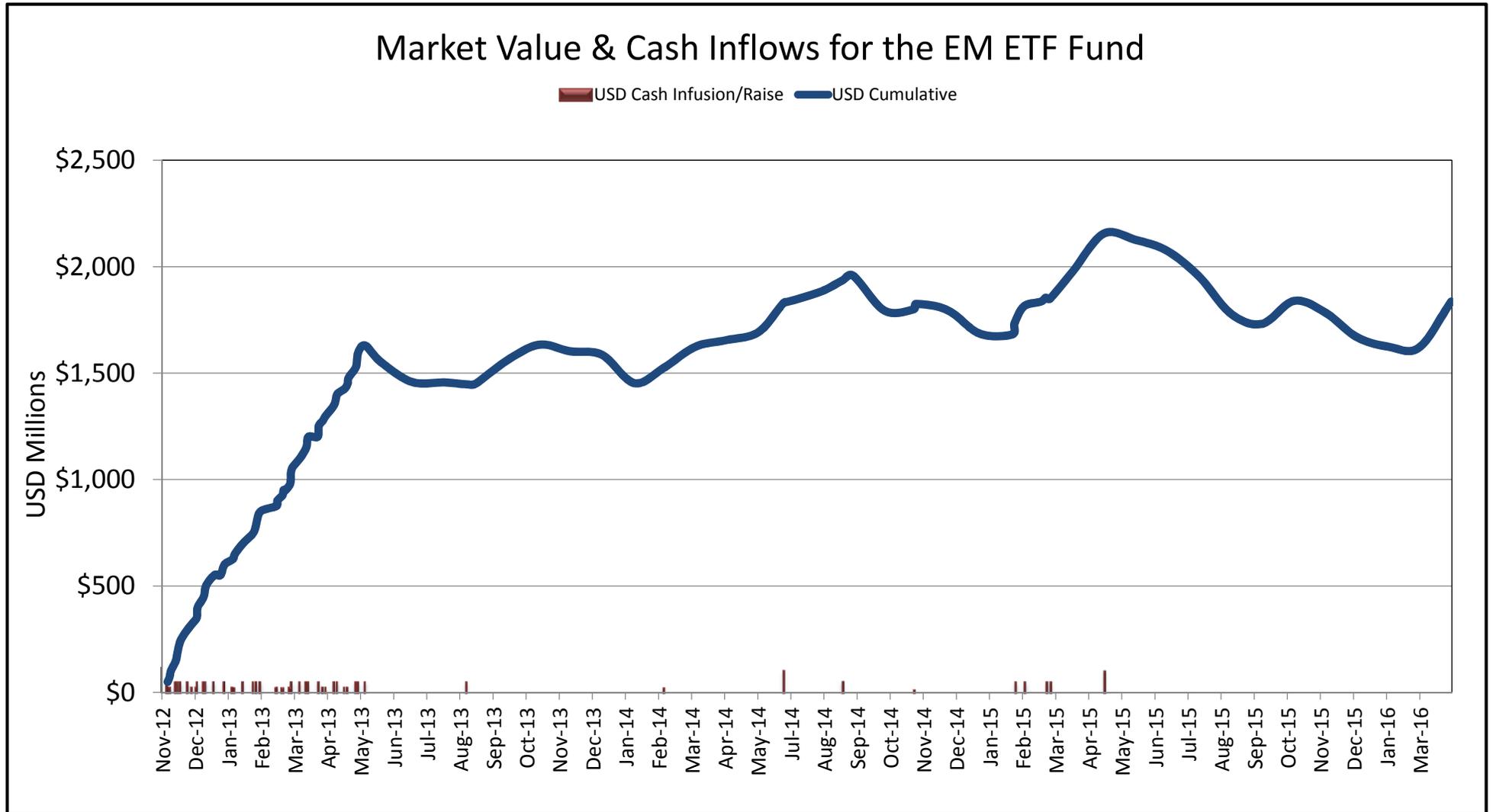
<sup>1</sup> Effective as of 9/4/10, internally managed by TCRS staff. Amundi Pacific terminated.

<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.

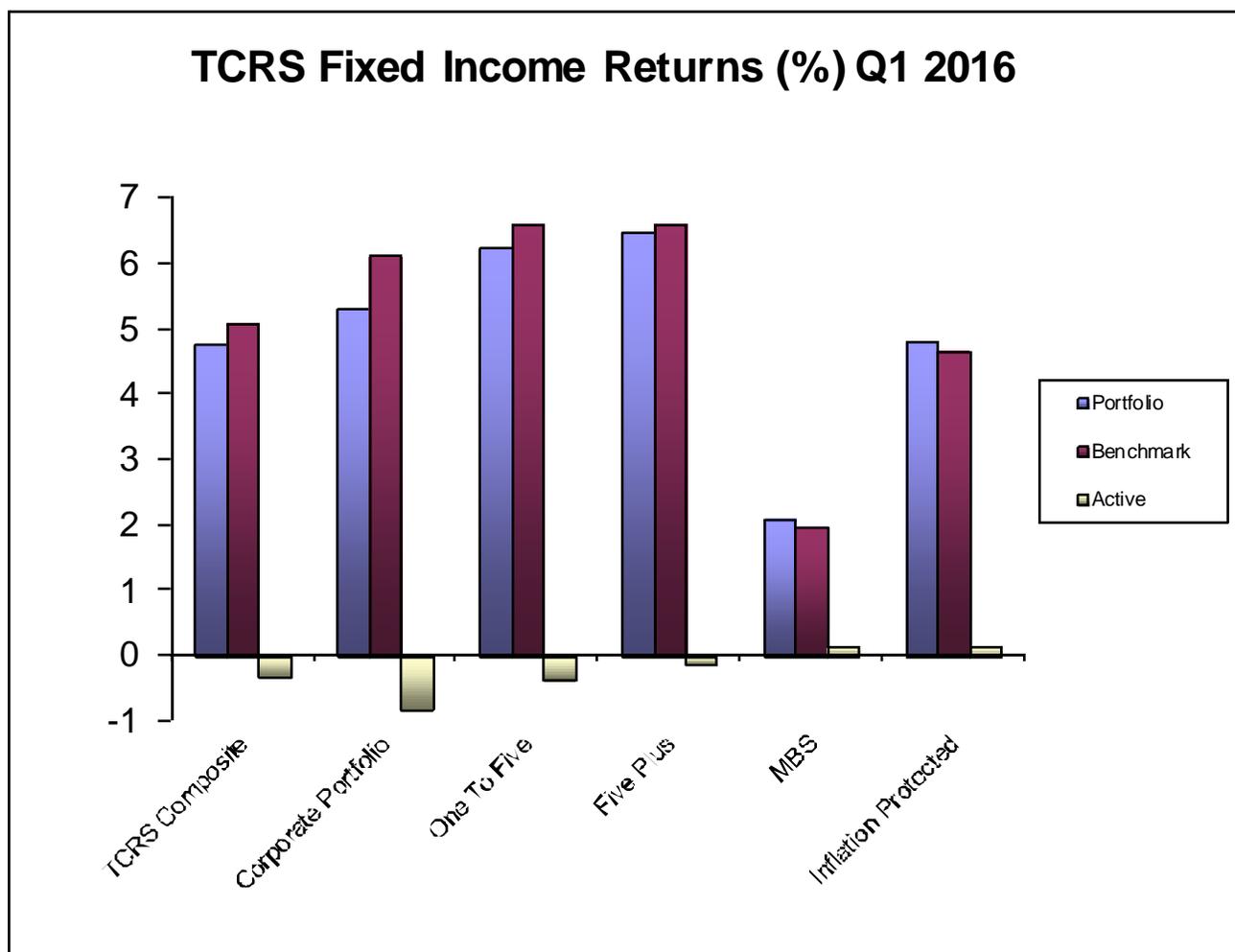
Emerging Markets ETF Fund  
Kushal Gupta, CFA, CAIA

Assets as of March 31, 2016: \$1.83B

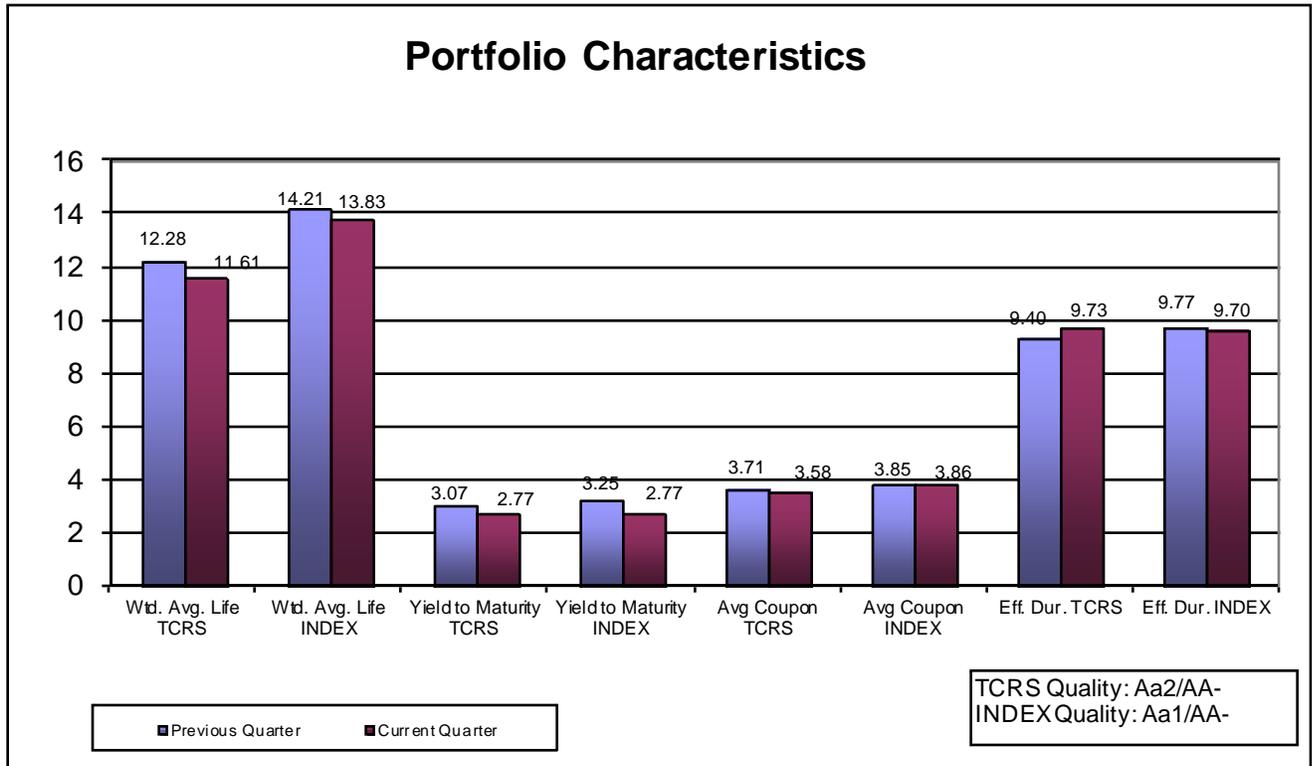


Thomas Kim, CFA

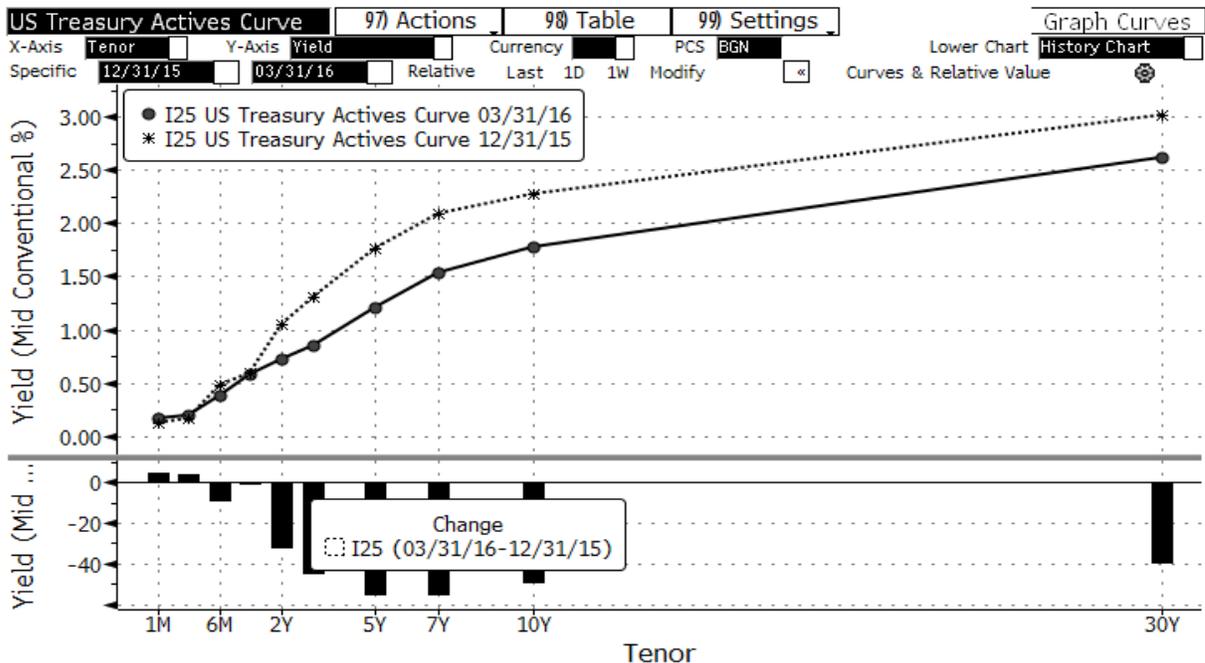
Portfolio	Value (Yield Book) (\$MMs)	Portfolio Return	Benchmark Return	Active Return
TCRS Domestic Fixed Income Composite	\$11,487	4.77	5.09	(0.32)
Corporate Portfolio	\$3,348	5.31	6.13	(0.82)
Government One To Five Years	\$2,245	6.24	6.61	(0.37)
Government Five Plus Years	\$2,136	6.48	6.61	(0.13)
Mortgage Portfolio	\$3,709	2.10	1.97	0.14
TCRS Inflation Protected Securities	\$2,433	4.80	4.67	0.13



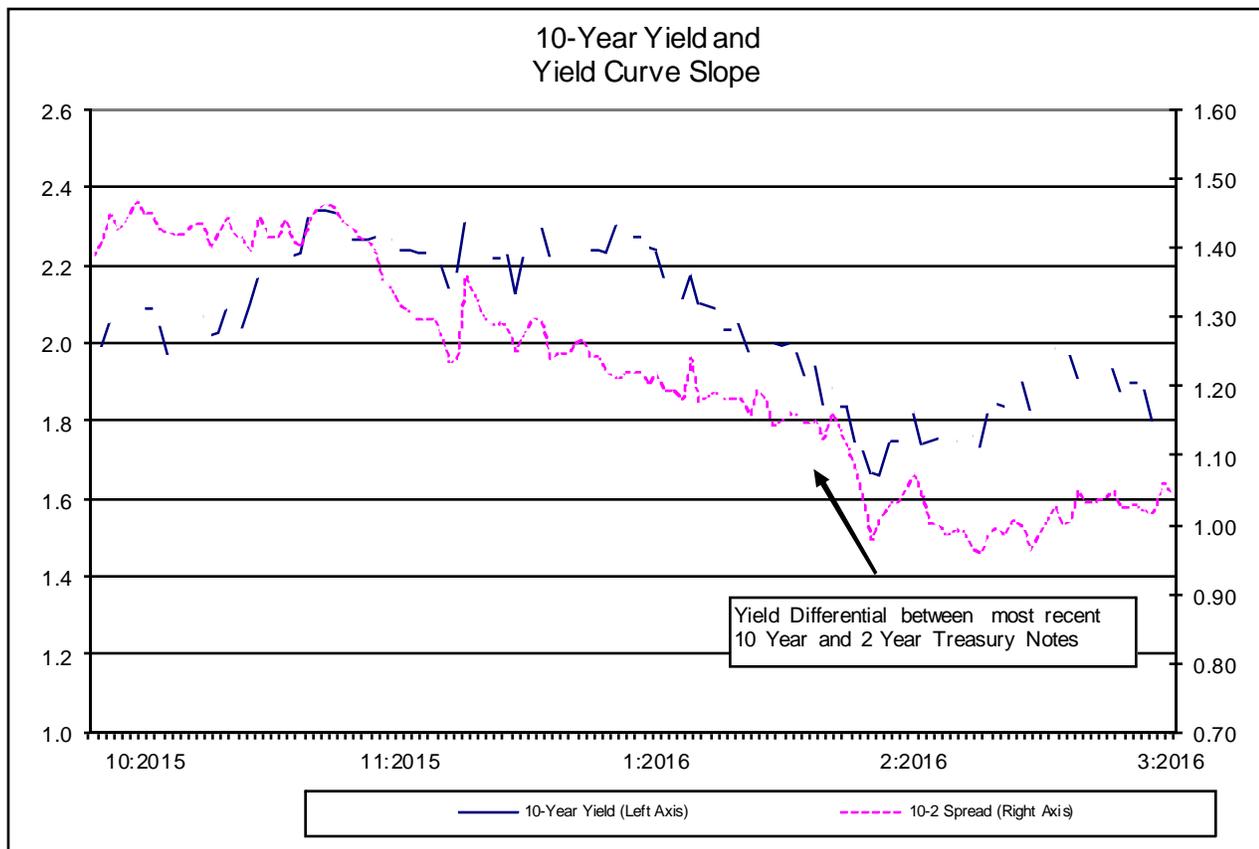
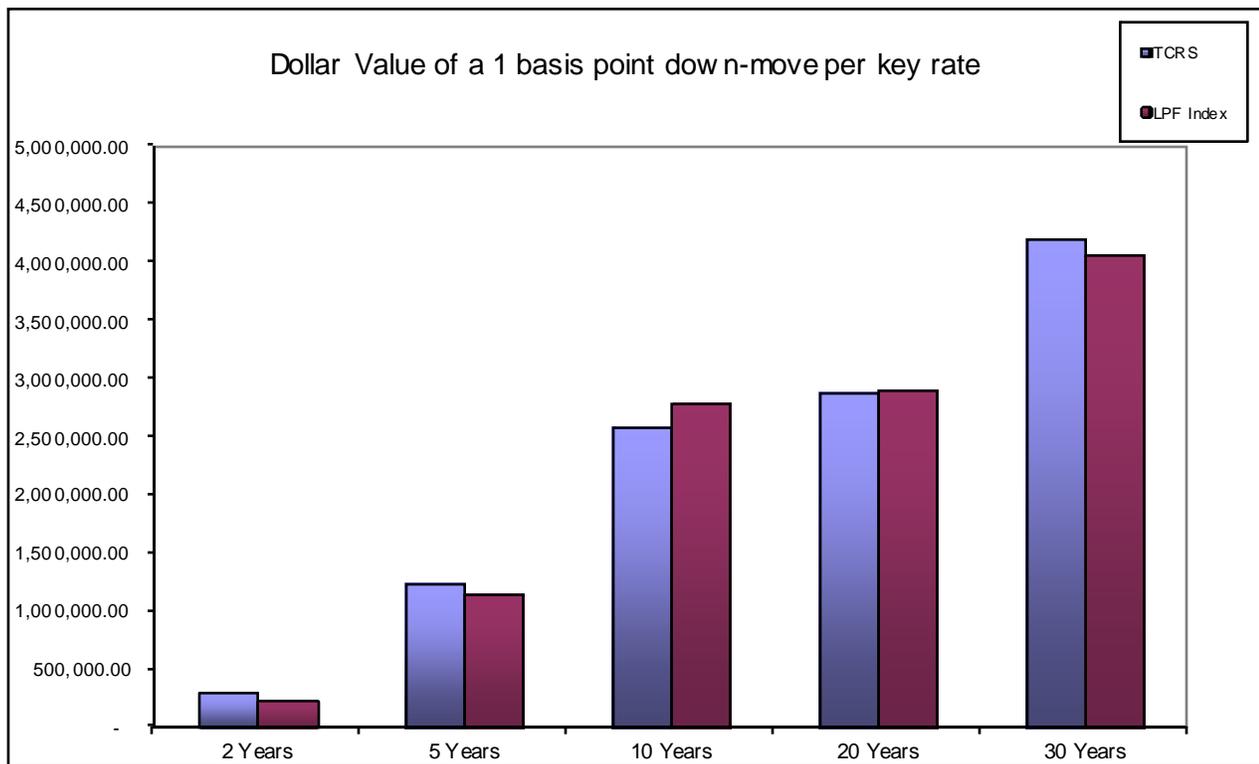
*We are close to the benchmark duration due to volatility in the market*



*The Yield Curve flattened*



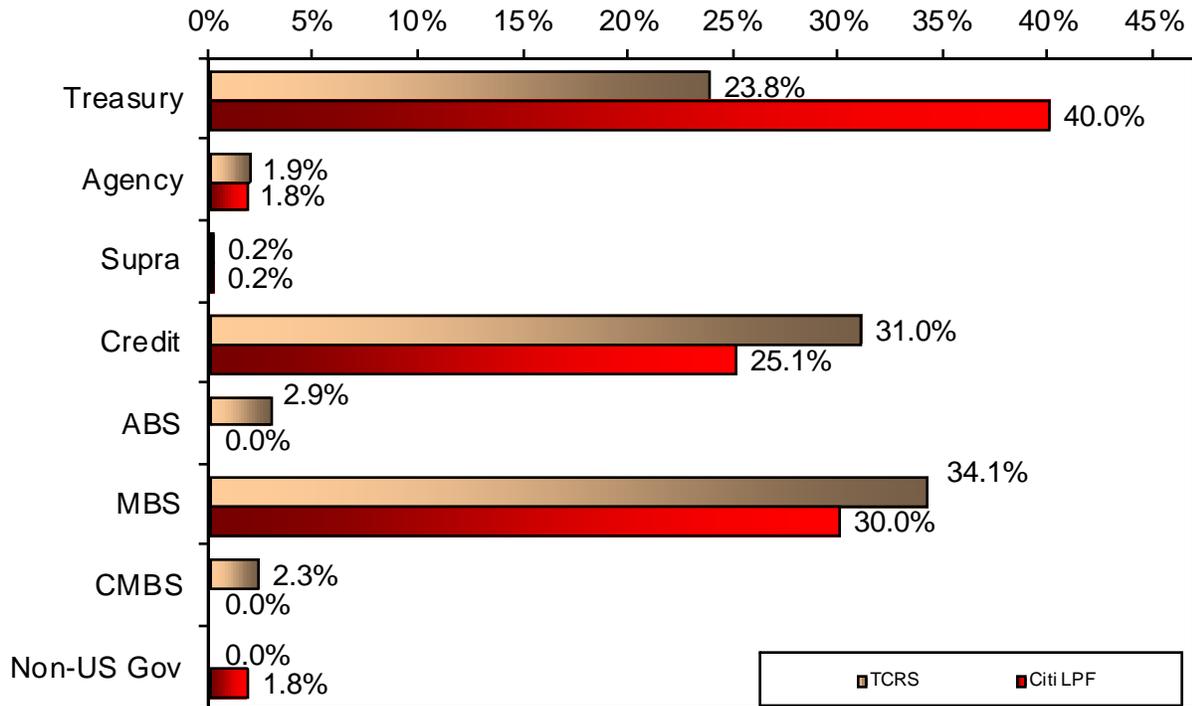
*Curve positioning reflects our view that the risk of further hikes of the overnight interest rate by the Federal Reserve in 2016 has diminished, so we made efforts to neutralize curve impacts.*



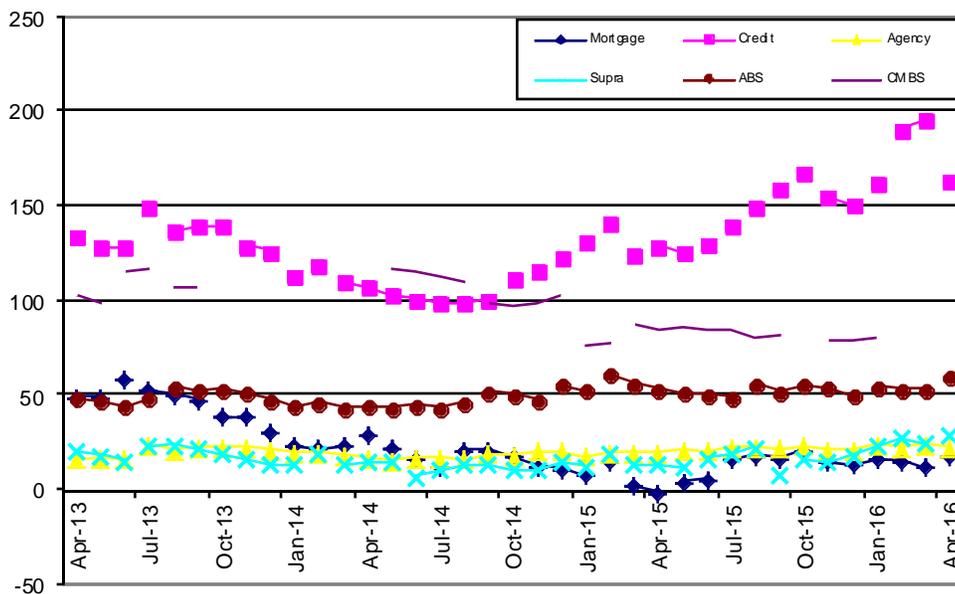
source: Bloomberg

*Credit Spreads tightened significantly during the quarter. Our credit portfolio underperformed due to a reduction in low quality credit risk exposure and an increase in high quality fixed income products.*

Sector Allocation v. Index  
(% market value)



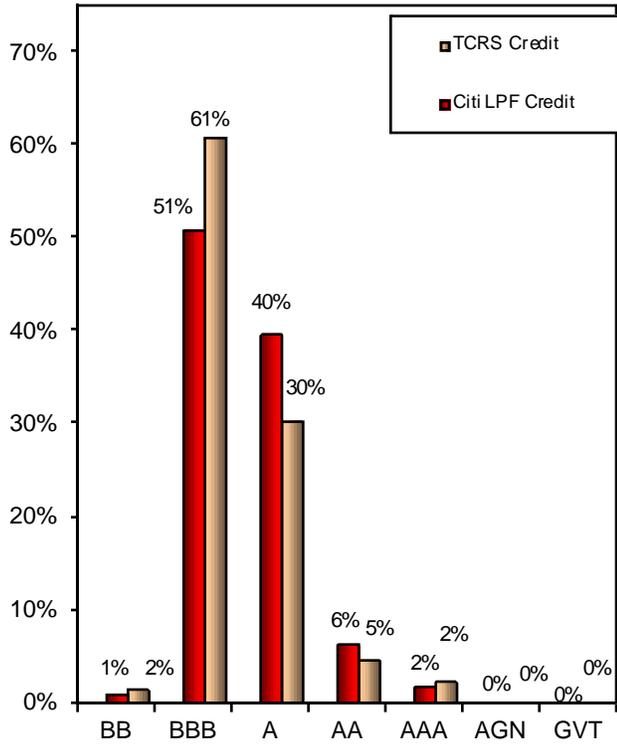
Spread to Treasuries by Asset Class  
(in basis points, index data)



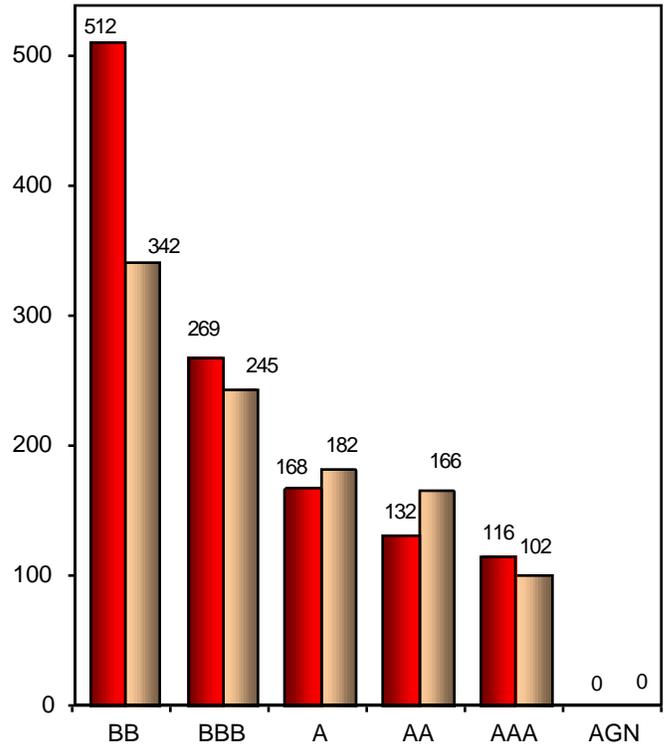
source: Yield Book

*Credit Spreads tightened significantly during the quarter.  
Despite an overweight in BBB, the credit portfolio underperformed  
because of an emphasis on high quality BBB assets.*

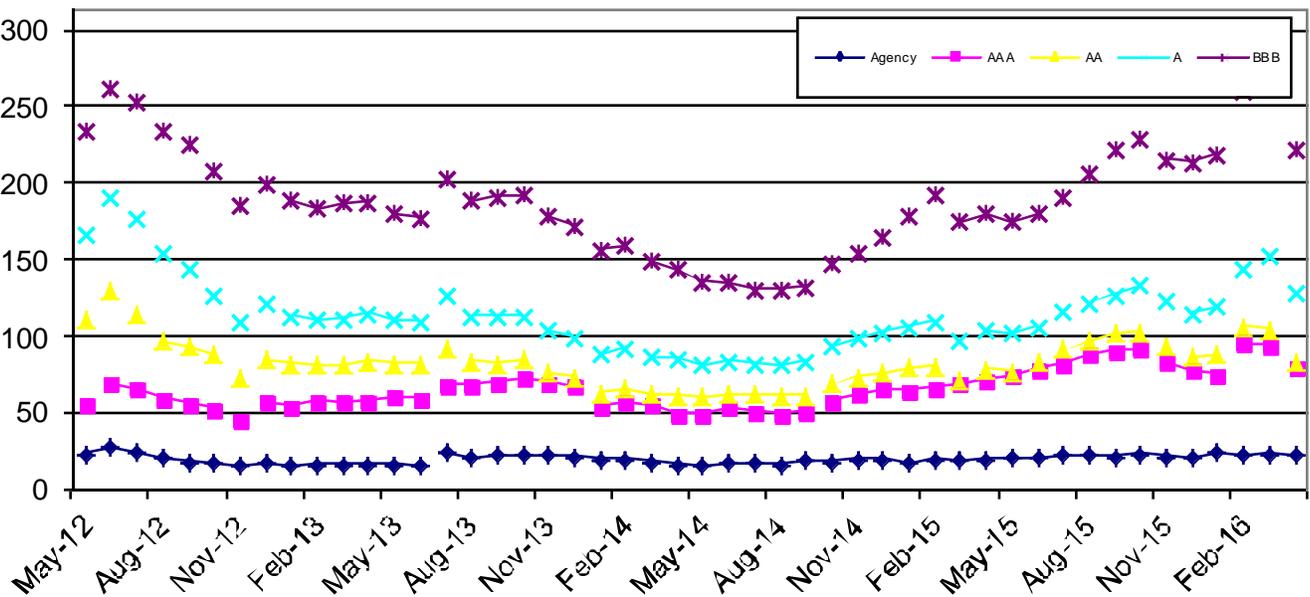
Credit Allocation v. Index  
(% market value)



OAS by Credit Allocation



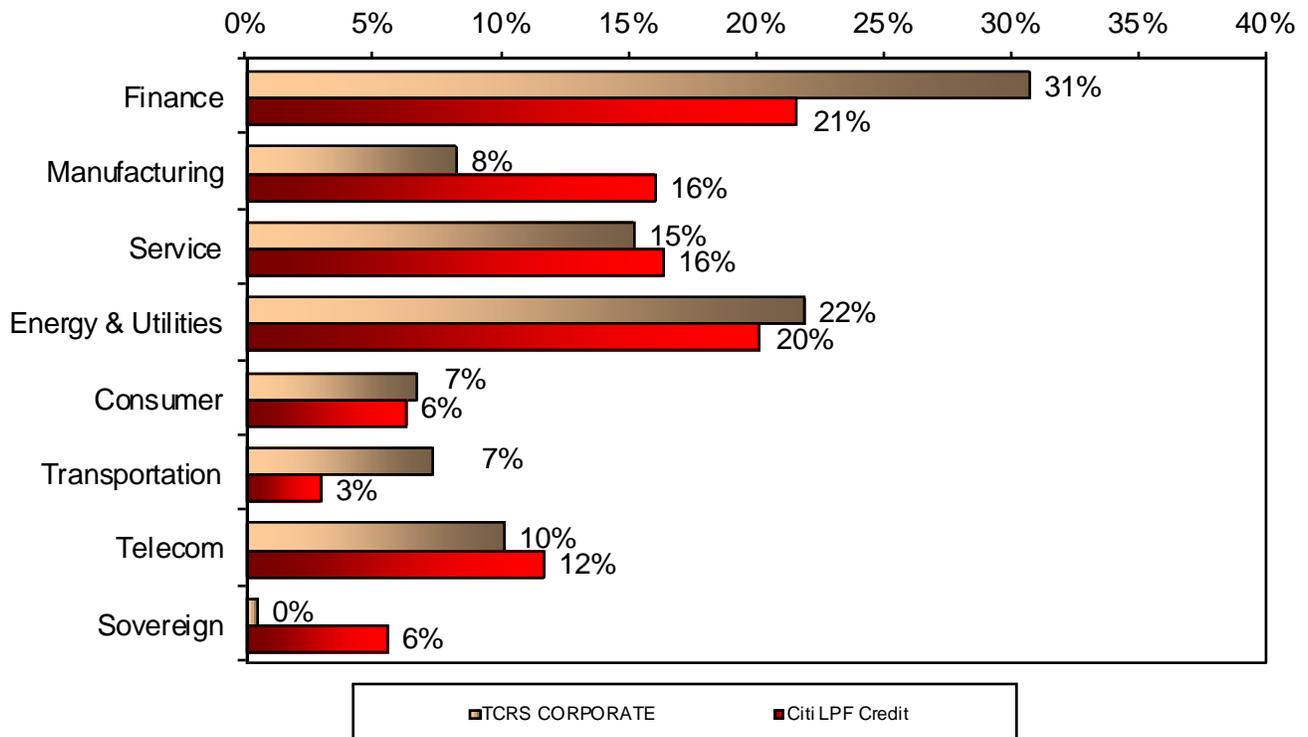
Spread to Treasury by Credit Rating  
(in basis points, index data)



Top 5 Credit Holdings (by Market Value)	MktVal	% MktVal
US TREASURY BONDS	37,443	1.1
NEW YORK CITY WATER & SEWER	37,114	1.1
US TREASURY NOTES	37,108	1.1
METROPOLITAN GOVT NASHVILLE	35,954	1.1
ARMY HAWAII FAMILY HOUSING TRUST	31,192	0.9

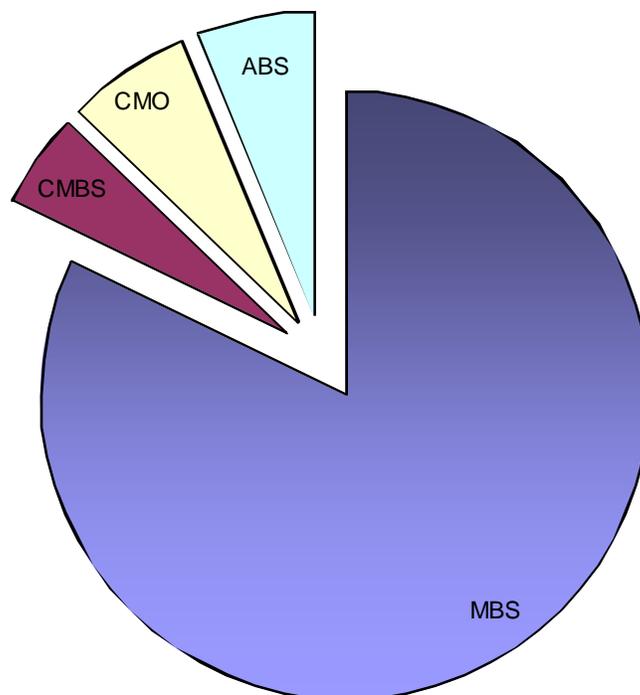
Top 5 Credit Holdings (by Dollar Duration)	DV01	% DV01
US TREASURY BONDS	76,017	1.8%
NEW YORK CITY WATER & SEWER	57,047	1.3%
AT&T INC	46,292	1.1%
J.P. MORGAN & CO INC	45,355	1.1%
METROPOLITAN GOVT NASHVILLE	41,010	1.0%

Sector Allocation v. Index  
(% market value)



	Market Value (\$MM - Yield Book)	TCRS % of portfolio	CITI	Difference
<b>Agency Mortgage Backed Securities</b>	\$3,713,161	32.1	29.6	2.5
<b>GNMA</b>				
15-Yr	\$16,460	0.1	0.0	0.1
30-Yr	\$1,089,614	9.4	8.4	1.0
<b>FNMA</b>				
10-, 15- & 20-Yr	\$295,979	2.6	2.6	0.0
30-Yr	\$1,138,612	9.9	11.5	-1.6
<b>FHLM</b>				
15-Yr	\$114,057	1.0	1.3	-0.4
30-Yr	\$987,915	8.5	5.8	2.7
<b>Agency Hybrid</b>	\$70,524	0.6	0.0	0.6
<b>Commercial Mortgage Backed Securities</b>	\$225,953	2.0	0.0	2.0
<b>CMO and Non Agency Passthroughs</b>	\$297,926	2.6	0.0	2.6
<b>Asset Backed Securities</b>	\$282,597	2.4	0.0	2.4
<b>Total Securitized Product</b>	<b>\$4,519,637</b>	<b>39.1</b>	<b>29.6</b>	<b>9.5</b>

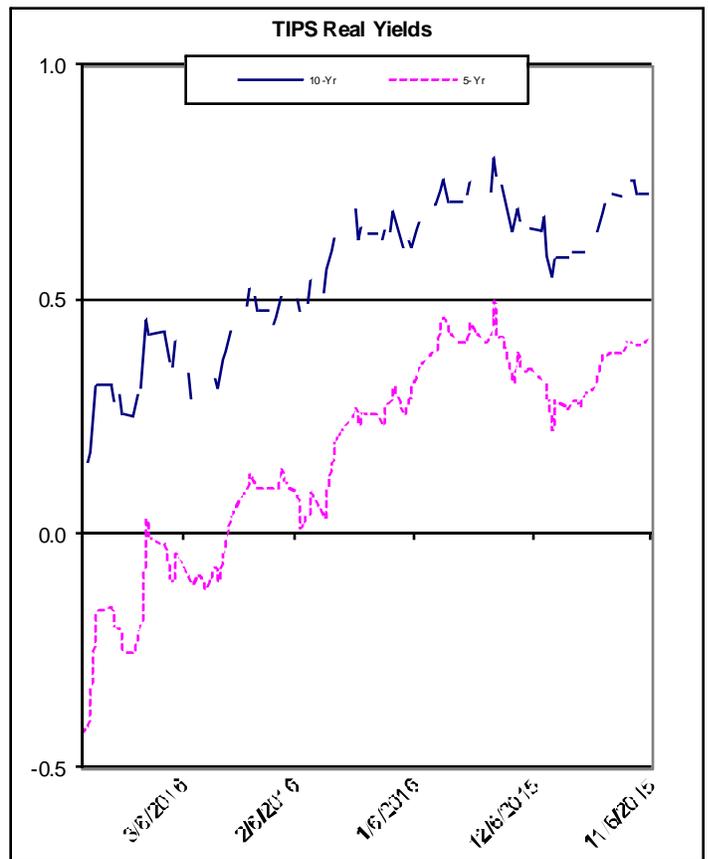
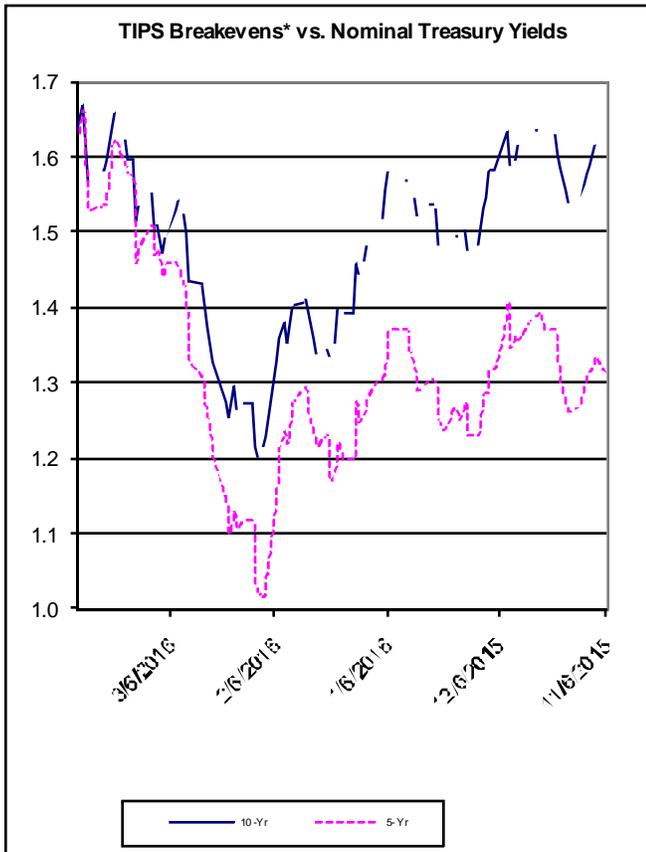
**Percent of Securitized Product**



Portfolio Value (Yield Book): \$2,433,499,761  
 Portfolio Return: 4.80%  
 Citigroup ILSI Index: 4.67%  
**Active Return: 0.13%**

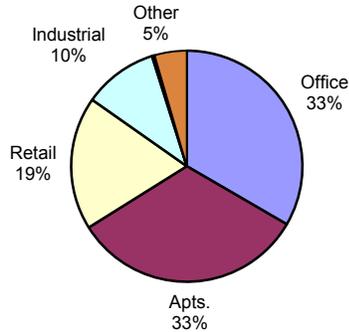
**% Market Value by Duration**

	TCRS	CITI	Difference
0-2	12.6	14.6	-2.0%
2-4	28.6	30.0	-1.3%
4-6	38.9	31.0	7.9%
6-8	4.1	9.9	-5.7%
8-10	1.8	0.8	0.9%
10+	14.0	13.7	0.3%

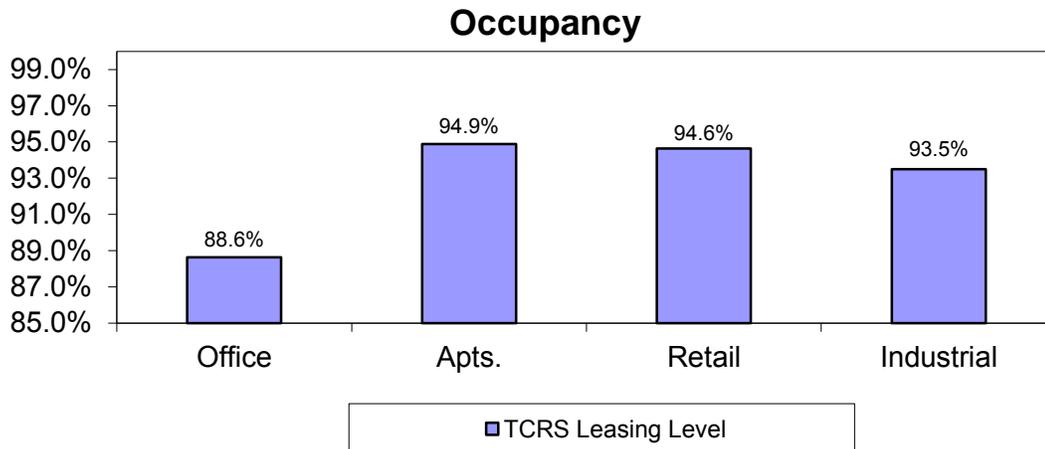
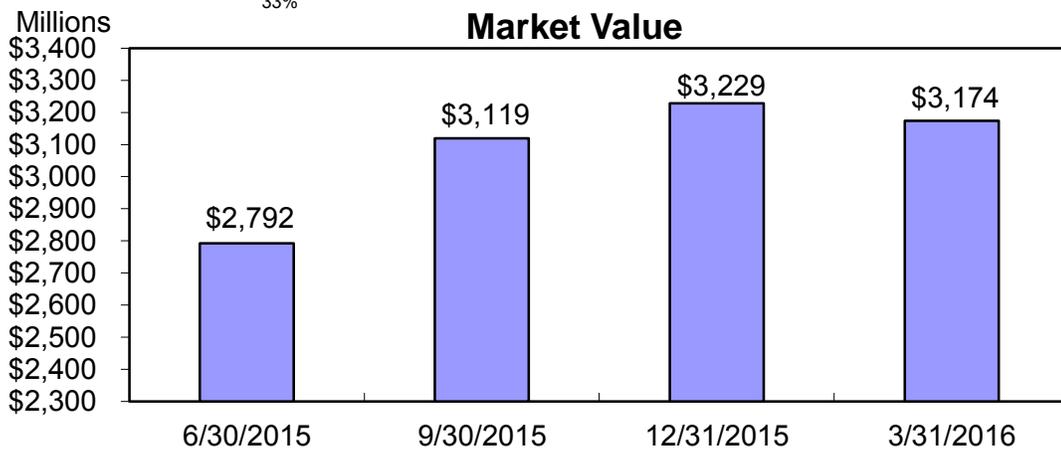
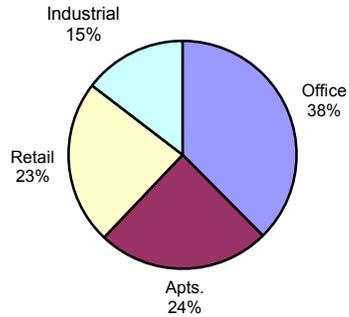


\* The "breakeven" rate is the expected rate of inflation at which investment in TIPS yield the same return as investment in Treasuries

**TCRS By Property Type**

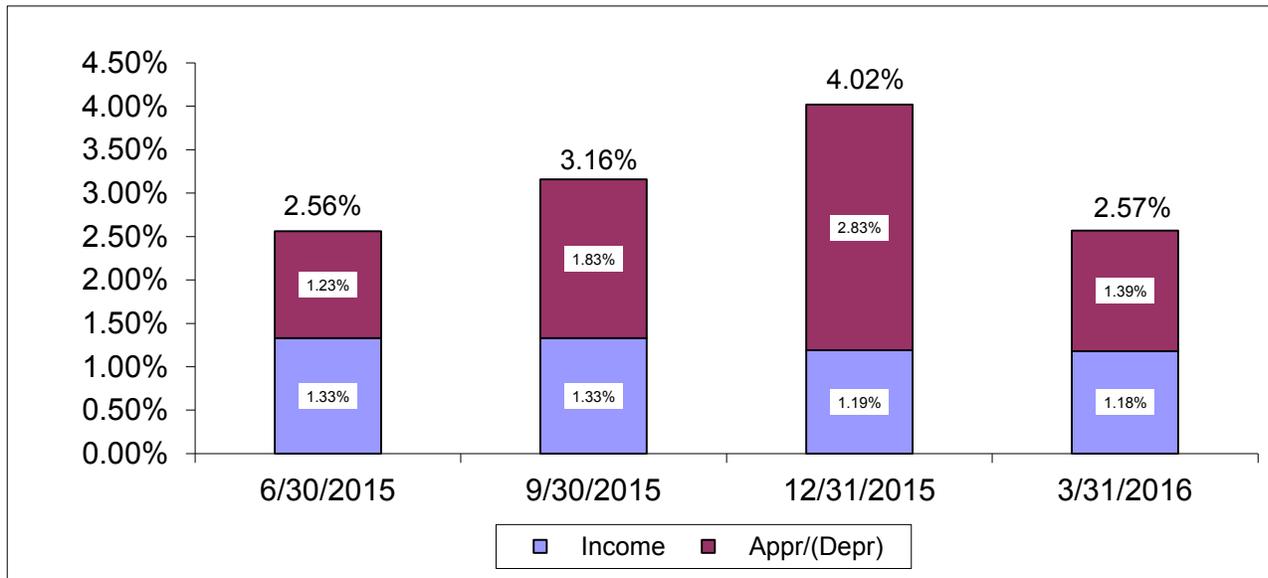


**NPI By Property Type**



\*Occupancy data does not include non-core investments.

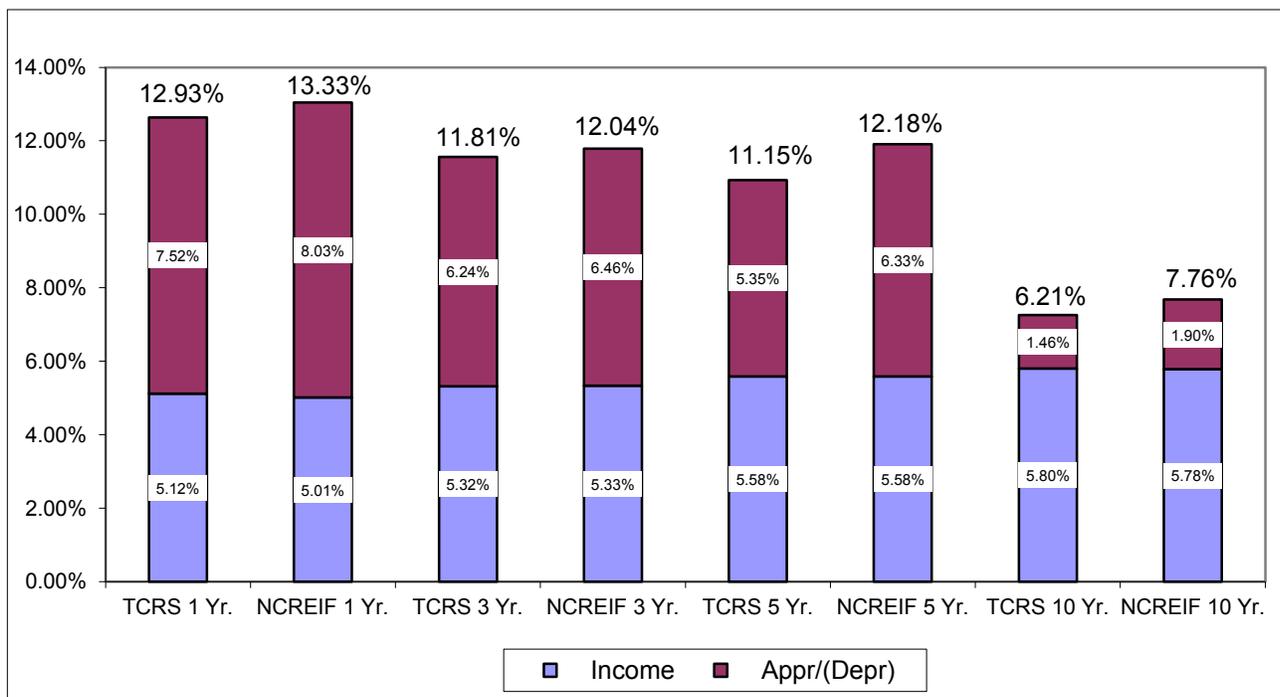
The NPI is the National Property Index of the National Council of Real Estate Investment Fiduciaries (the index used for US core properties).



All returns shown above are reported one quarter in arrears

Budgeted Annual Income Return for calendar year 2016 (excluding funds)

5.15%



All returns shown above are reported one quarter in arrears

## Daniel Crews, CFA CAIA

We have finalized our fiscal 3Q2016 results (the period ending 12/31/15), and are pleased to report that the program continues to demonstrate positive performance.

### PORTFOLIO BENCHMARK

AS OF DECEMBER 31, 2015	1 QTR	1 YEAR	3 YEAR	5 YEAR	SINCE INCEPTION	TVPI
<b>Portfolio</b>	2.6%	14.4%	18.0%	16.5%	16.4%	1.3x
<b>S&amp;P 500 (+ 300 bps)<sup>1</sup></b>	7.8%	4.5%	14.3%	14.2%	14.6%	N/A
<i>Value Added</i>	-5.2%	10.0%	3.7%	2.2%	1.9%	N/A

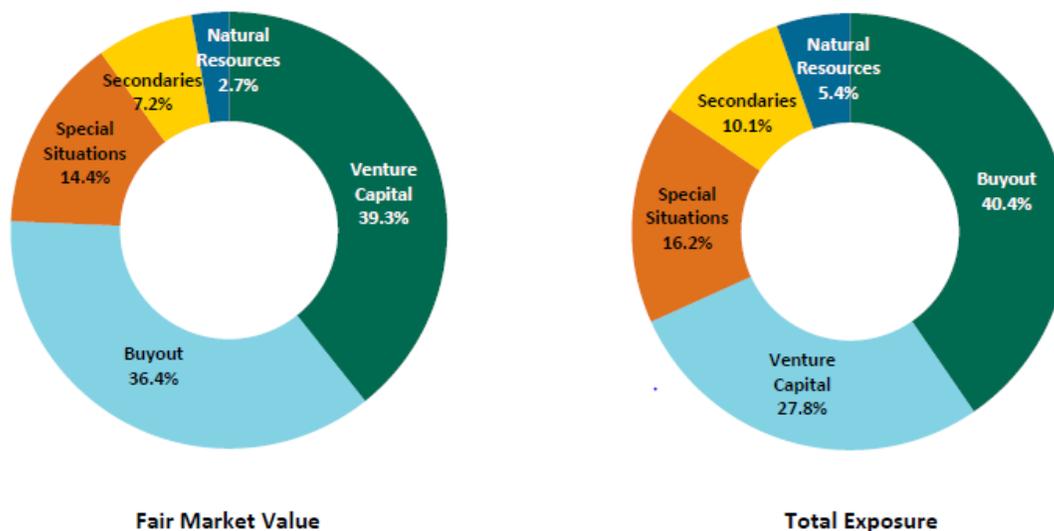
### PEER BENCHMARK

AS OF DECEMBER 31, 2015	1 QTR	1 YEAR	3 YEAR	5 YEAR	SINCE INCEPTION	TVPI
<b>Portfolio</b>	2.6%	14.4%	18.0%	16.5%	16.4%	1.3x
<b>Cambridge Associates<sup>2</sup></b>	1.1%	7.7%	13.2%	12.9%	13.1%	1.3x
<i>Value Added</i>	1.5%	6.8%	4.8%	3.6%	3.4%	0.0x

<sup>1</sup> Data is dollar-weighted Long-Nickels calculation of monthly changes in the S&P 500 total returns index plus 300 basis points.

<sup>2</sup> Cambridge Associates Pooled IRR: Inclusive of all Buyout, Distressed, Private Equity Energy, Secondary, Upstream Energy & Royalties, and Venture Capital private equity funds with geographies of Global, North America, or Europe as of December 31, 2015.

The following chart shows the total exposure to the sub-asset classes based on valuations and unfunded commitments through the end of December 2015. By total exposure, the portfolio is very close to its neutral target weights for each segment of the portfolio. By Fair Market Value, a divergence is evident between Buyouts and Venture. Venture is experiencing meaningful gains in recent funds but distributions remain low, while Buyout firms are net sellers and are generally slow in drawing capital committed to recent funds.

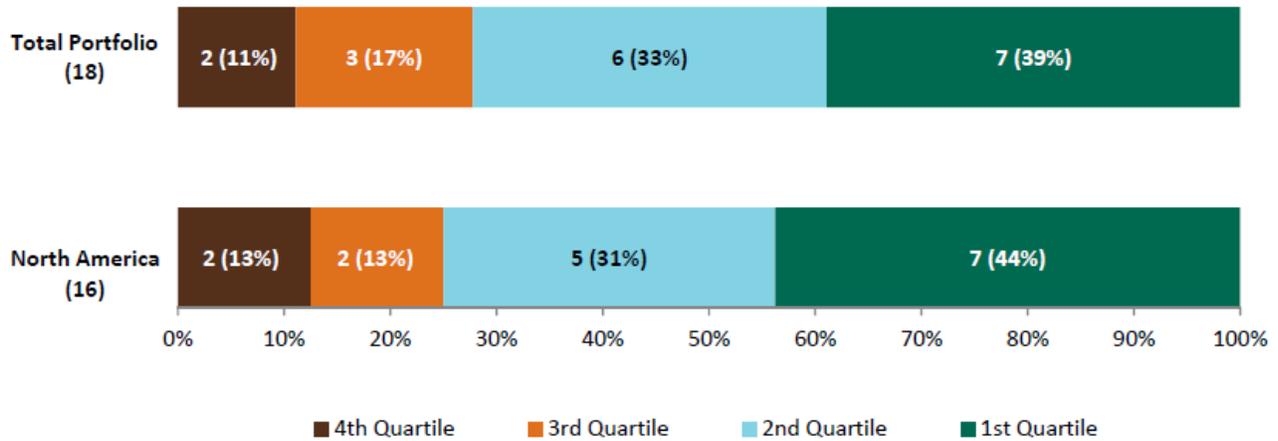


## Daniel Crews, CFA CAIA

Manager selection continues to add incremental value to the portfolio, as the proportion of seasoned funds in the portfolio in the 1<sup>st</sup> and 2<sup>nd</sup> performance quartiles are significantly above 50%.

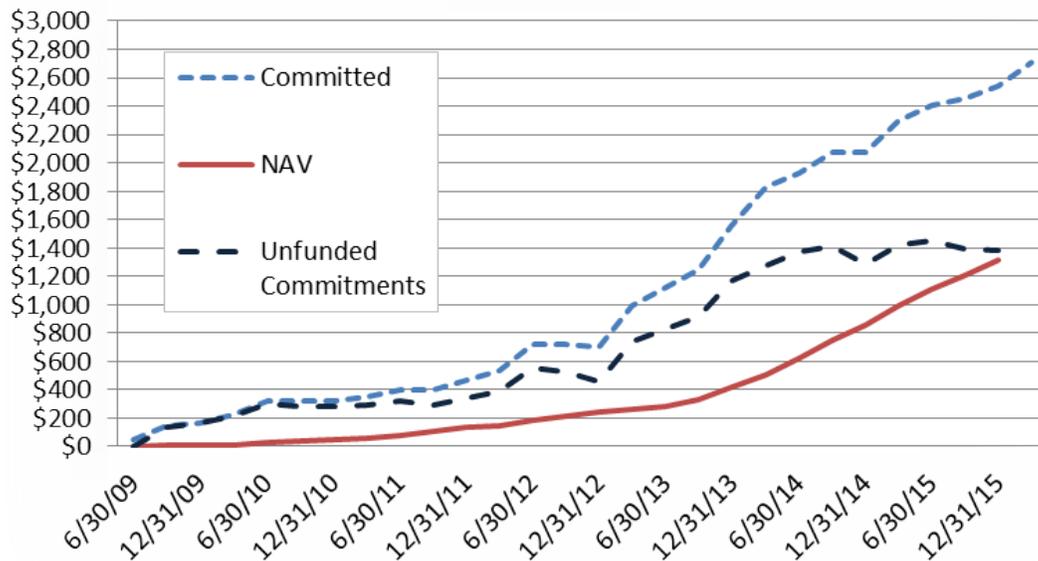
### Quartile Ranking Distribution

Cambridge Associates IRR Quartile Distribution as of September 30, 2015  
Based on Committed Capital | Excludes Vintage Year 2013 and Newer



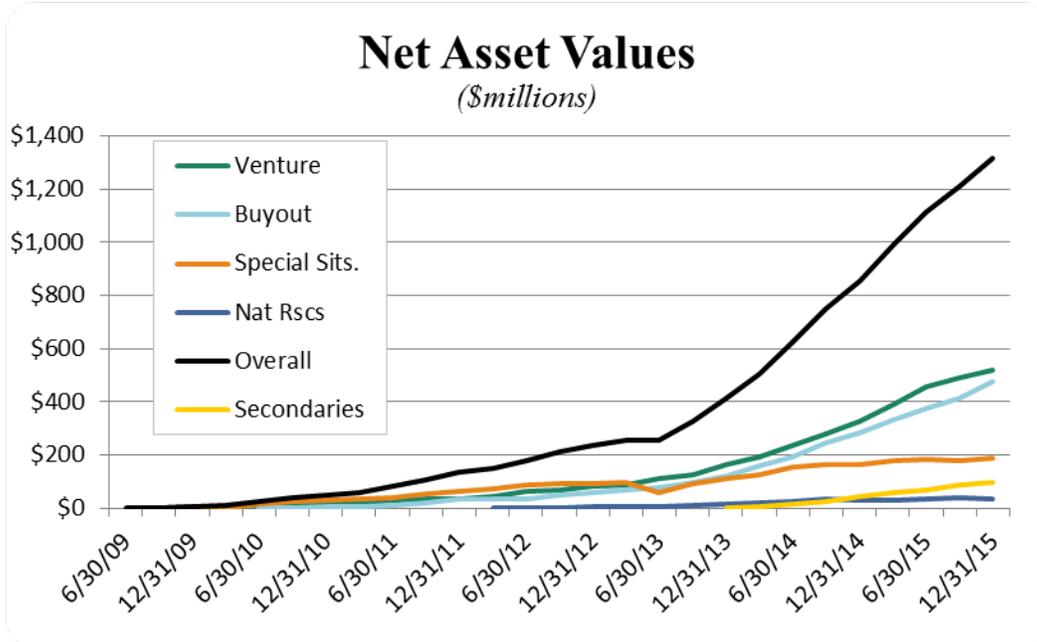
The next chart shows the overall size and growth of the TCRS portfolio in terms of cumulative commitments, unfunded commitments, and net asset value.

## TCRS Private Equity Portfolio Size (*\$millions*)



## Daniel Crews, CFA CAIA

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.



Staff continues to pursue implementation of eFront, a Contact Resource Management (CRM) software program, and focus on pipeline and monitoring activities.

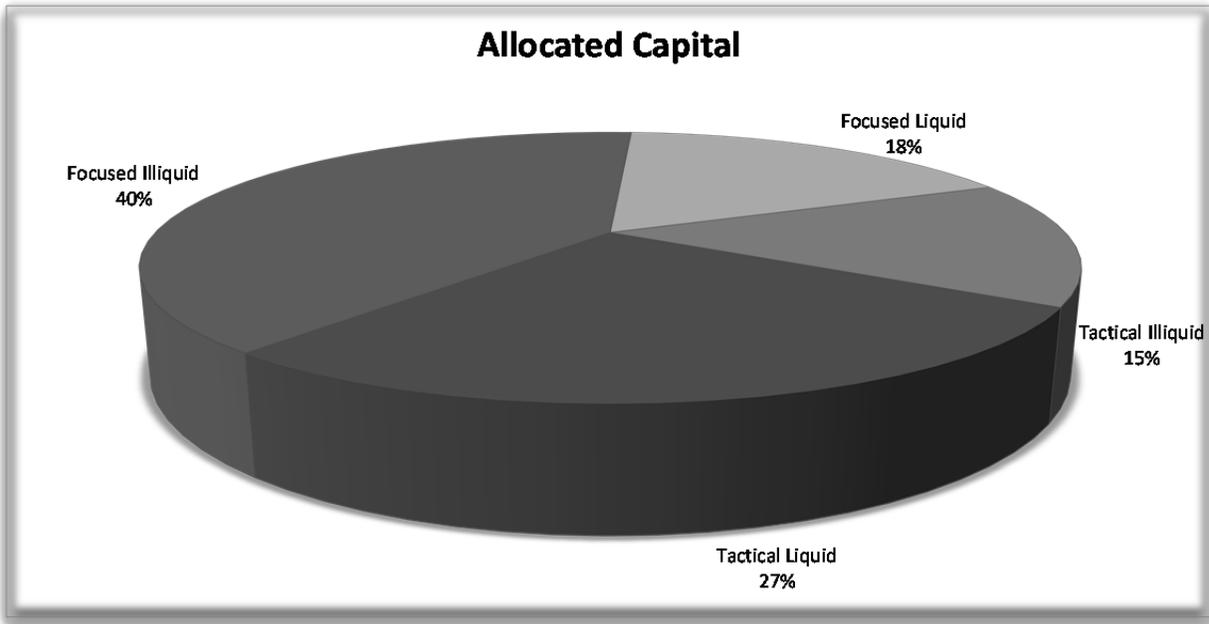
A key project underway is the development of a robust and systematic framework for dealing with any funds that experience unexpected negative issues.

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**Tennessee Consolidated Retirement System**  
Strategic Lending Portfolio  
Fiscal Q3 2016 Update  
Derrick Dagnan, CFA

During calendar 2016, the Strategic Lending Portfolio has made opportunistic investments to take advantage of a broad dislocation in the liquid below investment grade corporate credit market. This action was possible because of the tools and procedures that Staff had previously developed.

As of March, TCRS had committed approximately \$2.3 billion with \$1.4 billion being invested in eight larger separate accounts and ten co-mingled funds. The eight separate accounts amount to \$1.6 billion of the allocation and can be cancelled on short notice and approximately \$650 million is committed to the other ten, less liquid, lock-up vehicles.



**Market Outlook**

During the fiscal third quarter of 2016, the liquid U.S. below-investment grade market deteriorated as the oil and commodity sell-off that began in June, 2014 continued and created increased stress in the bonds of energy and mining companies. In addition, this stress has now leaked into the Retail and Telecom sectors and credit spread widened to recession levels. However, February 12, 2016

marked a bottom and commodities and high yield markets rebounded over the course of the quarter. At this time, the new issue market re-opened for capital starved borrowers. However, it is clear that stressed companies in the commodity and retail sectors now face financing pressure that will likely drive increased defaults in 2016 to 2018. Default rates are now set to exceed the long term average of 3% in 2016 and are expected to increase to 6% in 2017, with over half of defaults coming in the energy sector. Unfortunately, the recovery rate for energy companies in default have been very low year to date, which has increased the severity of losses and higher oil prices are the only savior.

By mid-February, the Barclays High Yield Bond Index was down -4.6% and the Credit Suisse Leveraged Loan Index was down -1.6% year to date. However, for the full quarter, the indices were up 3.3% and 1.3%, respectively. The Strategic Lending benchmark (50/50) underperformed the Barclays Long TIPS Index by 1.0% in the quarter. In 2015, the TCRS Strategic Lending Portfolio outperformed the benchmark with an underweight to commodities and an overweight to illiquid strategies. With the rebound in commodities in 2016, the portfolio is likely underperforming the benchmark.

With respect to the private debt market, it appears that originators have reduced activity and only the highest quality opportunities find available financing. At this point, the U.S. liquid markets should post a more attractive risk-adjusted return in calendar 2016.

## **Recent Developments**

During the fiscal third quarter, staff increased the allocation to liquid market high yield bonds with an investments of \$50 million in an existing separate account. In addition, Staff increased the allocation to an opportunistic credit separate account by \$50 million. Staff also committed \$100 million in a successor European Direct Lending Fund with an existing relationship and committed \$50 million to a European Special Situations Fund with an existing relationship. At this time, staff continues to favor loans over bonds, senior over junior debt, and liquid over illiquid investments.

## **Future Activity**

Recently, Staff has focused more on hiring a portfolio manager. Additionally, Staff continues to focus on portfolio monitoring, process, procedures, internal investment capabilities, and other key program initiatives.

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# TCRS Equity Derivative Report

## Domestic Stock Index Futures Roy Wellington, CFA

No Activity

# TCRS Currency Derivative Report

## Currency Forwards Activity Albert Chang

2016 3rd Quarter Activity

**NO ACTIVITY**

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Trading – TCRS's Equity Trading Group transacted approximately 174 million shares and \$8.2 billion of notional value during the time period of January 1, 2016 – March 31, 2016. When compared with the previous 3 month period, these numbers illustrate a 45% increase in share volume quarter over quarter, and a 24% increase in notional value. Severe market volatility during this time period was a major reason for the increased activity.

TCRS used 26 brokers during this time period, the same amount of counterparties as last quarter. Broker performance is monitored to ensure best execution practices. In addition, the work with Abel Noser's Transaction Cost Analysis group helps to verify the trading desk's analysis with hard data on broker performance.

Total commission dollars, during this time period, were approximately \$2.16 million. This represents a 32% increase in commissions from the prior three month period (\$2.16 million vs \$1.63 million). Total commission dollars spent increased at a slower rate than the volume of shares traded (45% more shares traded vs 32% increase in commission dollars spent quarter over quarter).

Operations – Operations continues to support the Treasury Managed Fund and the additional responsibilities associated with the program, such as the reconciliation process that is so critical to the accuracy of the daily operation. The small team has performed well while dealing with the increased trading volume and the challenges associated with the securities lending program while striving to meet the goal of no failed trades.

Securities Lending – The TCRS securities lending program has been using Deutsche Bank as its securities lending agent since January 30, 2014 (over 27 months). As of March 31, 2016, TCRS earnings since inception totaled \$58 million (\$7.6 million of that was earned first quarter 2016). All cash collateral continues to be invested in indemnified repurchase agreements.

The average on loan balance since inception was \$5.3 billion with a spread of 56 bps. The average on loan balance for Q1 2016 was \$6.4 billion with spread of 52 bps. The largest earnings contributor since inception was Domestic Equities making up 43% of the total (45% as well for Q1 2016) followed by Emerging Market Equities 29% (25% Q1 2016), Fixed Income 20% (24% Q1 2016), and International Equities 8% (6% Q1 2016).

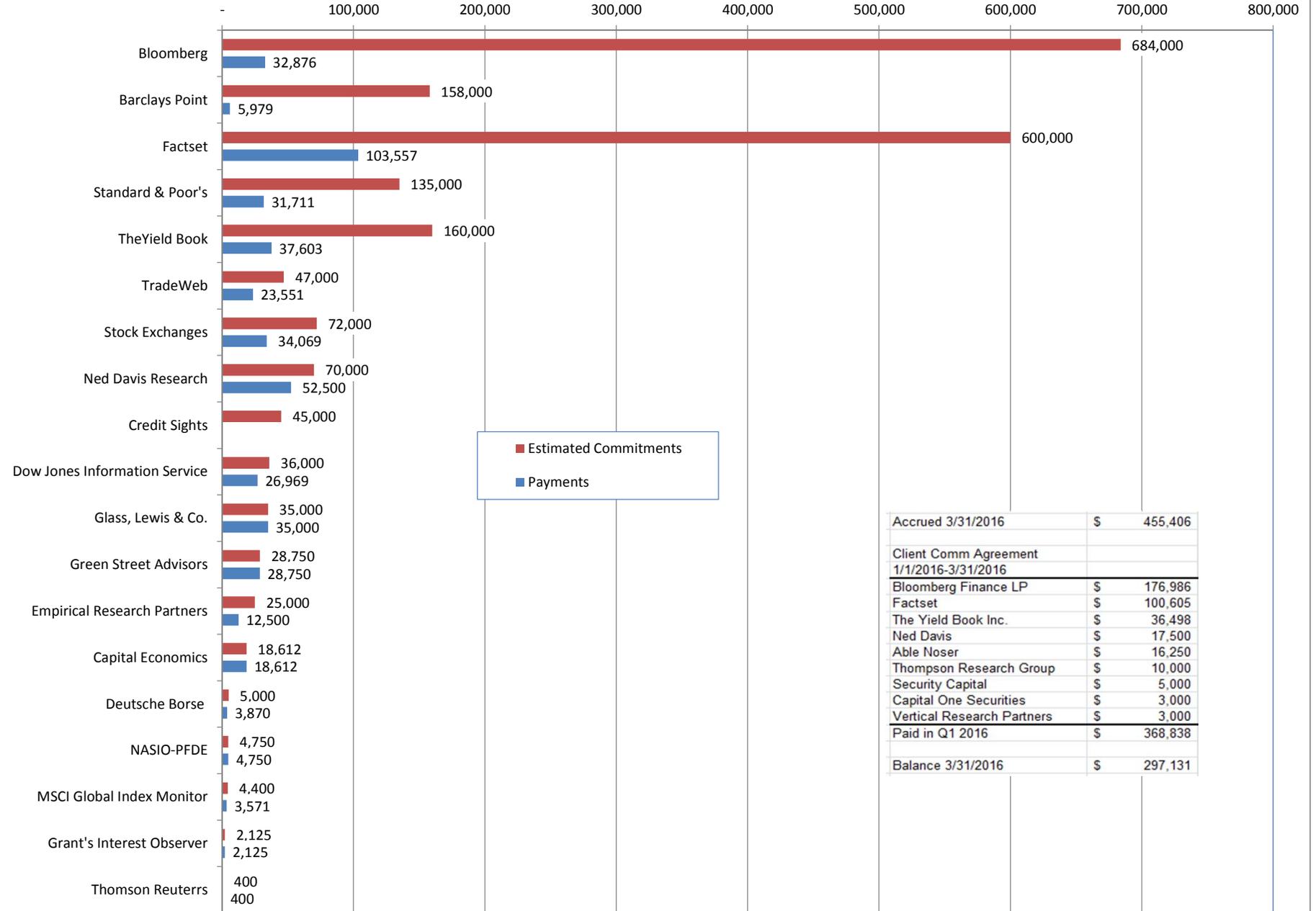
With regards to balances in the 1<sup>st</sup> Quarter 2016, the top 5 borrowing counterparties were JP Morgan (representing 11.2% of the total on loan balance), Morgan Stanley (11%), Merrill Lynch (10.2%), HSBC (9%), and Citigroup (8.9%).

Tim McClure, CTP

Two out of TCRS' top 5 earners for the period of January 30, 2014 to March 31, 2016 occurred within the ETF space. The overall leader for the 27 month period was iShares MSCI Brazil (EWZ) (6.55% or \$3.8 million). This was closely followed by Armbarella (5.34% or \$3.1 million) and iShares MSCI Taiwan (EWT) (3.81% or \$2.2 million). The other two places were held by the following: GoPRO (3.75% or \$2.175 million) and Ubiquiti Networks (3.06% or \$1.77 million). These 5 securities accounted for 22.5% or \$13 million of the TCRS earnings since inception.

	<b>Jan 1, 2014 - Mar 31, 2016</b>	<b>Oct 1, 2015 - Dec 31, 2015</b>	<b>Jan 1, 2016 - Mar 31, 2016</b>
TCRS Earnings \$	58M	8.6M	7.6M
Lending	28M	4M	3.1M
Reinvest	30M	4.6M	4.5M
Avg On Loan	5.3B	6.7B	6.4B
Spread	56 BPS	57 BPS	52 BPS
Domestic Equities	43%	52%	45%
Emerging Market Equities	29%	28%	25%
Fixed Income	20%	16%	24%
International Equities	8%	4%	6%

**Commissioned Dollar Report**



Accrued 3/31/2016	\$ 455,406
Client Comm Agreement 1/1/2016-3/31/2016	
Bloomberg Finance LP	\$ 176,986
Factset	\$ 100,605
The Yield Book Inc.	\$ 36,498
Ned Davis	\$ 17,500
Able Noser	\$ 16,250
Thompson Research Group	\$ 10,000
Security Capital	\$ 5,000
Capital One Securities	\$ 3,000
Vertical Research Partners	\$ 3,000
Paid in Q1 2016	\$ 368,838
Balance 3/31/2016	\$ 297,131