

INVESTMENT REPORT

TENNESSEE CONSOLIDATED RETIREMENT SYSTEM

**Second Quarter
Fiscal Year 2014 - 2015**

October 1, 2014 – December 31, 2014

**Prepared for:
Board of Trustees**

March 27, 2015

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>
Frederick S. Crown, Jr., CFA 124 Longwood Place Nashville, TN 37215 Phone: 615-347-0343 E-mail: crownfl@gmail.com	June 30, 2017	5 year
Susan Logan Huffman, CFA 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: shuffman@reliantllc.com	June 30, 2016	5 year
George B. Stadler, CFA 95 White Bridge Road, Suite 414 Nashville, TN 37205 Phone: 615-416-3455 cell E-mail: george@hmscm.com	June 30, 2015	5 year
Carol Womack, Principal Diversified Trust Company 3102 West End Avenue, Suite 600 Nashville, TN 37203 Phone: 615-386-7302 E-mail: cwomack@diversifiedtrust.com	June 30, 2015	3 year

TENNESSEE CONSOLIDATED RETIREMENT SYSTEM

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Fiscal Year 2014-2015

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TABLE OF CONTENTS

Page

Minutes of March 10, 2015 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
March 10, 2015**

Mr. George Stadler, Chairman of the Investment Advisory Council (IAC), convened the meeting at 1:39 p.m. in the 13th Floor conference room of the Andrew Jackson State Office Building. IAC members present included Chairman Stadler, Ms. Carol Womack, Mr. Fred Crown, Treasurer David H. Lillard, Jr (ex officio) and Mr. Michael Brakebill (ex officio). Investment Staff members present included Andrew Palmer, Michael Keeler, Tim McClure, Roger Henry, Jennifer Selliers, Roy Wellington, Kushal Gupta, JP Rachmaninoff, Matthew Haitas, Justin Denery, Daniel Crews, Michael Giggie, Thomas Kim, Rhonda Myers, Derrick Dagnan and Daniel Toomey.

Chairman Stadler opened the meeting by requesting a motion to approve the minutes from the IAC meeting on December 8, 2014. Upon a motion by Mr. Crown and seconded by Ms. Womack, the minutes were unanimously approved with no additions or corrections.

Mr. Brakebill began his comments with an update on the investment policy. He noted Jennifer Selliers, Compliance Officer, had gone through the policy and re-written the policy to reflect changes in law and regulation. These small changes will not have much impact on actual investments and there were no significant changes in the direction of the policy.

Mr. Brakebill noted there were four areas of change in the proposed policy that would impact the investment portfolio. The dollar threshold at which the Investment Committee must approve a private equity, real estate or strategic lending investment will increase from \$30 million to \$75 million. This change is meant to reduce the administrative load on the Investment Committee as the number of transactions increases due to growing investment allocation and commitment sizes. In another change, current policy permits up to 20% of the real estate portfolio be invested in non-core investments. The proposal raises that limit to 30% to prevent a policy exception as investments in non-core assets reach 20%. The policy also provides a specific definition of “international security” to facilitate compliance measurement. Finally, the proposed policy provides for delegation by the Board to the Treasurer the authority to procure services necessary for TCRS and to determine appropriate alternative procurement procedures.

A question was raised regarding what performance impact can be expected as a result of filling the 20% allocation to non-core real estate. The Real Estate team replied they believed the changes may improve performance by 0.5%.

A motion, made by Ms. Womack and seconded by Mr. Crown, to affirm the aforementioned changes to the investment policy was approved, unanimously.

Mr. Brakebill then discussed TCRS current investment allocation. Looking forward to next year, staff and the general consultant will be researching potential changes to the investment policy target portfolio construction that may be advisable to pursue in the next asset allocation review. These potential changes might require legislative initiatives. Research is beginning now to allow time for the legislative process.

A question was raised about the efficacy of modeling standard deviation in private assets. A brief discussion ensued during which Mr. Brakebill suggested using public market equivalents as a proxy for modeling the standard deviation of TCRS private investments.

Mr. Brakebill then discussed several investing concepts he and the team continue to monitor but do not currently plan to implement, including Low Volatility Equities, Hedge Funds, Infrastructure, Real Return, Commodities, Master Limited Partnerships, Risk Parity, Beta and Alpha Overlay, De-risking, and Liability Driven Investment.

Mr. Brakebill then addressed the team's progress on several key initiatives. The fixed income team hired Daniel Toomey to assist Thomas Kim with management of the credit portfolio. Recruiting for summer interns led by Carrie Green and Markus Klar has yielded two interns who will be joining TCRS this summer. The private equity consultant contract will expire this year. An RFP for a new contract, including work on the strategic lending portfolio, is being prepared. Process initiatives in both trading and legal remain ongoing.

Mr. Brakebill then kicked off a discussion of overall fund performance noting the fund returned 16.7% in fiscal 2014 and ranked in the 48th percentile among other public funds greater than \$1 billion (median of 16.43%). The composite fund returned 2.25% for the fourth quarter of calendar 2014 and ranked in the 27th best percentile (median of 1.30%). For the full calendar year 2014, the fund outperformed its policy (8.76% vs. 8.69%) and ranked in the 5th percentile among large public funds (median of 5.60%), beating 90%+ of its peers. The 7 year return has been 5.7% (median fund did 4.9%). He noted this performance coincides with the financial crisis.

Mr. Keeler discussed initiatives in the public equity portion of the investment portfolio and noted staff has been working on long range initiatives including updating evaluation processes for research & miscellaneous service providers. Mr. Wellington, Mr. Gupta and Mr. Keeler have been reviewing the long term strategic plan for domestic equities and will discuss it with Mr. Brakebill in the next month or so. Lastly, the team has several projects lined up for the summer interns in order to help with various projects and provide a meaningful experience for them.

Moving to the equity portion of the portfolio, Mr. Keeler said stocks were fairly strong through most of the December quarter, although global economic concerns put a damper on enthusiasm late in the period. Size factors (smaller was better) dominated relative returns during the period. Still, growth provided only a modest boost. Domestic equities lagged the S&P 1500 benchmark return for the quarter as mid and small cap stocks recovered somewhat from an extended period of underperformance while the fund remained underexposed. In addition, the large cap funds underperformed their benchmarks during the quarter. Poor performance in the Energy sector was detrimental to all portfolios. The team is looking to add to small cap and mid-cap assets on anticipation that the strong dollar will benefit smaller rather than larger companies.

Mr. Gupta noted the Quant Fund saw sector rotation in the December quarter, out of technology and into utilities, healthcare and others and away from companies with high risk from a strong dollar and collapsing oil prices. Oil prices slid 40%+ in calendar 4Q14. Forward earnings multiples were little changed for the market and most sectors with one exception – Energy. Earnings forecasts for the sector were slashed in December as oil continued to fall. Momentum and quality-based factors were the top-performing factors in 2014. The worst performing factors in 2014 were Price Volatility, Price Reversal, and Traditional Value. Utilities was the best performing sector in 2014 and Energy went from the best performing sector in the third quarter to the worst performing sector in the fourth quarter and the 2014 year. The quant fund underperformed in the quarter versus the benchmark. We reduced the portfolio beta and tightened the tracking error to further neutralize the risks. These changes helped and, as of the time of the meeting, the portfolio was up over 50 bps this quarter relative to the index.

Mr. Wellington said the Sector Fund is positioned for economic expansion with over weights to industrials, information technology and health care. Fourth quarter performance was hurt by the fall in oil prices despite the underweight to Energy. Most of the underperformance during the calendar 4Q came from the surprise forced bankruptcy of GT Advanced Technologies (GTAT), a would be supplier of sapphire cover glass to Apple and an acquisition bid for Baker Hughes by portfolio holding Halliburton.

The Mid Cap Fund underperformed the S & P Mid Cap 400 return during the quarter. Good stock selection in the Healthcare and Technology sectors was more than offset by difficulties in the Energy Sector.

The International managers benefited from good overall stock picking, continuing a string of good quarters. As previously reported, TCRS cut the allocation to Barings due to personnel turnover and performance. American Century migrated from a small-mid capitalization strategy to pure small cap during the quarter. Across developed market portfolios, a slight preference towards Europe was instituted as it appears that positive economic news, a weak euro and quantitative easing has arrested a long period of underperformance. Additional buying in Emerging Market ETFs has brought that portfolio to almost \$2bn.

Mr. Palmer began his review of the Fixed Income portfolio by discussing an initiative to coordinate the internal research effort that was begun at the beginning of the fiscal year. Thomas Kim is coordinating the effort. Mr. Klar has put together a treasury curve model used by the Fed to analyze the possible future path of interest rates. During this process, Mr. Klar came up with a probability surface model to analyze scenarios that has been very helpful to the team. He used it to analyze the major rally in interest rates in January and it recommended we get short duration, which benefited our performance in February as rates sold off significantly. From a performance perspective, Mr. Palmer reported that portfolios underperformed during the quarter. The two basic drivers of performance were less sensitivity to falling interest rates in a period of falling rates and as in the equity portfolios, an asset allocation bias towards the service sector portion of the Energy sector. Mr. Brakebill then noted calendar year 2014 performance for Fixed Income was over 12% which contributed to the good total fund performance.

Mr. Palmer then continued with his review of the fixed income portfolio. 10yr and longer credit widened out as non-US money flowed into treasuries and not into credit; treasury yields fell and corporate bond yields only fell marginally. In the portfolio, credit quality has been overweight BBB for some time. Treasury Inflation Protected securities (TIP) underperformed due to our short duration curve allocation. Shorter dated TIPs were hurt by lower energy prices as a sign of falling inflation.

Mr. Rachmaninoff began by discussing the current diversification of the real estate portfolio. He noted that there were no major changes from the prior quarter. He next reviewed the closed transactions in the quarter. The fund closed on a grocery-anchored retail center in suburban Atlanta and committed to a new opportunistic fund that was 25% invested at the time of closing. TCRS was also awarded an attractive retail opportunity in Washington DC. This transaction closed in the first quarter and is TCRS's first direct investment in Washington DC.

Mr. Rachmaninoff noted that there was a recent change in the valuation process for TCRS's direct real estate investments. Historically, all real estate assets were valued on an annual basis. All real estate assets will now be valued on a quarterly basis. This change contributed meaningfully to the outperformance of the portfolio in the recent quarter as TCRS had three quarters of price appreciation relative to one quarter for the index. Mr. Rachmaninoff reported

that Staff continues to look for an addition to the real estate team and hopes to have a hire finalized in the next 60 days.

In response to a question about rent trends across the portfolio, Mr. Rachmaninoff noted strength in the San Francisco office market as well as both the CBD Boston and suburban Boston office markets. In general, pricing leverage is shifting towards landlords in the office space. On the other hand, Houston is seeing new office space being delivered at a time when it is not needed given the pullback in the energy space.

Mr. Crews then gave several comments on the fund's private equity (PE) investments. Venture capital appears to be getting a little frothy based on current valuations. He noted Jet.com is valued at \$600 million and has yet to even launch its shopping website, has no revenue and has no profits. He added that Mr. Brakebill was invited to participate in a panel which focused on the idea that PE, as an industry, is moving to more standardization and transparency. The team closed two funds in the first quarter, working with Fairview and Oaktree.

Moving on to strategic lending, Mr. Dagnan commented the high yield market was very weak in the fourth quarter, led by the sell-off in energy. However, despite being underweight in energy the fund still underperformed. An overweight in low quality issuers was the primary driver while Euro exposure also had a negative impact. He noted that transaction terms have moved back into the lenders' favor as evidenced by the elimination of covenant light deals.

Under the authority provided in the initial investment approval and further approval of the Treasurer, the fund increased allocations to Beachpoint and Brigade, by \$25 million each, at the end of December, after the oil and high yield markets bottomed on December 15th. New allocations were made with Blackstone, GSO and Orbimed. Mr. Dagnan discussed different investment opportunities staff is currently considering and noted he finds European and liquid markets to be more attractive than a year ago.

As part of an operational update, Mr. Palmer discussed moving away from soft dollars and instead paying for research and other broker services directly.

Mr. Henry provided the update on securities lending. Mr. Henry stated that the securities lending program has been under way just over 13 months. Earnings from inception to present day (March 10th, 2015) are approximately \$25 million. Lastly, Mr. Henry noted securities lending income is allocated to each portfolio in which the income was derived.

Mr. Palmer then continued with a review of derivatives activity before moving onto mortgage TBA and currency which is awaiting ISDA approval.

Before wrapping up, Council Members Stadler, Crown and Womack offered their view of the markets and macro-economics.

Given no further questions or comments, Chairman Stadler adjourned the meeting at 3:28 p.m.

Performance Review

December 2014

Absolute comparison

- 1 quarter return of 2.3%
- 1 year return of 8.8% (median fund did 5.6%)
- 3 year return of 11.4% (median fund did 11.4%)
- 5 year return of 10.1% (median fund did 9.7%)
- 7 year return of 5.7% (median fund did 4.9%)

Benchmark (relative) comparison

- Qtr return beat allocation index by 0.2%
- 1 year return beat allocation index by 0.2%
- 3 year return beat allocation index by 0.6%
- 5 year return beat allocation index by 0.6%

Peer comparison

- 1 quarter return ranked at 27% (0% = best)
- 1 year return ranked at 5%
- 3 year return ranked at 50%
- 5 year return ranked at 37%
- 7 year return of 5.7% is 23% (median fund did 4.9%)

Risk Adjusted Returns (Sharpe Ratio)

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

TCRS beat 58% of peers as measured via the Sharpe ratio for the trailing 3 year period and 86% for the trailing five year period.

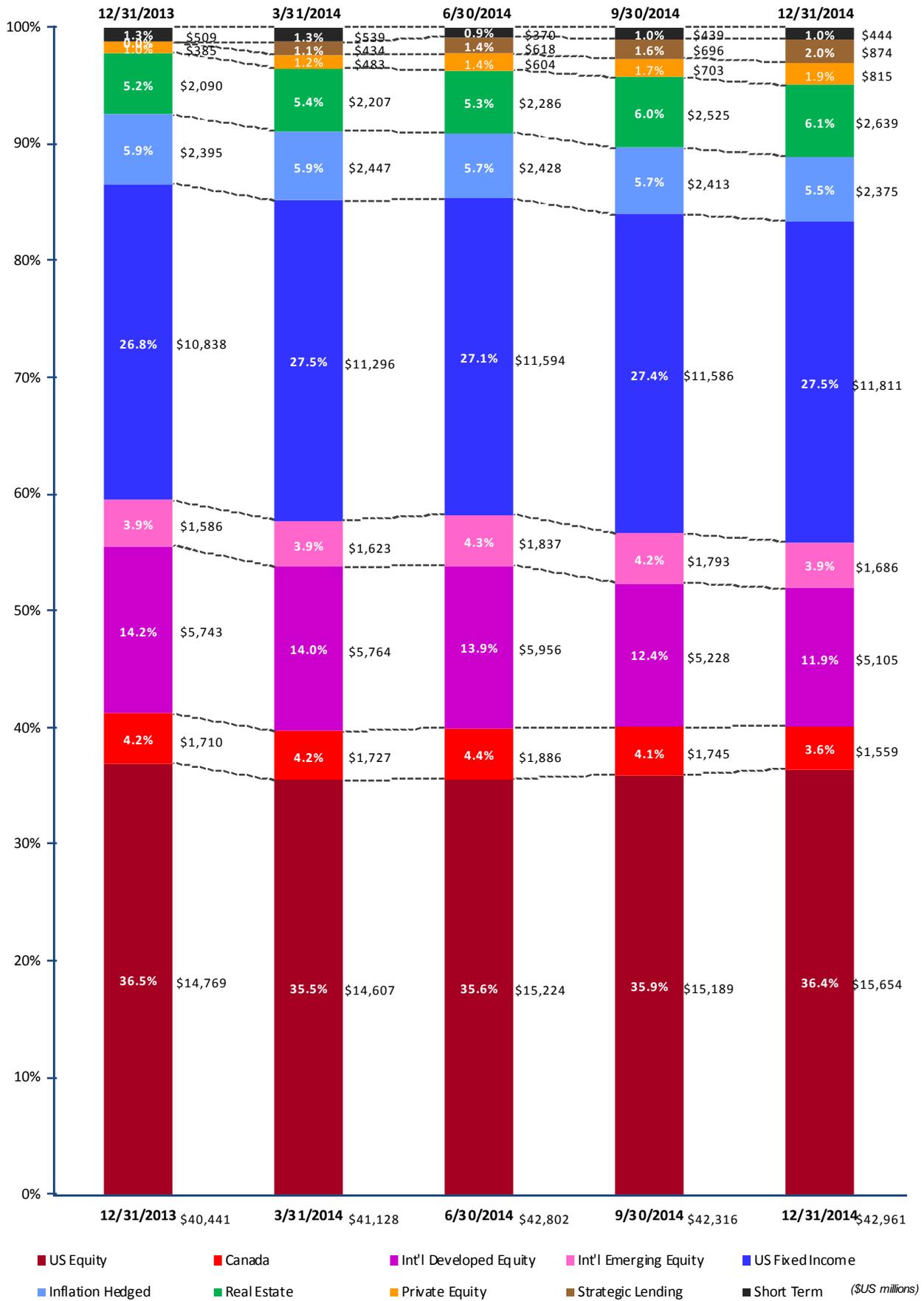
Key Initiatives

December 2014

- **People**
 - Hire Daniel Toomey in Fixed Income
 - 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

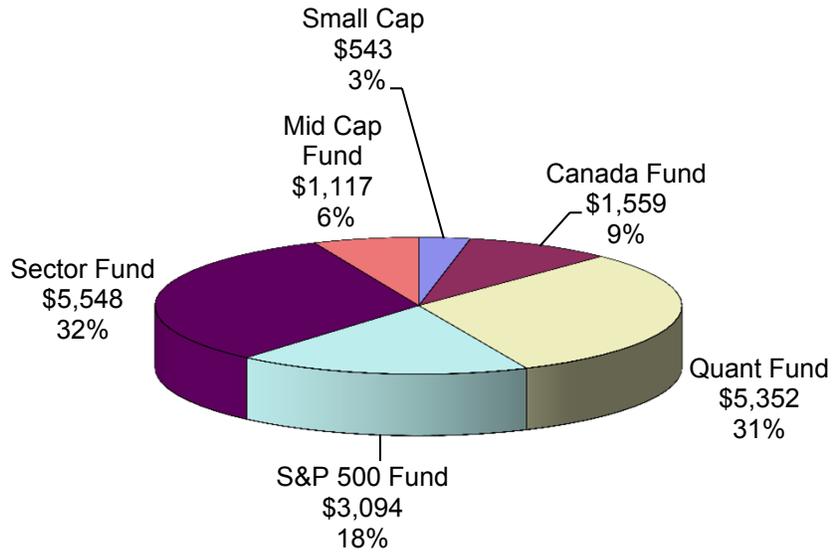
- **Portfolio**
 - Tactical allocation
 - Strategic Allocation
 - Securities lending
 - Private equity fund additions
 - Strategic lending fund additions
 - Real estate property and fund additions



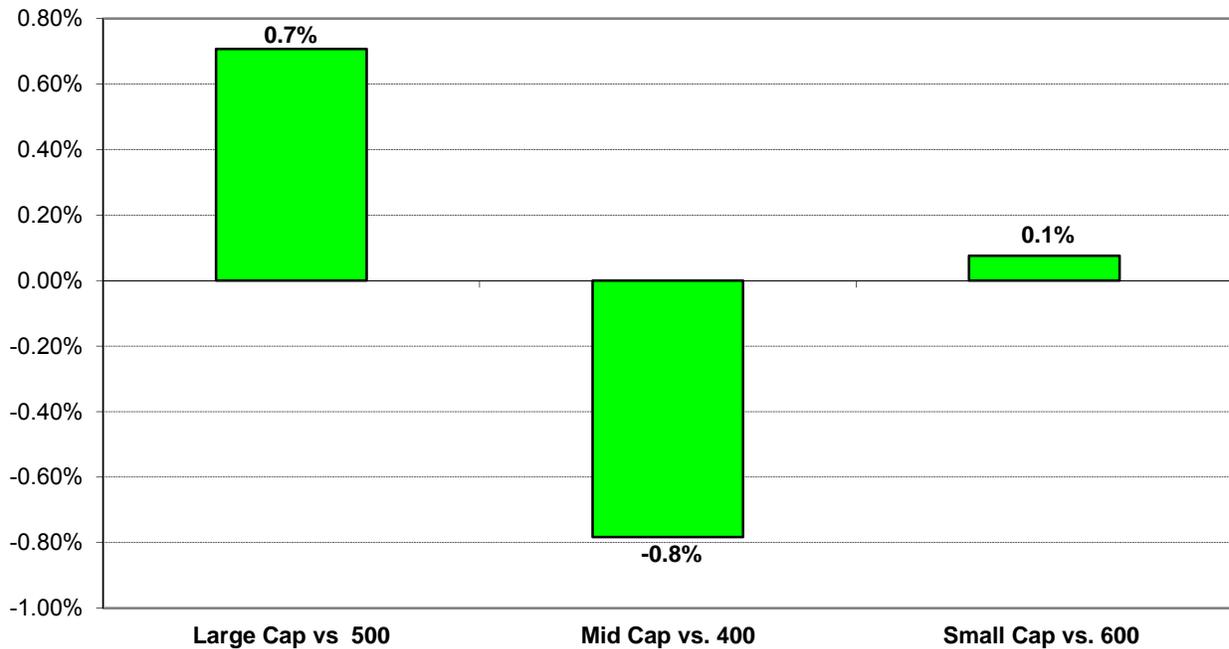
Domestic Equity Portfolio Overview

Michael Keeler, CFA

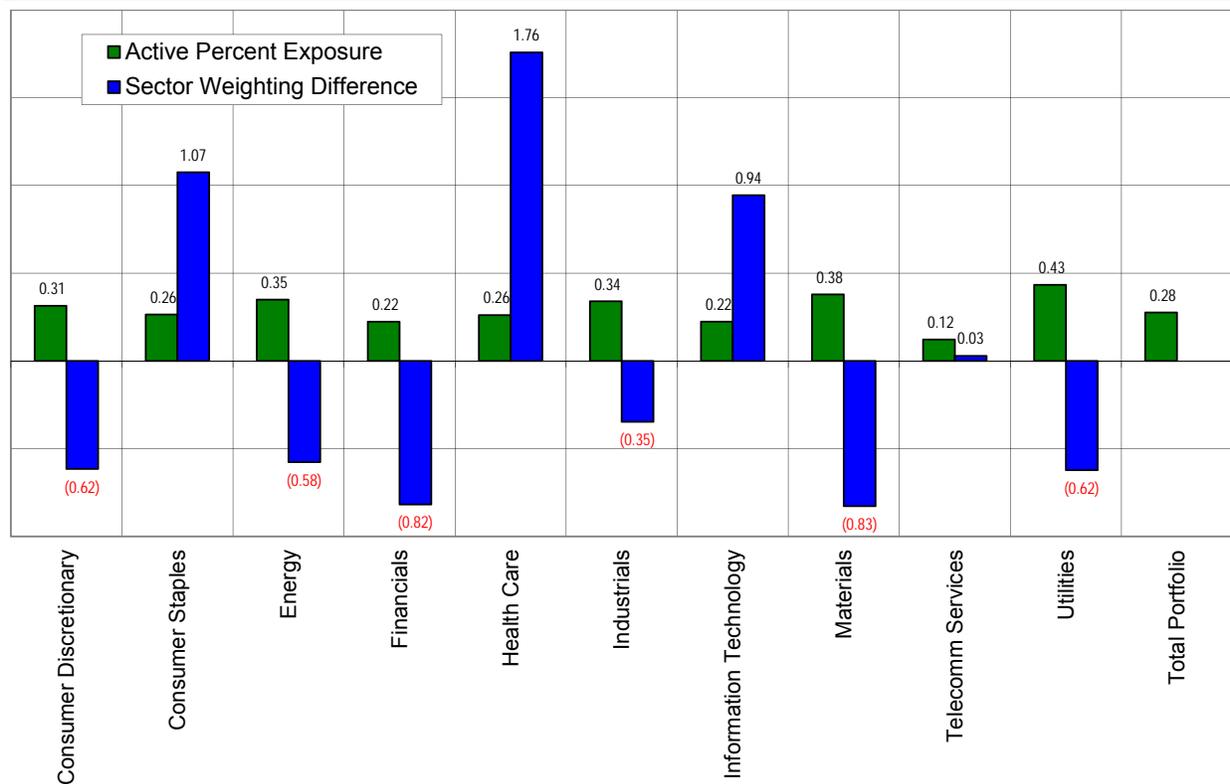
TCRS North American Equity Funds



TCRS Cap Weights vs. S & P 1500 Composite



Kushal Gupta, CFA, CAIA

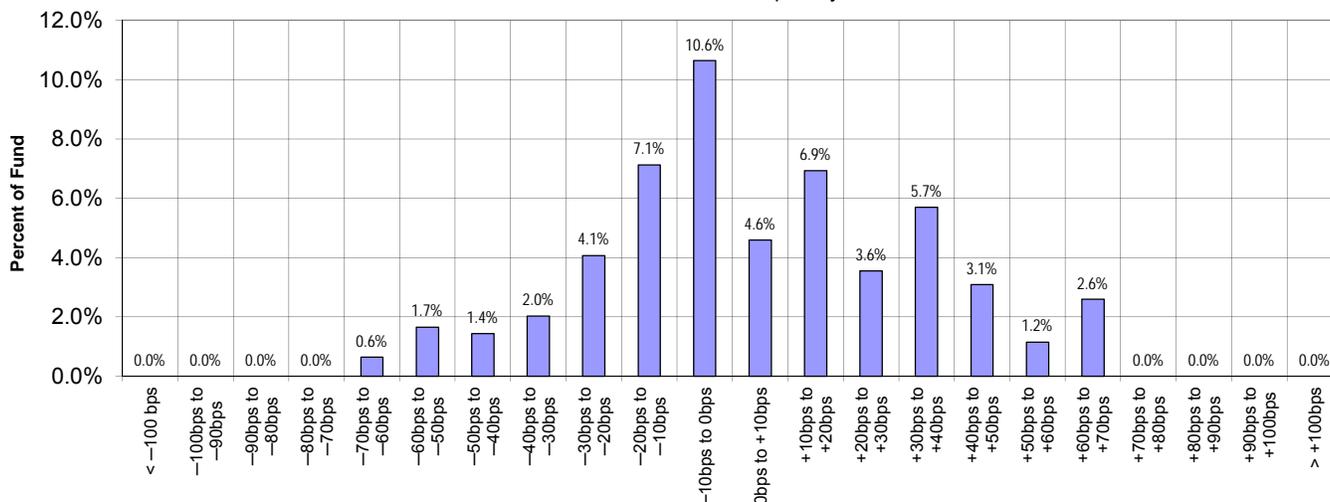


U.S. stocks were up 4%+ in the fourth quarter, but Oil prices slid 40%+. Forward earnings multiples were little changed for the market and most sectors with one exception for Energy. US dollar continued its strength against all other majors and the US continues to dominate the global equity markets.

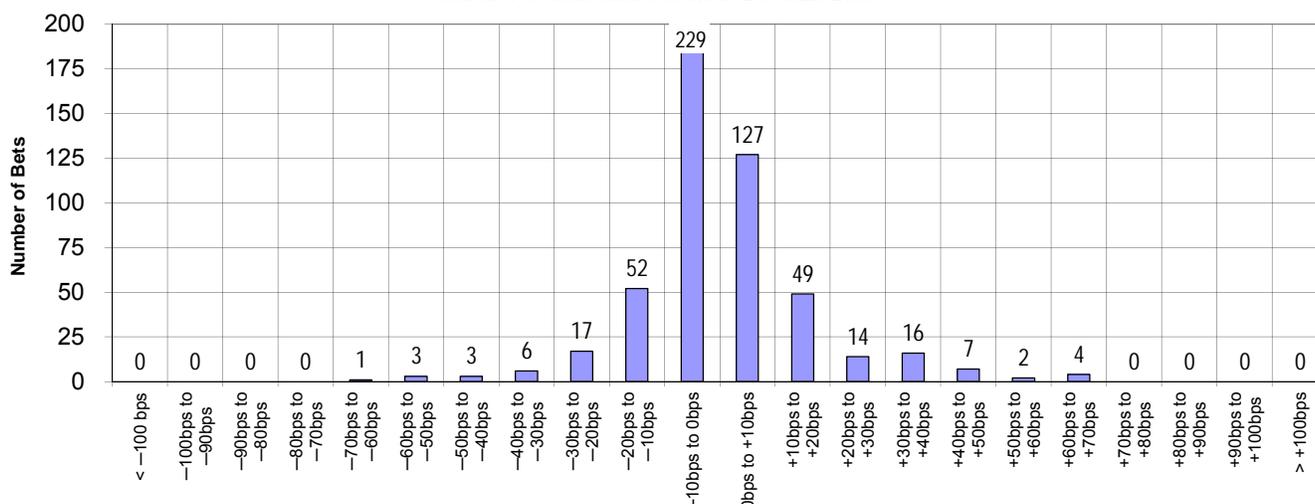
Momentum and quality-based factors were the top-performing factors in 2014. The top performing factors for 2014 were Earnings Momentum, Profit Trends, Earnings Quality, and Price Momentum. The worst performing factors in 2014 were Price Volatility, Price Reversal, and Traditional Value also within both large-cap and small-cap. Among the S&P 500 sectors, Utilities was the best performing sector in 2014 with a (+28.9%) total return for the year. Health care, Information Technology and Consumer staples, all performed well for the year. Energy went from the best performing sector in the third quarter to the worst performing sector in the fourth quarter and the 2014 year, losing (-7.78%) for the year. The other laggard was the Telecommunications sector with a return just over (+2.9%) for the 2014 calendar year.

The quant fund underperformed in the quarter versus the benchmark. We reduced the portfolio beta and tightened the tracking error to further neutralize the risks. The Quant Fund's tracking error is at 1.17%.

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



Number of Individual Stocks in Bet Size Bins

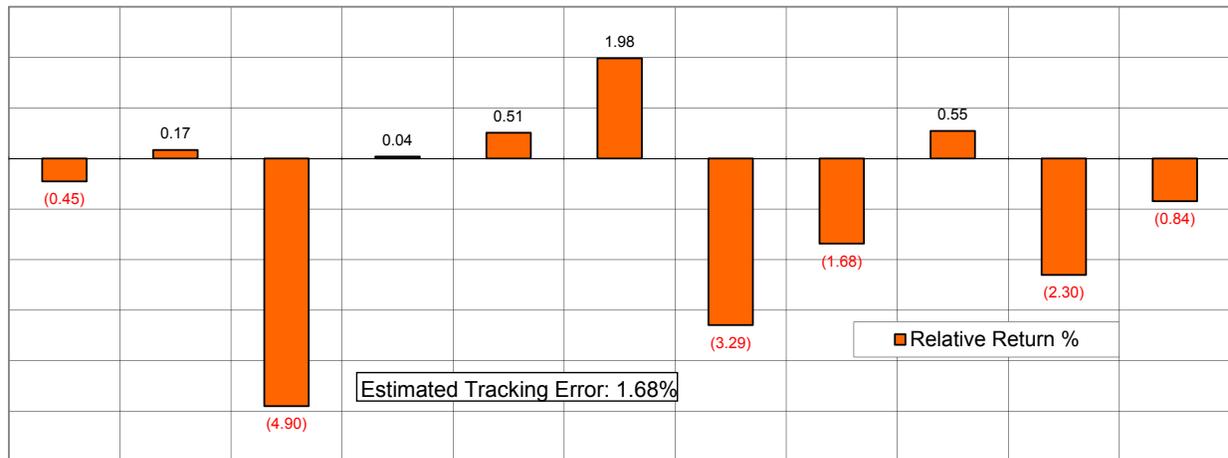
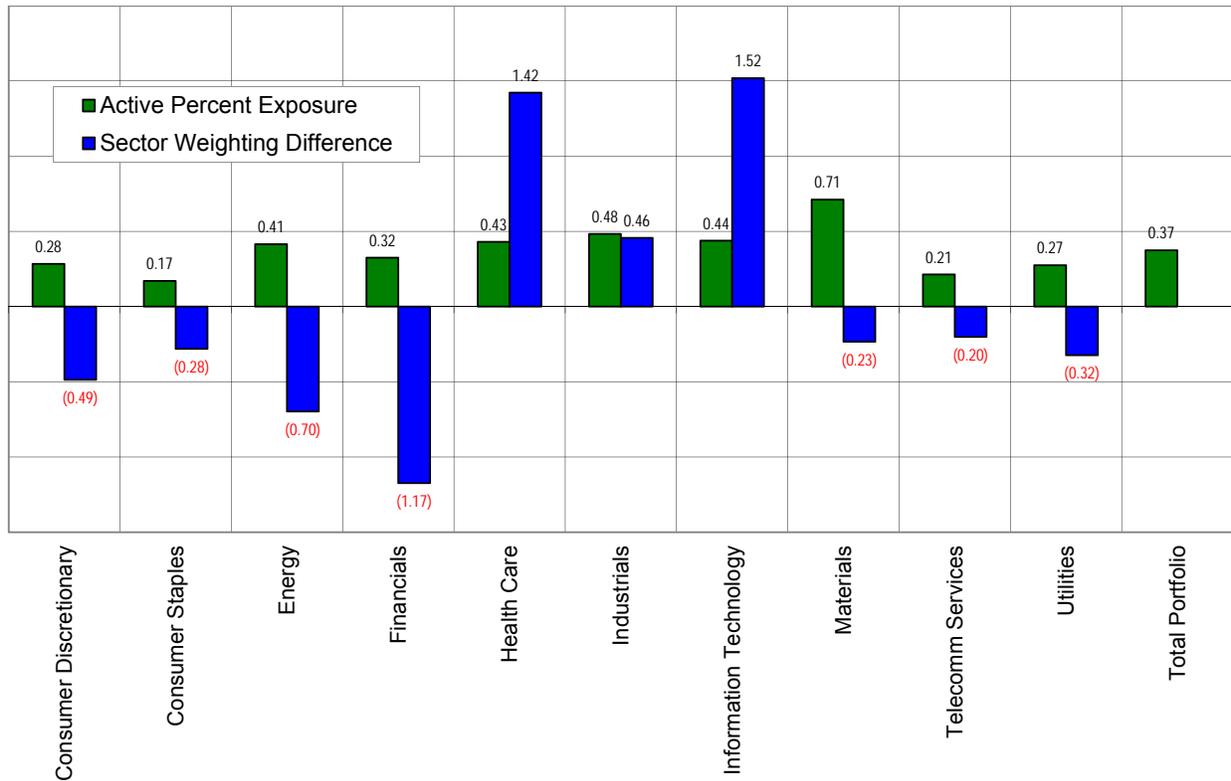


Largest Overweights by Stock in Fund

Ticker	Description	Bps Over
MU	Micron Technology, Inc.	67
ADM	Archer-Daniels-Midland Company	65
GD	General Dynamics Corporation	65
AAPL	Apple Inc.	62
AMGN	Amgen Inc.	58
MO	Altria Group, Inc.	57
DFS	Discover Financial Services	48
SNDK	SanDisk Corporation	47
PCLN	Priceline Group Inc	45
UNH	UnitedHealth Group Incorporated	44
NOV	National Oilwell Varco, Inc.	43
SWKS	Skyworks Solutions, Inc.	42
LMT	Lockheed Martin Corporation	41
UNP	Union Pacific Corporation	40
HD	Home Depot, Inc.	40
AMP	Ameriprise Financial, Inc.	40
AET	Aetna Inc.	38
SHW	Sherwin-Williams Company	38
LO	Lorillard, Inc.	37
QRVO	RF Micro Devices, Inc	37

Largest Underweights by Stock in Fund

Ticker	Description	Bps Under
AMZN	Amazon.com, Inc.	-65
CSCO	Cisco Systems, Inc.	-58
PM	Philip Morris International Inc.	-56
GE	General Electric Company	-52
MCD	McDonald's Corporation	-50
CVX	Chevron Corporation	-48
KO	Coca-Cola Company	-46
ABT	Abbott Laboratories	-37
XOM	Exxon Mobil Corporation	-36
EBAY	eBay Inc.	-35
OXY	Occidental Petroleum Corporation	-34
SPG	Simon Property Group, Inc.	-31
QCOM	QUALCOMM Incorporated	-31
DHR	Danaher Corporation	-29
EOG	EOG Resources, Inc.	-28
TMO	Thermo Fisher Scientific Inc.	-27
COF	Capital One Financial Corporation	-25
FDX	FedEx Corporation	-25
D	Dominion Resources, Inc.	-25
SO	Southern Company	-24

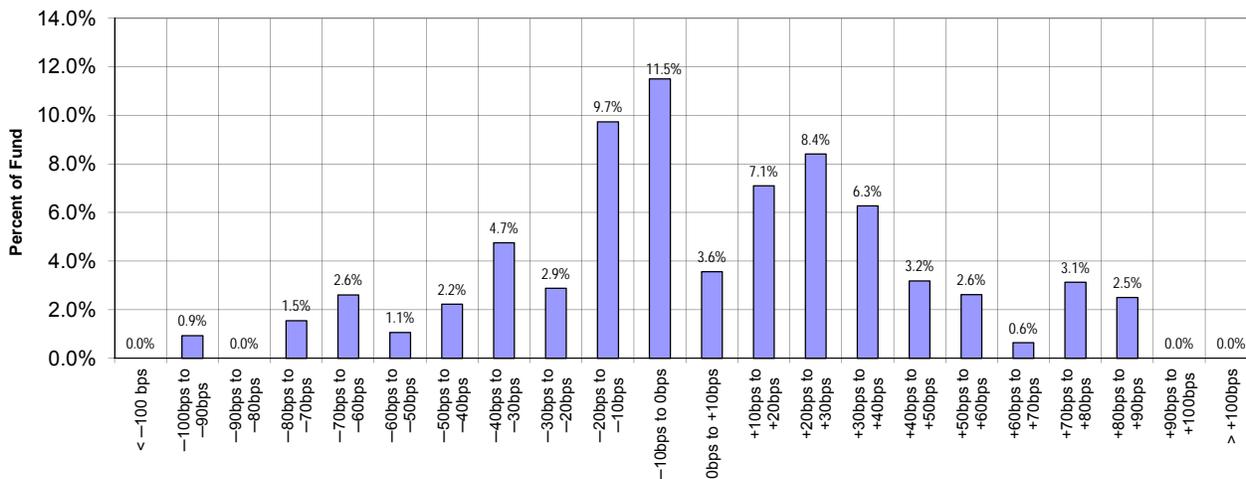


The continuation of good news supports US equity markets: expanding economy, dovish Fed supported by ease in Europe, China and Japan, and low inflation led by energy prices. The Goldilocks environment is proving irresistible for foreign investors who keep buying. The New Year may have brought a change in seasons: the "surprisingly good news" has shifted from the US to Europe as has the forced injection of money and a tilt in the terms of trade after some euro depreciation. Lower oil prices are unambiguously positive for Europe, call it "ambiguously positive" for the United States.

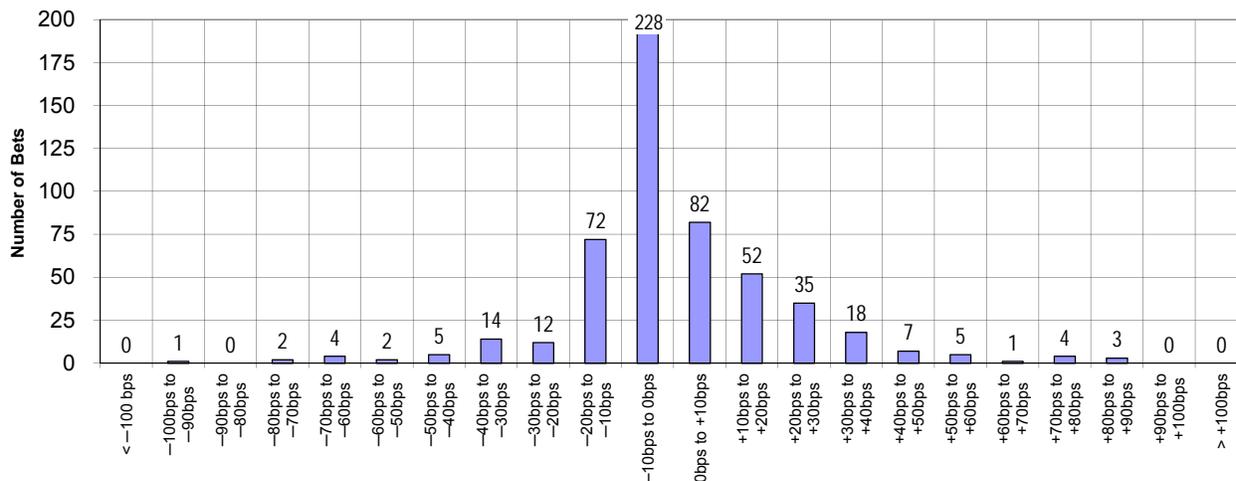
The Sector Fund maintained an overweight to Information Technology, Health Care and Industrials to capture the rewards of an improving economy. The underweight to the Energy sector was particularly helpful. The very companies that have led the way in growing domestic oil production in the United States the last three years proved to be most vulnerable to falling oil prices and detracted from performance. The release of the latest iPhone allowed the Technology investor to swap away from the Apple supply chain into software and services which also subtracted from performance. To anticipate the iWatch is to anticipate small technology content and small investment returns.

Some events are impossible to foretell and the Sector Fund was severely impacted by two. At the start of the quarter Apple forced its supplier GT Advanced Technologies into a surprise bankruptcy when the latter failed to produce their sapphire glass covers for the iPhone. Oil service stalwart Halliburton bid for competitor Baker-Hughes at a hefty premium and at the worst possible point in the oil market cycle. These two corporate events were responsible for the majority of the performance shortfall in the fourth quarter.

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



Number of Individual Stocks in Bet Size Bins



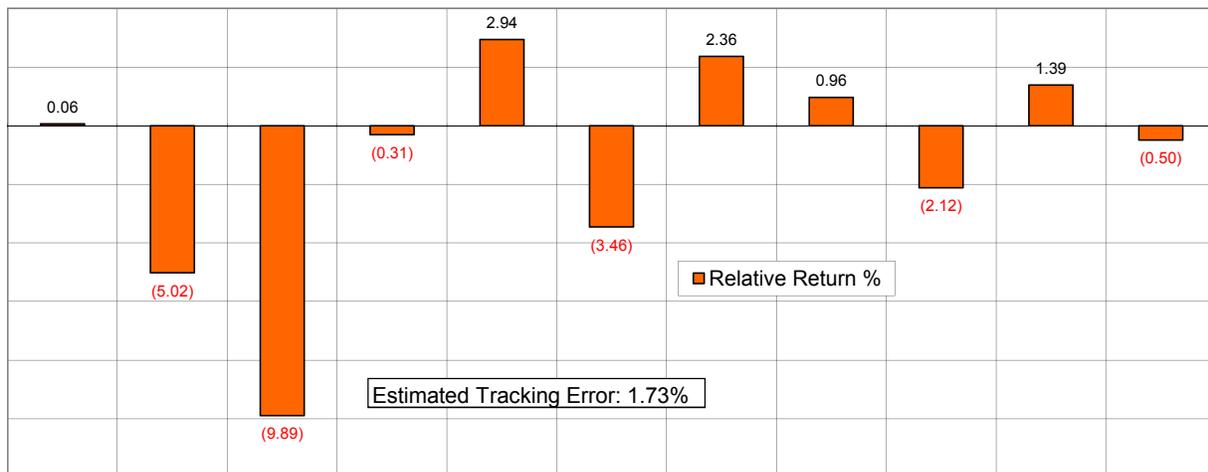
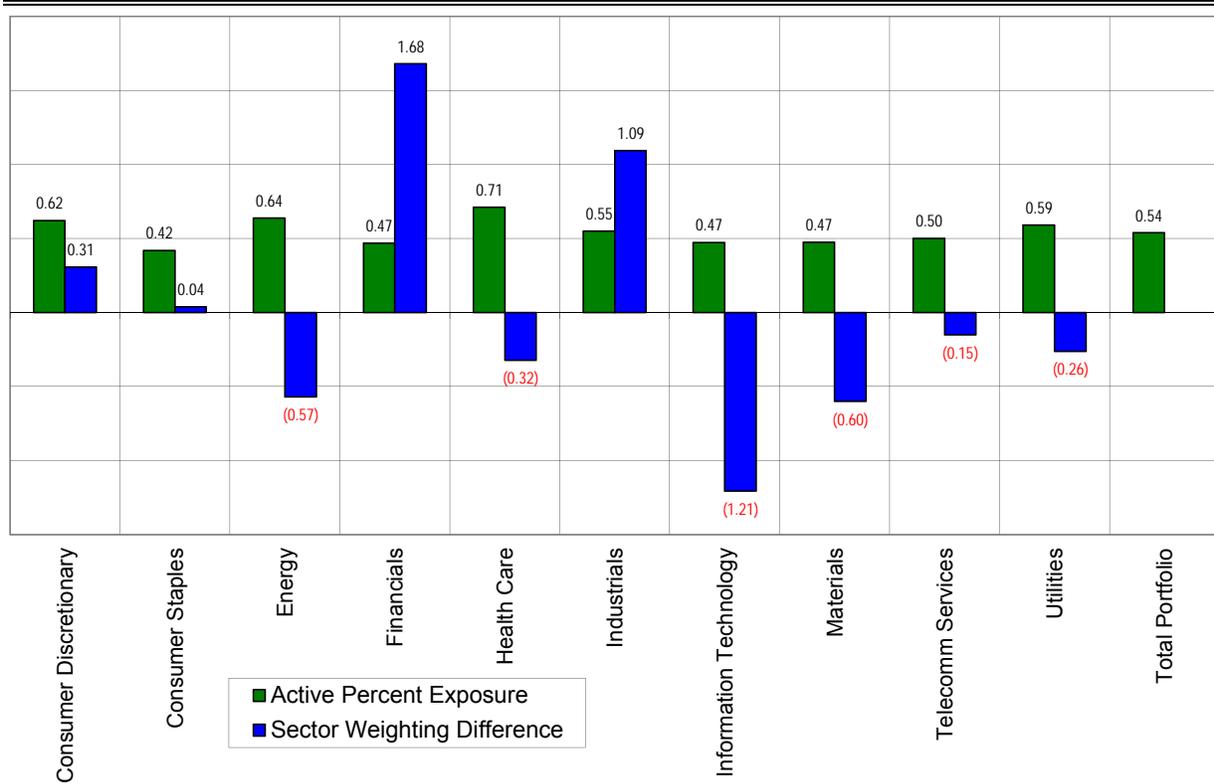
Largest Overweights by Stock in Fund

Ticker	Description	Bps Over Index Wt
SYNA	Synaptics Incorporated	84
MU	Micron Technology, Inc.	83
NXPI	NXP Semiconductors NV	83
AVGO	Avago Technologies Limited	80
AMAT	Applied Materials, Inc.	80
AAPL	Apple Inc.	77
SNDK	SanDisk Corporation	77
MDT	Medtronic Plc	64
BMJ	Bristol-Myers Squibb Company	53
AGN	Allergan, Inc.	53
EOG	EOG Resources, Inc.	53
VMW	Vmware, Inc. Class A	52
ZMH	Zimmer Holdings, Inc.	51
LYB	LyondellBasell Industries NV	49
SWKS	Skyworks Solutions, Inc.	49
SWN	Southwestern Energy Company	48
MWV	MeadWestvaco Corporation	46
HCC	HCC Insurance Holdings, Inc.	42
LUV	Southwest Airlines Co.	42
DAL	Delta Air Lines, Inc.	42

Largest Underweights by Stock in Fund

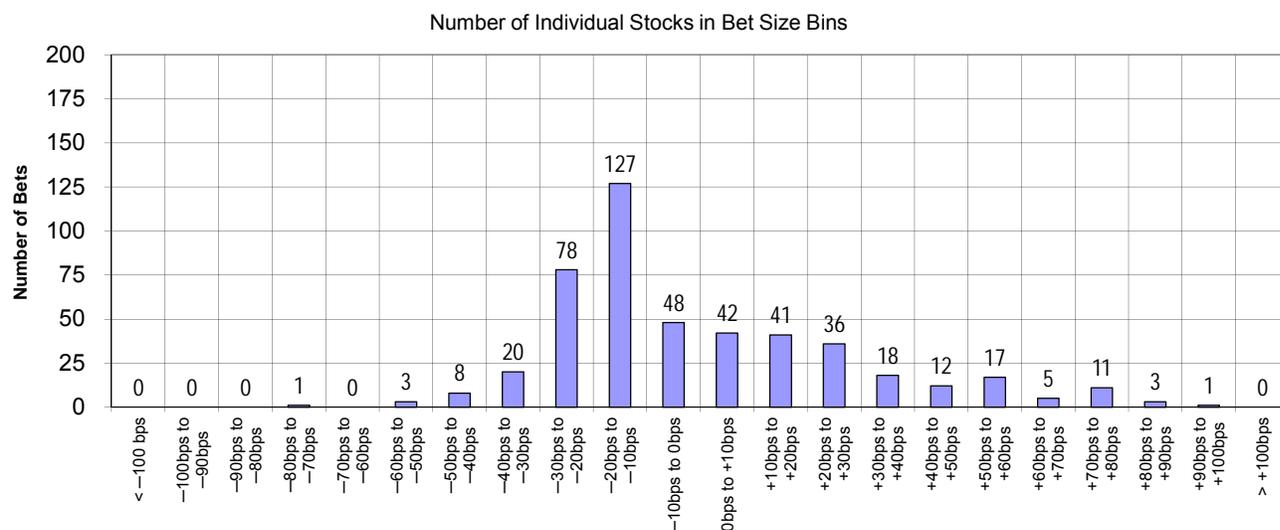
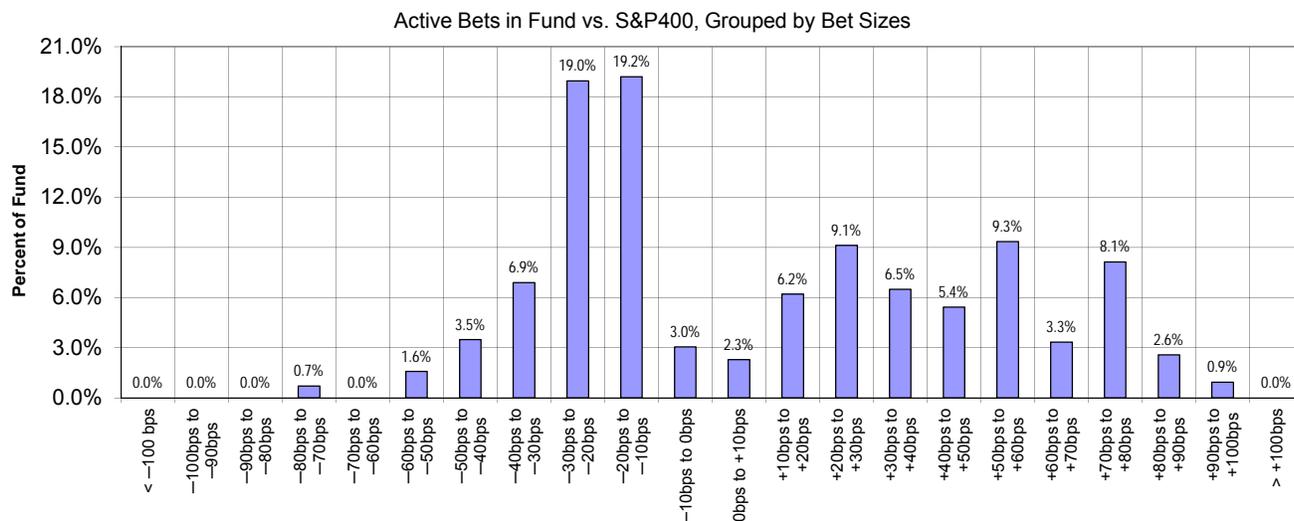
Ticker	Description	Bps Under
MSFT	Microsoft Corporation	-93
CSCO	Cisco Systems, Inc.	-78
CVX	Chevron Corporation	-77
JNJ	Johnson & Johnson	-68
ORCL	Oracle Corporation	-67
AMGN	Amgen Inc.	-66
INTC	Intel Corporation	-61
UTX	United Technologies Corporation	-53
UNH	UnitedHealth Group Incorporated	-53
GE	General Electric Company	-49
BA	Boeing Company	-47
T	AT&T Inc.	-43
UPS	United Parcel Service, Inc. Class B	-42
HPQ	Hewlett-Packard Company	-41
KMI	Kinder Morgan Inc Class P	-39
LLY	Eli Lilly and Company	-37
PFE	Pfizer Inc.	-37
DD	E. I. du Pont de Nemours and Comp	-37
EBAY	eBay Inc.	-35
OXY	Occidental Petroleum Corporation	-34

Mid Cap Fund
Mike Keeler, CFA



Stocks were fairly strong through most of the December quarter although global economic concerns put a damper on enthusiasm late in the period. Size factors (smaller was better) dominated relative returns during the period although growth provided a modest boost. Domestic equities lagged the S & P 1500 benchmark return for the quarter as mid and small cap stocks recovered somewhat from an extended period of underperformance while we remained underexposed to that particular sub-class. In addition our large cap funds underperformed their benchmarks during the quarter.

The Mid Cap Fund underperformed the S & P Mid Cap 400 return during the quarter. Good stock selection in the Healthcare and Technology sectors was more than offset by difficulties in the Energy Sector. Stock selection accounted for all of the return against the benchmark



Largest Overweights by Stock in Fund

Ticker	Description	Bps Over
CNC	Centene Corporation	95
UTHR	United Therapeutics Corporation	86
EW	Edwards Lifesciences Corporation	86
AFG	American Financial Group, Inc.	85
RE	Everest RE Group, Ltd.	79
OCR	Omnicare, Inc.	78
CSC	Computer Sciences Corporation	76
RJF	Raymond James Financial, Inc.	75
SCG	SCANA Corporation	74
SWKS	Skyworks Solutions, Inc.	74
CMA	Comerica Incorporated	72
UNM	Unum Group	72
DST	DST Systems, Inc.	71
IDXX	IDEXX Laboratories, Inc.	71
HLS	HealthSouth Corporation	70
EWBC	East West Bancorp, Inc.	70
XL	XL Group Plc	69
PRXL	PAREXEL International Corporation	66
HNT	Health Net, Inc.	65
R	Ryder System, Inc.	65

Largest Underweights by Stock in Fund

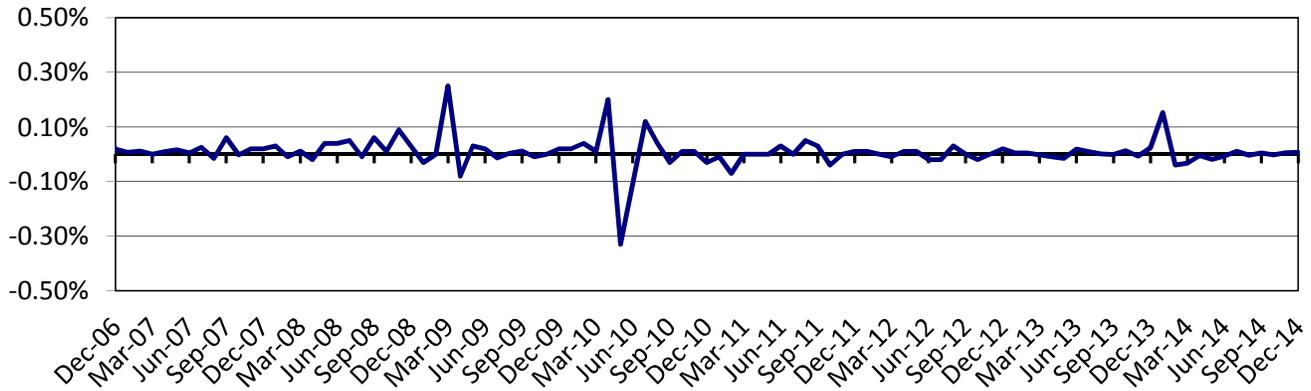
Ticker	Description	Bps Under
HSIC	Henry Schein, Inc.	-70
MTD	Mettler-Toledo International Inc.	-53
JAH	Jarden Corporation	-53
LKQ	LKQ Corporation	-52
COO	Cooper Companies, Inc.	-48
CBST	Cubist Pharmaceuticals, Inc.	-47
SLXP	Salix Pharmaceuticals, Ltd.	-45
ENDP	Endo International Plc	-43
O	Realty Income Corporation	-42
RPM	RPM International Inc.	-42
EQIX	Equinix Inc	-41
MD	MEDNAX, Inc.	-41
HOLX	Hologic, Inc.	-40
DRC	Dresser-Rand Group Inc.	-38
CYH	Community Health Systems, Inc.	-38
OII	Oceaneering International, Inc.	-38
AYI	Acuity Brands, Inc.	-37
FRT	Federal Realty Investment Trust	-37
HAIN	Hain Celestial Group, Inc.	-36
CVD	Covance Inc.	-36

Passive Domestic Equity Funds
Derrick Dagnan, CFA & Michael Giggie

Index Fund vs. S&P 500

Assets as of December 2014: \$3.1B

Monthly Excess Returns

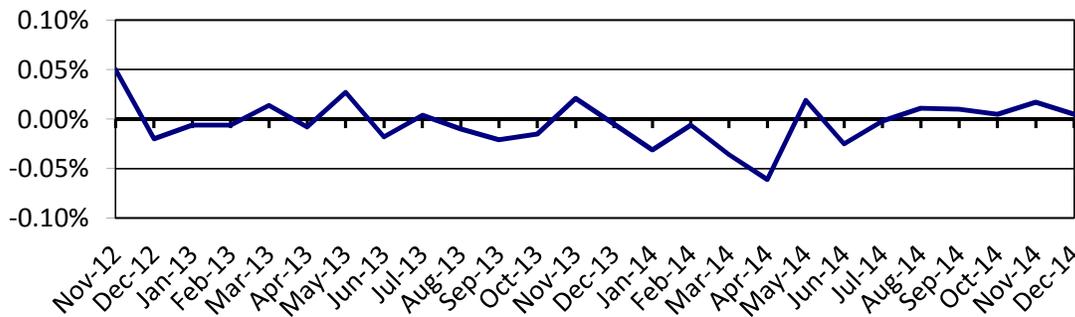


	1 Quarter	1 Year	3 Years	Since Inception
Index Fund	4.9%	13.8%	20.5%	7.8%
S&P 500	4.9%	13.7%	20.4%	7.7%
Excess Return	0.0%	0.1%	0.1%	0.1%
Tracking Error	0.02%	0.17%	0.10%	0.20%

Small Cap Fund vs. S&P 600

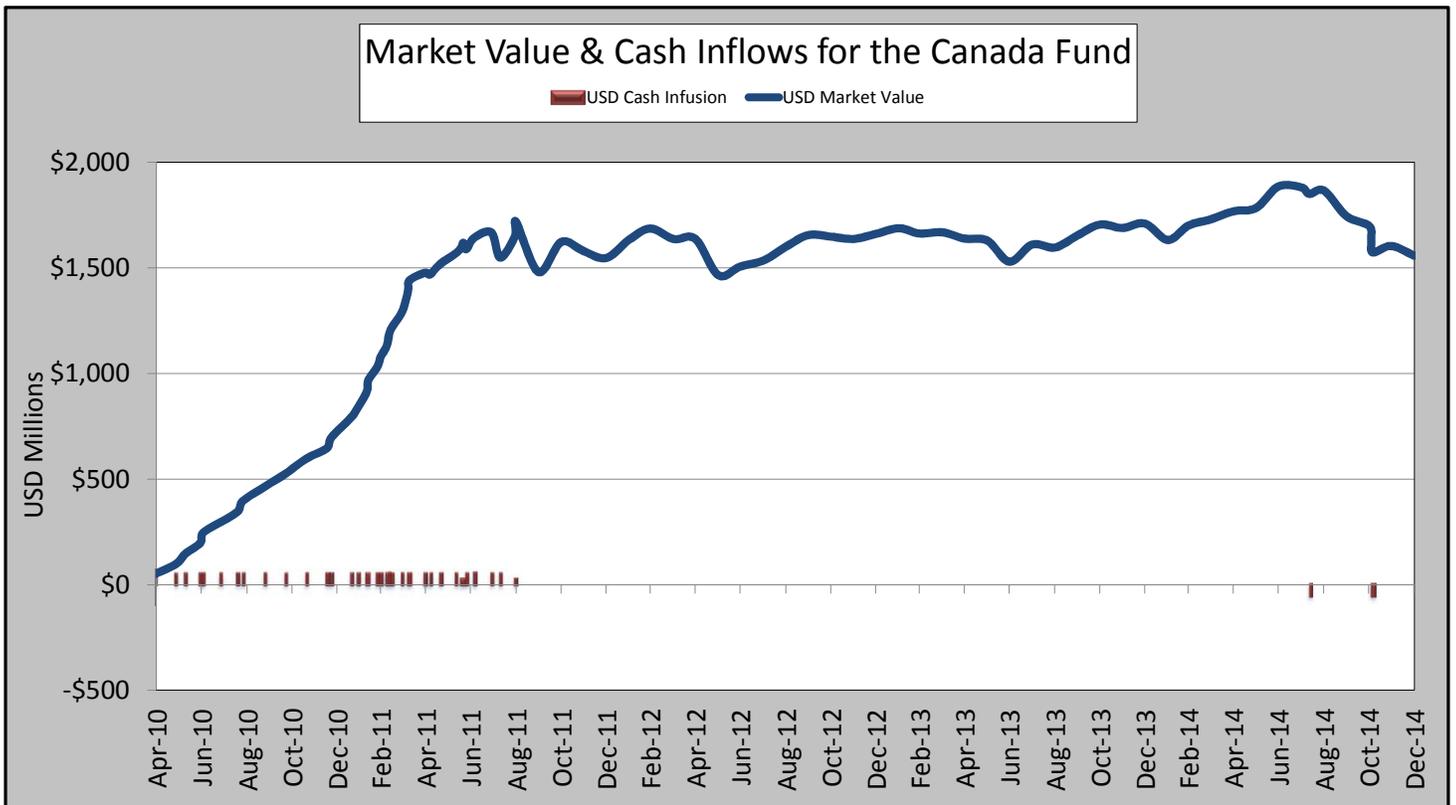
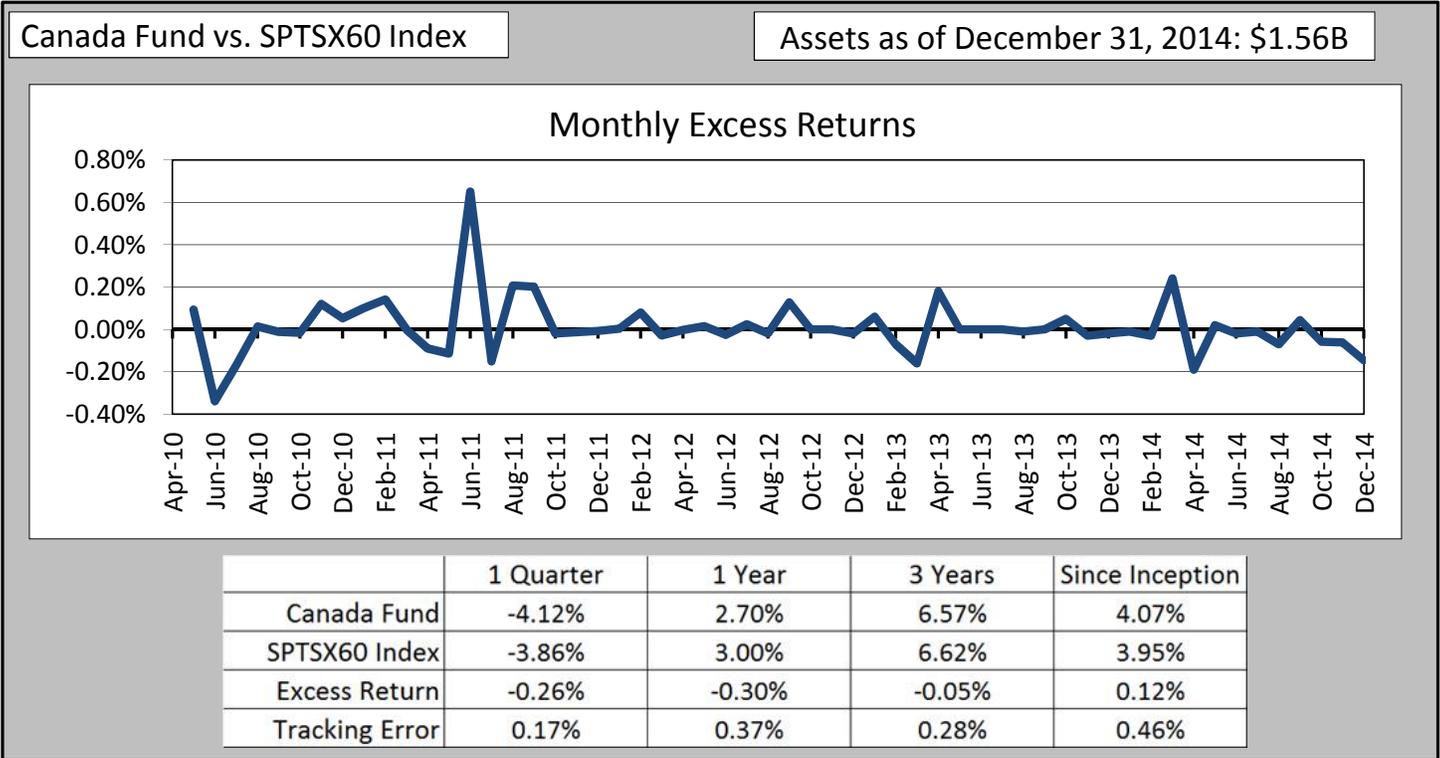
Assets as of September 2014:

Monthly Excess Returns



	1 Quarter	1 Year	3 Years	Since Inception
Small Cap Fund	9.87%	5.7%	N/A	22.72%
S&P 600	9.85%	5.8%	N/A	20.72%
Excess Return	0.03%	-0.1%	N/A	1.99%
Tracking Error	0.02%	0.09%	N/A	2.52%

Canada Fund
Kushal Gupta, CFA, CAIA



Manager Performance Comparison - International Equity

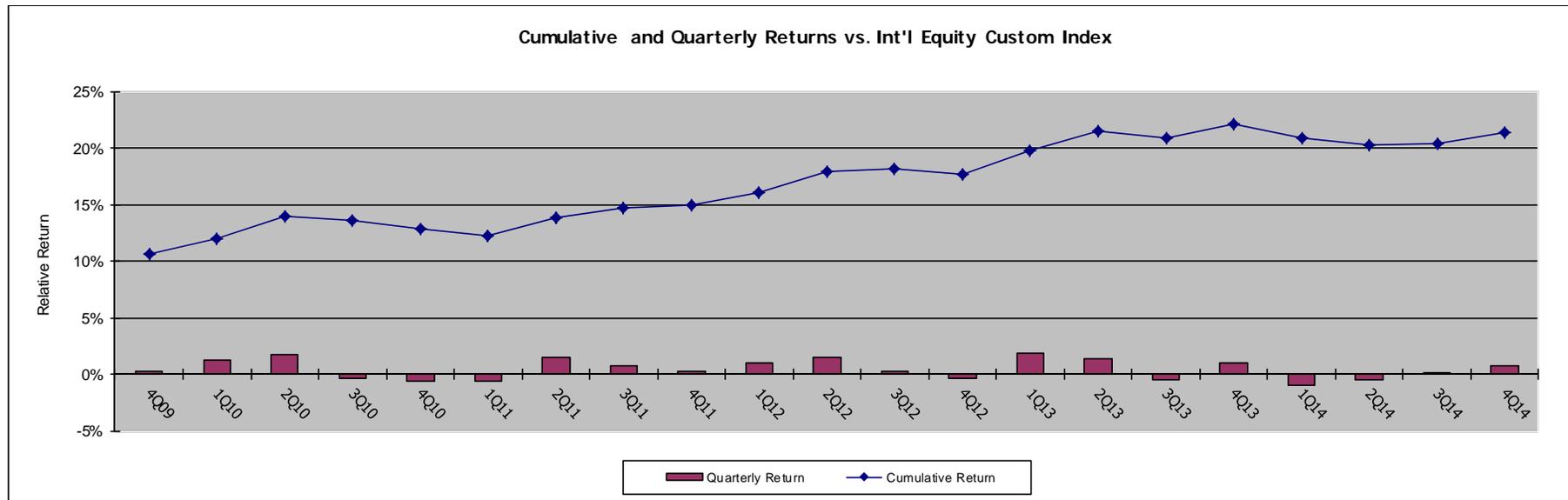
As of December 31, 2014

Manager Returns For The Quarter Ending December 31, 2014

Manager	Manager Return	Benchmark	Benchmark Return
American Century	-2.53	MSCI EAFE Small Cap	-2.27
Baring Asset Mgmt	-3.64	MSCI EAFE	-3.57
Emerging Market ETF	-5.65	MSCI Emg Mkts Net Custom	-5.50
GE Asset Mgmt	-4.01	MSCI Europe	-4.35
Marathon	-2.45	MSCI EAFE net	-3.57
Pacific Indexed Portfolio ¹	-1.85	MSCI Pacific net	-2.08
PanAgora Asset Mgmt	-1.95	MSCI EAFE	-3.57
Pyramis Global	-1.38	MSCI EAFE Small Cap	-2.27
TT International	-2.08	MSCI EAFE	-3.57
Walter Scott	-1.60	MSCI EAFE net ²	-3.57
International Equity	-3.21	Int'l Equity Custom ³	-3.98

Manager Returns For Five Years Ending December 31, 2014

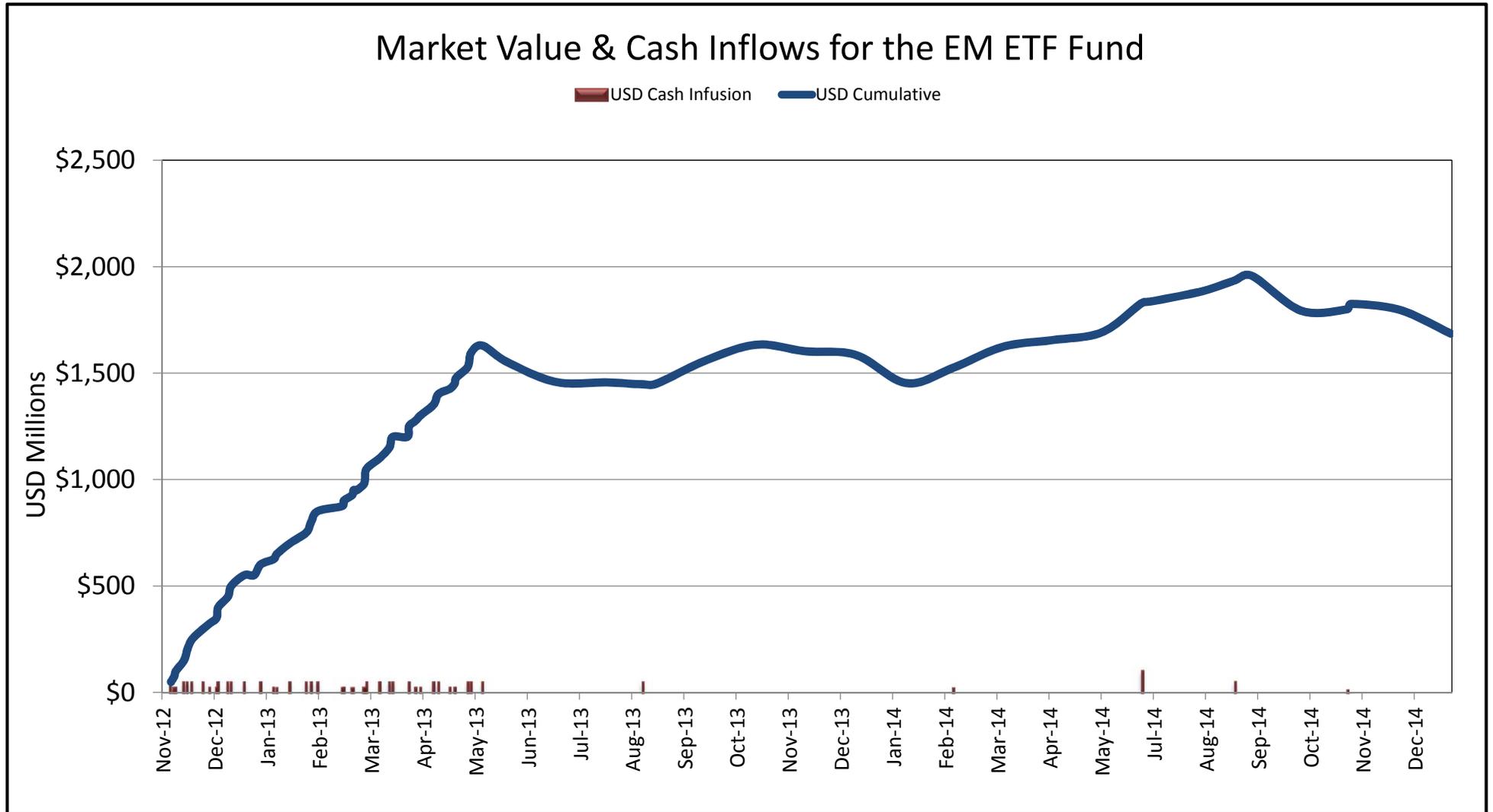
Manager	Manager Return	Benchmark	Benchmark Return
American Century	11.38	MSCI EAFE Small Cap	8.63
Baring Asset Mgmt	6.57	MSCI EAFE	5.33
Emerging Market ETF		MSCI Emg Mkts Net Custom	
GE Asset Mgmt	4.97	MSCI Europe	5.28
Marathon	8.89	MSCI EAFE net	5.33
Pacific Indexed Portfolio ¹	4.63	MSCI Pacific net	5.66
PanAgora Asset Mgmt	8.30	MSCI EAFE	5.33
Pyramis Global	10.14	MSCI EAFE Small Cap	8.63
TT International	7.37	MSCI EAFE	5.33
Walter Scott	8.12	MSCI EAFE net ²	5.33
International Equity	6.87	Int'l Equity Custom ³	4.48



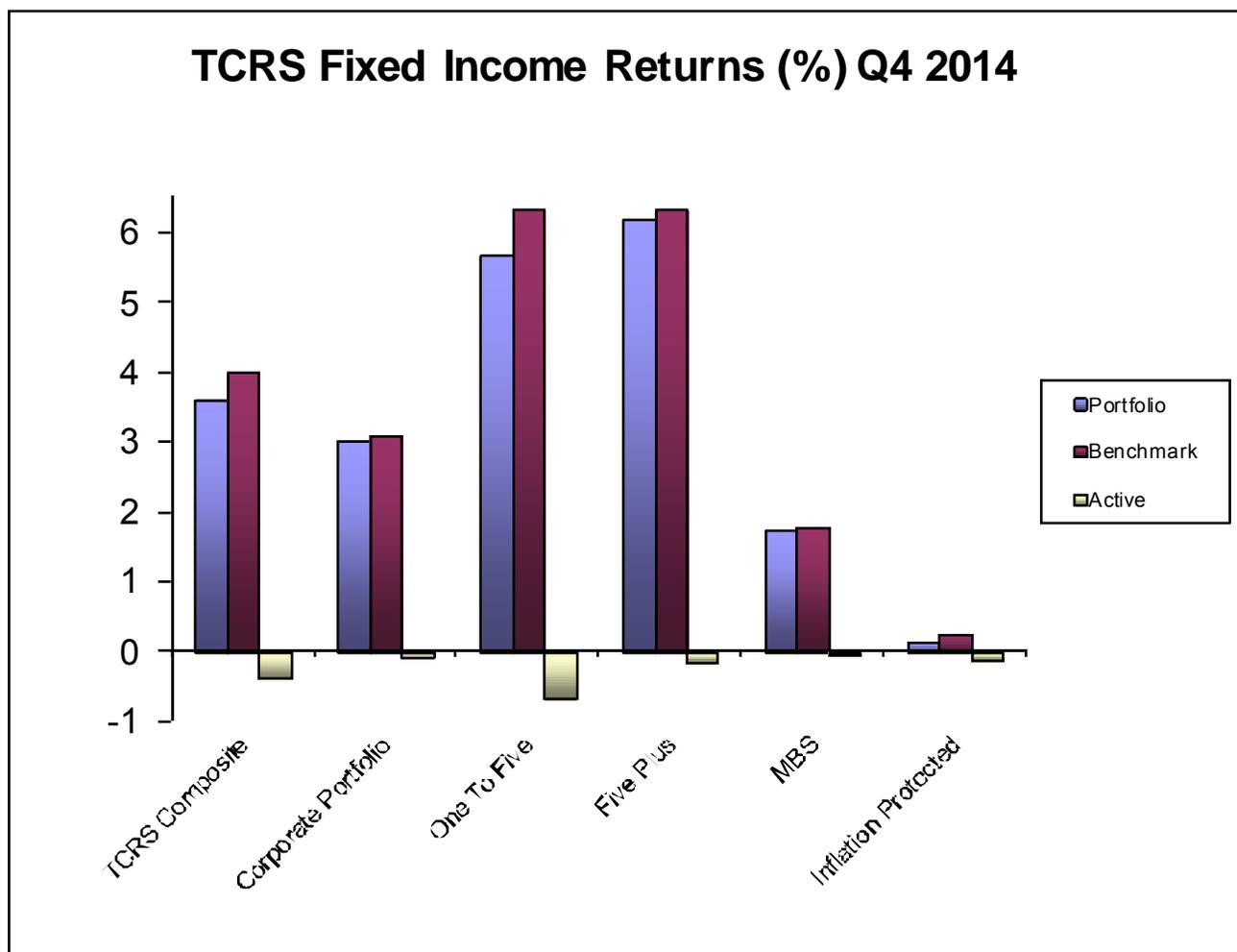
¹ Effective as of 9/4/10, internally managed by TCRS staff. Amundi Pacific terminated.
² Effective 3/1/09. Benchmark is linked to MSCI Europe Index.
³ Effective 1/1/13, benchmark is 72.22% MSCI EAFE IMI net/27.78% MSCI Emerging Mkts net; linked to 100% MSCI IMI net.

Emerging Markets ETF Fund
Kushal Gupta, CFA, CAIA

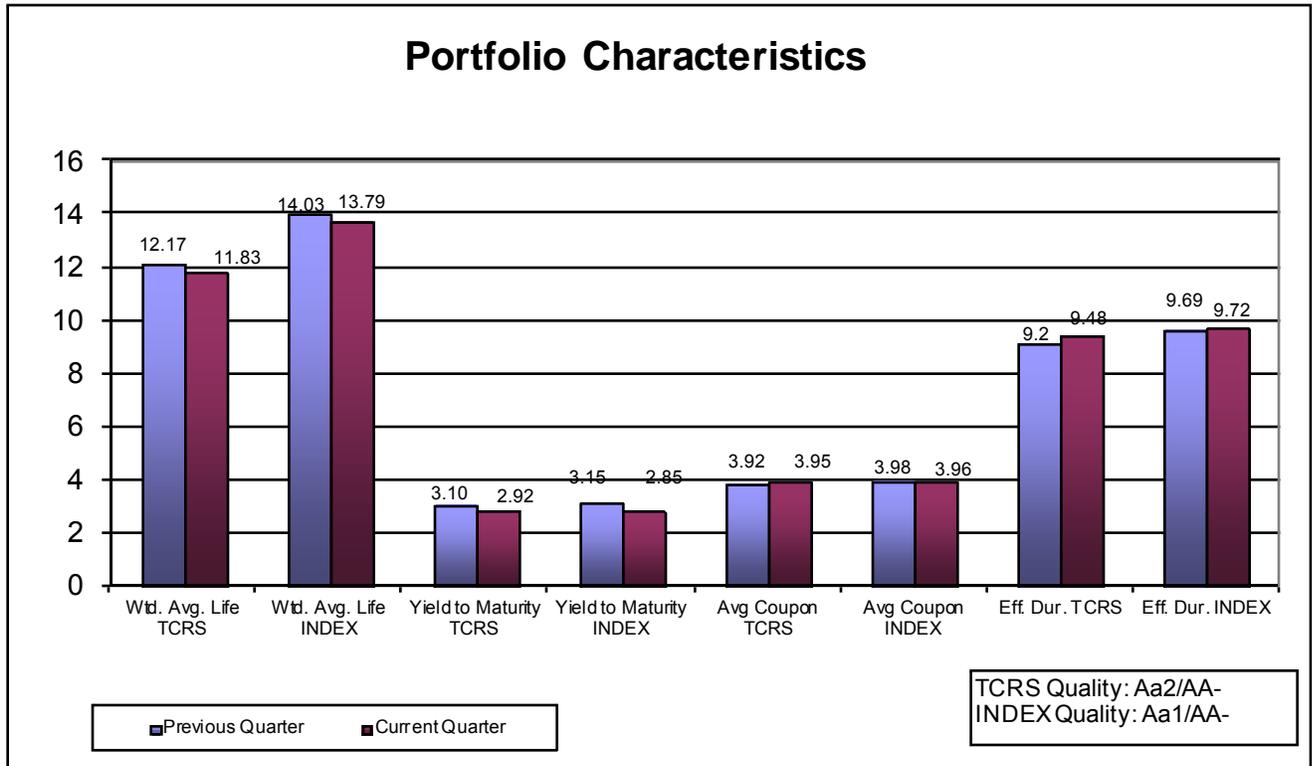
Assets as of December 31, 2014: \$1.68B



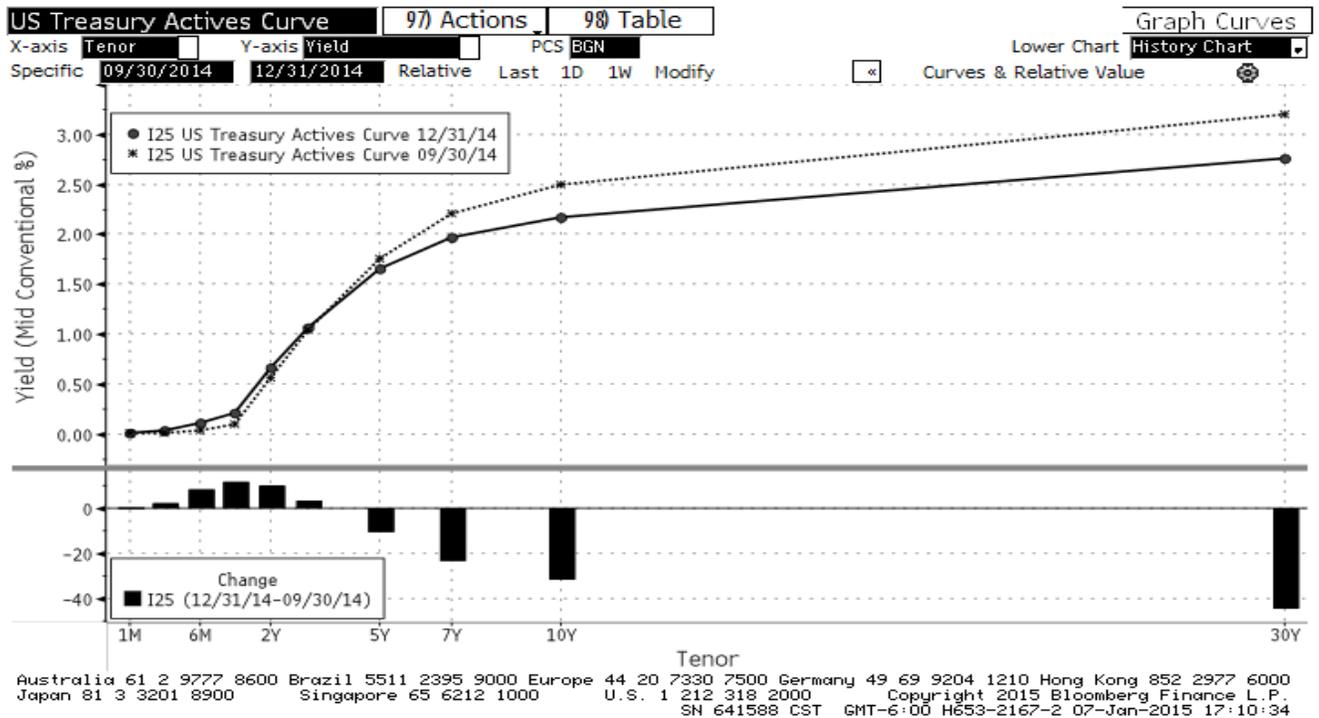
Portfolio	Value (Yield Book) (\$MMs)	Portfolio Return	Benchmark Return	Active Return
TCRS Domestic Fixed Income Composite	\$11,832	3.61	4.00	(0.38)
Corporate Portfolio	\$3,983	3.04	3.11	(0.07)
Government One To Five Years	\$1,990	5.67	6.34	(0.66)
Government Five Plus Years	\$2,067	6.19	6.34	(0.15)
Mortgage Portfolio	\$3,742	1.74	1.80	(0.06)
TCRS Inflation Protected Securities	\$2,375	0.15	0.27	(0.11)



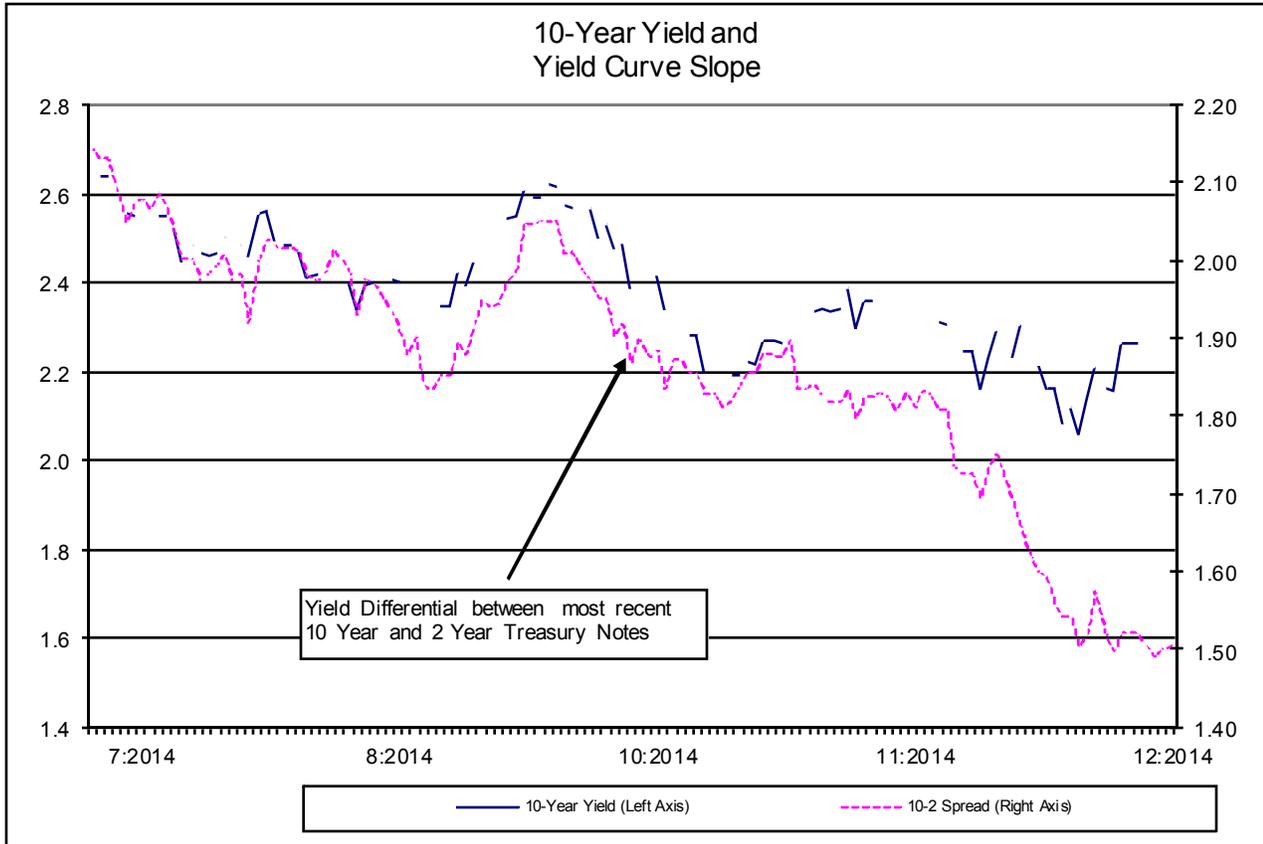
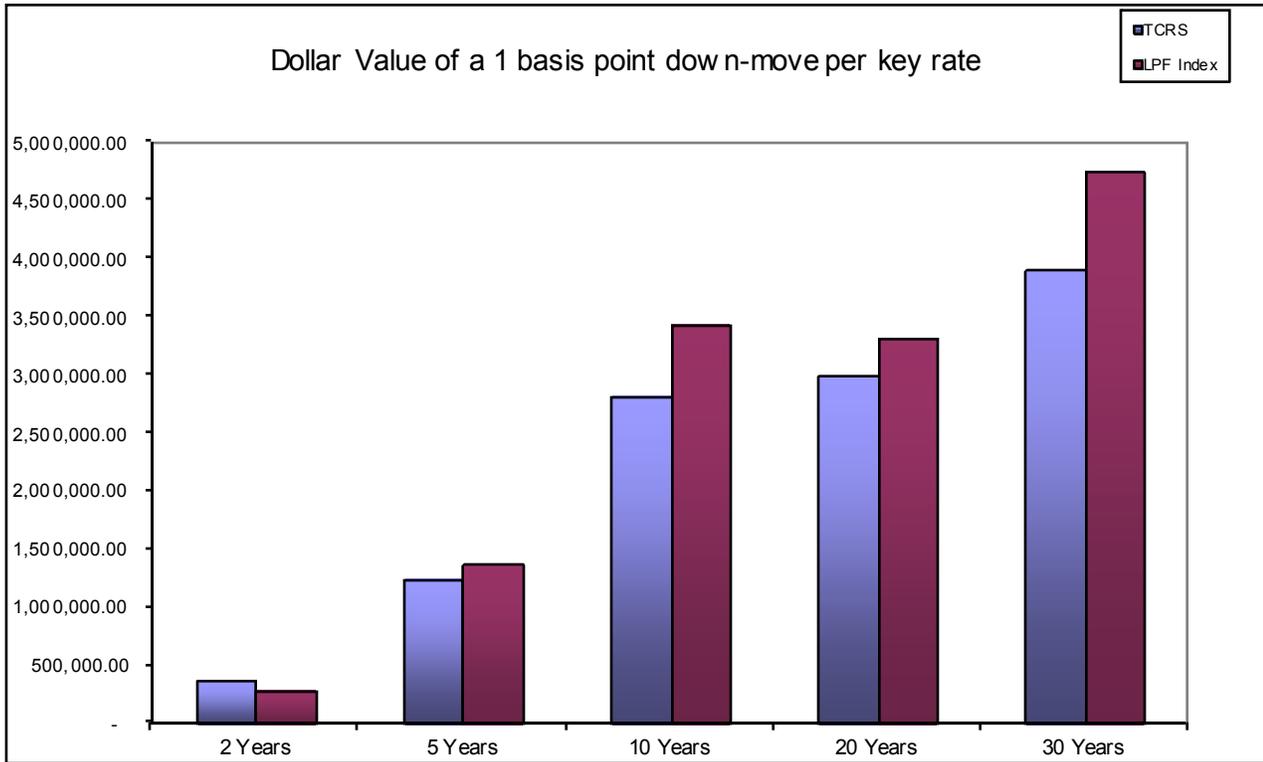
Characteristics were mostly stable from quarter to quarter, but relative duration, while still extended compared to the index, shortened.



The Yield Curve flattened



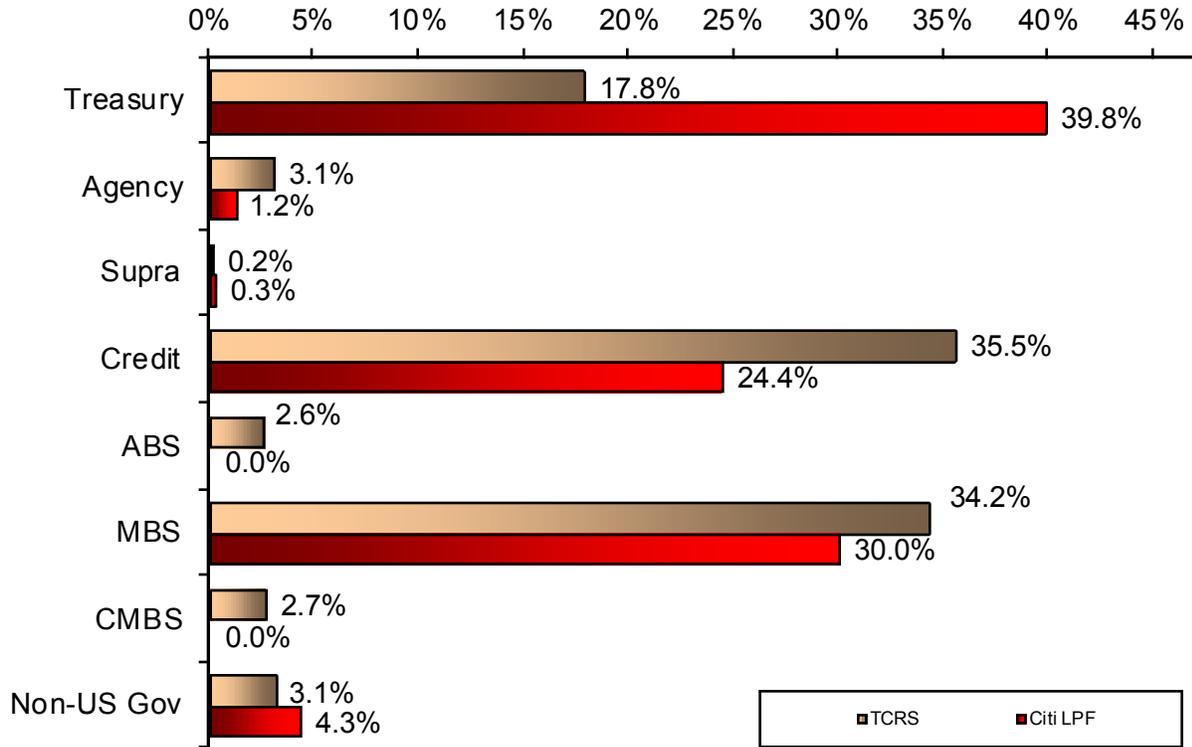
Curve positioning reflects our view that the Federal Reserve will begin to raise overnight interest rates in 2015



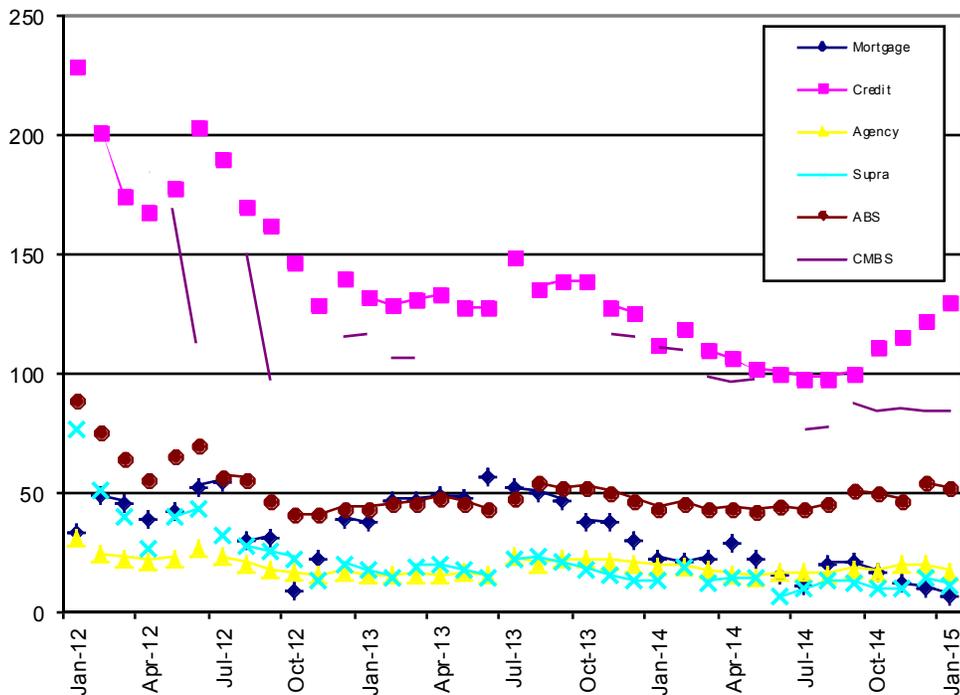
source: Bloomberg

Spreads generally widened during the quarter. Exposure reflects increased preference for credit risk over MBS risk as the Fed tapers MBS purchases and credit spreads have widened

Sector Allocation v. Index
(% market value)



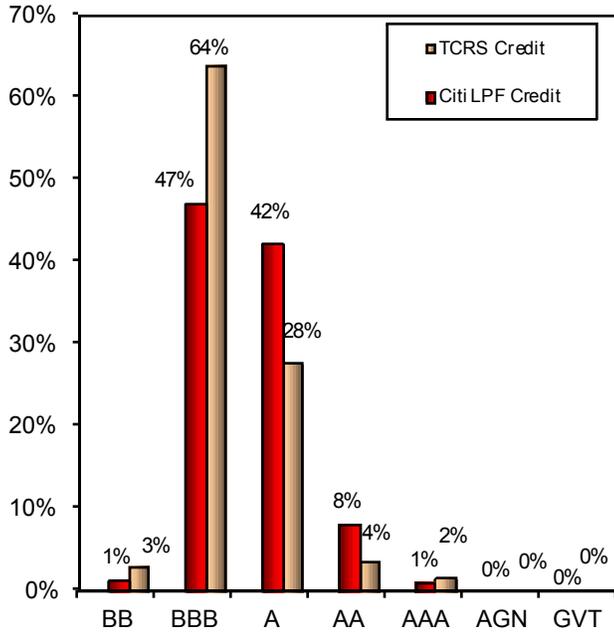
Spread to Treasuries by Asset Class
(in basis points, index data)



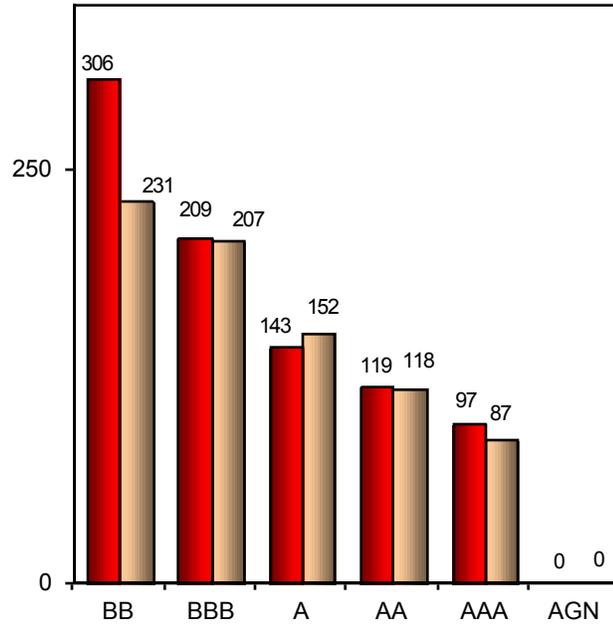
Credit Spreads widened during the quarter.

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

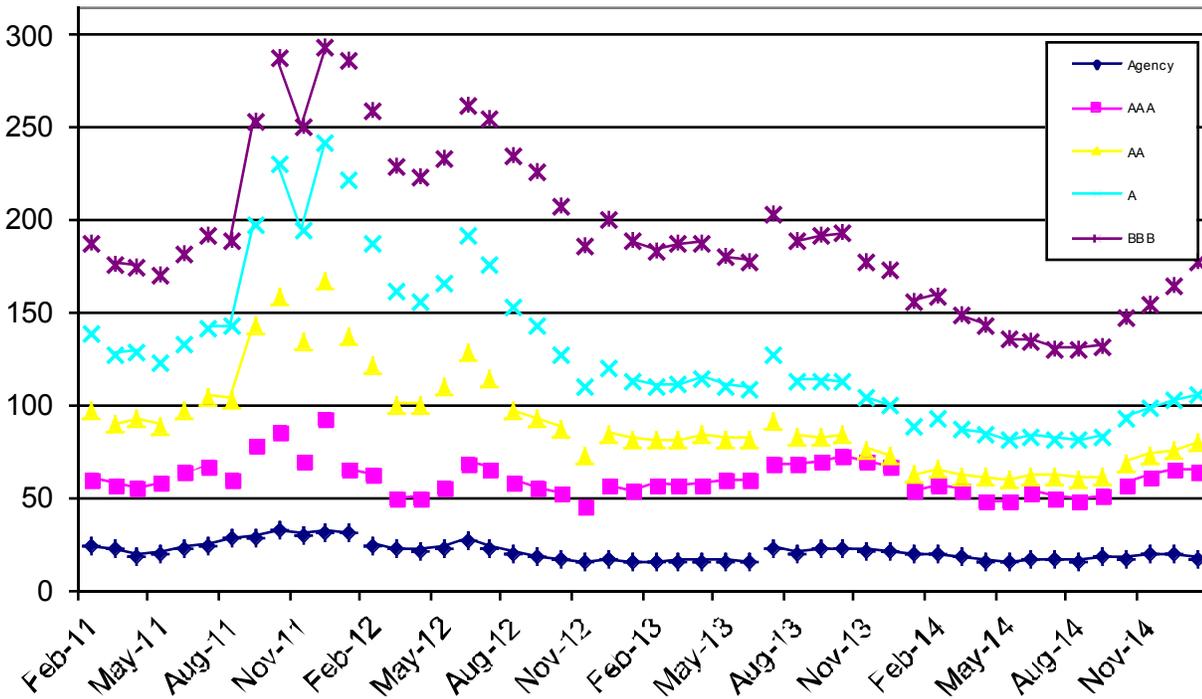
Credit Allocation v. Index
(% market value)



OAS by Credit Allocation



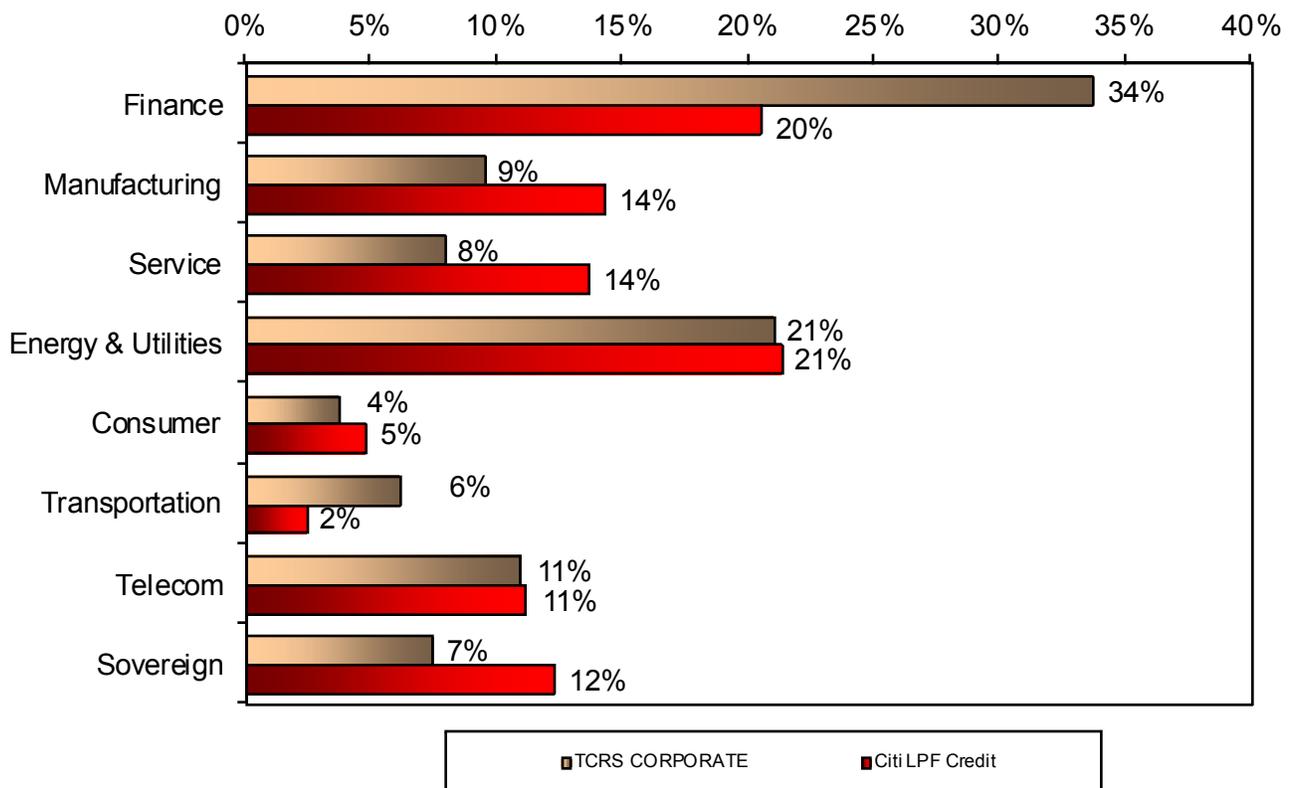
Spread to Treasury by Credit Rating
(in basis points, index data)



Top 5 Credit Holdings (by Market Value)	MktVal	% MktVal
PETROLEOS MEXICANOS	26,386	0.2
JPMORGAN CHASE & CO	25,506	0.2
GOLDMAN SACHS GROUP INC	23,999	0.2
VERIZON COMMUNICATIONS INC	23,948	0.2
CROWN CASTLE TOWERS LLC	23,639	0.2

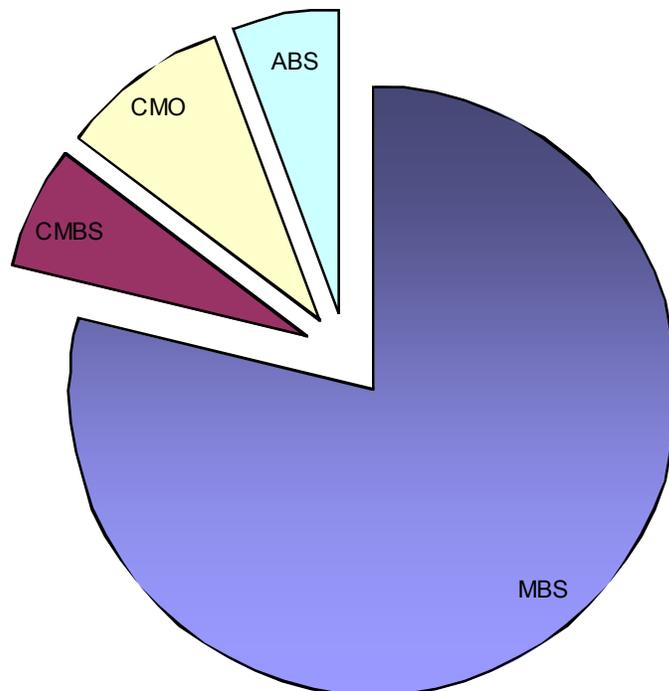
Top 5 Credit Holdings (by Dollar Duration)	\$ Duration	% \$ Duration
VERIZON COMMUNICATIONS INC	35.13	0.3
GOLDMAN SACHS GROUP INC	33.91	0.3
VERIZON COMMUNICATIONS INC	33.25	0.3
GUARDIAN LIFE INSURANCE CO	28.8	0.3
AMERICAN WATER CAP CORP	28.19	0.3

Sector Allocation v. Index
(% market value)



	Market Value (\$MM - Yield Book)	TCRS % of portfolio	CITI	Differenc
Agency Mortgage Backed Securities	\$3,736,245	31.7	30.1	1.6
GNMA				
15-Yr	\$22,427	0.2	0.1	0.1
30-Yr	\$791,130	6.7	8.2	-1.5
FNMA				
10-, 15- & 20-Yr	\$368,004	3.1	2.7	0.4
30-Yr	\$1,699,169	14.4	11.5	2.9
FHLM				
15-Yr	\$85,144	0.7	1.5	-0.8
30-Yr	\$711,466	6.0	6.1	-0.1
Agency Hybrid	\$58,905	0.5	0.0	0.5
Commercial Mortgage Backed Securities	\$308,422	2.6	0.0	2.6
CMO and Non Agency Passthroughs	\$427,292	3.6	0.0	3.6
Asset Backed Securities	\$266,165	2.3	0.0	2.2
Total Securitized Product	\$4,738,124	40.2	30.1	10.1

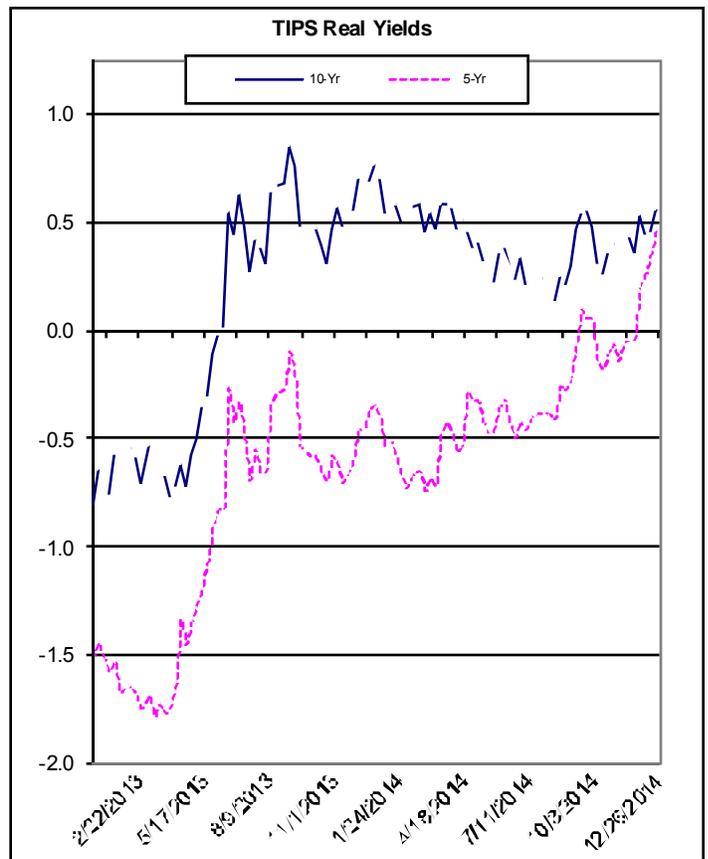
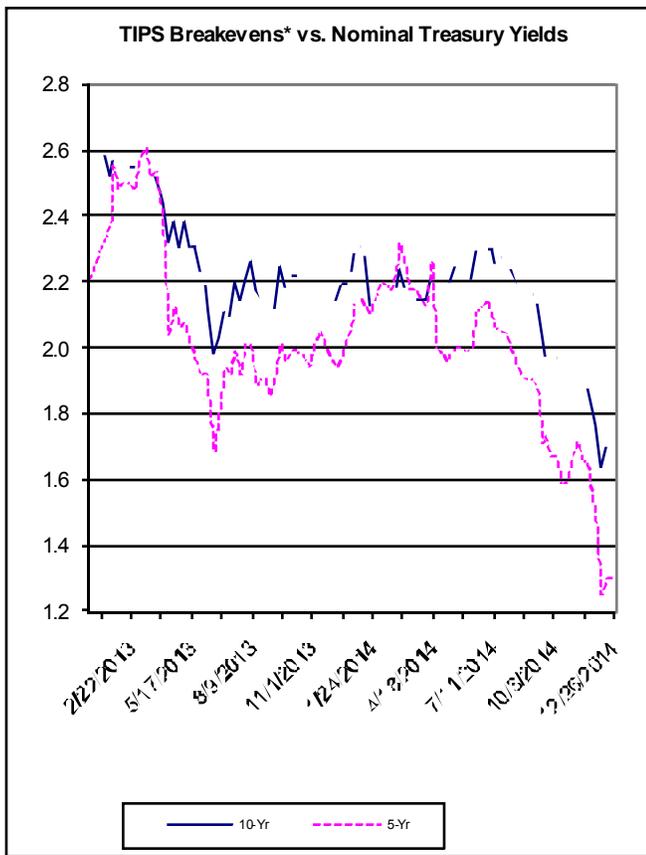
Percent of Securitized Product



Portfolio Value (Yield Book): \$2,375,127,583
 Portfolio Return: 0.15%
 Citigroup ILSI Index: 0.27%
Active Return: -0.11%

% Market Value by Duration

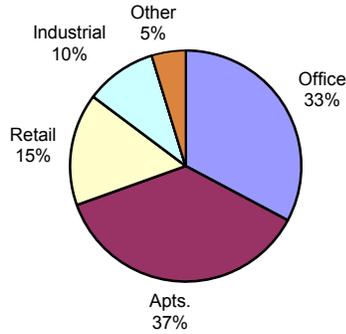
	TCRS	CITI	Difference
0-2	-0.9%	0.0%	-0.9%
2-4	1.7%	1.7%	0.0%
4-6	3.6%	3.4%	0.2%
6-8	5.1%	5.3%	-0.2%
8-10	8.8%	7.9%	0.9%
10+	13.8%	15.9%	-2.2%



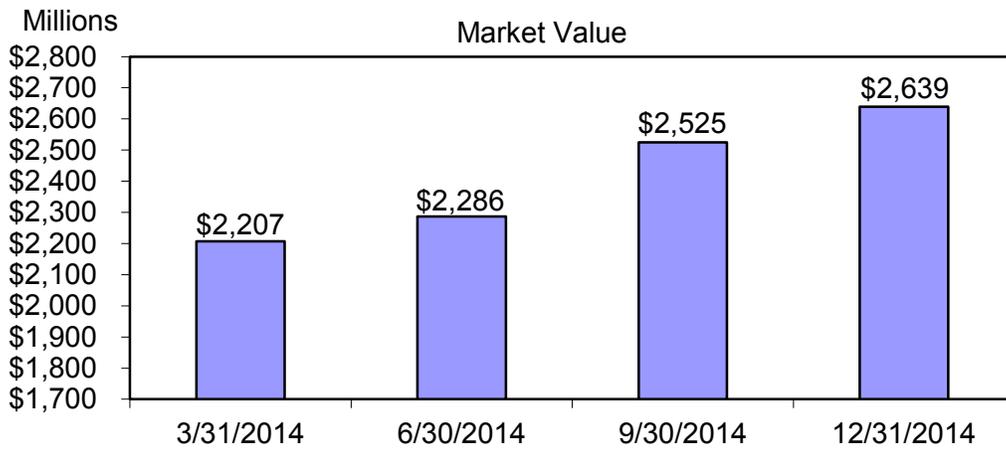
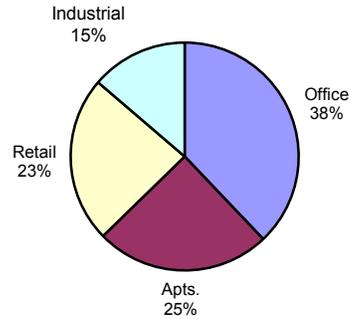
* The "breakeven" rate is the expected rate of inflation at which investment in TIPS yield the same return as investment in Treasuries

Source: Bloomberg

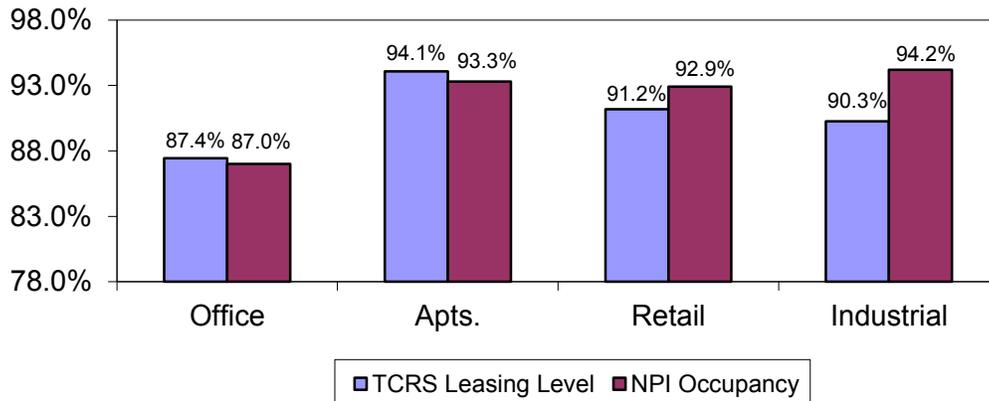
TCRS By Property Type



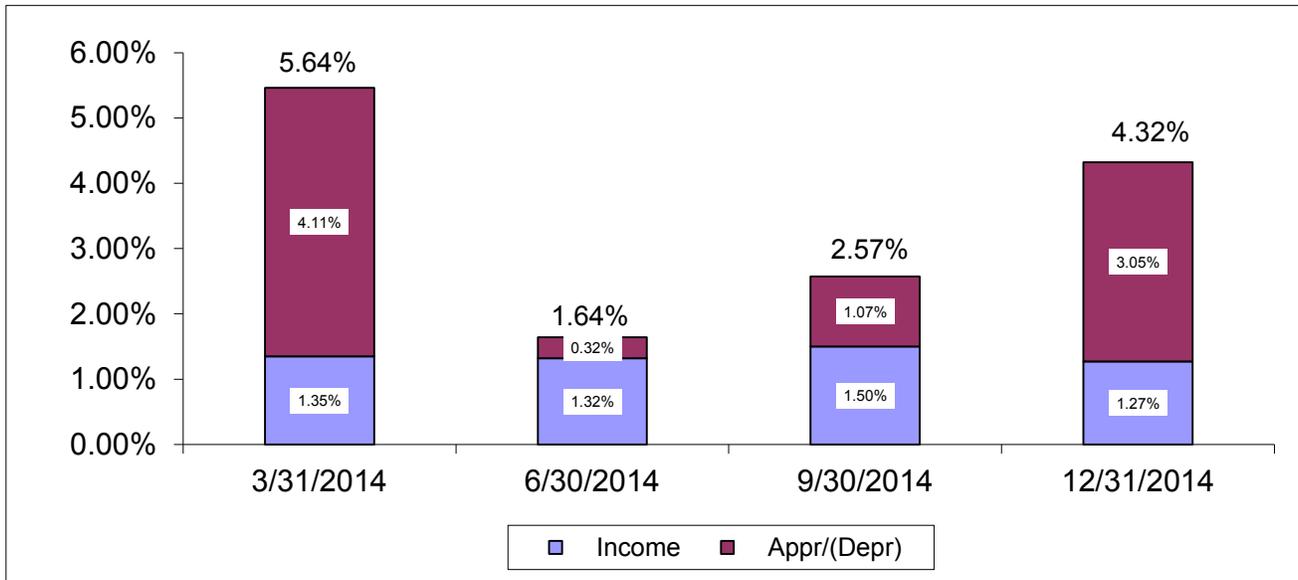
NPI By Property Type



Occupancy



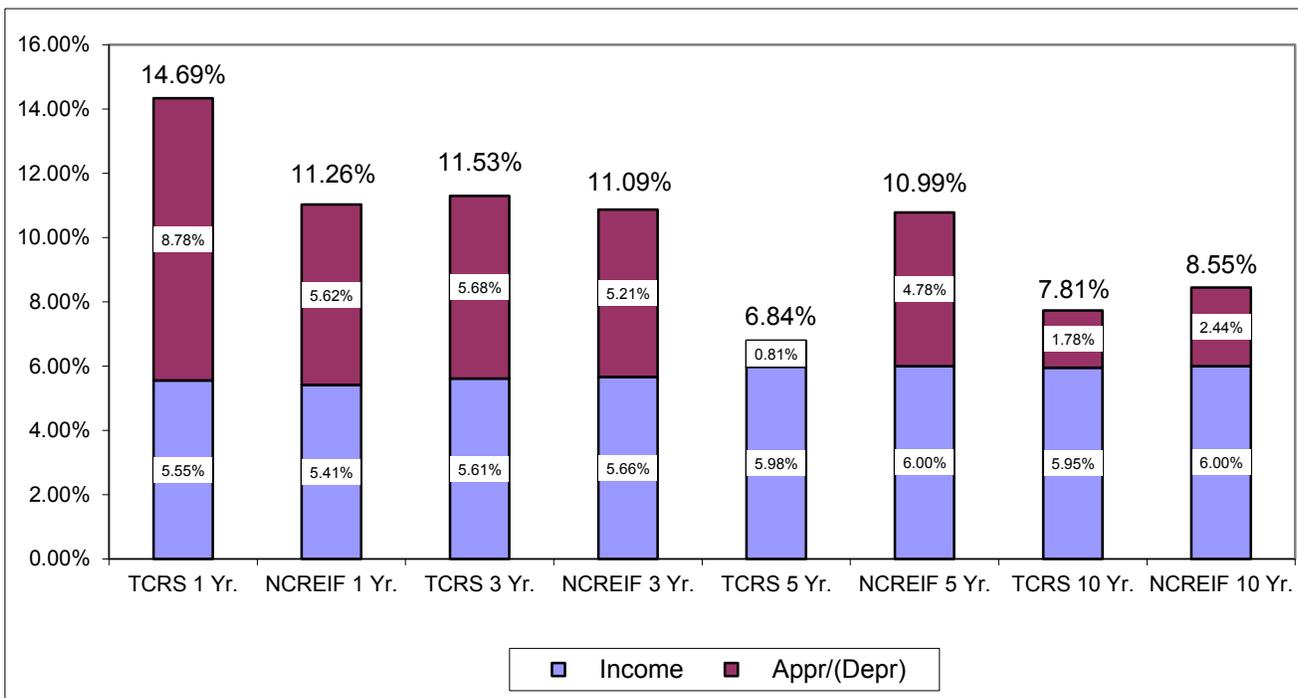
The NPI is the National Property Index of the National Council of Real Estate Investment Fiduciaries (the index used for US core properties).



All returns shown above are reported one quarter in arrears

Budgeted Annual Income Return for calendar year 2015 (excluding funds)

5.41%



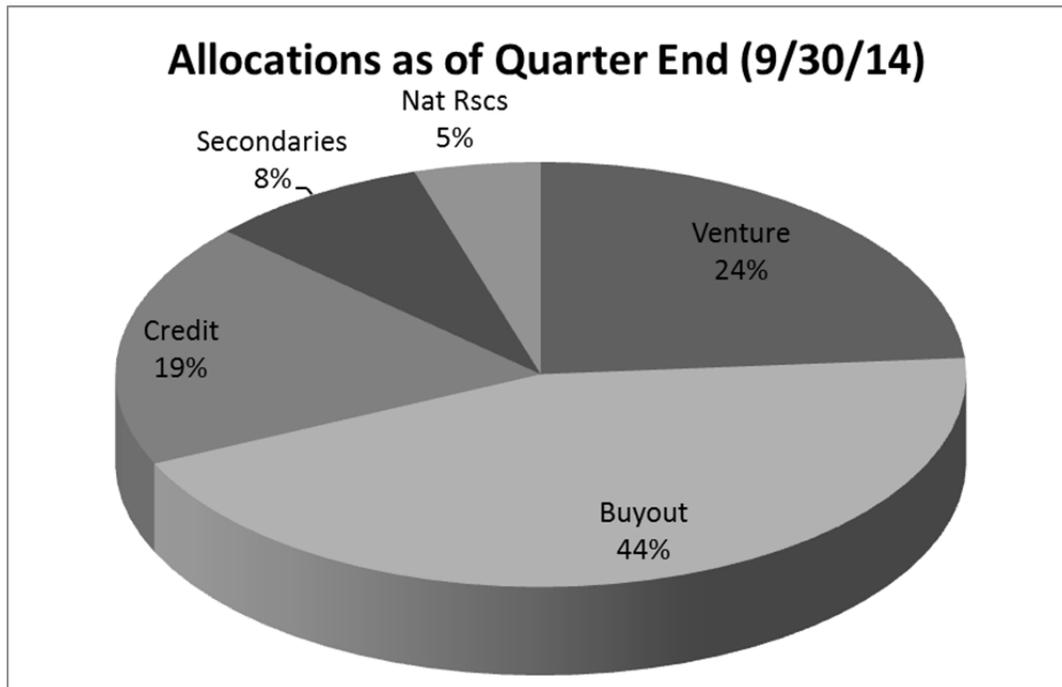
All returns shown above are reported one quarter in arrears

Tennessee Consolidated Retirement System
 Private Equity Program
 Fiscal 2Q 2015 Update
 Daniel Crews, CFA CAIA

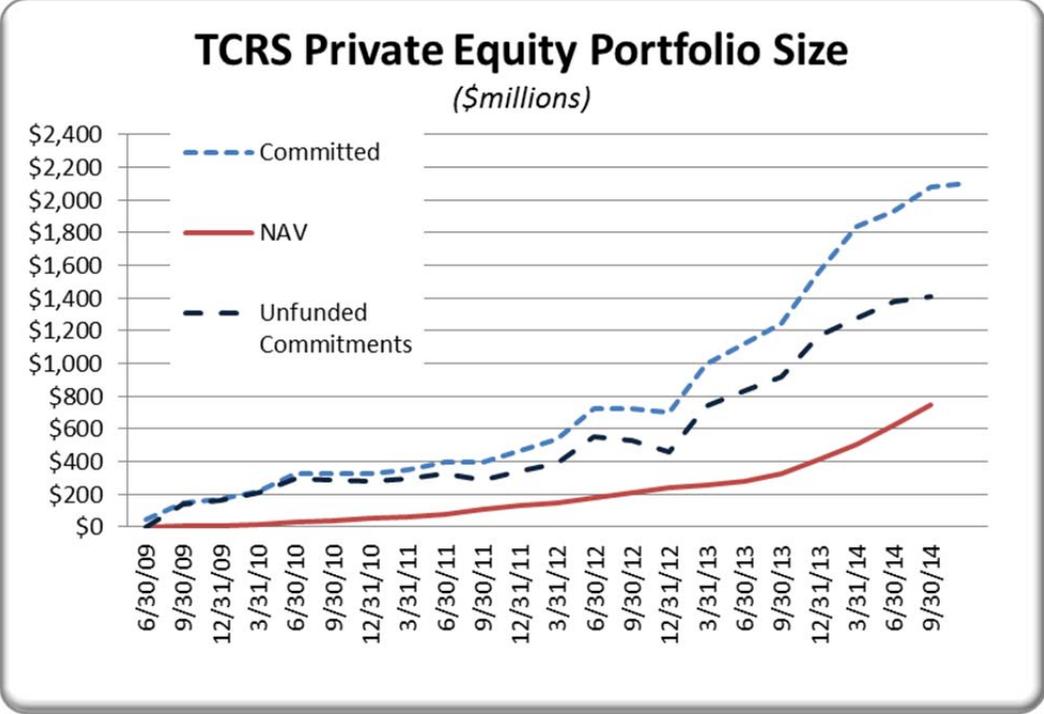
We have finalized our fiscal 1Q2015 results (the period ending 9/30/14), and are pleased to report that the program continues to demonstrate positive momentum. While Venture Capital, Natural Resources, and Secondaries returns accelerated, the Buyout and Credit Portfolios lagged.

<i>Trailing IRR</i>	Quarter	Trailing 1 Year	Since Inception
Buyout	-2.4%	15.2%	13.1%
Credit	-1.9%	8.2%	11.5%
Secondaries	13.0%	NA	NA
Venture	3.4%	44.4%	23.4%
Natural Resources	<u>4.0%</u>	<u>43.0%</u>	<u>19.7%</u>
TCRS PE Overall	0.4%	25.8%	17.0%
<i>S&P 500 + 3%</i>	<i>1.9%</i>	<i>22.9%</i>	<i>17.9%</i>

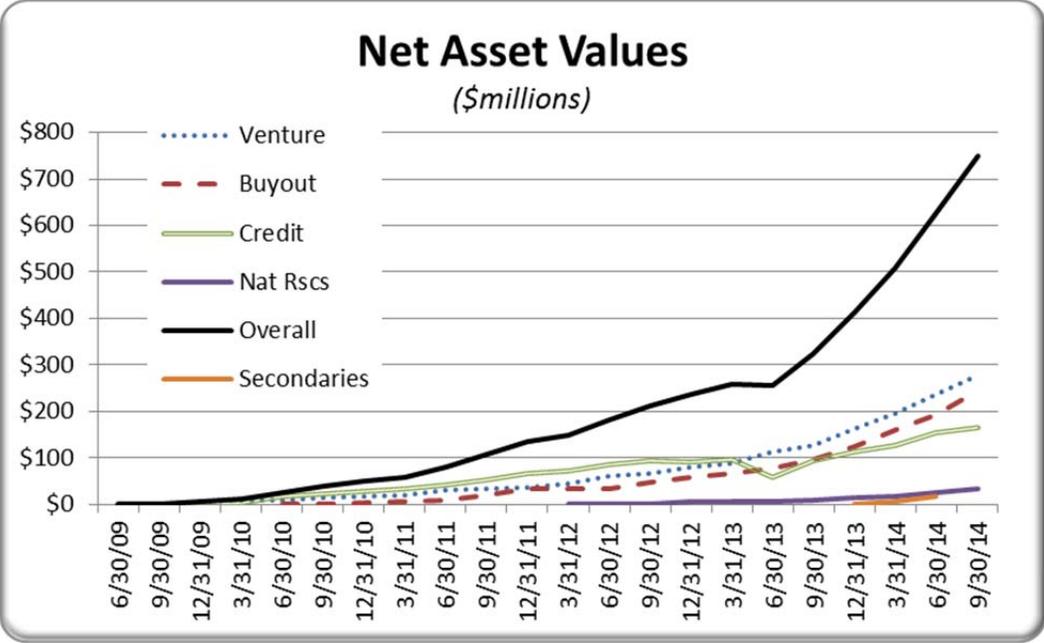
The following chart shows the allocations to the sub-asset classes based on commitments through the end of September, 2014. As of now, the portfolio is very close to its neutral target weights for each segment of the portfolio.



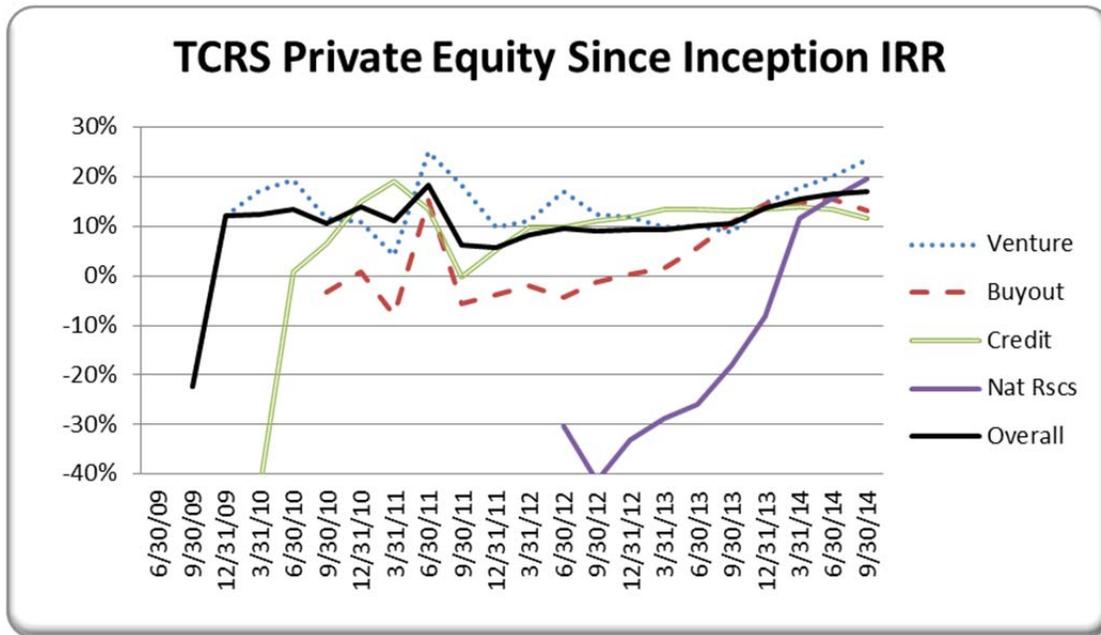
The next chart shows the overall size and growth of the TCRS portfolio in terms of commitments, unfunded commitments, and net asset value.



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. A divergence is evident between Buyouts and Venture, indicating the timing differences of the program's commitments in those categories. 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.



Looking Forward

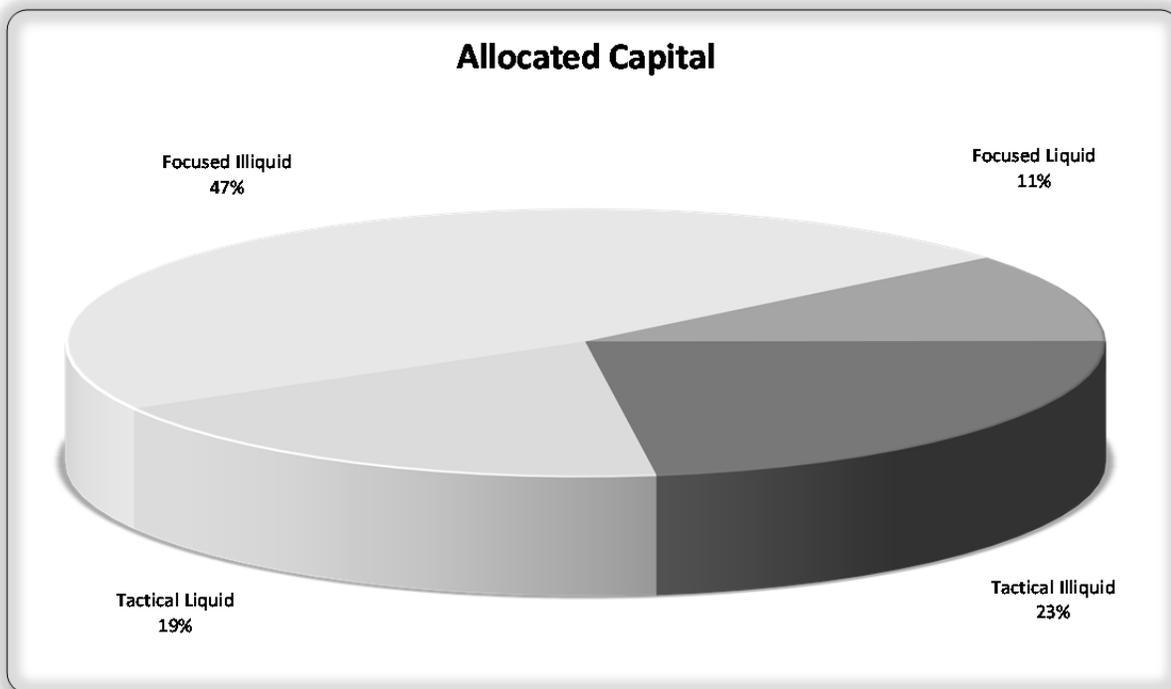
In the current and approaching quarters we continue to make progress on acquiring an internal Contact Resource Management (CRM) and Portfolio Management software package for managing the private equity program. Staff is working to refine our short list of potential new managers in 2015.

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Tennessee Consolidated Retirement System
Strategic Lending Portfolio
Fiscal Q2 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 December, TCRS had allocated \$1.9 billion with \$900 million being invested in seven larger separate accounts and six co-mingled funds. The seven separate accounts amount to \$1.5 billion of the allocation and can be cancelled on short notice and \$400 million is committed to the other six less liquid lock-up vehicles.



Market Outlook

During the fiscal second quarter of 2015, the liquid U.S. below-investment grade market continued to show signs of stress, posting total returns of -1.6% in the bond market and -0.4% for the loan market. The increased volatility was driven by a continued severe sell-off in oil and energy related companies. Credit availability has diminished, spreads have widened, the new issue pace is slower and terms are more favorable to lenders. Default rates have ticked up as expected, driven by the TXU bankruptcy. 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. However, the private debt market has not adjusted to the spread widening in the liquid market and the illiquidity premium in 2015 is tighter. At this point, the liquid markets may post a more attractive risk-adjusted return in calendar 2015.

Recent Developments

During the second quarter of the fiscal year, TCRS committed \$50 million to a commingled fund focused on global opportunistic credit and equity investing and another \$50 million to a commingled fund focused on U.S. and E.U. rescue finance and special situations. At this time, staff continues to pursue a number of smaller potential agreements.

Future Activity

Recently, Staff has focused more on a number of smaller commingled vehicles and one larger separate account. During calendar 2015, staff aims to refocus efforts on portfolio monitoring, process, procedures, and other internal investment operations.

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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
Begin							
					1475	CBOT 10 T-NOTE 14 Dec 0	
					2525	CBOT T-BONDS 14 Dec 0	
					4079	CBOT ULTRABOND 14 Dec 0	
					-2810	CBOT 5YR TNOTE 14 Dec 0	
TRADE SUMMARY BY ACCOUNT							
5+ Gov't (1381)							
	375	-	(375)			CBOT T-BONDS 14 Dec 0	
	-	500	500			CBOT T-BONDS 15 Mar 0	
	1,355	250	(1,105)			CBOT ULTRABOND 14 Dec 0	
	-	1,305	1,305			CBOT ULTRABOND 15 Mar 0	
1-5 Gov't (1368)							
	1,575	-	(1,575)			CBOT 10 T-NOTE 14 Dec 0	
	157	1,575	1,418			CBOT 10 T-NOTE 15 Mar 0	
	750	3,560	2,810			CBOT 5YR TNOTE 14 Dec 0	
	3,060	-	(3,060)			CBOT 5YR TNOTE 15 Mar 0	
	2,250	-	(2,250)			CBOT T-BONDS 14 Dec 0	
	100	2,500	2,400			CBOT T-BONDS 15 Mar 0	
	3,169	-	(3,169)			CBOT ULTRABOND 14 Dec 0	
	100	3,169	3,069			CBOT ULTRABOND 15 Mar 0	
Overlay (1371)							
	-	200	200			CBOT ULTRABOND 15 Mar 0	
Corporate (1365)							
	475	575	100			CBOT 10 T-NOTE 14 Dec 0	
	575	575	-			CBOT 10 T-NOTE 15 Mar 0	
	150	250	100			CBOT T-BONDS 14 Dec 0	
	200	200	-			CBOT T-BONDS 15 Mar 0	
	85	280	195			CBOT ULTRABOND 14 Dec 0	
	250	-	(250)			CBOT ULTRABOND 15 Mar 0	
End							
			1418			CBOT 10 T-NOTE 15 Mar 0	
			2900			CBOT T-BONDS 15 Mar 0	
			4324			CBOT ULTRABOND 15 Mar 0	
			-3060			CBOT 5YR TNOTE 15 Mar 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

Tennessee Consolidated Retirement System

Operations Update
Fiscal Q2 2015 Update
Tim McClure, CTP

Trading – There were 1,497 purchases totaling over 50.6 million shares with a market value of \$2.89 billion, and 2,815 sales totaling over 58.2 million shares with a market value of \$2.83 billion.

Trading costs analysis for the quarter indicated there was a cost of 14.1 basis points when comparing the cost of the trade to the entry price, and a cost of 3.9 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 11.1 basis points and 1.8 basis points, respectively. Costs have been trending down during the last two quarters and volumes have been relatively stable for the last five quarters.

Operations – Staff continues to address issues related to the conversion to State Street on September 22, 2014. Processes seem to be improving, however, bank conversions are typically quite challenging and considerable time and effort is expended in order to address all issues.

Securities Lending – The TCRS securities lending program has been using Deutsche Bank as its securities lending agent since January 30th, 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 December 31st, 2014, TCRS earnings since inception totaled \$19.5 million (\$7.6 million of that was earned fourth quarter 2014). All cash collateral continues to be invested in indemnified repurchase agreements.

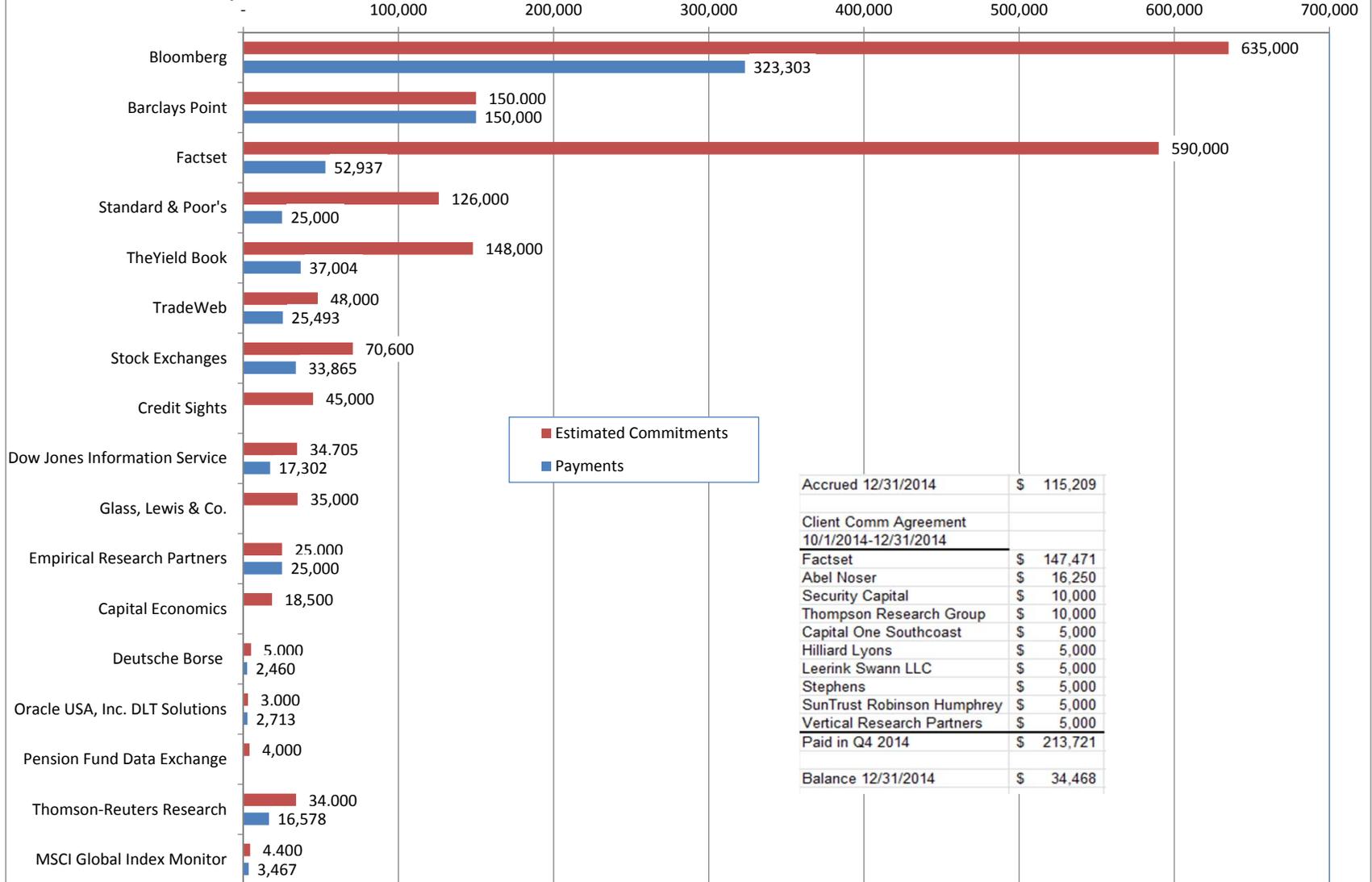
The average on loan balance since inception was \$3.9 billion with a spread of 60 bps (the average for fourth quarter was \$5.3 billion with spread of 63 bps). The largest earnings contributor since inception was Domestic Equities making up 40% of the total (53% for fourth quarter) followed by Emerging Market Equities 32% (23% fourth quarter), Fixed Income 18% (20% fourth quarter), and International Equities 10% (4% fourth quarter).

With regards to balances in the 4th Quarter, the top 5 borrowing counterparties were Citigroup (representing 16% of the total on loan balance), JP Morgan (14%), SG Americas (13%), Morgan Stanley (13%), and Credit Suisse (8%).

The majority (4 out of the 5) of TCRS' top 5 earners for the period of January 30, 2014 to December 31, 2014 occurred within the ETF space. However, the overall leader for 2014 was GoPRO (9.5% or \$1.9 million). The other four places were held by the following ETFs (19% or \$ 3.8 million); iShares MSCI Brazil (EWZ), iShares MSCI Taiwan (EWT), iShares MSCI Turkey (TUR), iShares MSCI Indonesia (EIDO). These 5 securities accounted for 29% or \$5.7 million of the overall earnings for this period.

	Jan 30, 2014 – Dec 31, 2014	Oct 1, 2014 – Dec 31, 2014
TCRS Earnings \$	19.5M	7.6M
Lending	11.7M	4.3M
Reinvest	7.8M	3.3M
Avg On Loan	3.9B	5.3B
Spread	60 BPS	63 BPS
Domestic Equities	40%	53%
Emerging Market Equities	32%	23%
Fixed Income	18%	20%
International Equities	10%	4%

Commissioned Dollar Report



Accrued 12/31/2014	\$ 115,209
Client Comm Agreement 10/1/2014-12/31/2014	
Factset	\$ 147,471
Abel Noser	\$ 16,250
Security Capital	\$ 10,000
Thompson Research Group	\$ 10,000
Capital One Southcoast	\$ 5,000
Hilliard Lyons	\$ 5,000
Leerink Swann LLC	\$ 5,000
Stephens	\$ 5,000
SunTrust Robinson Humphrey	\$ 5,000
Vertical Research Partners	\$ 5,000
Paid in Q4 2014	\$ 213,721
Balance 12/31/2014	\$ 34,468