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Commander Navy Installations Command

Executive Summary of Investment Performance

September 30, 2017

Numbers in Context

MARKET COMMENTARY

U.S. Equity

The U.S. stock market was up 4.6% for the third quarter of 2017. Equity investors are in part responding to strong earnings reports. Reported earnings were up in the double digits for each quarter of the first half of 2017. Economic releases during the past three months have been solid with growth in both the economy and labor market.

On September 20th, the Federal Reserve confirmed that they would begin their balance sheet normalization program. The market reaction was muted, however, given the steady and telegraphed actions that the Fed has undertaken since the global financial crisis. The program is expected to reduce their holdings by $10B per month initially, increasing quarterly until reaching $50B per month in both Treasury and Mortgage-backed securities. This slow but steady pace would mirror the Fed's approach to post-2008 conditions.

Non-U.S. Equity

Equity markets outside of the U.S. produced very strong returns during the third quarter in both developed and emerging markets. Gains were broad based across Europe with all of the major foreign markets in positive territory. Emerging Markets continue to lead all global equities. Despite rising political tensions in North Korea, emerging market equity is positive for 2017 largely due to an improving economic outlook across most emerging countries.

Fixed Income

The U.S. Treasury yield curve continued to flatten during the quarter with short to intermediate term rates rising more than long-term yields. The bellwether 10-year Treasury yield ended the quarter up slightly at 2.33%. Credit spreads continued lower in both investment grade and high yield bonds.

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SEPTEMBER 2017 ASSET CLASS ASSUMPTIONS

	EQUITY						FIXED INCOME						REAL ASSETS					
													REAL ESTATE					
	US STOCK	DEV EX-US STOCK	EMG MRKT STOCK	GLOBAL EX-US STOCK	GLOBAL STOCK	PRIVATE EQUITY	CASH	CORE BOND	LT CORE BOND	US TIPS	HIGH YIELD	NON-US BOND (HDG)	US RES	GLOBAL RES	PRIVATE RE	CMDTY	REAL ASSETS	US CPI
EXPECTED COMPOUND RETURN (%)	6.25	6.25	6.25	6.45	6.45	8.80	1.50	3.50	3.80	2.90	4.85	1.40	5.25	5.45	6.90	3.35	6.50	1.85
EXPECTED ARITHMETIC RETURN (%)	7.55	7.70	9.20	8.05	7.80	12.05	1.50	3.65	4.25	3.05	5.30	1.45	6.60	6.60	7.80	4.40	6.85	1.85
EXPECTED RISK (%)	17.00	18.00	26.00	18.75	17.15	27.50	1.25	5.15	9.85	6.00	10.00	3.50	17.00	15.80	14.00	15.00	8.40	1.75
CASH YIELD (%)	2.00	3.00	2.00	2.75	2.35	0.00	1.50	3.60	4.80	3.05	8.10	1.80	3.85	3.85	2.70	1.50	2.85	0.00
CORRELATIONS																		
US STOCK	1.00																	
DEV EX-US STOCK (USD)	0.83	1.00																
EMERGING MARKET STOCK	0.75	0.75	1.00															
GLOBAL EX-US STOCK	0.85	0.96	0.87	1.00														
GLOBAL STOCK	0.96	0.94	0.84	0.96	1.00													
PRIVATE EQUITY	0.75	0.65	0.63	0.68	0.74	1.00												
CASH EQUIVALENTS	-0.05	-0.09	-0.05	-0.08	-0.07	0.00	1.00											
CORE BOND	0.29	0.13	0.00	0.10	0.20	0.32	0.19	1.00										
LT CORE BOND	0.32	0.16	0.01	0.12	0.23	0.33	0.11	0.95	1.00									
US TIPS	-0.05	0.00	0.15	0.05	0.00	-0.03	0.20	0.61	0.48	1.00								
HIGH YIELD BOND	0.55	0.40	0.50	0.45	0.52	0.34	-0.10	0.25	0.33	0.05	1.00							
NON-US BOND (HDG)	0.16	0.26	-0.01	0.19	0.18	0.27	0.10	0.68	0.65	0.40	0.27	1.00						
US RE SECURITIES	0.60	0.48	0.45	0.50	0.57	0.51	-0.05	0.17	0.23	0.10	0.57	0.05	1.00					
GLOBAL RE SECURITIES	0.66	0.60	0.57	0.63	0.67	0.58	-0.05	0.16	0.22	0.11	0.63	0.04	0.96	1.00				
PRIVATE REAL ESTATE	0.55	0.45	0.45	0.48	0.53	0.51	-0.05	0.19	0.26	0.09	0.58	0.05	0.79	0.77	1.00			
COMMODITIES	0.15	0.25	0.30	0.28	0.22	0.15	0.00	-0.04	-0.05	0.20	0.20	-0.05	0.26	0.29	0.25	1.00		
REAL ASSET BASKET	0.40	0.41	0.48	0.46	0.45	0.38	0.02	0.24	0.26	0.41	0.51	0.08	0.66	0.70	0.70	0.56	1.00	
INFLATION (CPI)	-0.10	-0.15	-0.13	-0.15	-0.13	-0.10	0.10	-0.12	-0.12	0.15	-0.08	-0.08	0.05	0.04	0.05	0.40	0.25	1.00

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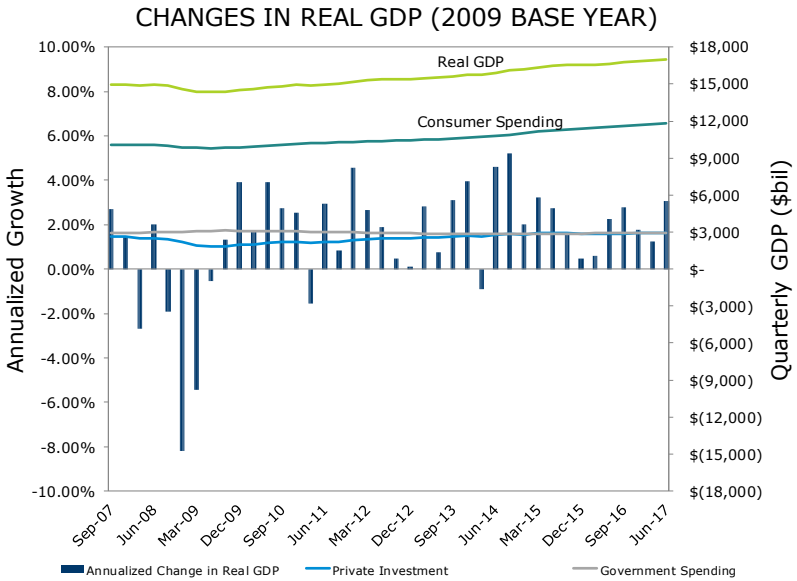
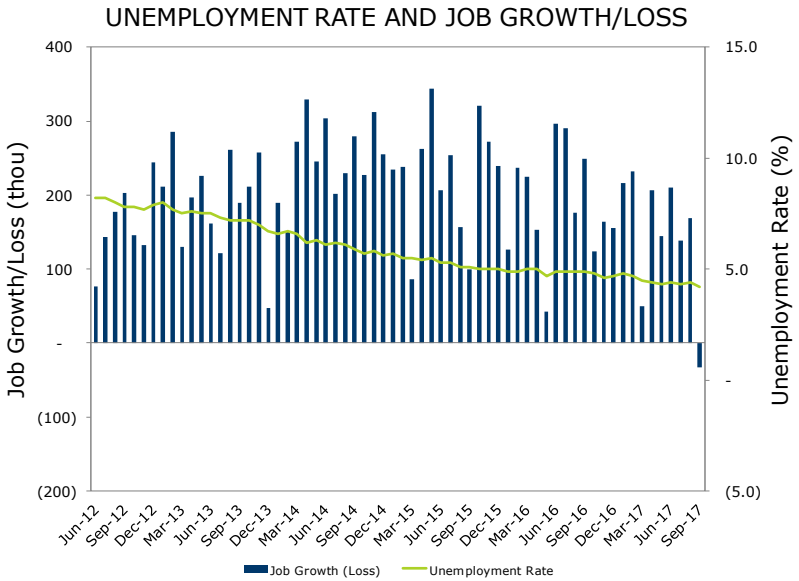
ECONOMIC REVIEW

AS OF SEPTEMBER 30, 2017	KEY ECONOMIC INDICATORS			
CPI (ALL ITEMS)	MONTHLY CHANGE		CUMULATIVE CHANGE	
SEASONALLY ADJUSTED	Sep-17	0.5	3-Mo.	1.1
	Aug-17	0.4	12-Mo.	2.2
	Jul-17	0.1	10-Yr. (Annual)	1.7
BREAKEVEN INFLATION	10-Yr.	1.8		
CONSUMER SENTIMENT	Sep-17	95.1		
U. OF MICHIGAN SURVEY	Aug-17	96.8		
	1-Yr. Ago	91.2	10-Yr. Avg	78.5
MANUFACTURING	Sep-17	60.8	CHANGE IN SECTOR	
INST. FOR SUPPLY MGMT	Aug-17	58.8	>50	Expansion
PURCHASING MNGRS' IDX	1-Yr. Avg.	56.2	<50	Contraction

Note: Seasonally adjusted CPI data is utilized to better reflect short-term pricing activity.





Data sources: Bureau of Labor Statistics, U.S. Treasury, University of Michigan, Institute for Supply Management, Bureau of Economic Analysis

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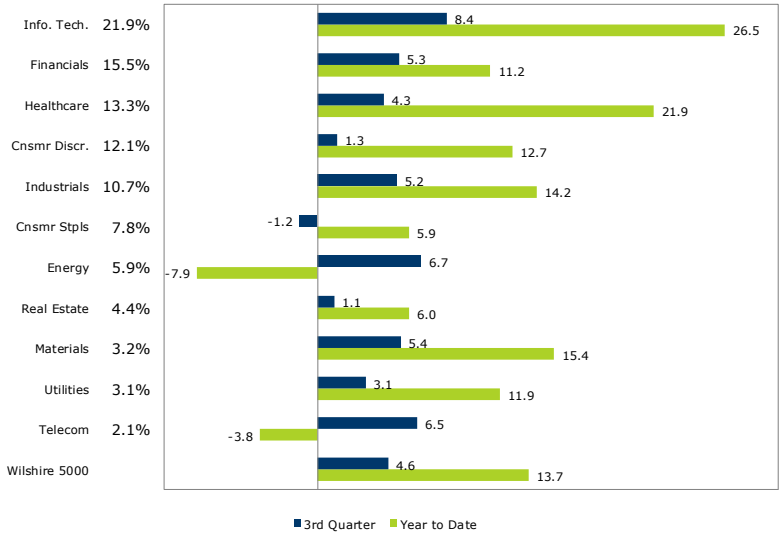
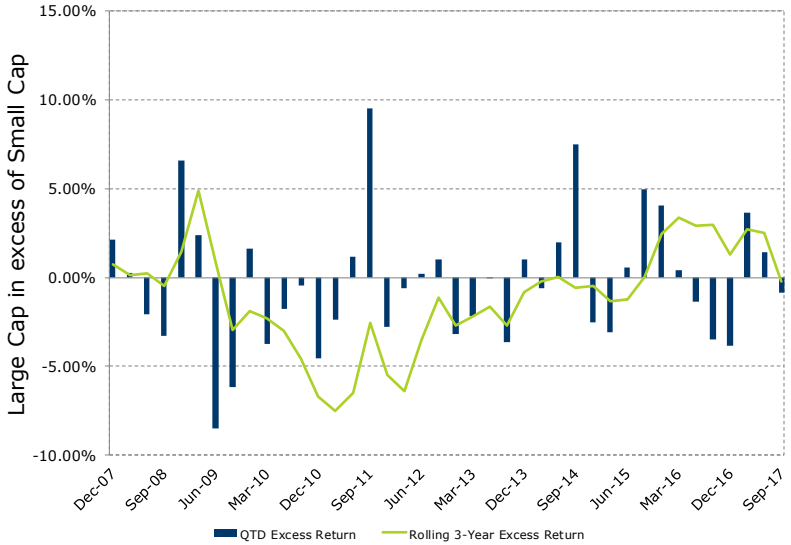
U.S. EQUITY MARKET

AS OF SEPTEMBER 30, 2017	QTR	YTD	1 YR	3 YR	5 YR	10 YR
WILSHIRE 5000 INDEX	4.6	13.7	18.9	11.0	14.3	7.6
WILSHIRE U.S. LARGE CAP	4.5	14.2	18.9	10.9	14.3	7.5
WILSHIRE U.S. SMALL CAP	5.4	9.6	18.6	11.2	14.3	8.9
WILSHIRE U.S. LARGE GROWTH	5.0	19.0	23.6	12.2	15.4	8.9
WILSHIRE U.S. LARGE VALUE	4.0	9.6	14.4	9.6	13.1	6.0
WILSHIRE U.S. SMALL GROWTH	6.7	14.8	23.5	10.7	14.4	9.1
WILSHIRE U.S. SMALL VALUE	4.1	4.3	13.7	11.4	14.2	8.7
WILSHIRE REIT INDEX	0.6	2.4	0.1	9.6	9.5	5.6
MSCI USA MIN. VOL. INDEX	3.3	12.6	12.5	11.8	12.9	8.0
FTSE RAFI U.S. 1000 INDEX	4.3	9.2	17.2	9.5	14.4	8.2

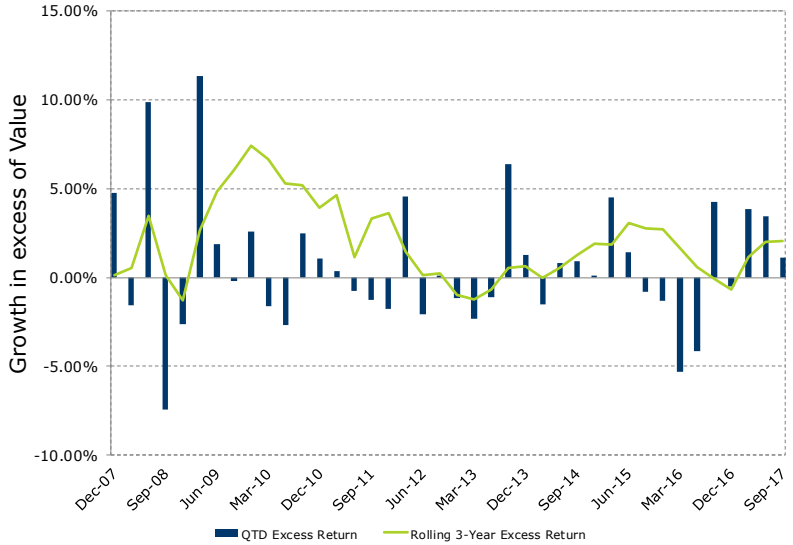
WILSHIRE 5000 SECTOR WEIGHT & RETURN (%)



LARGE CAP VS SMALL CAP



GROWTH VS VALUE



Data sources: Wilshire Compass, Wilshire Atlas

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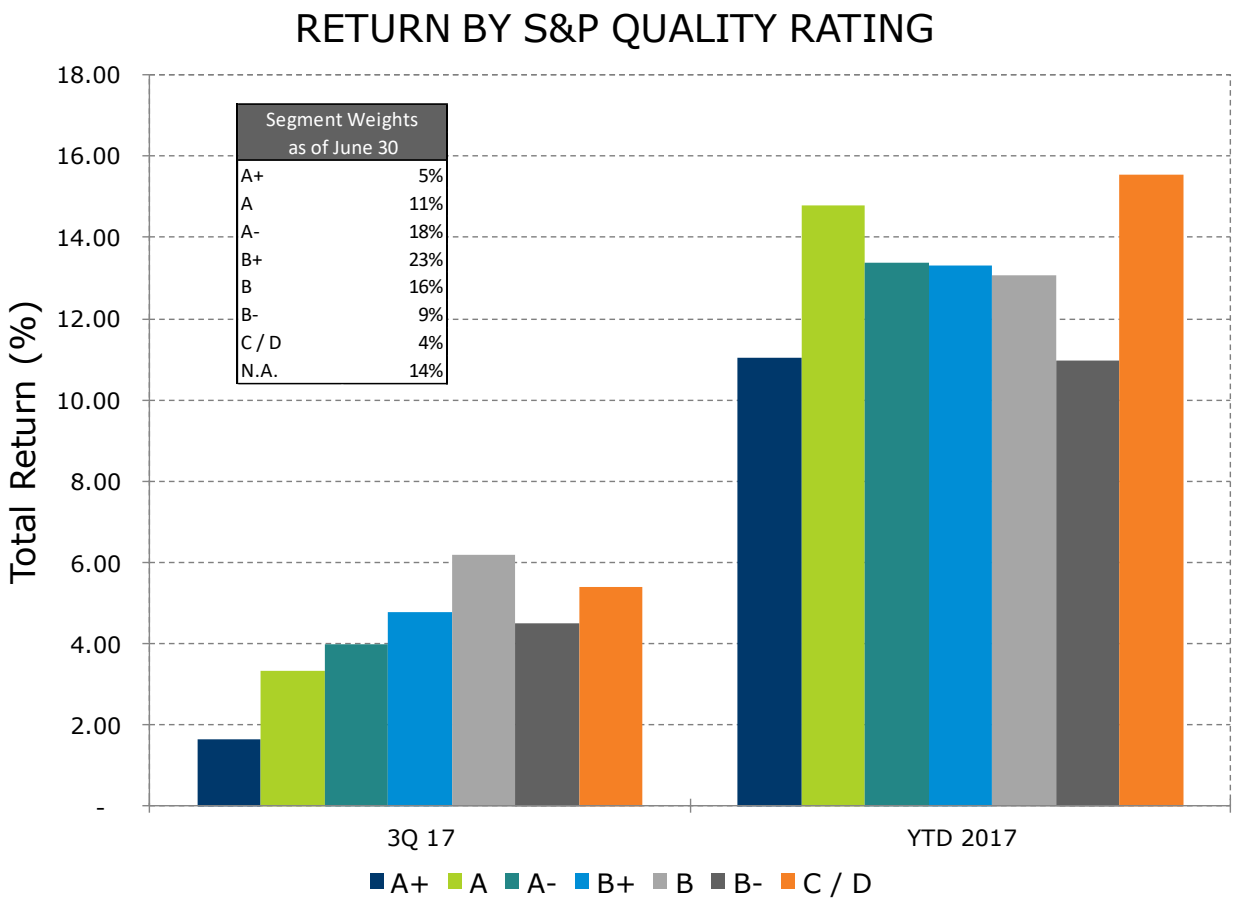
RETURNS BY QUALITY SEGMENT

In a reversal from last quarter, lower quality names led the market during the third quarter



Data sources: Wilshire Atlas

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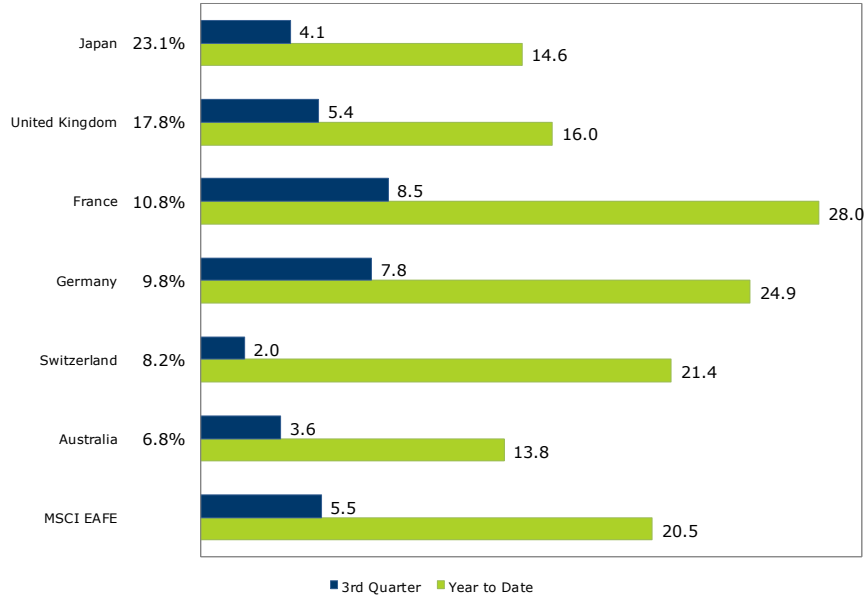
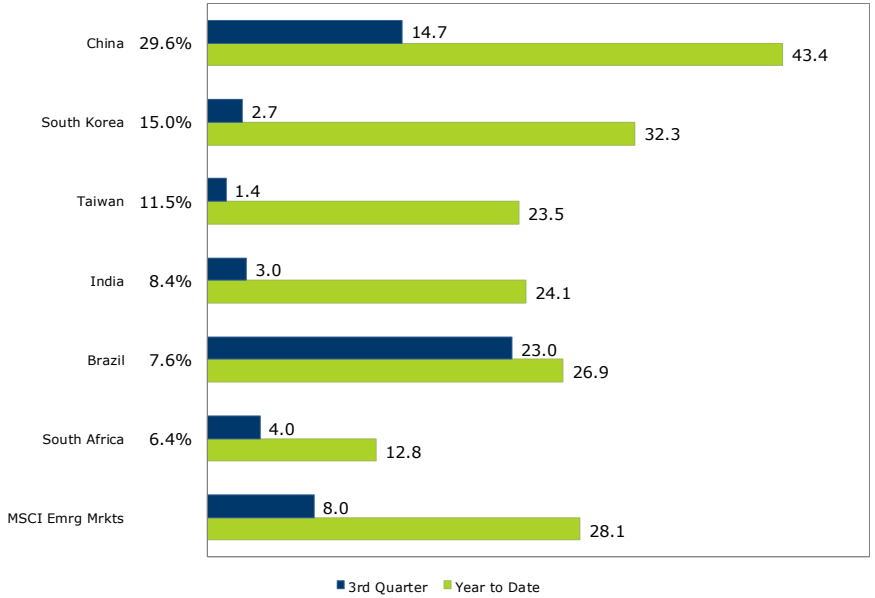
NON-U.S. EQUITY MARKET

AS OF SEPTEMBER 30, 2017	QTR	YTD	1 YR	3 YR	5 YR	10 YR
MSCI ACWI EX-US ($G)	6.3	21.6	20.1	5.2	7.5	1.7
MSCI EAFE ($G)	5.5	20.5	19.7	5.5	8.9	1.8
MSCI EMERGING MARKETS ($G)	8.0	28.1	22.9	5.3	4.4	1.7
MSCI FRONTIER MARKETS ($G)	8.1	25.3	26.0	-0.9	9.2	-0.4
MSCI ACWI EX-US GROWTH ($G)	6.4	25.2	18.1	6.8	8.2	2.2
MSCI ACWI EX-US VALUE ($G)	6.1	18.3	22.2	3.5	6.6	1.2
MSCI ACWI EX-US SMALL ($G)	7.0	23.9	19.6	8.7	10.2	4.0
MSCI EAFE MINIMUM VOLATILITY	2.8	18.0	10.3	8.1	9.2	4.9
FTSE RAFI DEVELOPED EX-US	6.6	20.1	24.5	5.3	9.5	2.3
MSCI EAFE LC (G)	3.4	11.6	19.6	8.4	12.8	3.1
MSCI EMERGING MARKETS LC (G)	7.7	23.9	22.2	8.9	8.3	4.2

MSCI EAFE: LARGEST COUNTRIES & RETURN (USD)



MSCI EM: LARGEST COUNTRIES & RETURN (USD)



Data sources: Wilshire Compass

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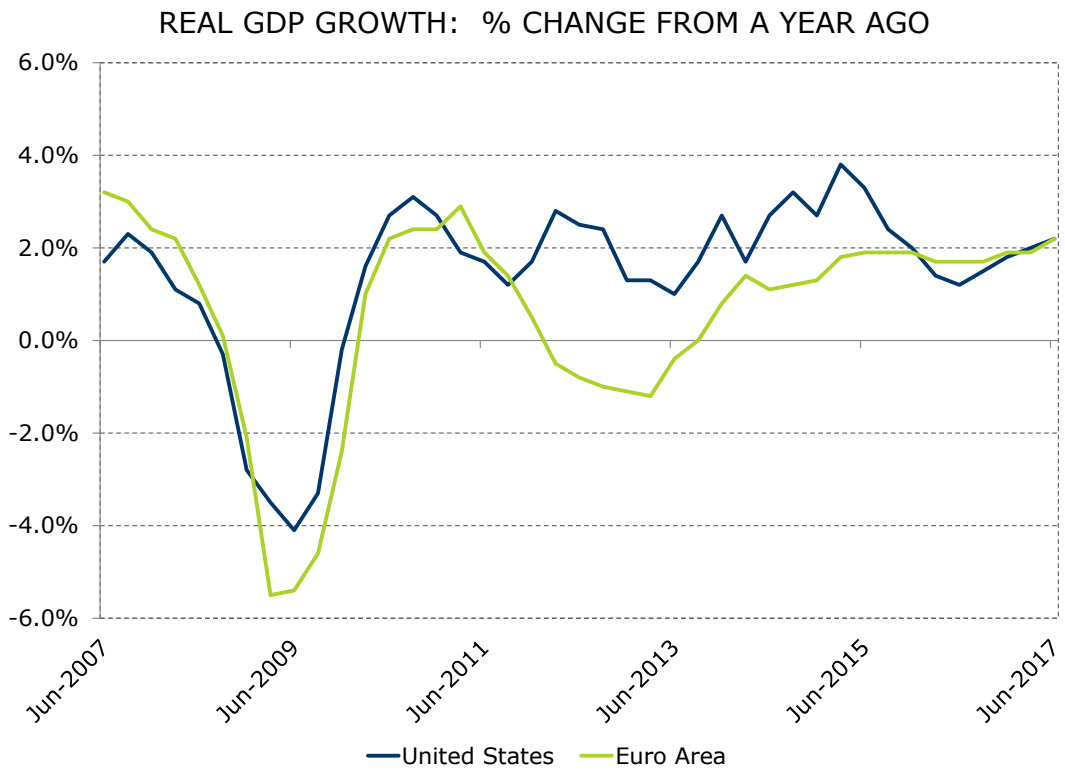
EUROPEAN ECONOMIC GROWTH

- Post-crisis recovery struggled to take hold within the European Union (as evidenced below by collective growth in the 19 countries that utilize the euro)
- Growth has improved more recently due, in part, to ongoing economic stimulus by the ECB and generally solid conditions in Europe's trading partners



Data sources: Wilshire Compass

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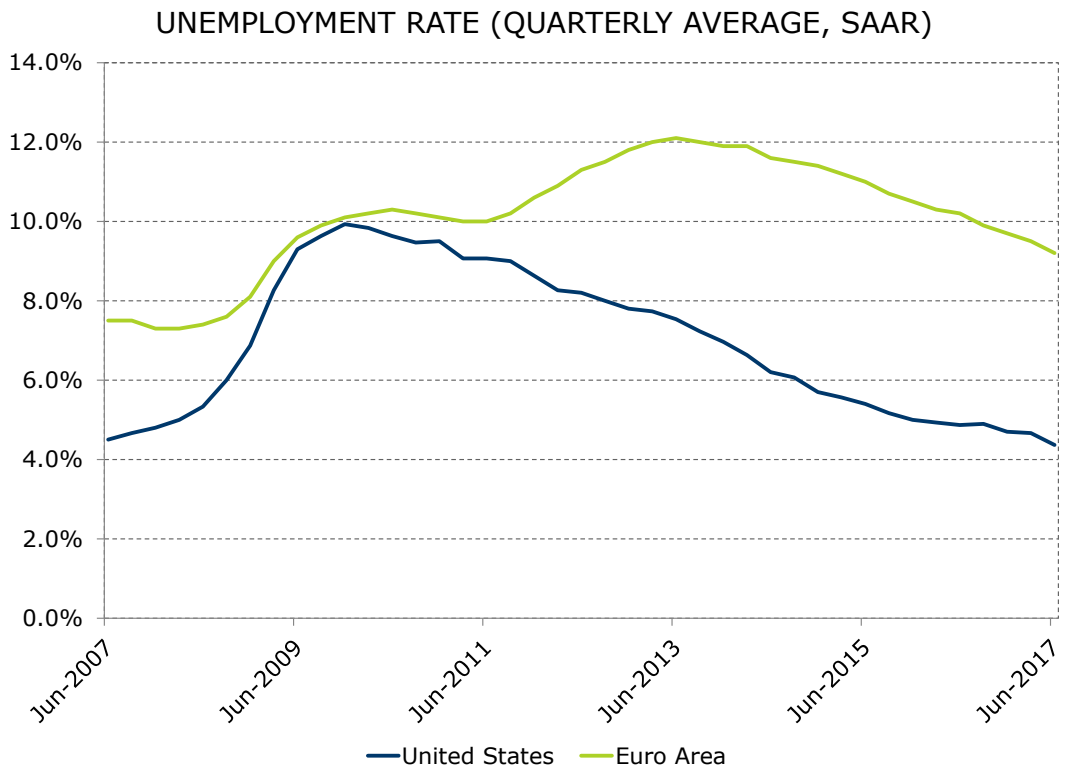
EUROPEAN ECONOMIC GROWTH

- Employment conditions within the European Union have taken longer to improve, as well
- Slack in the labor market means that wage pressures are lower within the EU, resulting in less of a strain on profit margins of EU-based companies
- Growth and a strengthening Euro have resulted in outsized returns for U.S.-based investors



Data sources: Wilshire Compass

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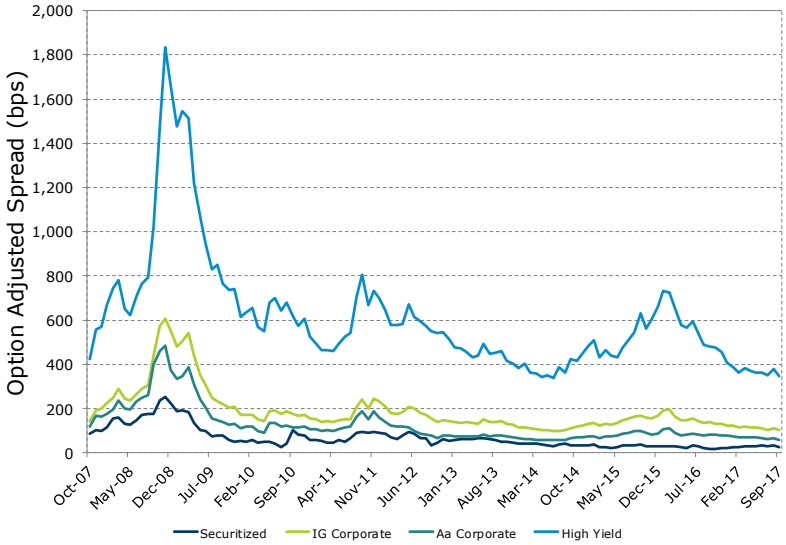
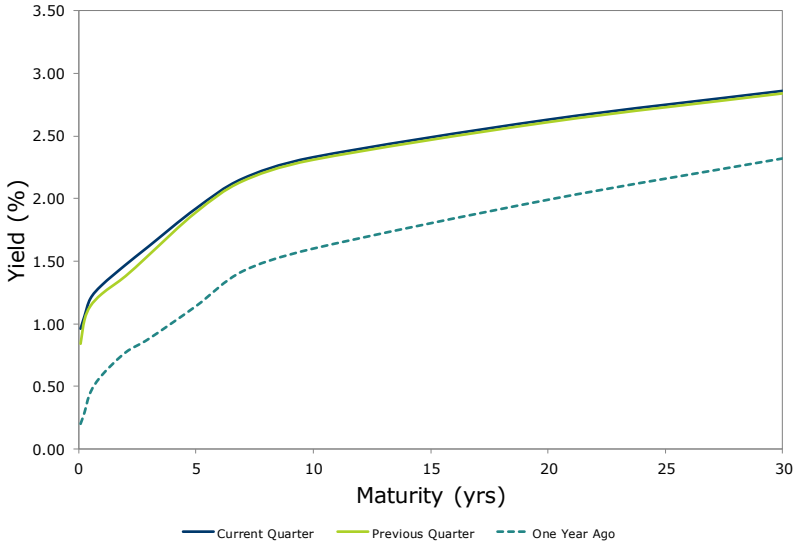
U.S. FIXED INCOME

AS OF SEPTEMBER 30, 2017	YTM	DURATION	QTR	YTD	1 YR	3 YR	5 YR	10 YR
BLOOMBERG BARCLAYS AGGREGATE	2.6	6.0	0.9	3.2	0.1	2.7	2.1	4.3
BLOOMBERG BARCLAYS TREASURY	1.9	6.2	0.4	2.3	-1.7	2.0	1.2	3.7
BLOOMBERG BARCLAYS GOV'T-REL.	2.5	5.4	1.1	3.9	0.6	2.6	2.0	4.0
BLOOMBERG BARCLAYS SECURITIZED	2.8	4.5	0.9	2.3	0.3	2.5	2.0	4.1
BLOOMBERG BARCLAYS CORPORATE	3.2	7.6	1.3	5.2	2.2	4.1	3.5	5.7
BLOOMBERG BARCLAYS LT G/C	3.6	15.4	1.5	7.7	-0.8	5.5	3.9	7.4
BLOOMBERG BARCLAYS LT TREASURY	2.8	17.6	0.6	6.0	-6.3	4.8	2.8	6.9
BLOOMBERG BARCLAYS LT GOV't-REL.	4.0	12.6	2.9	9.7	1.5	5.3	4.0	7.3
BLOOMBERG BARCLAYS LT CORP.	4.2	14.2	2.0	8.5	3.0	6.1	4.8	7.7
BLOOMBERG BARCLAYS U.S. TIPS	0.6	8.2	0.9	1.7	-0.7	1.6	0.0	3.9
BLOOMBERG BARCLAYS HIGH YIELD	6.0	3.8	2.0	7.0	8.9	5.8	6.4	7.8
TREASURY BILLS	1.1	0.25	0.3	0.6	0.6	0.3	0.2	0.5

BLOOMBERG BARCLAYS FIXED INCOME INDEXES



TREASURY YIELD CURVE



Data sources: Wilshire Compass, Bloomberg Barclays, U.S. Treasury

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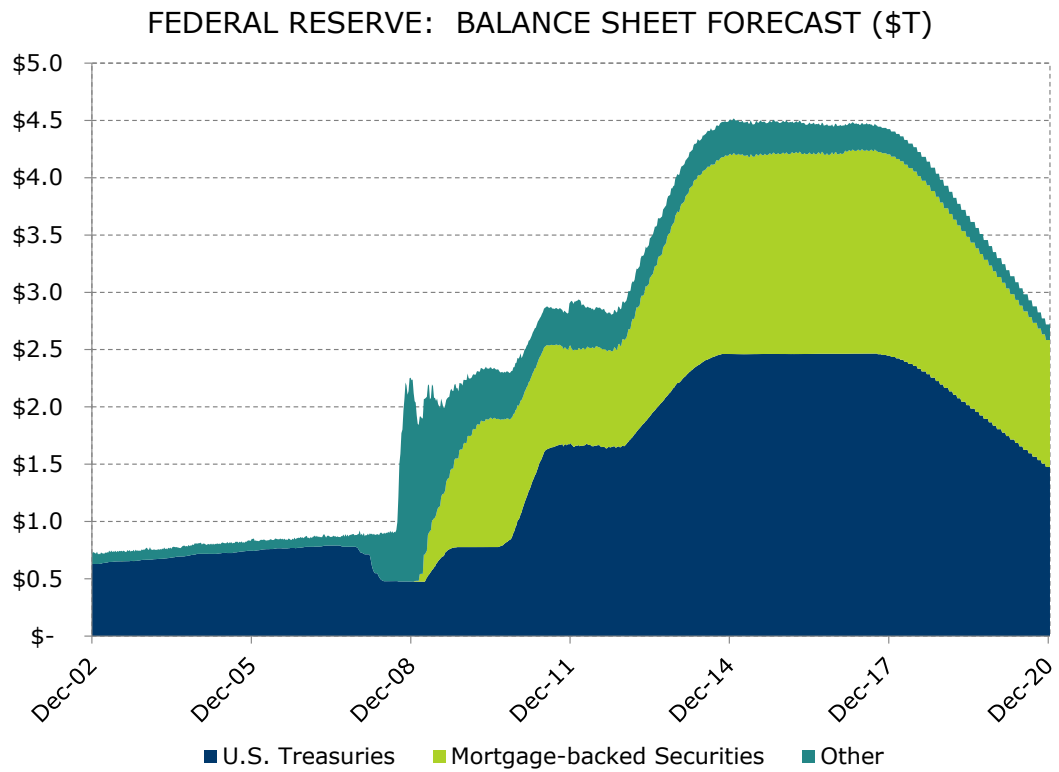
FEDERAL RESERVE

- Federal Reserve confirmed their intention to begin a balance sheet normalization program:
  - Treasuries: Reduce by $6B / month, increasing by $6B / quarter, until reaching $30B
  - MBS: Reduce by $4B / month, increasing by $4B / quarter, until reaching $20B
- Projections reveal a total balance sheet well above the pre-crisis trend for the foreseeable future



Data sources: Federal Reserve

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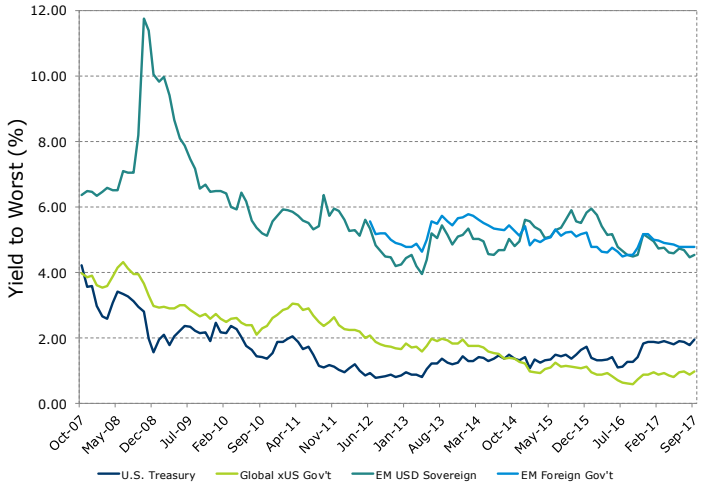
NON-U.S. FIXED INCOME

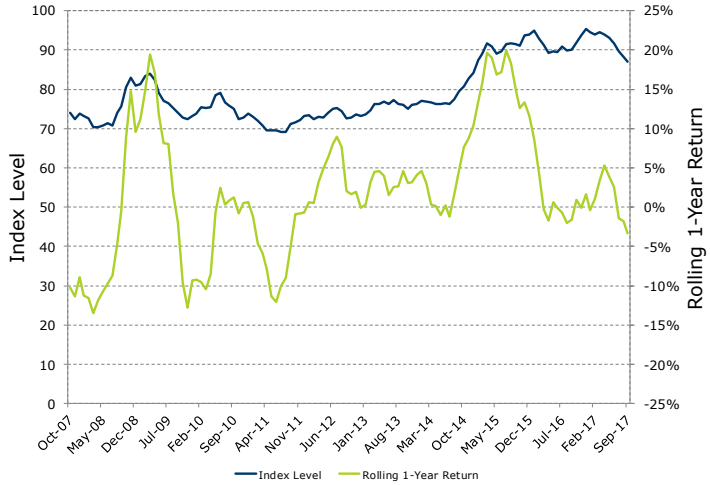
AS OF SEPTEMBER 30, 2017	QTR	YTD	1 YR	3 YR	5 YR	10 YR
DEVELOPED MARKETS						
BLMBRG BRCLYS GLBL AGGREGATE xUS	2.5	8.7	-2.4	0.2	-0.7	2.6
BLMBRG BRCLYS GLBL AGGREGATE xUS *	0.7	1.3	-0.6	3.4	3.7	4.3
BLMBRG BRCLYS WORLD GOV'T xUS IL	3.2	8.5	0.5	1.4	2.0	3.1
BLMBRG BRCLYS WORLD GOV'T xUS IL *	-0.1	-0.9	-2.7	5.8	5.3	5.6
EMERGING MARKETS (HARD CURRENCY)						
BLMBRG BRCLYS EM USD AGGREGATE	2.3	7.5	4.7	5.5	4.4	7.2
EMERGING MARKETS (FOREIGN CURRENCY)						
BLMBRG BRCLYS EM LOCAL CURR. GOV'T	2.8	11.8	3.4	0.6	0.7	n.a.
BLMBRG BRCLYS EM LOCAL CURR. GOV'T *	1.1	3.5	0.7	2.7	2.2	n.a.
EURO vs. DOLLAR	3.7	12.1	5.2	-2.2	-1.7	-1.9
YEN vs. DOLLAR	-0.2	3.6	-10.0	-0.9	-7.1	0.2
POUND vs. DOLLAR	3.3	8.6	3.3	-6.1	-3.6	-4.1

* Returns are reported in terms of local market investors, which removes currency effects.

BLOOMBERG BARCLAYS FIXED INCOME INDEXES



U.S. DOLLAR INDEX: MAJOR CURRENCIES



Data sources: Wilshire Compass, Bloomberg Barclays, Federal Reserve Bank of St. Louis

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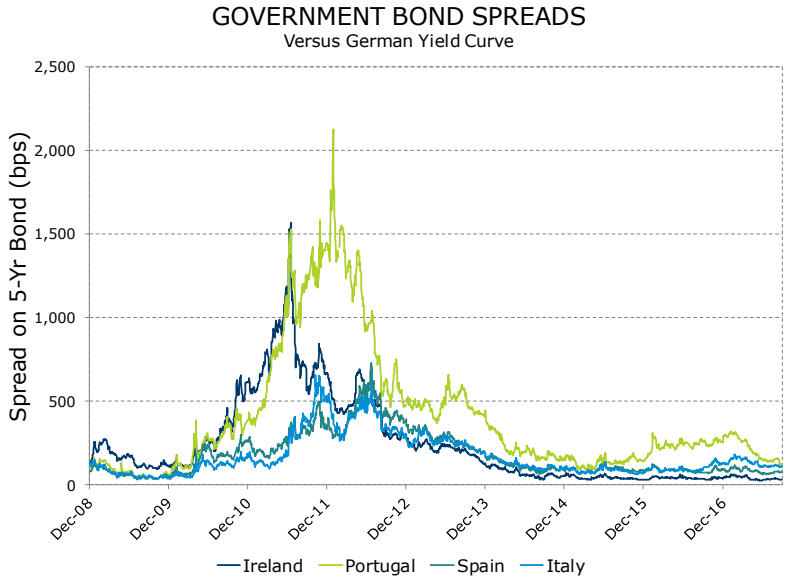
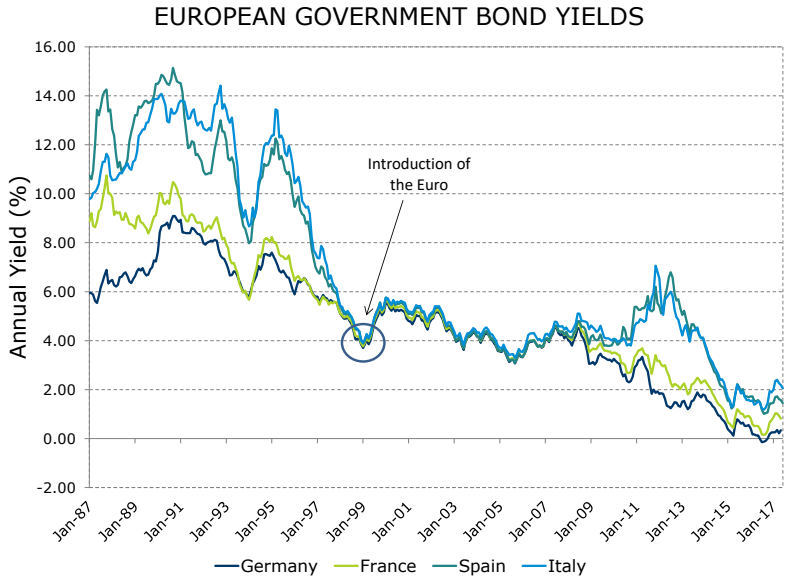
EUROPEAN DEBT

- Yields on Portugal's debt are down after strong economic growth and a lower debt/GDP ratio



- Yields on government bonds have edged higher with German yields back above zero



Data sources: Bloomberg Barclays, International Monetary Fund

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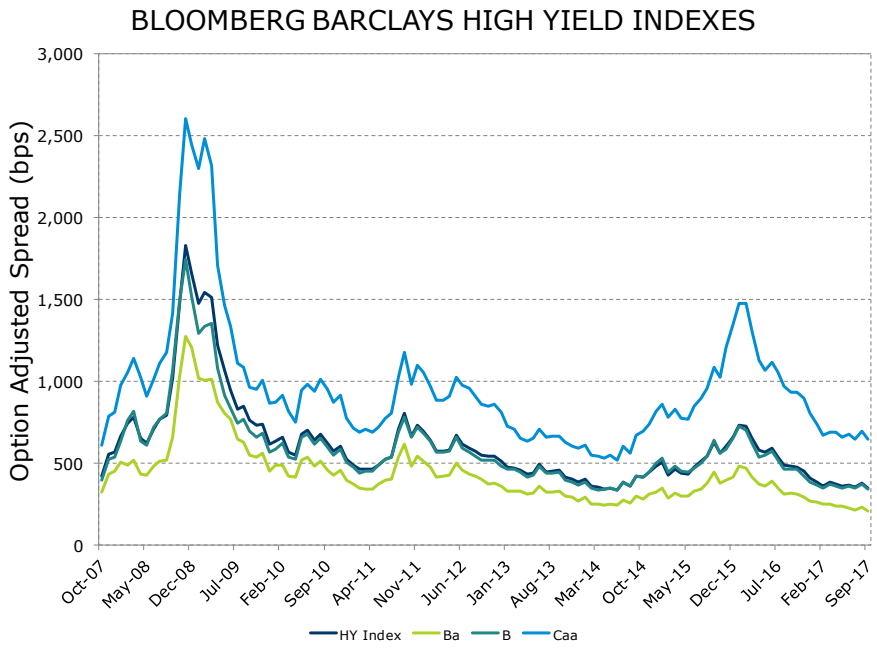
HIGH YIELD BOND MARKET

AS OF SEPTEMBER 30, 2017		QTR	YTD	1 YR	3 YR	5 YR	10 YR
BLOOMBERG BARCLAYS HIGH YIELD		2.0	7.0	8.9	5.8	6.4	7.8
CREDIT SUISSE LEVERAGED LOAN		1.1	3.0	5.4	4.0	4.4	4.4
HIGH YIELD QUALITY DISTRIBUTION	WEIGHT						
Ba U.S. HIGH YIELD	44.3%	2.0	6.9	7.4	6.4	6.3	8.3
B U.S. HIGH YIELD	39.6%	1.8	6.1	8.2	4.9	5.7	6.4
Caa U.S. HIGH YIELD	14.8%	2.5	9.3	14.4	6.6	8.0	7.3
Ca to D U.S. HIGH YIELD	1.1%	1.2	12.9	26.6	-11.5	-9.0	-1.5
Non-Rated U.S. HIGH YIELD	0.2%	2.6	11.4	12.9	-2.7	1.6	1.5



Data sources: Wilshire Compass, Bloomberg Barclays

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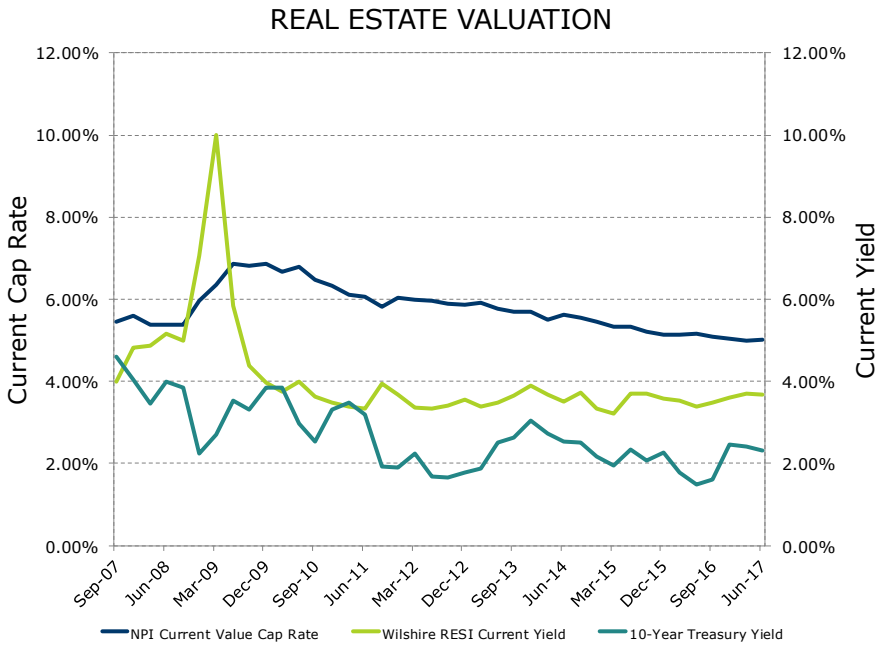
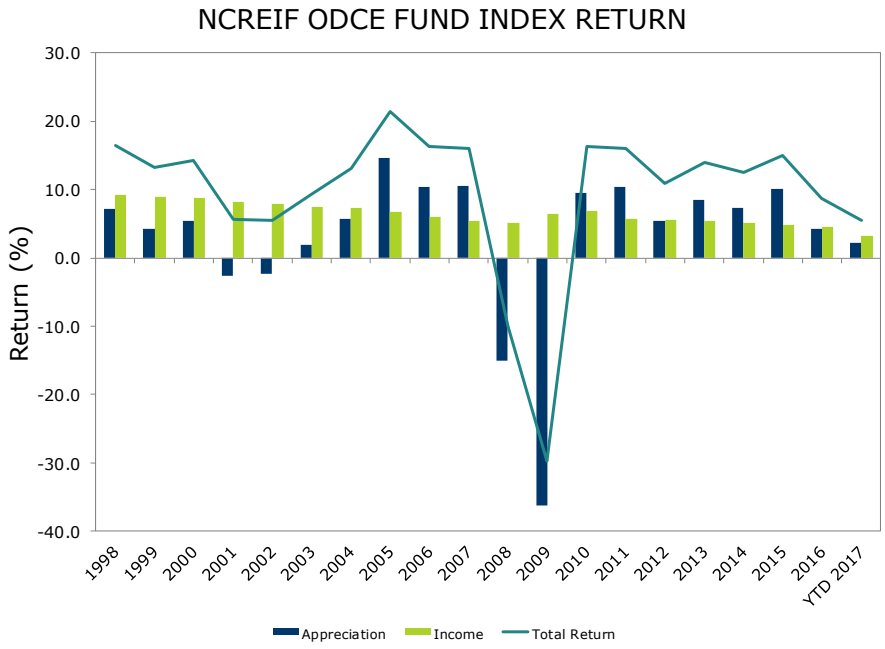
REAL ASSETS

AS OF SEPTEMBER 30, 2017	QTR	YTD	1 YR	3 YR	5 YR	10 YR
BLOOMBERG BARCLAYS U.S. TIPS	0.9	1.7	-0.7	1.6	0.0	3.9
BLOOMBERG COMMODITY INDEX	2.5	-2.9	-0.3	-10.4	-10.5	-6.8
WILSHIRE GLOBAL RESI INDEX	1.4	6.6	2.5	7.7	8.4	3.7
NCREIF ODCE FUND INDEX	1.9	5.4	7.6	10.8	11.6	5.0
NCREIF TIMBERLAND INDEX	0.6	2.1	3.3	5.2	7.1	5.2
ALERIAN MLP INDEX (OIL & GAS)	-3.1	-5.6	-3.7	-12.9	-0.6	6.5





Data sources: Wilshire Compass, National Council of Real Estate Investment Fiduciaries

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ASSET CLASS PERFORMANCE

ASSET CLASS RETURNS - BEST TO WORST						ANNUALIZED 5-YEAR AS OF 9/2017
2012	2013	2014	2015	2016	YTD 2017	
Emrg Mrkts 18.6%	U.S. Equity 33.1%	REITs 31.8%	REITs 4.2%	MLPs 18.3%	Emrg Mrkts 28.1%	U.S. Equity 14.3%
Developed 17.9%	MLPs 27.6%	U.S. Equity 12.7%	U.S. Equity 0.7%	High Yield 17.1%	Developed 20.5%	REITs 9.5%
REITs 17.6%	Developed 23.3%	Core Bond 6.0%	Core Bond 0.6%	U.S. Equity 13.4%	U.S. Equity 13.7%	Developed 8.9%
U.S. Equity 16.1%	High Yield 7.4%	MLPs 4.8%	T-Bills 0.1%	Commodities 11.8%	High Yield 7.0%	High Yield 6.4%
High Yield 15.8%	REITs 1.9%	U.S. TIPS 3.6%	Developed -0.4%	Emrg Mrkts 11.6%	Core Bond 3.2%	Emrg Mrkts 4.4%
U.S. TIPS 7.0%	T-Bills 0.1%	High Yield 2.5%	U.S. TIPS -1.4%	REITs 7.2%	REITs 2.4%	Core Bond 2.1%
MLPs 4.8%	Core Bond -2.0%	T-Bills 0.0%	High Yield -4.5%	U.S. TIPS 4.7%	U.S. TIPS 1.7%	T-Bills 0.2%
Core Bond 4.2%	Emrg Mrkts -2.3%	Emrg Mrkts -1.8%	Emrg Mrkts -14.6%	Core Bond 2.6%	T-Bills 0.6%	U.S. TIPS 0.0%
T-Bills 0.1%	U.S. TIPS -8.6%	Developed -4.5%	Commodities -24.7%	Developed 1.5%	Commodities -2.9%	MLPs -0.6%
Commodities -1.0%	Commodities -9.5%	Commodities -17.0%	MLPs -32.6%	T-Bills 0.3%	MLPs -5.6%	Commodities -10.5%

Data sources: Wilshire Compass

Note: Developed asset class is developed equity markets ex-U.S., ex-Canada

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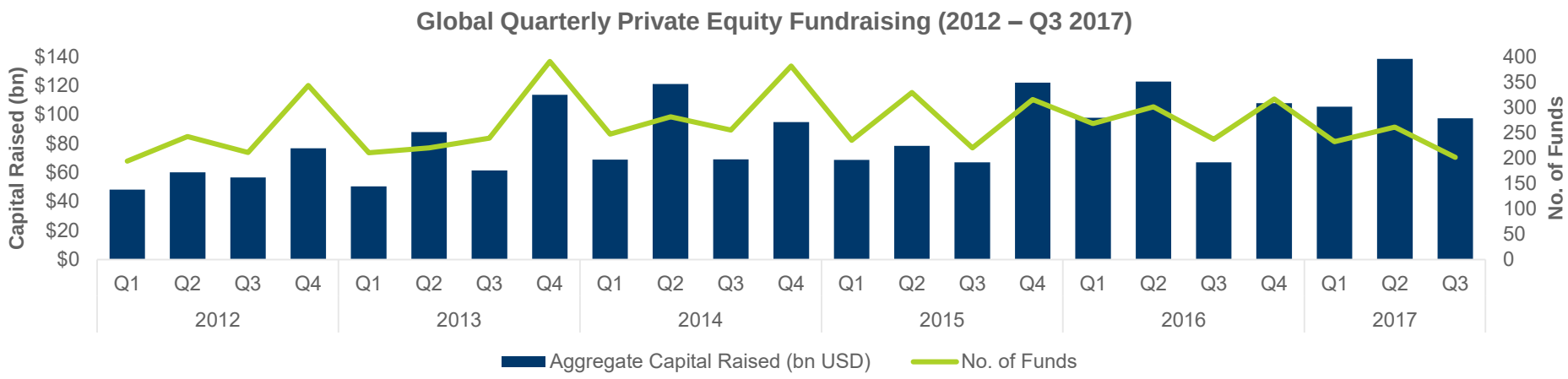
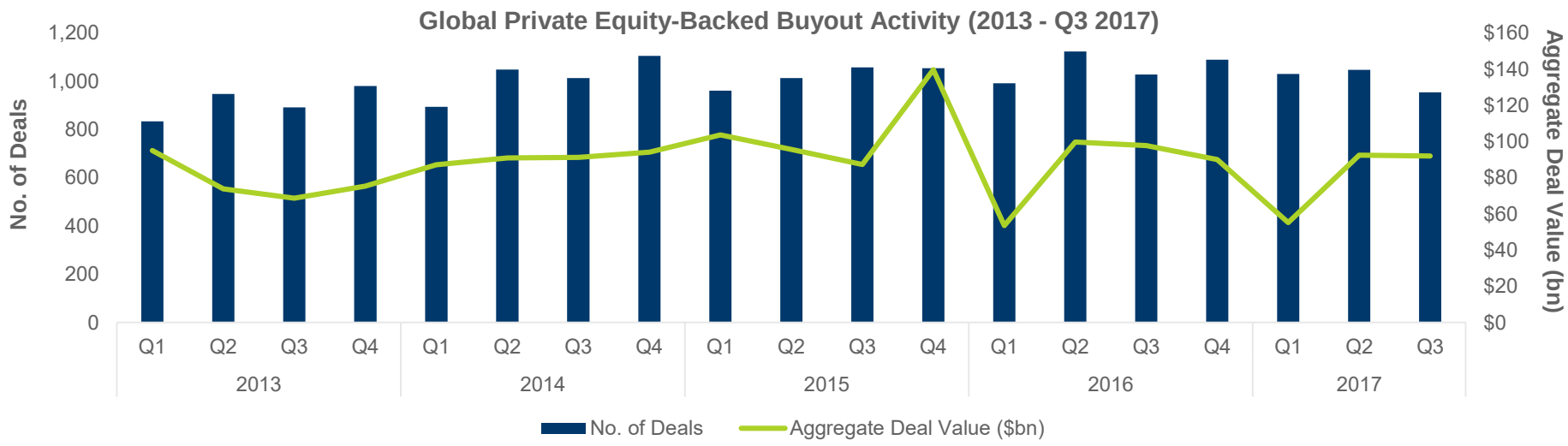
APPENDIX: PRIVATE MARKETS UPDATE

Wilshire Private Markets

PRIVATE EQUITY – FUNDRAISING & INVESTMENT ACTIVITY





Source: Preqin, as of September 30, 2017

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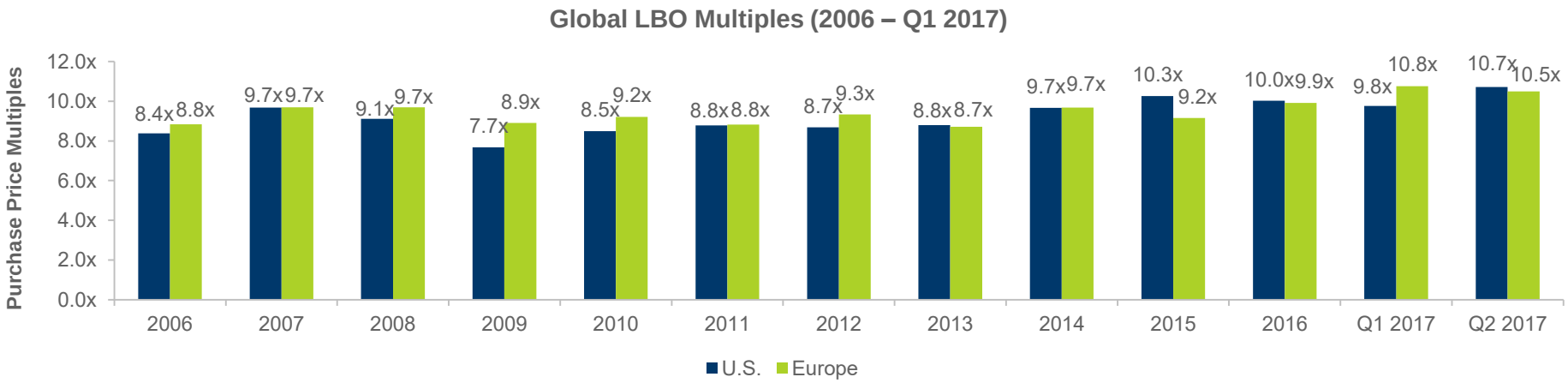
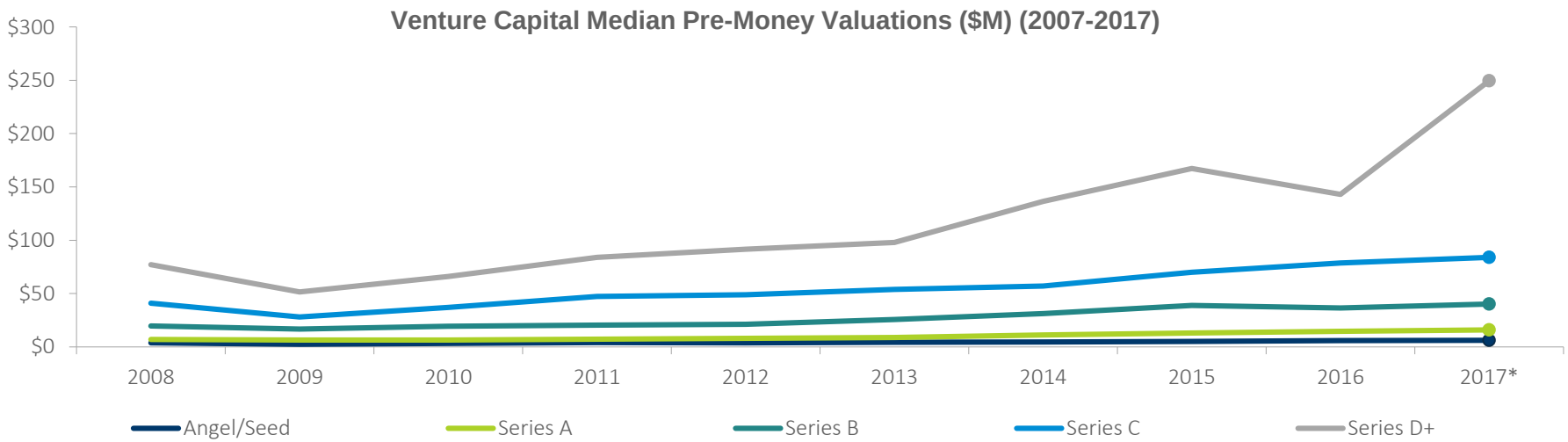
Wilshire Private Markets

PRIVATE EQUITY- PRICING & VALUATIONS





Source: S&P LCD as of June 30, 2017; *Pitchbook, as of September 30, 2017

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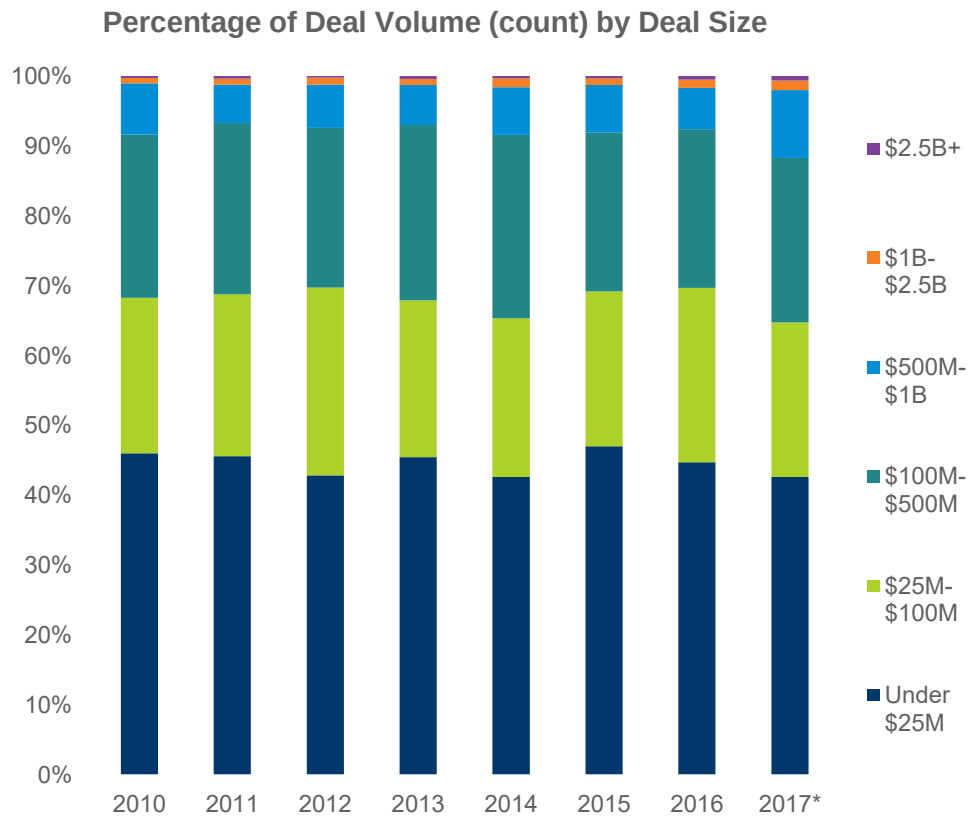
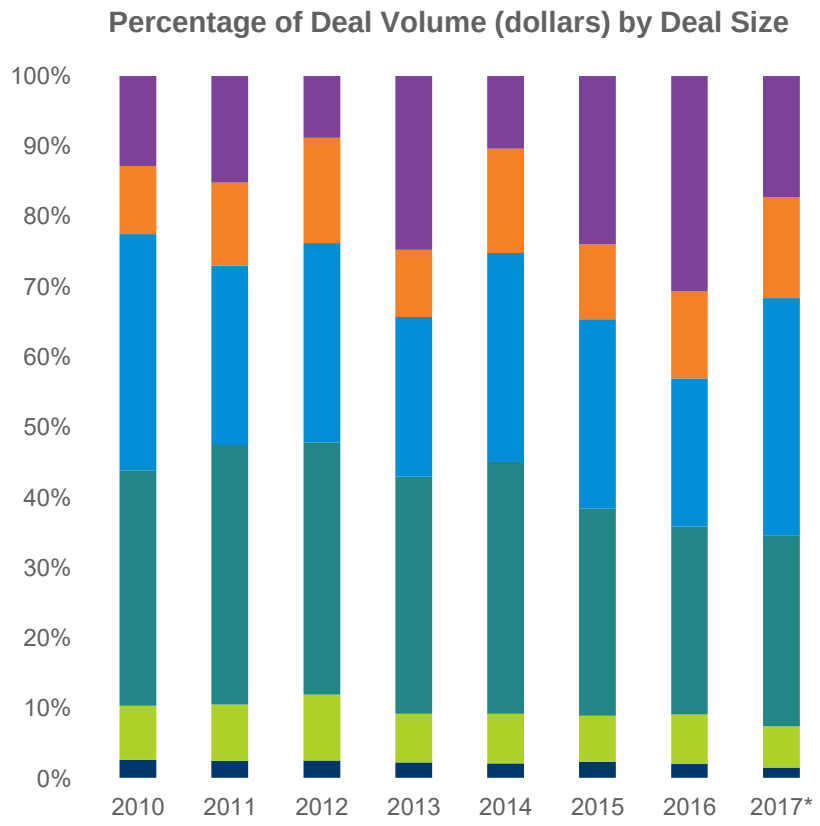
Wilshire Private Markets

U.S. Investment Activity by Deal Size





- Smaller deals continue to dominant deal volume by number of deals
- Through Q3 2017, significantly more capital has flown into deals in the $500 million to $1 billion range than in prior years

*Source: PitchBook, as of September 30, 2017

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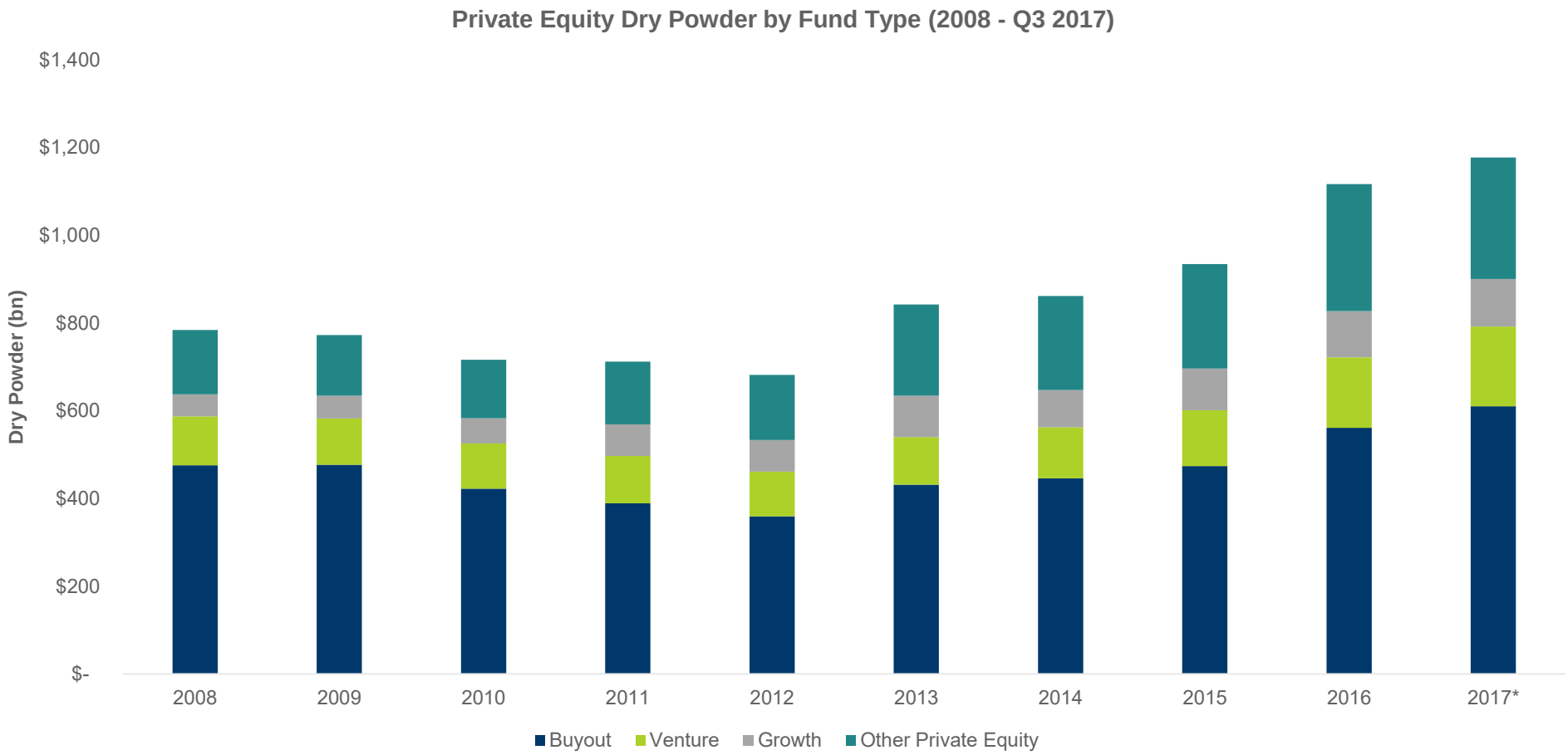
PRIVATE EQUITY DRY POWDER



- Global private equity dry powder continues to increase, topping $1.1 trillion through September 2017 across all fund types
- This abundant capital should continue to fuel private equity deal flow over the next few years

*Source: Preqin, as of May 31, 2017

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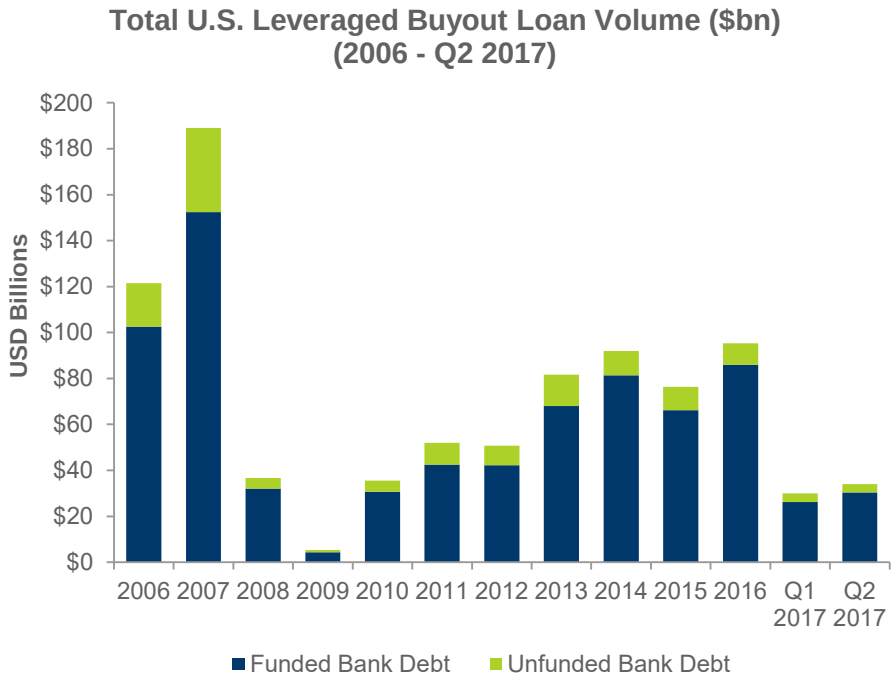
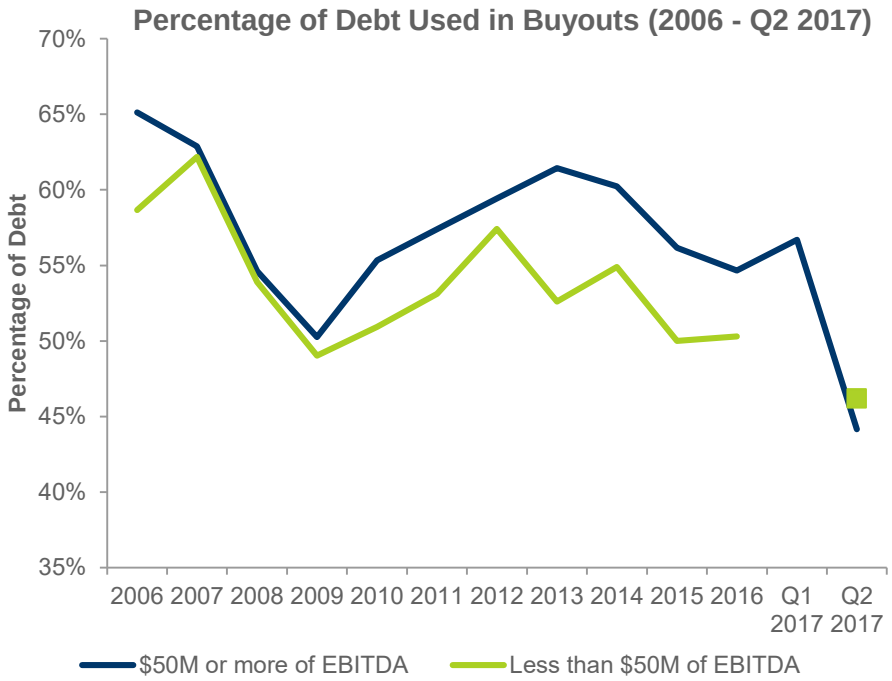
PRIVATE EQUITY- U.S. DEBT MARKETS





- The amount of capital available for leverage has decreased considerably since its peak volume in 2007; loan volume has been fairly consistent in the last few years and is on pace to continue this trend
- Historically, middle-market transactions apply less leverage than large-cap deals

Source: S&P LCD, as of June 30, 2017

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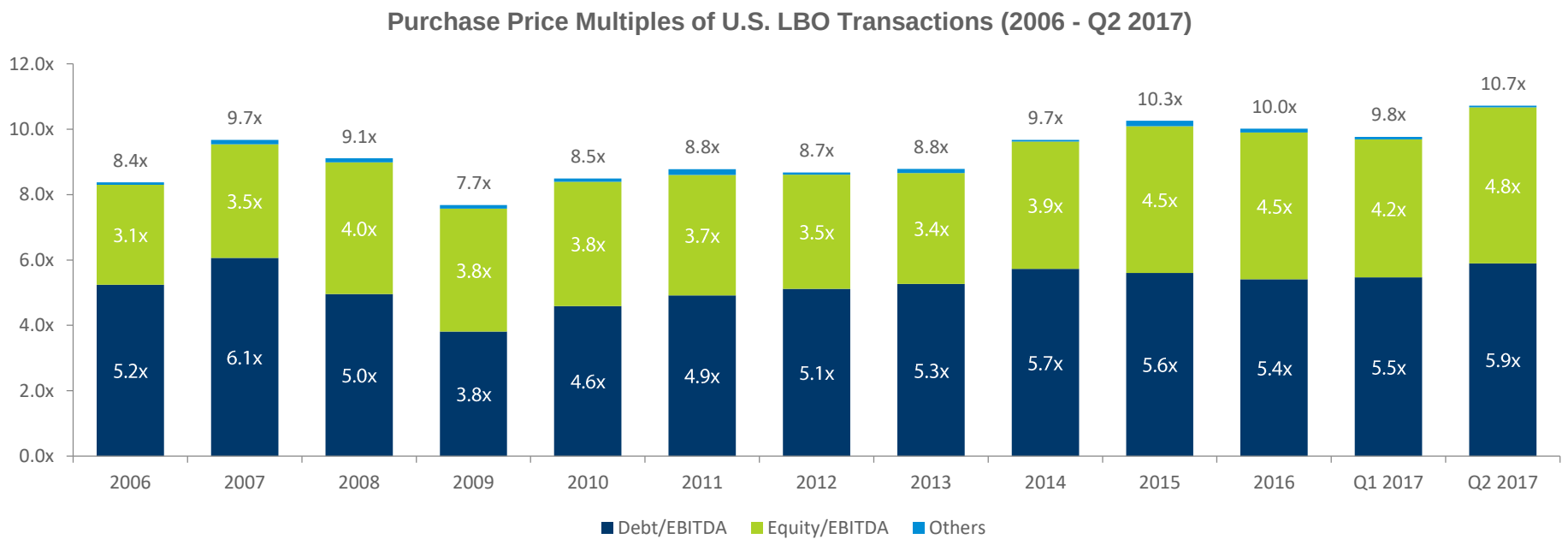
PRIVATE EQUITY- U.S. LBO PURCHASE PRICE MULTIPLES



- As debt has become more readily available, purchase price multiples have increased and remained high relative to 2009's low

Source: S&P LCD, as of June 30, 2017

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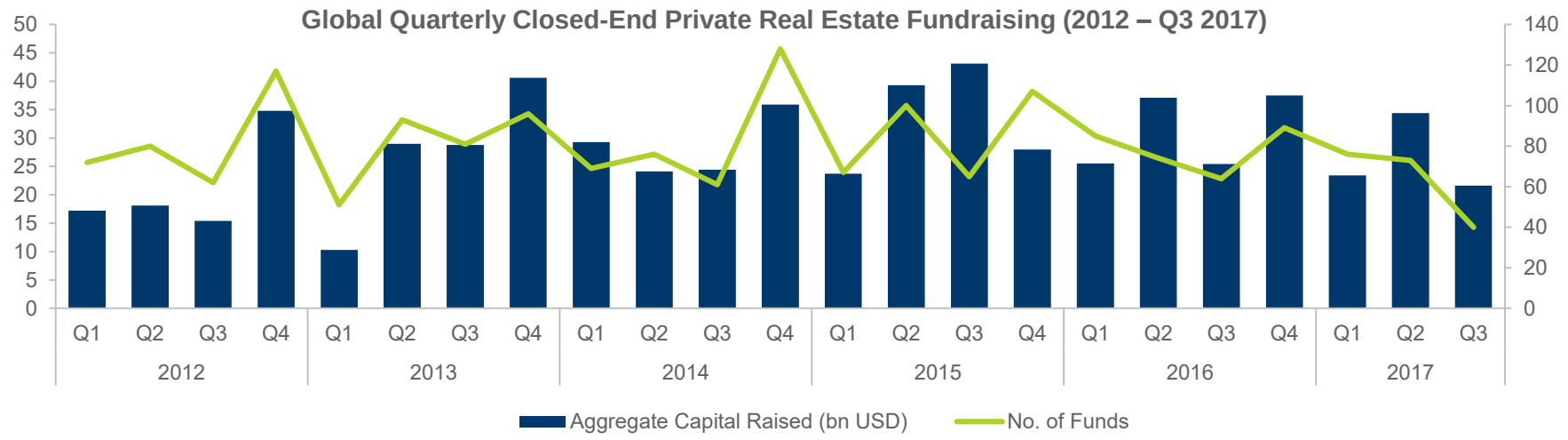
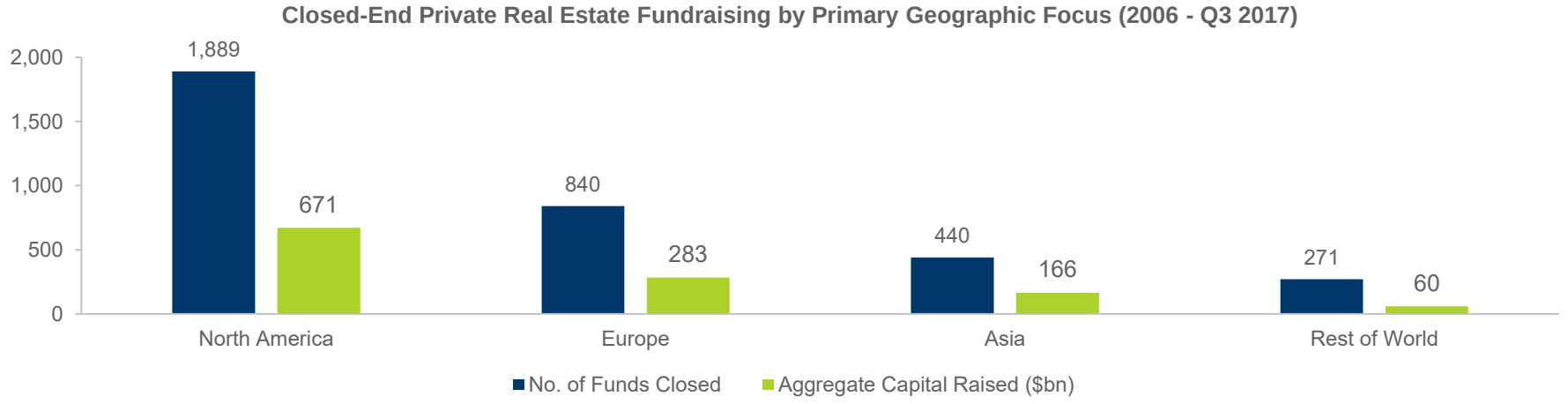
PRIVATE REAL ESTATE – FUNDRAISING ACTIVITY





Source: Preqin, as of September 30, 2017

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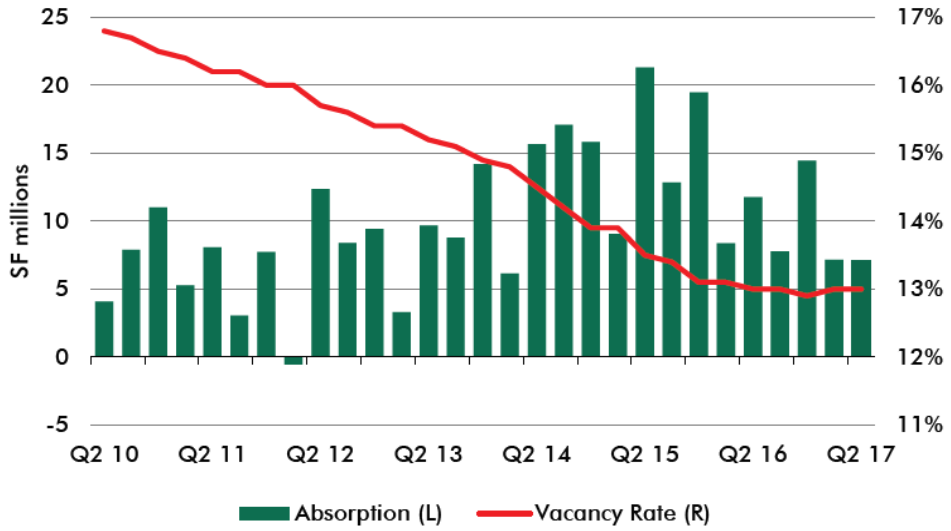
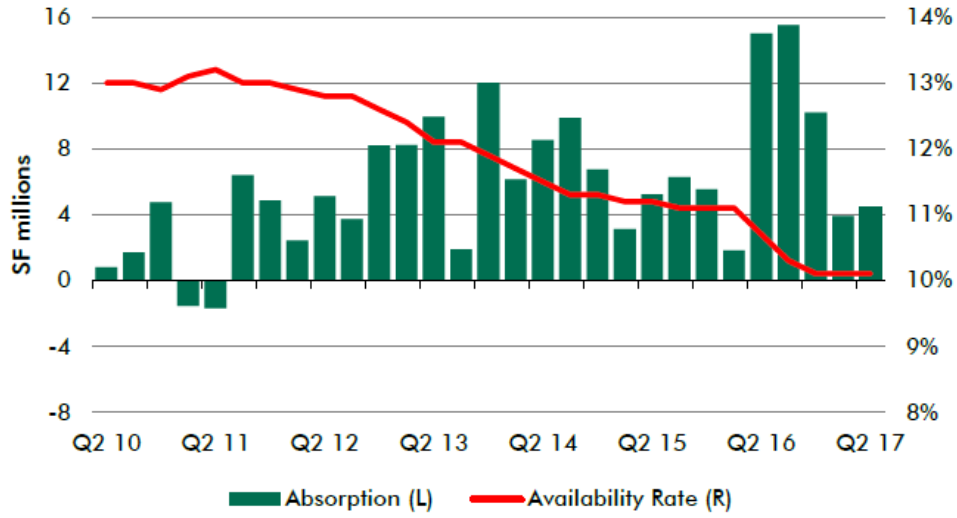
COMMERCIAL PROPERTY

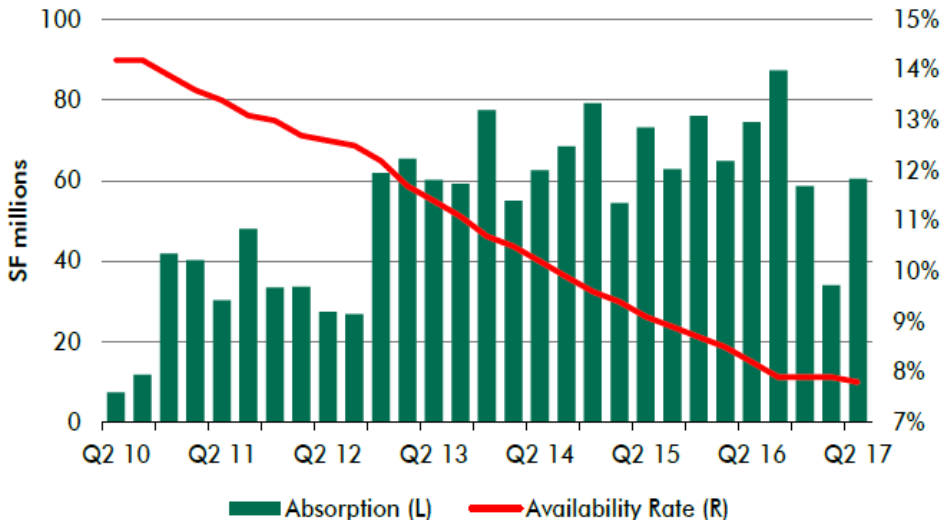
OFFICE



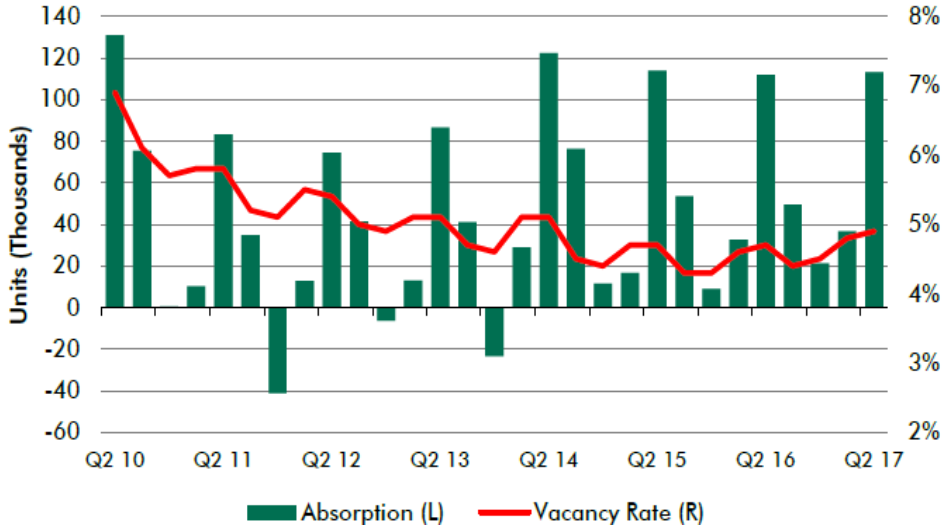
RETAIL



INDUSTRIAL



APARTMENTS



Data sources: CB Richard Ellis

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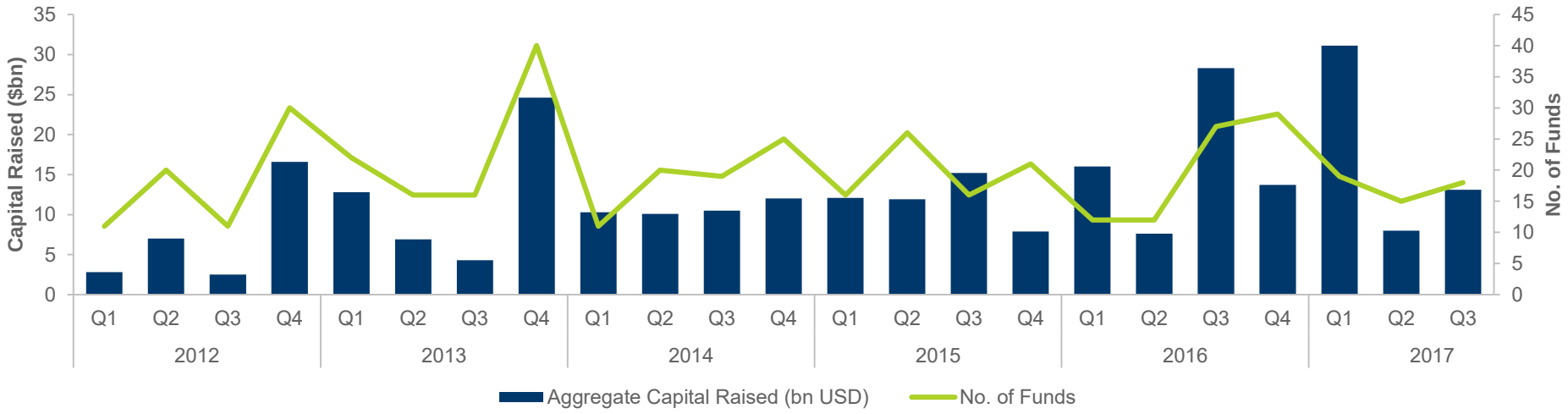
UNLISTED INFRASTRUCTURE – FUNDRAISING & INVESTMENT ACTIVITY



- Infrastructure fundraising has slowed considerably after a strong start to 2017

Source: Preqin, as of September 30, 2017

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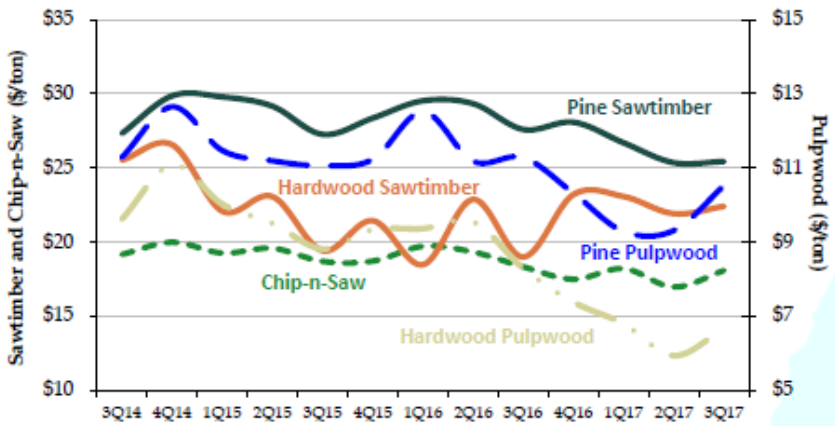
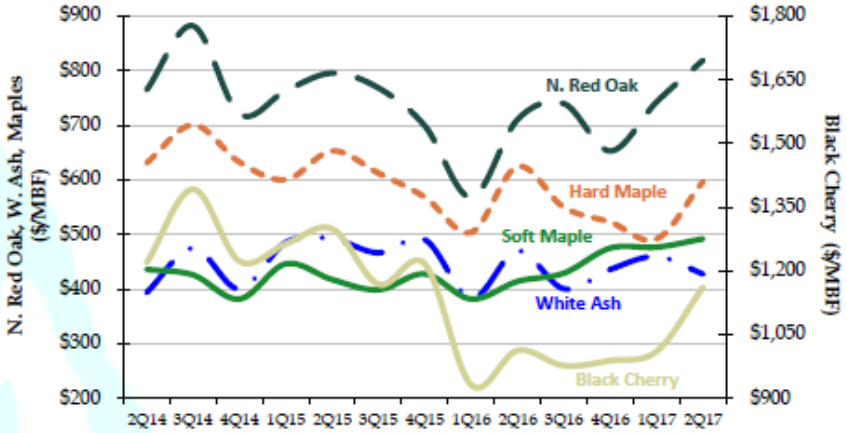
TIMBER

Southeastern Timber Prices



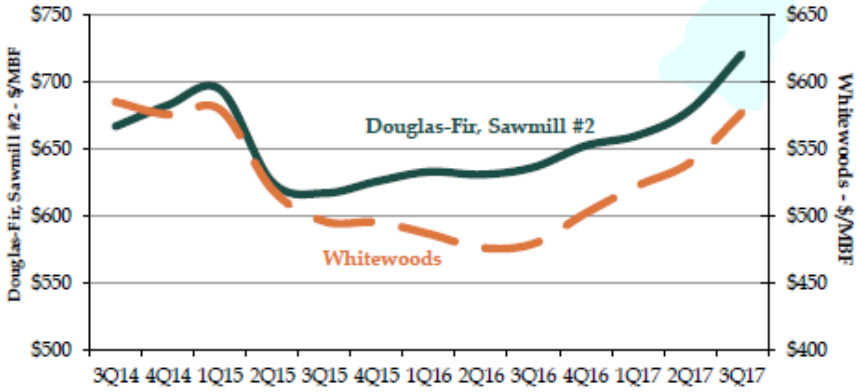
Source: Forest2Market®

Northeastern Hardwood Timber Prices



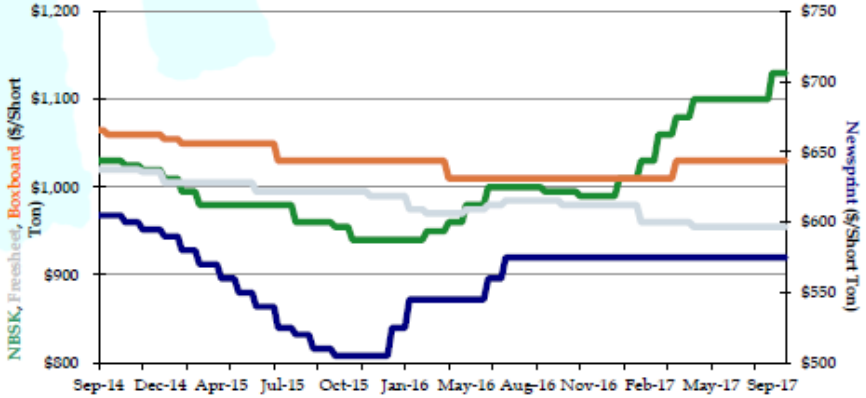
Source: Pennsylvania Woodlands Timber Market Report - Northwest Region

Pacific Northwest Timber Prices



Source: Log Lines®

Pulp and Paper



Source: FOEX Indexes, Ltd., RISI Pulp & Paper Week

Data sources: Forest Investment Associates

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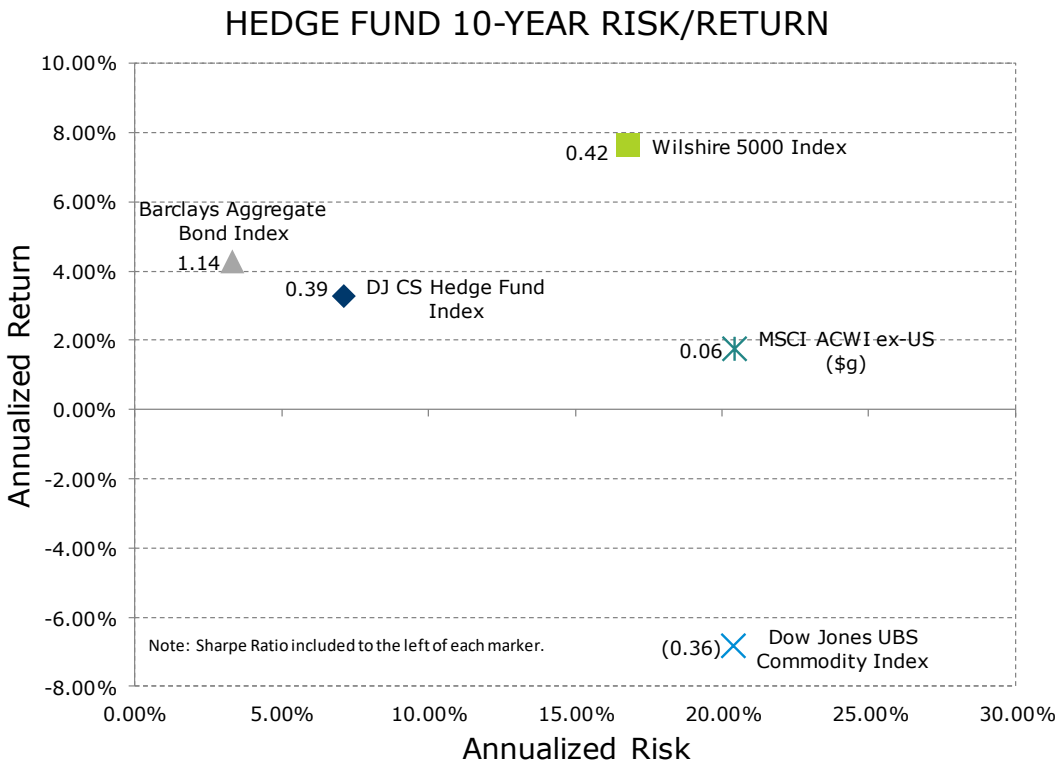
HEDGE FUND PERFORMANCE

AS OF SEPTEMBER 30, 2017	QTR	YTD	1 YR	3 YR	5 YR	10 YR
DJ CS HEDGE FUND INDEX	1.8	4.7	5.9	2.0	4.2	3.2
EVENT DRIVEN	0.9	4.7	7.1	-0.5	4.1	3.0
GLOBAL MACRO	1.8	0.3	4.9	1.5	2.5	4.6
LONG/SHORT EQUITY	3.0	9.8	9.6	3.9	6.9	3.9
MULTI-STRATEGY	1.4	6.6	7.8	5.3	7.0	5.0
WILSHIRE 5000	4.6	13.7	18.9	11.0	14.3	7.6
MSCI ACWI EX-US ($G)	6.3	21.6	20.1	5.2	7.5	1.7
BLOOMBERG BARCLAYS AGGREGATE	0.9	3.2	0.1	2.7	2.1	4.3
DOW JONES UBS COMMODITY	2.5	-2.9	-0.3	-10.4	-10.5	-6.8



Data sources: Wilshire Compass

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TOTAL FUND

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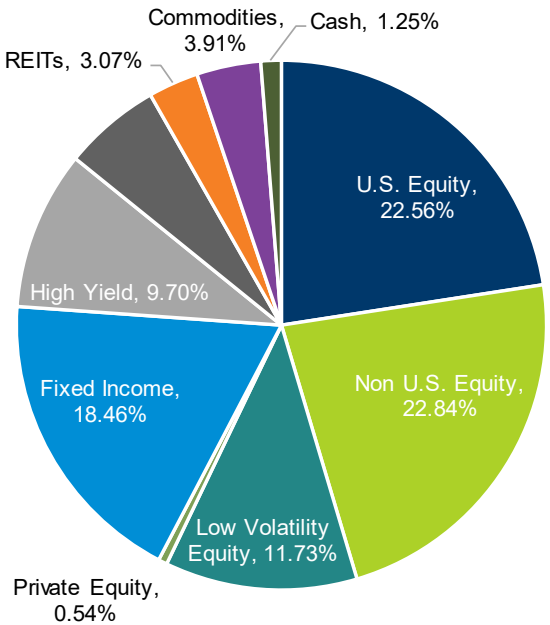
Actual Allocation vs. Policy

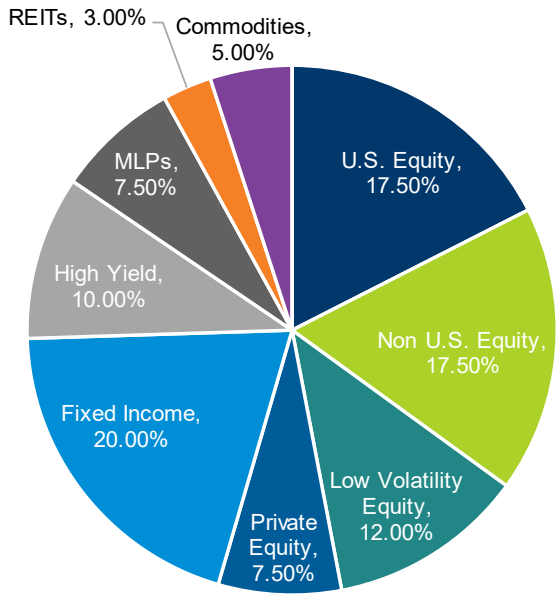
Total Fund Composite

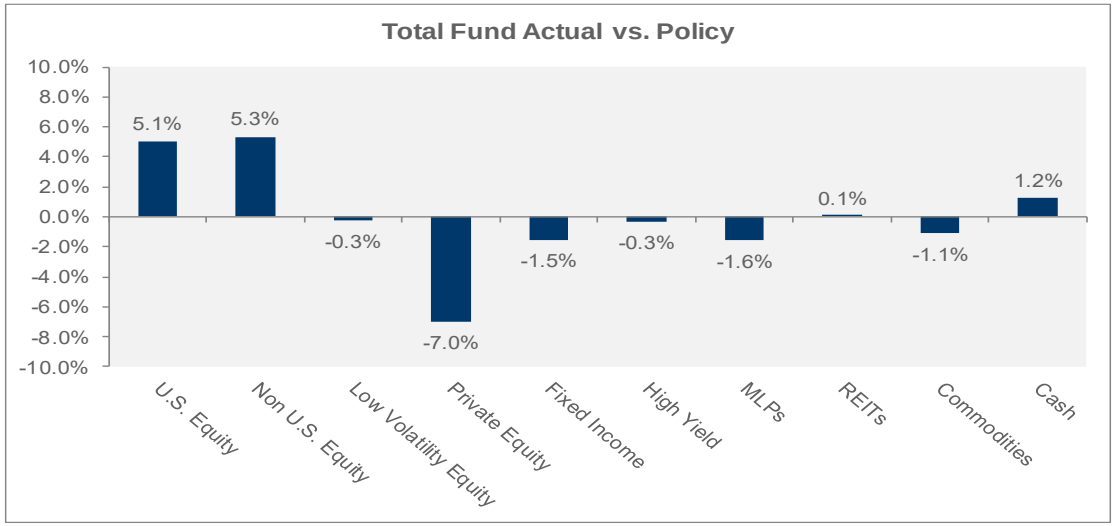
September 30, 2017

Actual Allocation %



Policy %





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Actual Allocation vs. Policy

Total Fund Composite

September 30, 2017

	Market Value	Actual Allocation %	Policy %
U.S. Equity	$146,046,482	22.56%	17.50%
Non U.S. Equity	$147,867,098	22.84%	17.50%
Low Volatility Equity	$75,938,864	11.73%	12.00%
Private Equity	$3,474,238	0.54%	7.50%
Fixed Income	$119,527,131	18.46%	20.00%
High Yield	$62,824,880	9.70%	10.00%
MLPs	$38,457,499	5.94%	7.50%
REITs	$19,860,023	3.07%	3.00%
Commodities	$25,342,991	3.91%	5.00%
Cash	$8,079,365	1.25%	0.00%
Total Pension	**$647,418,570**	**100%**	**100%**

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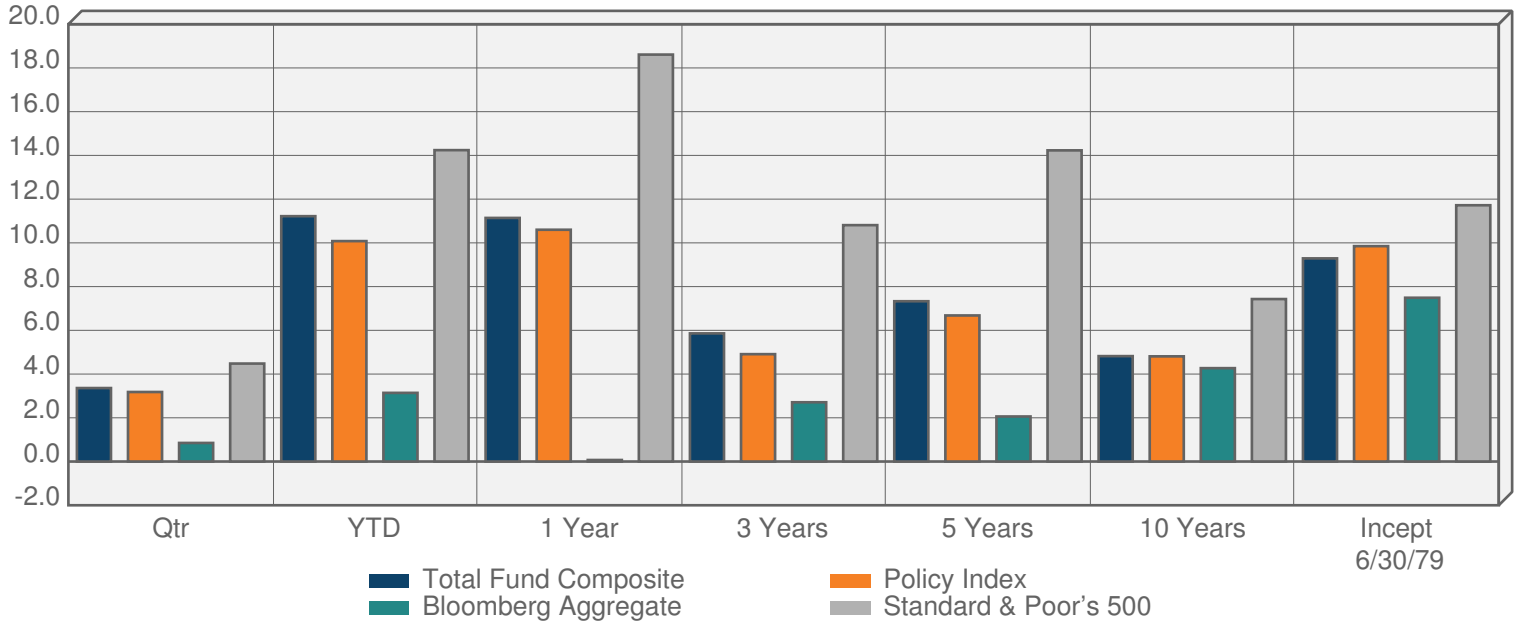
INVESTMENT PERFORMANCE

Total Fund Composite

Periods Ended September 30, 2017



Total Returns	Qtr	YTD	1 Year	3 Years	5 Years	10 Years	Incept 6/30/79
Total Fund Composite	3.36	11.22	11.14	5.86	7.33	4.82	9.29
Policy Index	3.18	10.08	10.60	4.91	6.68	4.81	9.85
Bloomberg Aggregate	0.85	3.14	0.07	2.71	2.06	4.27	7.49
Standard & Poor's 500	4.48	14.24	18.61	10.81	14.23	7.43	11.72

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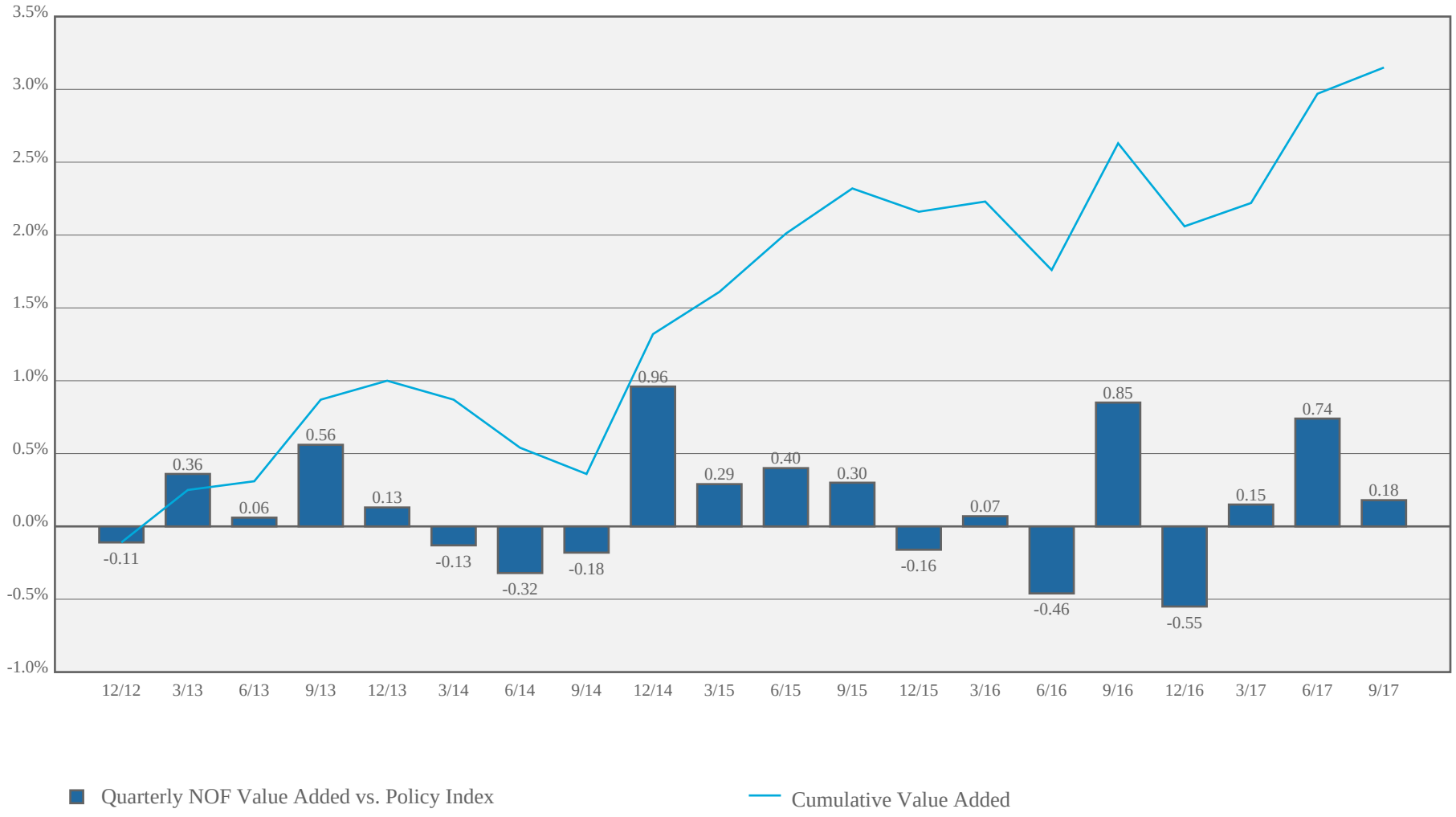
VALUE ADDED ANALYSIS

Total Fund Composite

Periods Ended September 30, 2017



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PERFORMANCE COMPARISON

Trailing Returns

Periods Ended September 30, 2017

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Domestic Equity Composite									
Net of Fee Return	**4.67**	**7.64**	**13.11**	**19.00**	**10.88**	**14.34**	**7.47**	**12/31/80**	**11.05**
Wilshire 5000	4.59	7.68	13.72	18.89	10.96	14.27	7.61	12/31/80	10.97
Value Added	0.08	-0.03	-0.61	0.12	-0.08	0.07	-0.15	12/31/80	0.08
Minimum Volatility Composite									
Net of Fee Return	**2.93**	**6.69**						**3/31/17**	**6.69**
MSCI ACWI Min Vol (N)	2.78	6.40						3/31/17	6.40
Value Added	0.15	0.29						3/31/17	0.29
Int'l Equity Composite									
Net of Fee Return	**6.49**	**16.39**	**27.96**	**22.01**	**9.84**	**9.44**	**2.26**	**12/31/87**	**6.25**
Policy Index	6.16	12.30	21.13	19.61	4.70	6.97	0.71	12/31/87	5.26
Value Added	0.33	4.09	6.83	2.40	5.13	2.47	1.55	12/31/87	0.99
Equity Composite									
Net of Fee Return	**5.03**	**10.78**	**18.80**	**19.44**				**12/31/14**	**9.88**
Domestic Fixed Composite									
Net of Fee Return	**1.05**	**2.56**	**3.47**	**0.44**	**2.99**	**2.43**	**4.25**	**6/30/82**	**8.79**
Policy Index	0.85	2.31	3.14	0.07	2.60	1.93	3.56	6/30/82	7.62
Value Added	0.21	0.26	0.32	0.37	0.40	0.50	0.69	6/30/82	1.17
High Yield Composite									
Net of Fee Return	**2.59**	**4.82**	**5.51**	**9.34**	**2.52**	**4.09**	**6.34**	**12/31/04**	**6.31**
Policy Index	2.02	4.20	7.02	9.03	5.87	6.38	7.54	12/31/04	7.30
Value Added	0.57	0.62	-1.52	0.30	-3.35	-2.30	-1.20	12/31/04	-0.98

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PERFORMANCE COMPARISON

Trailing Returns

Periods Ended September 30, 2017

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Real Estate Composite									
Net of Fee Return	**2.43**	**5.30**	**6.62**	**0.94**	**6.76**	**7.40**	**5.34**	**9/30/05**	**7.30**
Custom Real Estate Policy	1.84	4.90	7.31	1.52	6.80	7.60	5.04	9/30/05	6.68
Value Added	0.59	0.40	-0.69	-0.58	-0.04	-0.20	0.30	9/30/05	0.61
Commodity Composite									
Net of Fee Return	**3.33**	**0.73**	**-0.85**	**2.86**	**-10.70**	**-10.01**		**9/30/11**	**-7.36**
DJ UBS Commodity Index Total Ret	2.52	-0.56	-2.87	-0.29	-10.41	-10.47		9/30/11	-7.91
Value Added	0.81	1.29	2.02	3.15	-0.29	0.45		9/30/11	0.56
MLP Composite									
Net of Fee Return	**-2.34**	**-9.11**	**-5.30**	**-3.67**				**9/30/15**	**4.36**
Alerian MLP Index	-3.05	-9.21	-5.62	-3.70				9/30/15	4.20
Value Added	0.71	0.10	0.32	0.03				9/30/15	0.16
Cash Composite									
Net of Fee Return	**0.54**	**1.24**	**1.80**	**2.40**	**2.00**	**1.22**	**0.96**	**6/30/98**	**2.21**
91-Day Treasury Bill	0.26	0.47	0.57	0.66	0.32	0.22	0.47	6/30/98	2.00
Value Added	0.27	0.77	1.23	1.75	1.68	1.00	0.50	6/30/98	0.21
Total Fund Composite									
Net of Fee Return	**3.36**	**6.52**	**11.22**	**11.14**	**5.86**	**7.33**	**4.82**	**6/30/79**	**9.29**
Policy Index	3.18	5.58	10.08	10.60	4.91	6.68	4.81	6/30/79	9.85
Value Added	0.18	0.94	1.14	0.54	0.96	0.65	0.01	6/30/79	-0.56

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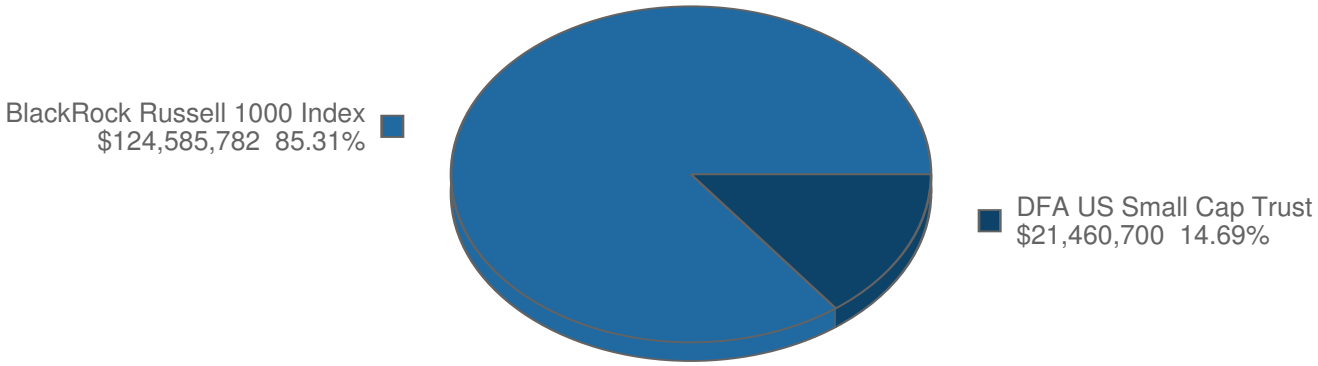
DOMESTIC EQUITY

Wilshire Consulting

MANAGER ALLOCATION

Domestic Equity Composite

As of September 30, 2017



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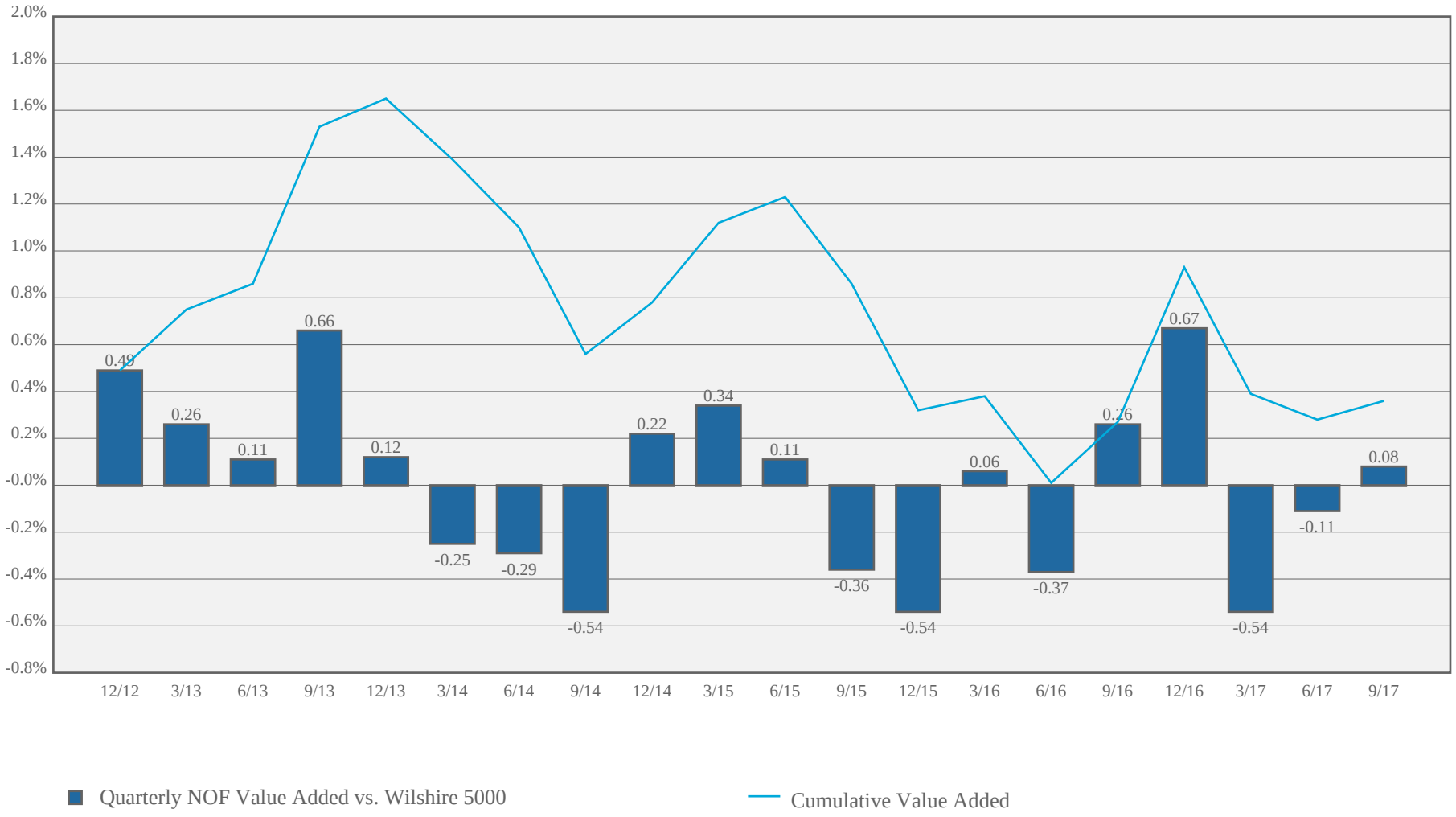
VALUE ADDED ANALYSIS

Domestic Equity Composite

Periods Ended September 30, 2017



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PERFORMANCE COMPARISON

Trailing Returns

Periods Ended September 30, 2017

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
BlackRock Russell 1000 Index									
Net of Fee Return	**4.49**	**7.69**	**14.17**	**18.52**	**10.57**	**14.21**		**9/30/11**	**16.74**
Russell 1000	4.48	7.68	14.17	18.54	10.63	14.27		9/30/11	16.76
Value Added	0.01	0.02	0.00	-0.02	-0.06	-0.06		9/30/11	-0.03
DFA US Small Cap Trust									
Net of Fee Return	**5.75**	**7.34**	**8.04**	**20.88**	**12.45**	**14.88**		**9/30/11**	**17.60**
Russell 2000	5.67	8.27	10.94	20.74	12.18	13.79		9/30/11	16.63
Value Added	0.08	-0.94	-2.90	0.14	0.28	1.08		9/30/11	0.98
Domestic Equity Composite									
Net of Fee Return	**4.67**	**7.64**	**13.11**	**19.00**	**10.88**	**14.34**	**7.47**	**12/31/80**	**11.05**
Wilshire 5000	4.59	7.68	13.72	18.89	10.96	14.27	7.61	12/31/80	10.97
Value Added	0.08	-0.03	-0.61	0.12	-0.08	0.07	-0.15	12/31/80	0.08

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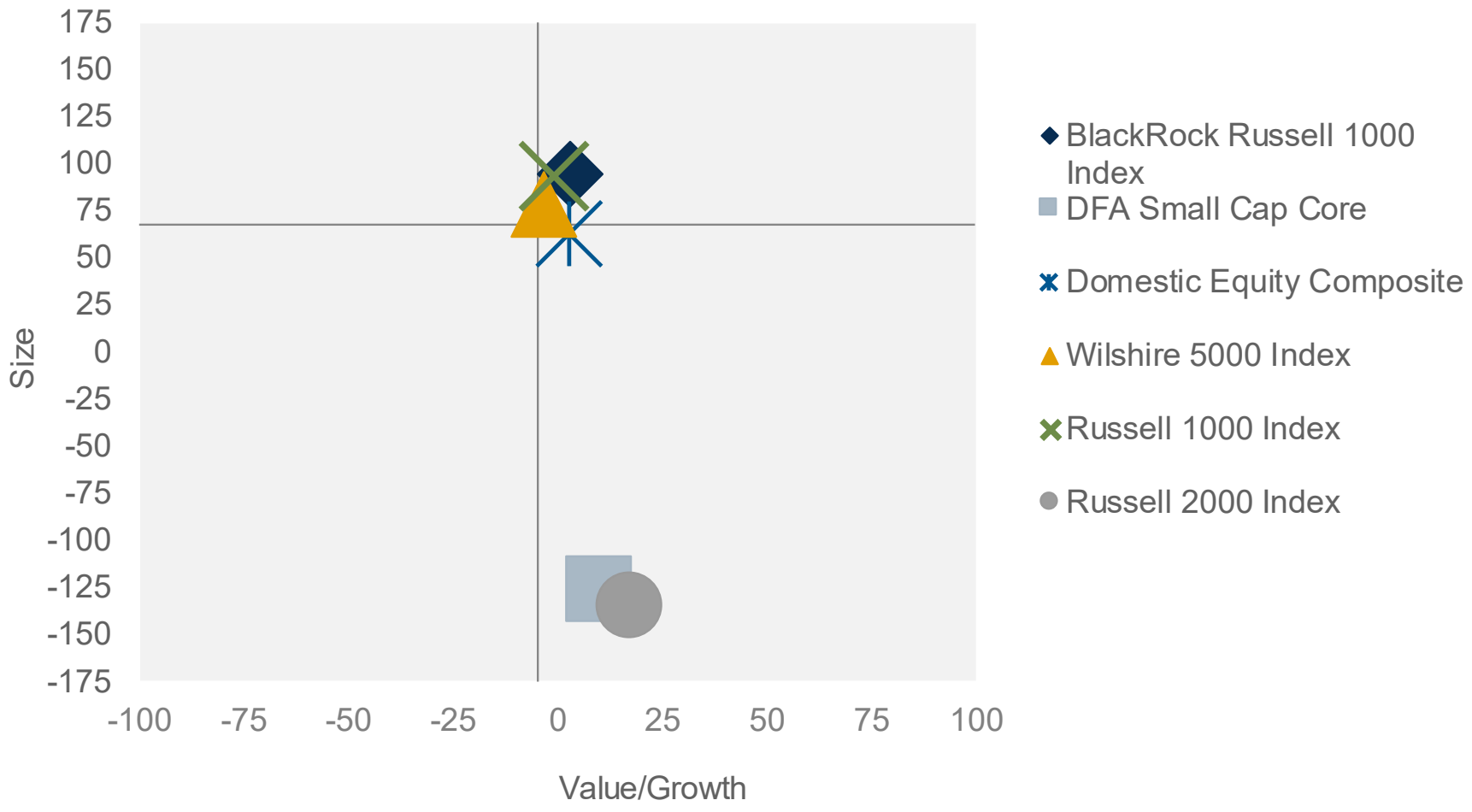
Equity Style Map



Source: Wilshire Compass. Characteristics represent strategy composite.

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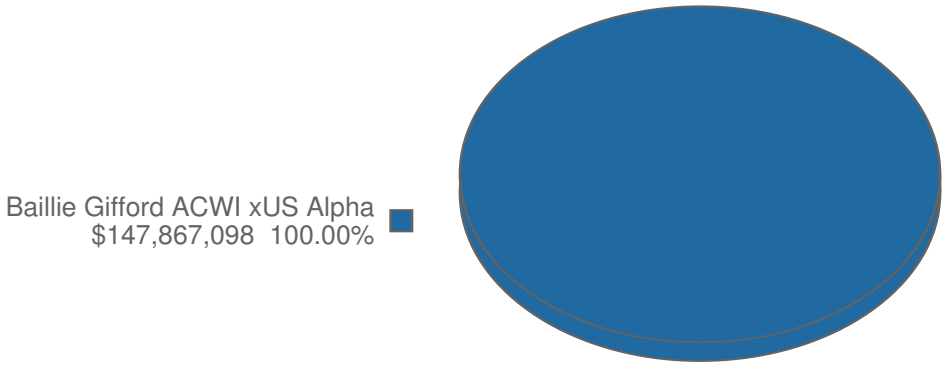
INTERNATIONAL EQUITY

Wilshire Consulting

MANAGER ALLOCATION

Int'l Equity Composite

As of September 30, 2017



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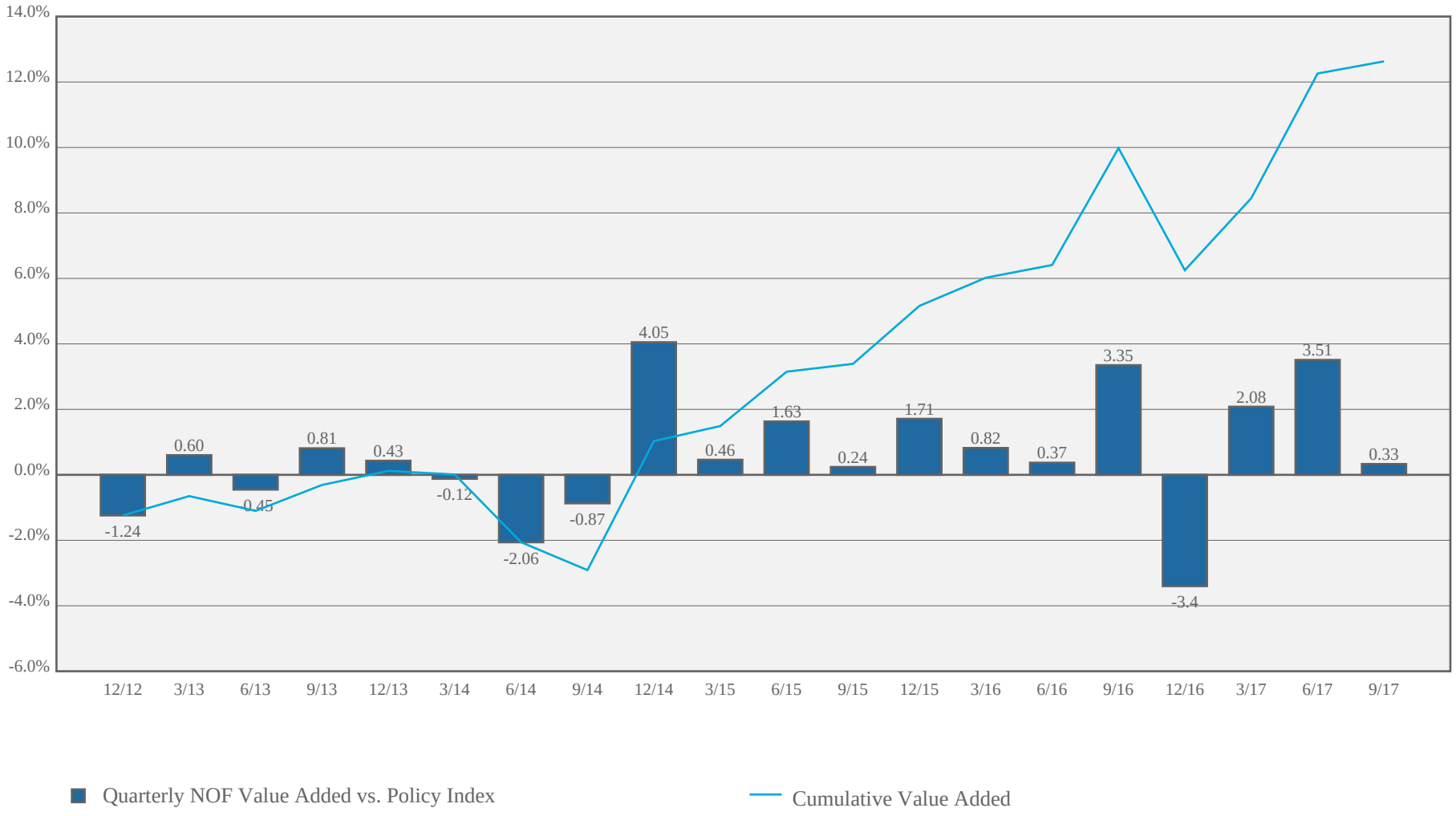
VALUE ADDED ANALYSIS

Int'l Equity Composite

Periods Ended September 30, 2017



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PERFORMANCE COMPARISON

Trailing Returns

Periods Ended September 30, 2017

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Baillie Gifford ACWI xUS Alpha									
Net of Fee Return	**6.49**	**16.39**	**27.96**	**22.01**	**9.84**	**9.44**		**9/30/11**	**11.34**
MSCI ACWI X US (N)	6.16	12.30	21.13	19.61	4.70	6.97		9/30/11	8.19
Value Added	0.33	4.09	6.83	2.40	5.13	2.47		9/30/11	3.16
Int'l Equity Composite									
Net of Fee Return	**6.49**	**16.39**	**27.96**	**22.01**	**9.84**	**9.44**	**2.26**	**12/31/87**	**6.25**
Policy Index	6.16	12.30	21.13	19.61	4.70	6.97	0.71	12/31/87	5.26
Value Added	0.33	4.09	6.83	2.40	5.13	2.47	1.55	12/31/87	0.99

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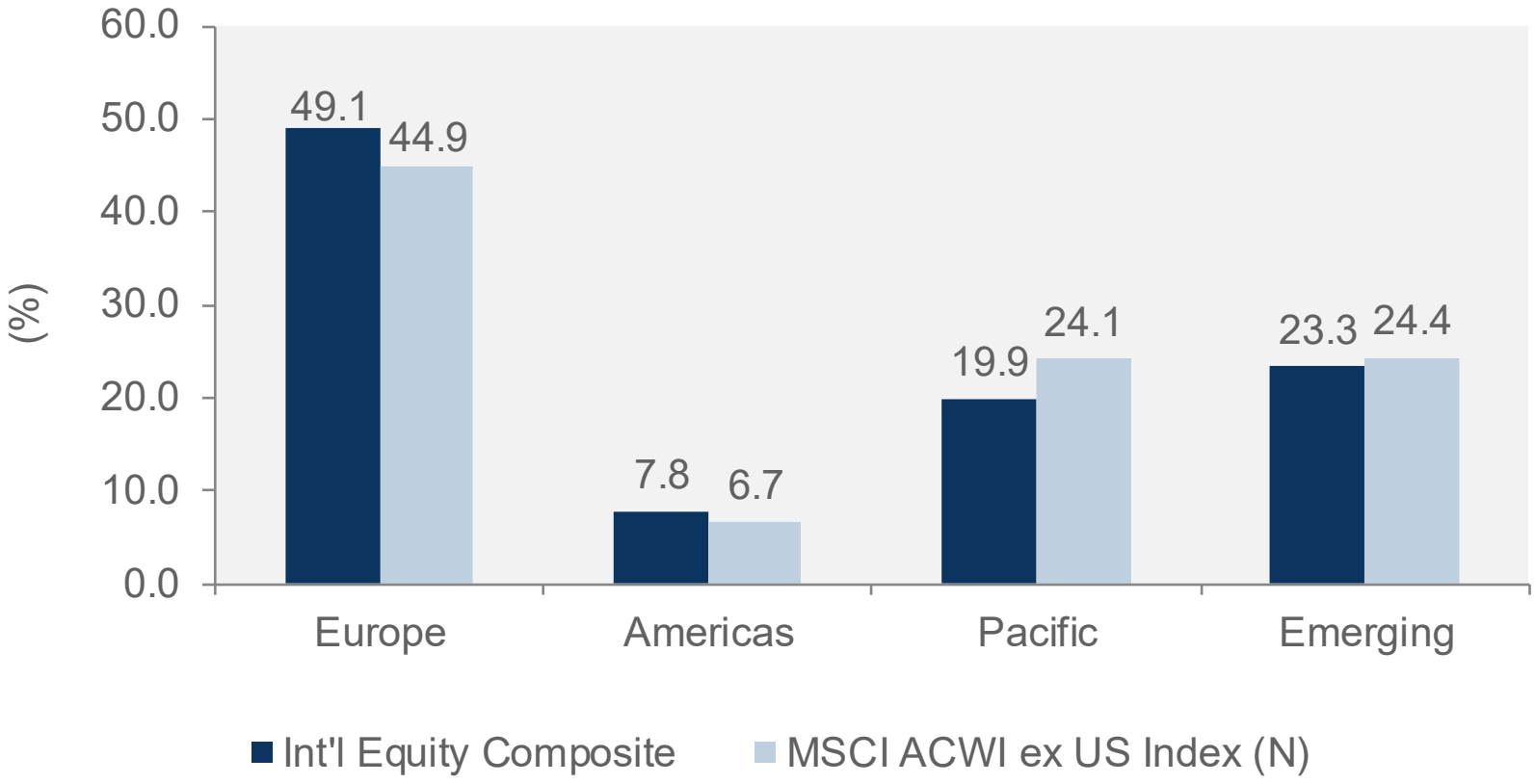
Regional Allocation



Source: Wilshire Compass. Characteristics represent strategy composite.

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Minimum Volatility Composite

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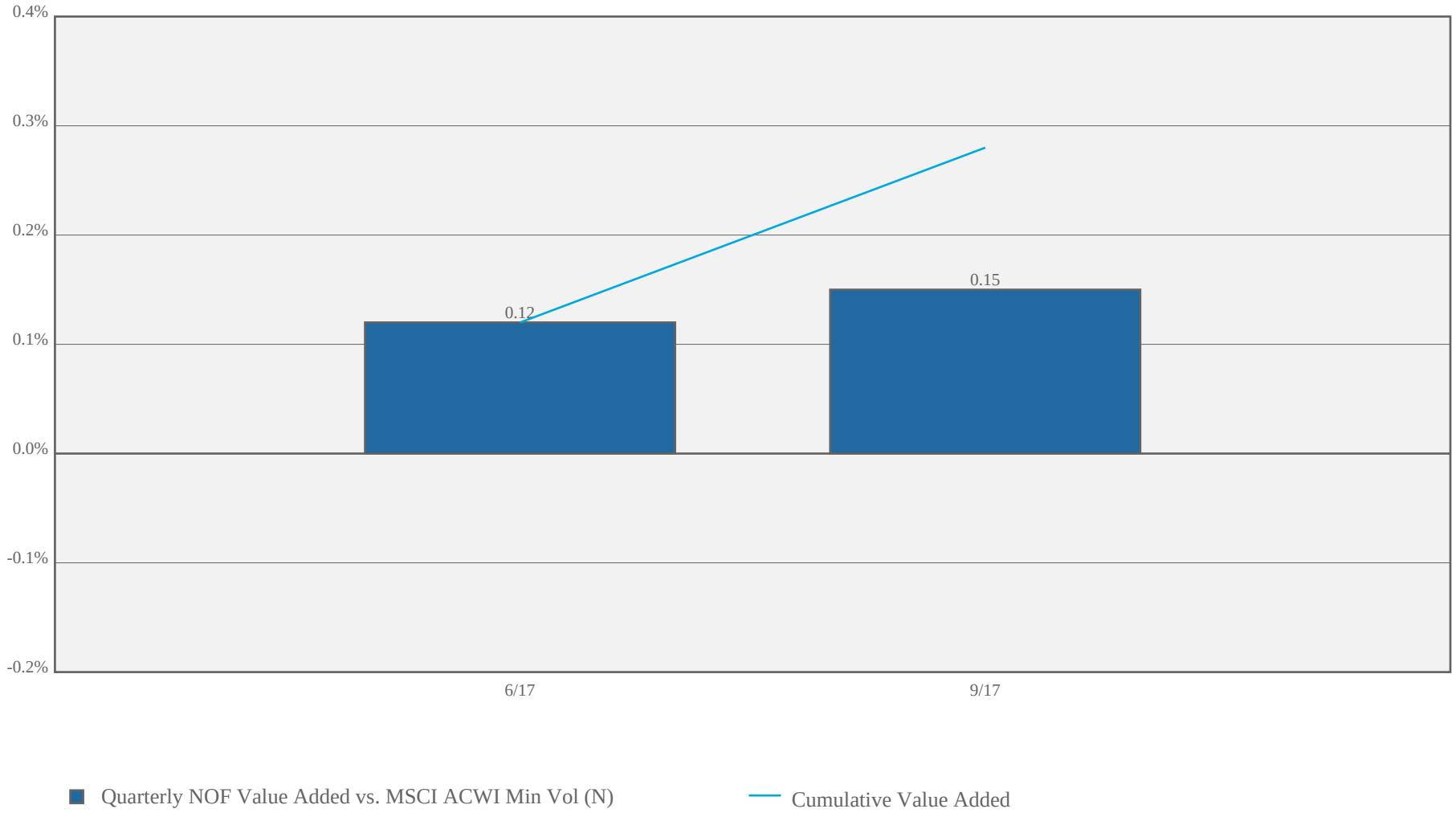
VALUE ADDED ANALYSIS

Minimum Volatility Composite

Periods Ended September 30, 2017



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PERFORMANCE COMPARISON

Trailing Returns

Periods Ended September 30, 2017

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
BlackRock Min. Volatility									
Net of Fee Return	**2.93**	**6.69**						**3/31/17**	**6.69**
MSCI ACWI Min Vol (N)	2.78	6.40						3/31/17	6.40
Value Added	0.15	0.29						3/31/17	0.29
Minimum Volatility Composite									
Net of Fee Return	**2.93**	**6.69**						**3/31/17**	**6.69**
MSCI ACWI Min Vol (N)	2.78	6.40						3/31/17	6.40
Value Added	0.15	0.29						3/31/17	0.29

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FIXED INCOME

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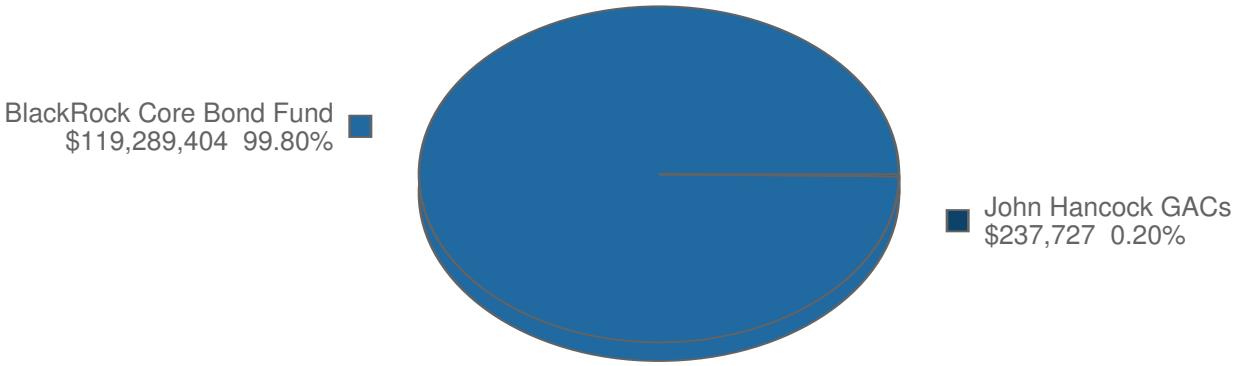
MANAGER ALLOCATION

Domestic Fixed Composite

As of September 30, 2017



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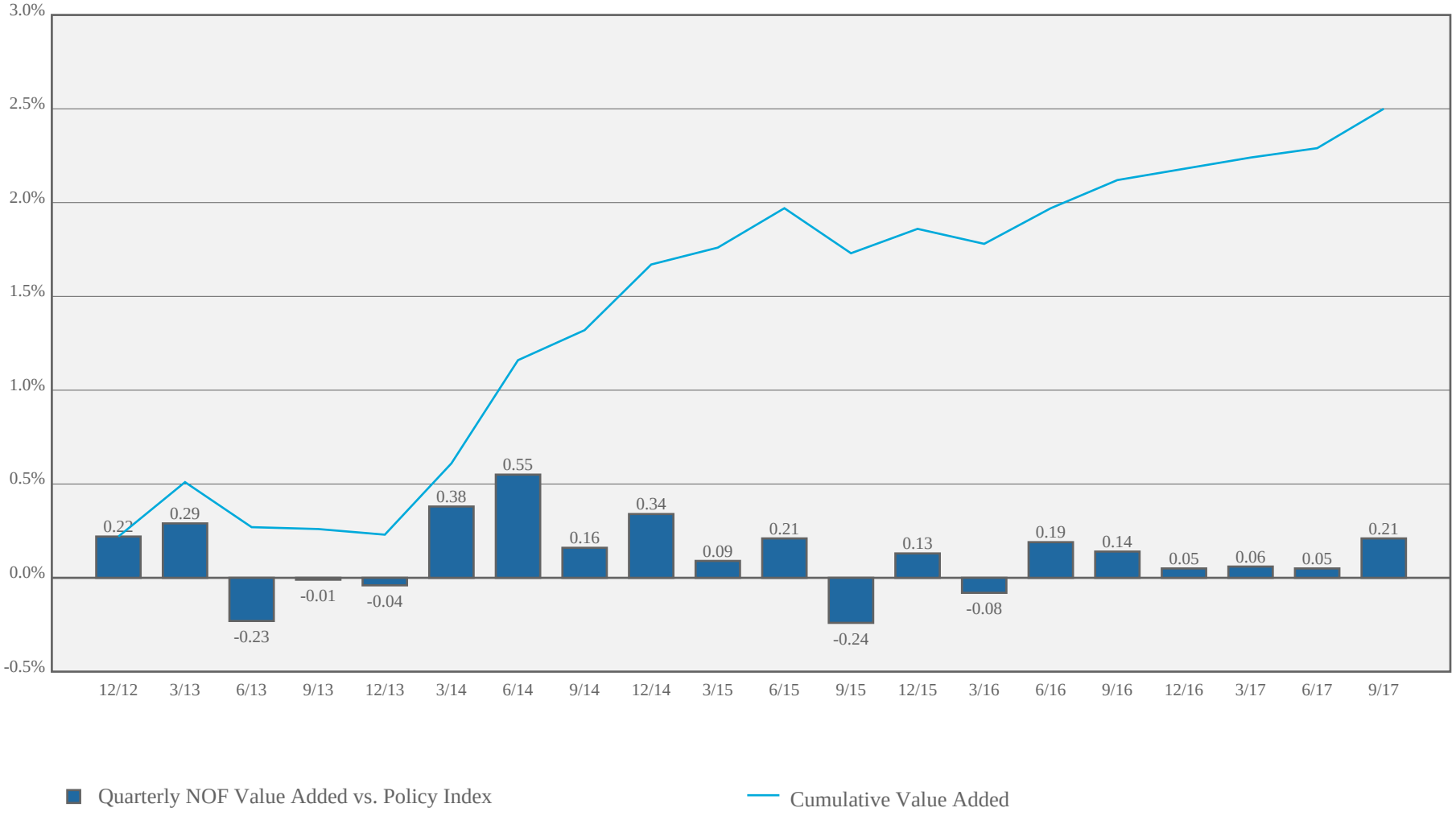
VALUE ADDED ANALYSIS

Domestic Fixed Composite

Periods Ended September 30, 2017



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PERFORMANCE COMPARISON

Trailing Returns

Periods Ended September 30, 2017

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
BlackRock Core Bond Fund									
Net of Fee Return	**1.05**	**2.57**	**3.47**	**0.45**	**3.08**	**2.43**	**4.96**	**3/31/02**	**5.16**
Bloomberg Aggregate	0.85	2.31	3.14	0.07	2.71	2.06	4.27	3/31/02	4.63
Value Added	0.21	0.26	0.33	0.37	0.37	0.37	0.68	3/31/02	0.52
Domestic Fixed Composite									
Net of Fee Return	**1.05**	**2.56**	**3.47**	**0.44**	**2.99**	**2.43**	**4.25**	**6/30/82**	**8.79**
Policy Index	0.85	2.31	3.14	0.07	2.60	1.93	3.56	6/30/82	7.62
Value Added	0.21	0.26	0.32	0.37	0.40	0.50	0.69	6/30/82	1.17
Lord Abbett									
Net of Fee Return	**2.59**	**4.82**						**3/31/17**	**4.82**
ML High Yield 2% Constrained	2.02	4.20						3/31/17	4.20
Value Added	0.57	0.62						3/31/17	0.62
High Yield Composite									
Net of Fee Return	**2.59**	**4.82**	**5.51**	**9.34**	**2.52**	**4.09**	**6.34**	**12/31/04**	**6.31**
Policy Index	2.02	4.20	7.02	9.03	5.87	6.38	7.54	12/31/04	7.30
Value Added	0.57	0.62	-1.52	0.30	-3.35	-2.30	-1.20	12/31/04	-0.98

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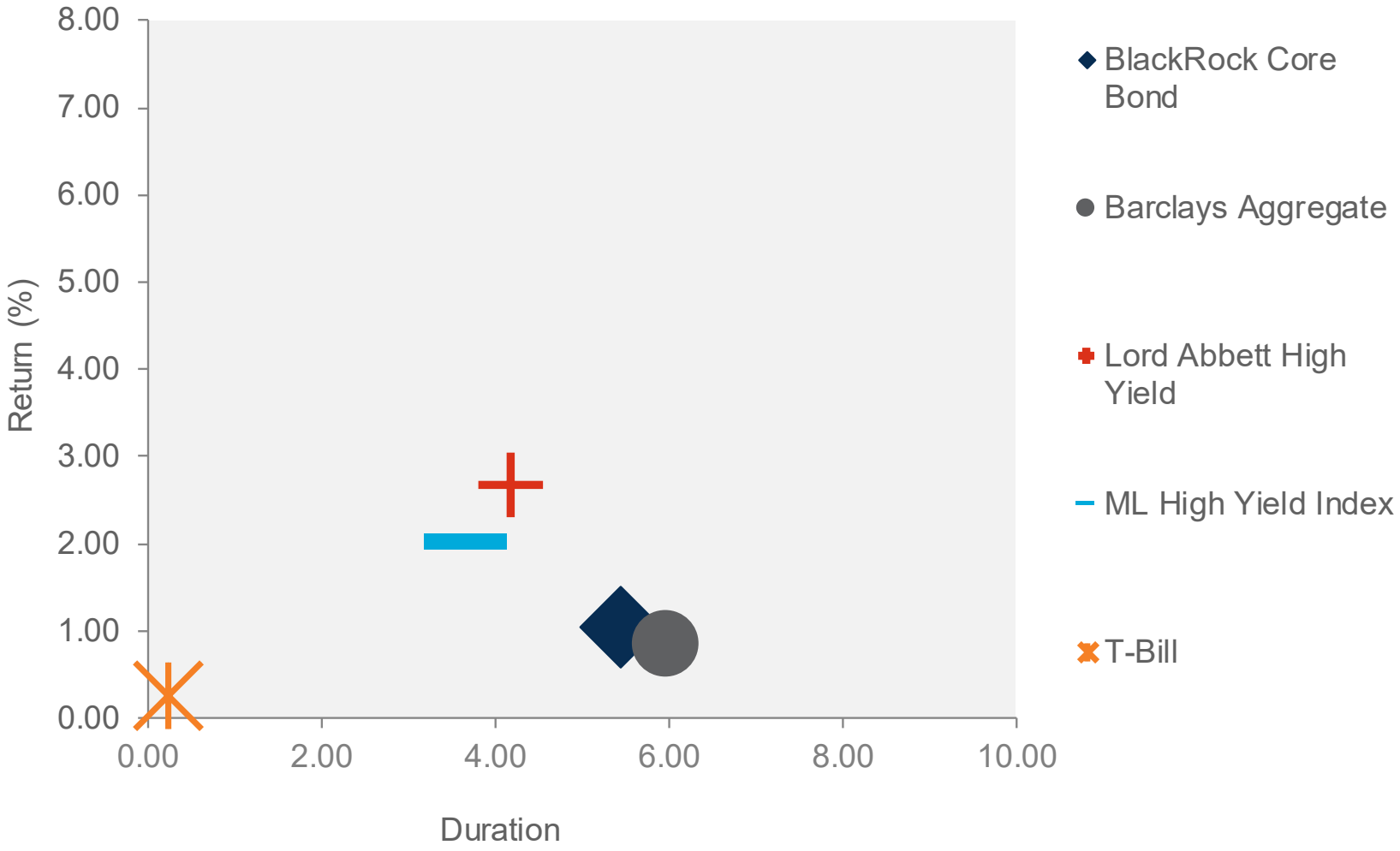
Return vs. Duration



Source: Wilshire Compass. Characteristics represent strategy composite.

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REAL ESTATE

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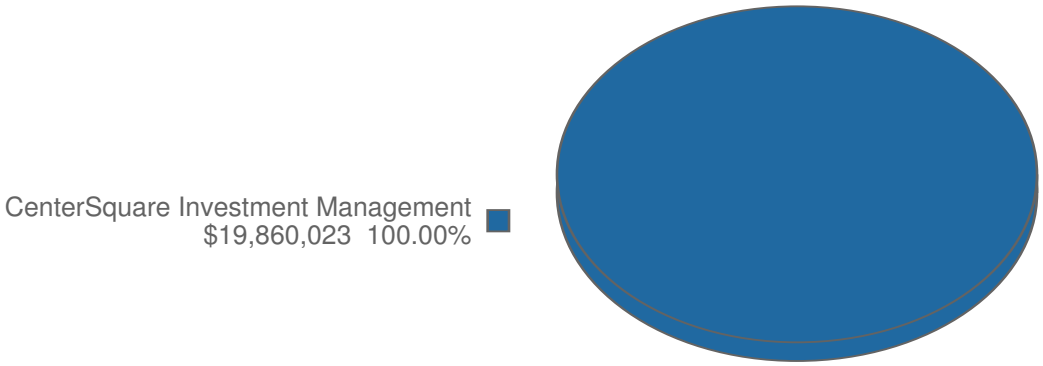
MANAGER ALLOCATION

Real Estate Composite

As of September 30, 2017



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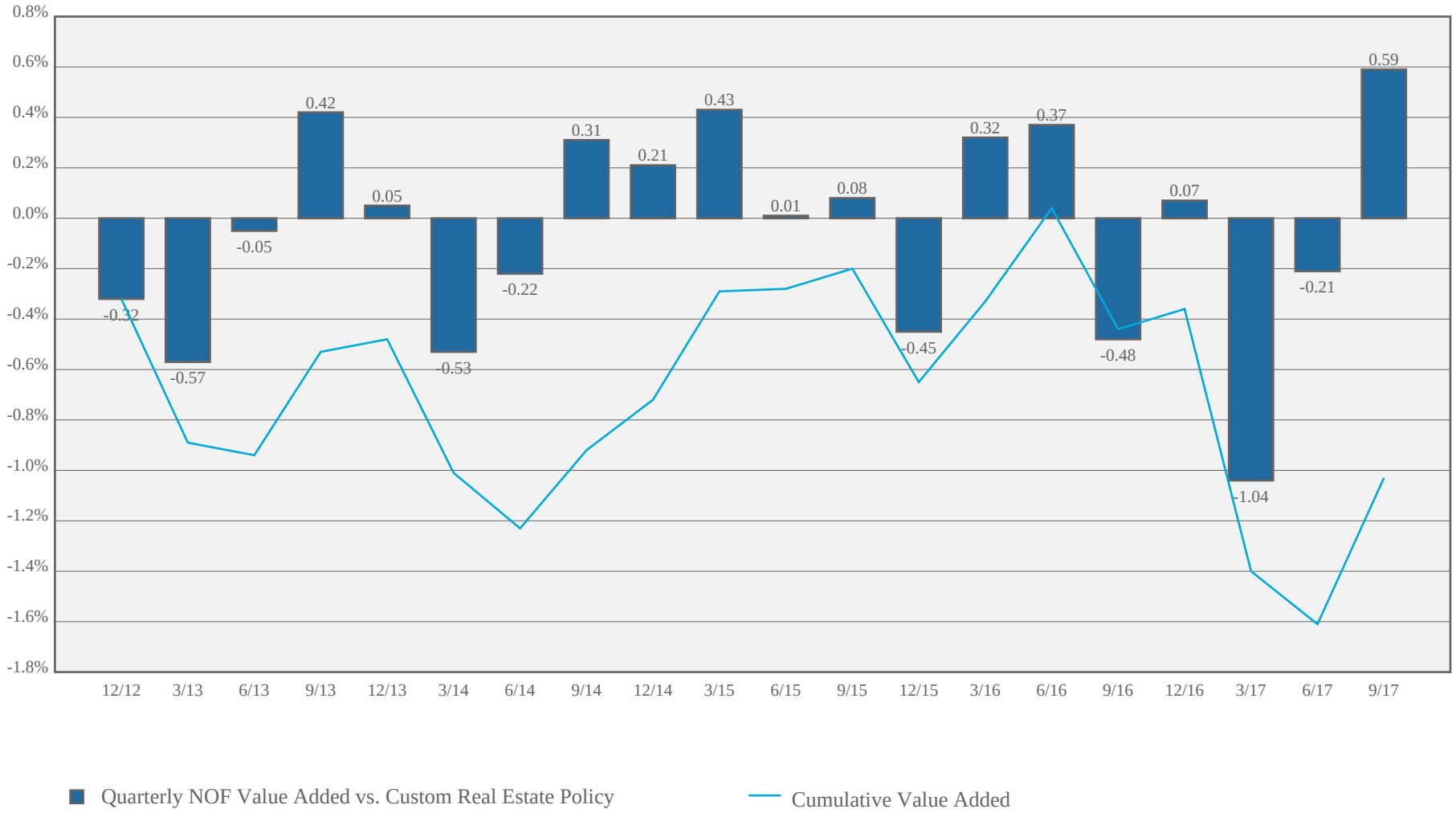
VALUE ADDED ANALYSIS

Real Estate Composite

Periods Ended September 30, 2017



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PERFORMANCE COMPARISON

Trailing Returns

Periods Ended September 30, 2017

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
CenterSquare Investment Management									
Net of Fee Return	**2.43**	**5.30**	**6.62**	**0.94**	**6.76**	**7.36**		**6/30/12**	**8.15**
FTSE EPRA/NAREIT Developed RE In	1.84	4.90	7.31	1.52	6.80	7.60		6/30/12	8.33
Value Added	0.59	0.40	-0.69	-0.58	-0.04	-0.24		6/30/12	-0.18
Real Estate Composite									
Net of Fee Return	**2.43**	**5.30**	**6.62**	**0.94**	**6.76**	**7.40**	**5.34**	**9/30/05**	**7.30**
Custom Real Estate Policy	1.84	4.90	7.31	1.52	6.80	7.60	5.04	9/30/05	6.68
Value Added	0.59	0.40	-0.69	-0.58	-0.04	-0.20	0.30	9/30/05	0.61

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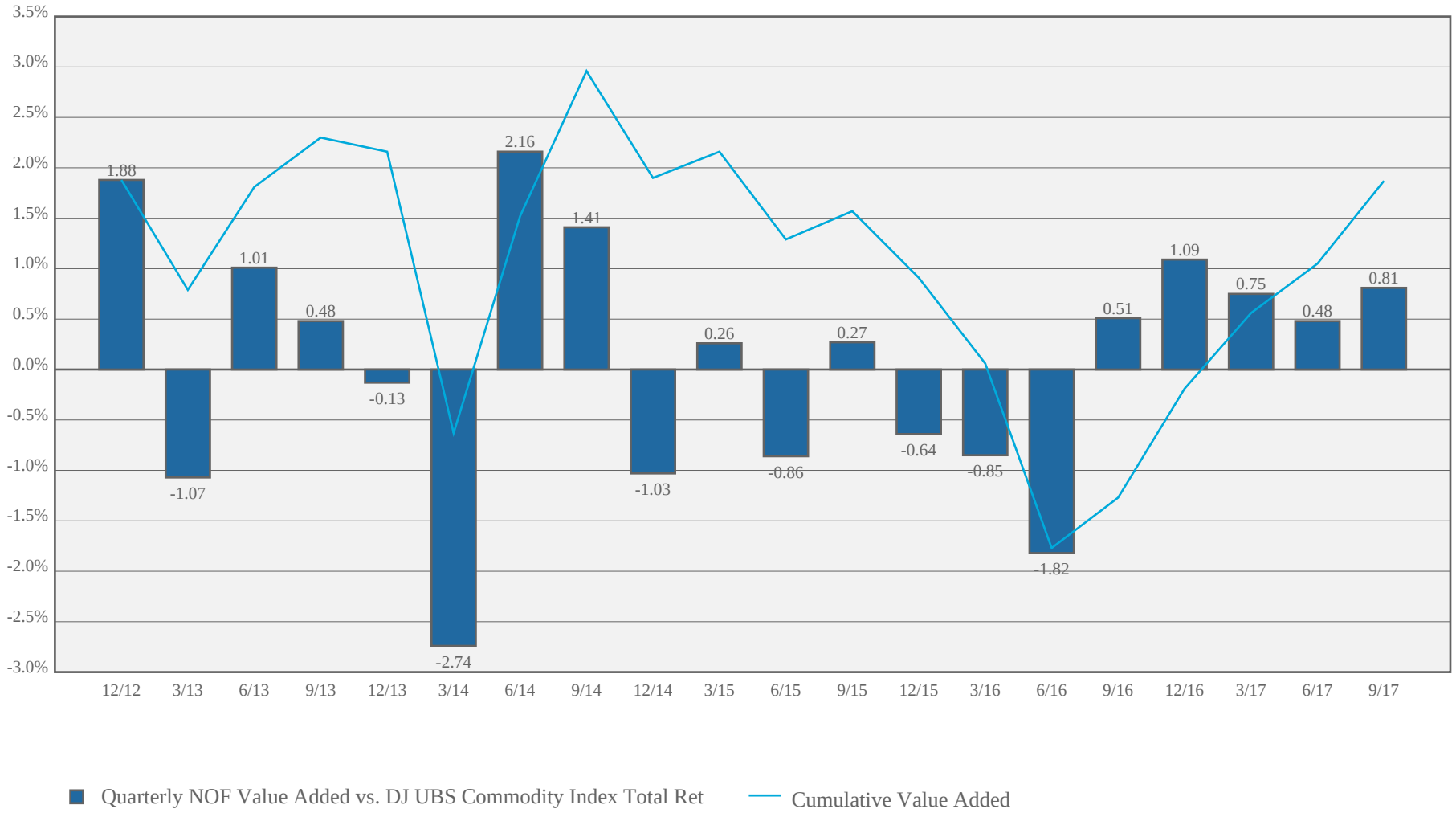
COMMODITY COMPOSITE

Wilshire Consulting

VALUE ADDED ANALYSIS

Commodity Composite

Periods Ended September 30, 2017



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PERFORMANCE COMPARISON

Trailing Returns

Periods Ended September 30, 2017

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Gresham Commodity Fund (ETAP)									
Net of Fee Return	**3.33**	**0.73**	**-0.85**	**2.86**	**-10.70**	**-10.01**		**9/30/11**	**-7.36**
DJ UBS Commodity Index Total Ret	2.52	-0.56	-2.87	-0.29	-10.41	-10.47		9/30/11	-7.91
Value Added	0.81	1.29	2.02	3.15	-0.29	0.45		9/30/11	0.56
Commodity Composite									
Net of Fee Return	**3.33**	**0.73**	**-0.85**	**2.86**	**-10.70**	**-10.01**		**9/30/11**	**-7.36**
DJ UBS Commodity Index Total Ret	2.52	-0.56	-2.87	-0.29	-10.41	-10.47		9/30/11	-7.91
Value Added	0.81	1.29	2.02	3.15	-0.29	0.45		9/30/11	0.56

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MLP COMPOSITE

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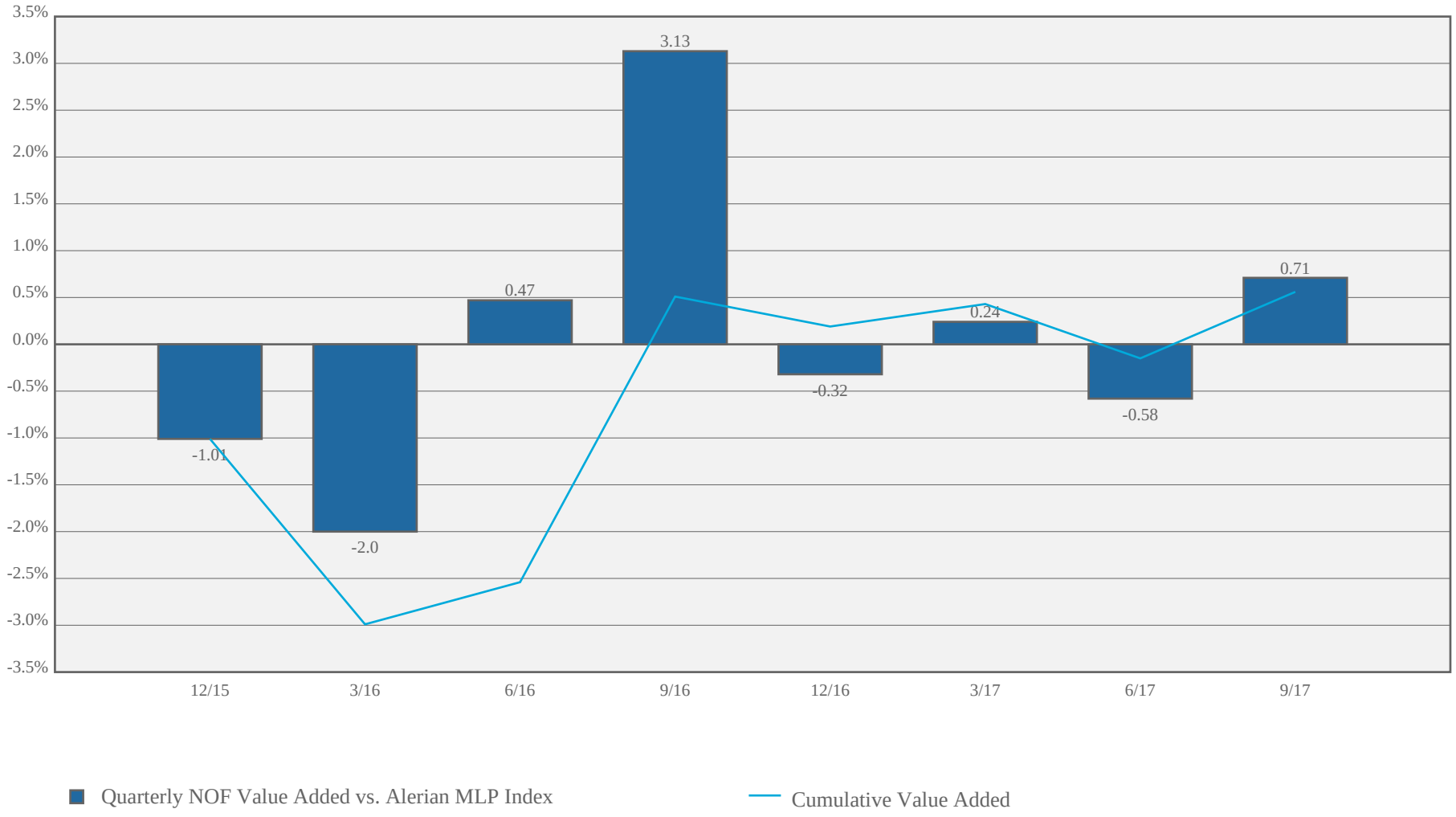
VALUE ADDED ANALYSIS

MLP Composite

Periods Ended September 30, 2017



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PERFORMANCE COMPARISON

Trailing Returns

Periods Ended September 30, 2017

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Harvest MLP									
Net of Fee Return	**-2.34**	**-9.11**	**-5.30**	**-3.67**				**9/30/15**	**4.36**
Alerian MLP Index	-3.05	-9.21	-5.62	-3.70				9/30/15	4.20
Value Added	0.71	0.10	0.32	0.03				9/30/15	0.16
MLP Composite									
Net of Fee Return	**-2.34**	**-9.11**	**-5.30**	**-3.67**				**9/30/15**	**4.36**
Alerian MLP Index	-3.05	-9.21	-5.62	-3.70				9/30/15	4.20
Value Added	0.71	0.10	0.32	0.03				9/30/15	0.16

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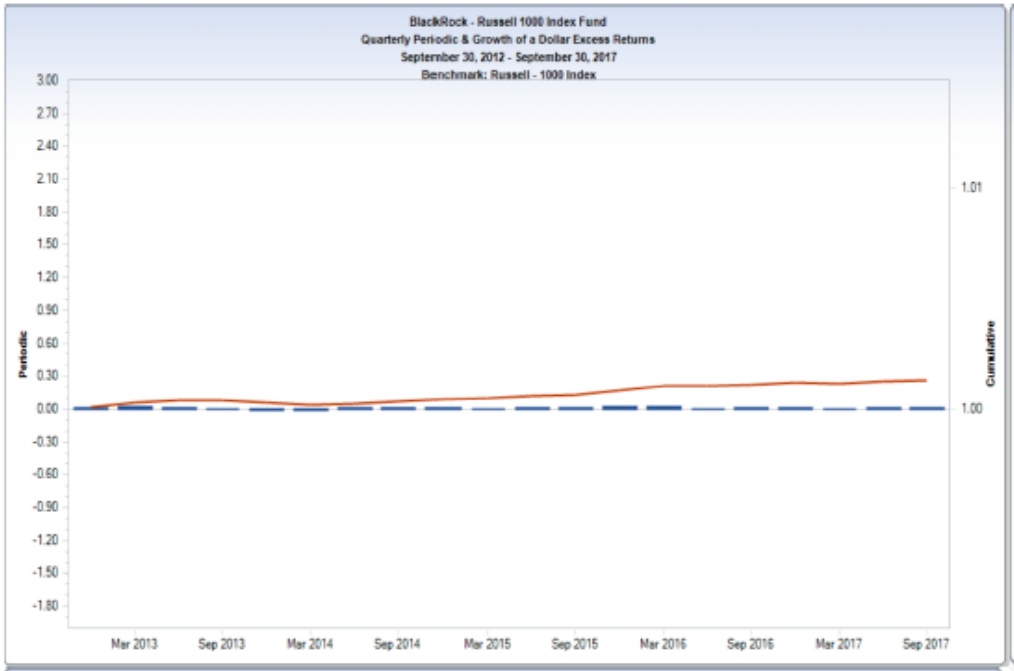
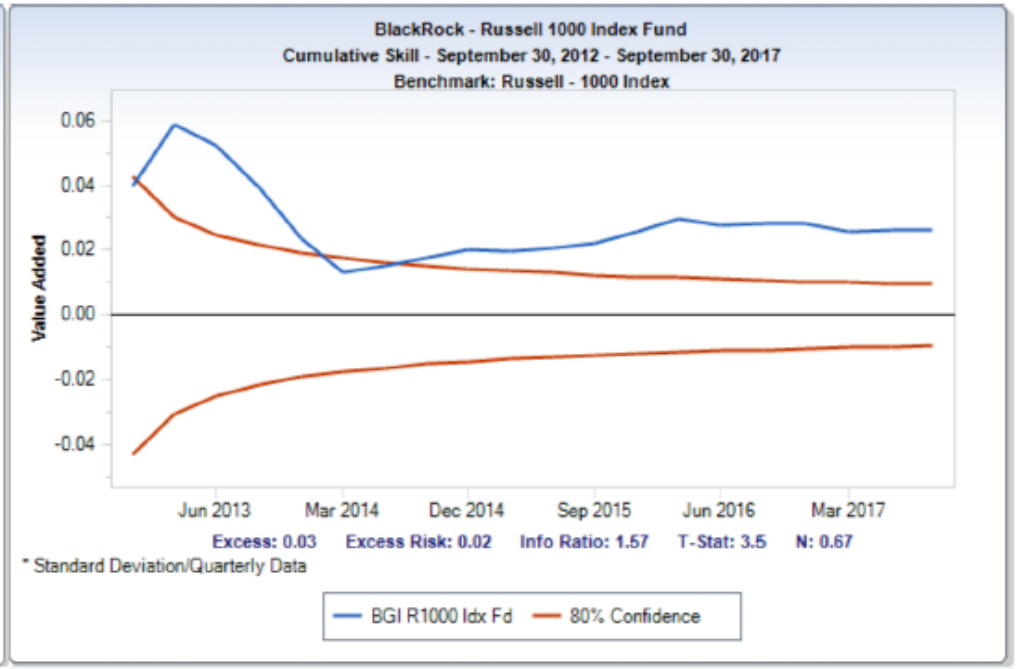
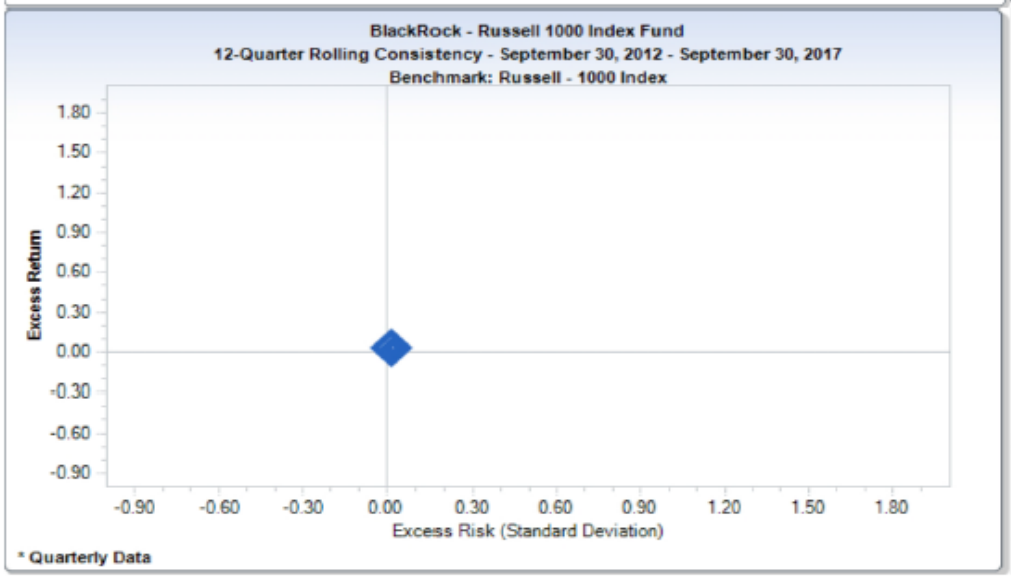
Investment Manager Analysis

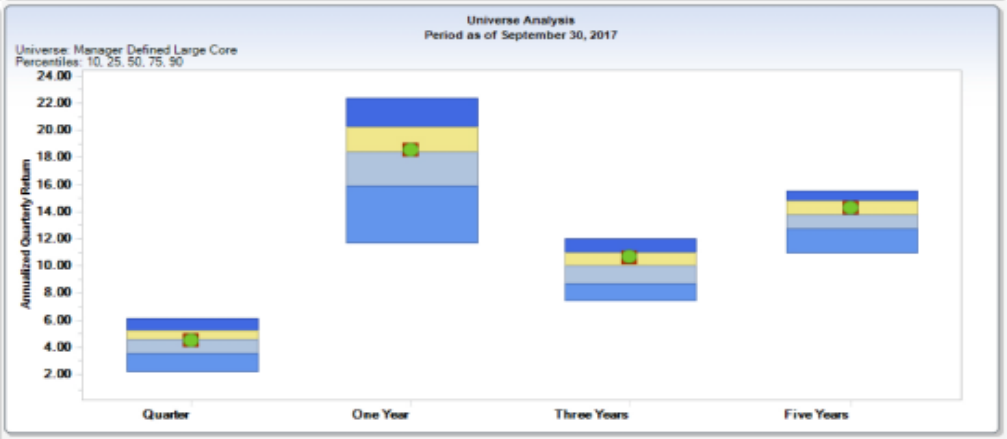
Wilshire Consulting

BlackRock Russell 1000 Index Fund









	Quarter	One Year	Three Years	Five Years
BGI R1000 Idx Fd	4.49 (51%)	18.56 (48%)	10.67 (35%)	14.30 (35%)
RUSSELL 1000	4.48 (51%)	18.54 (49%)	10.63 (36%)	14.27 (36%)
# of Products	248	246	233	209

Source: Wilshire Compass. Performance represents gross composite returns.

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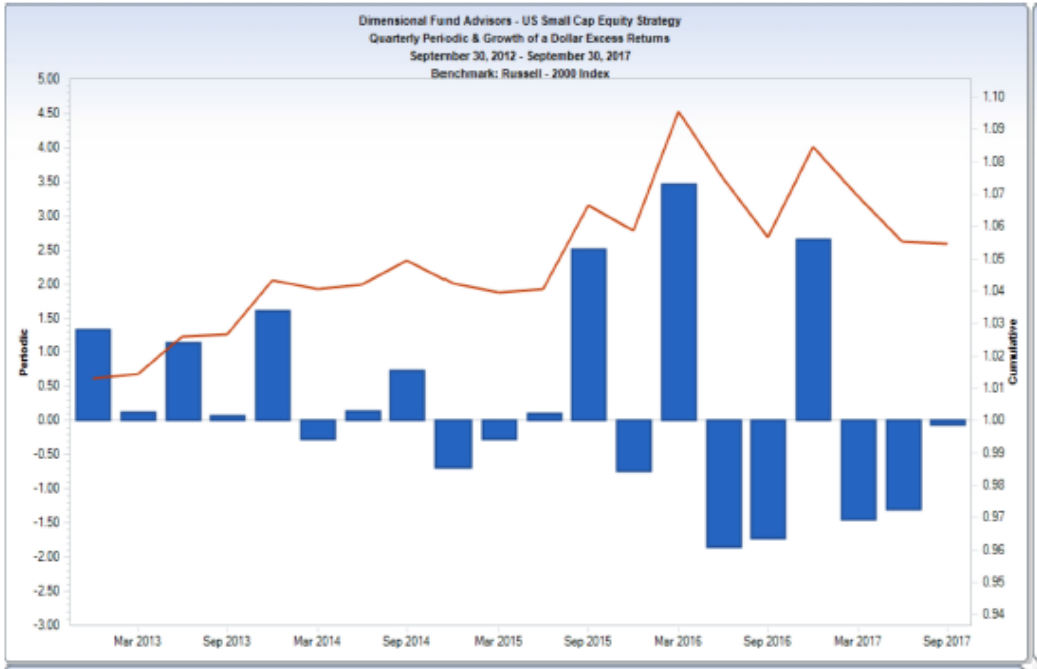
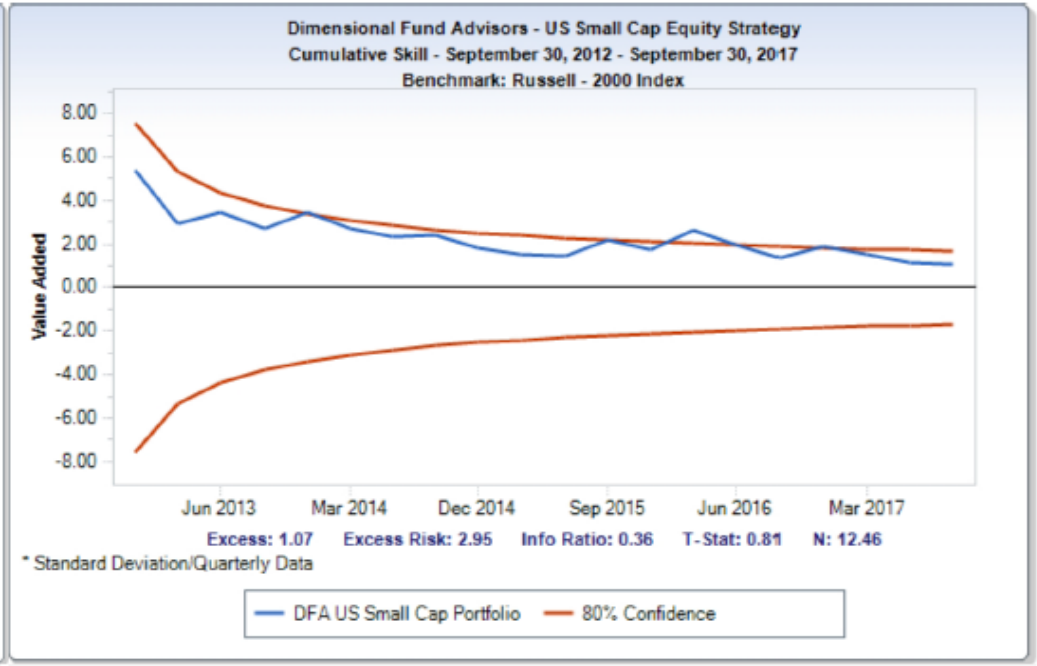
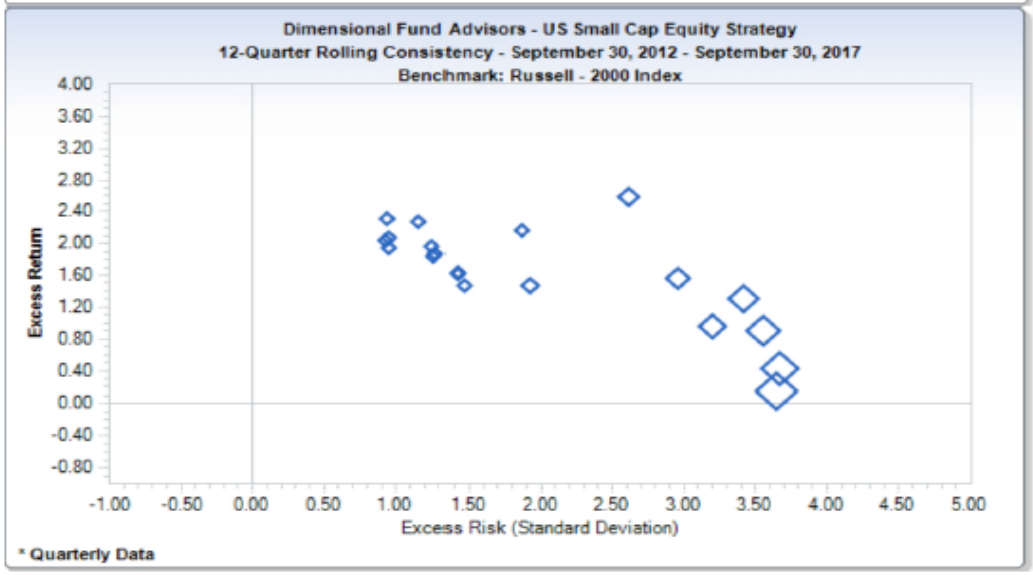
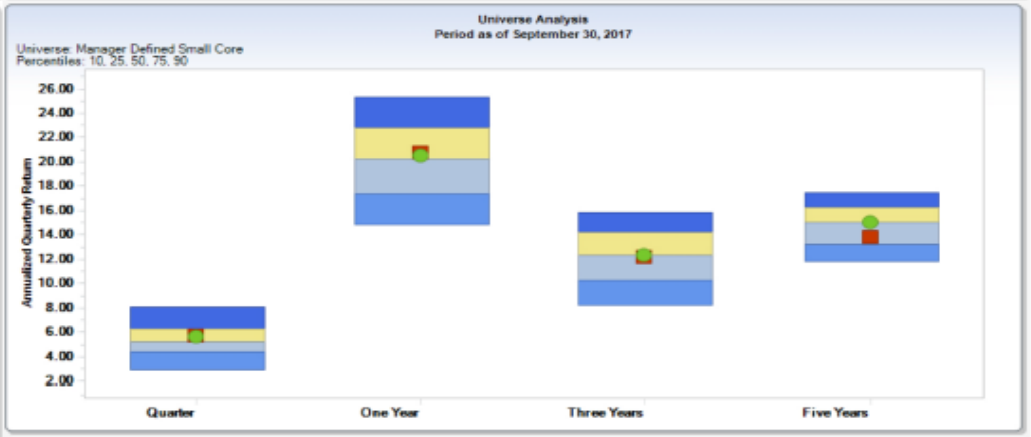
DFA US Small Cap Equity









	Quarter	One Year	Three Years	Five Years
DFA US Small Cap Portfolio	5.61 (39%)	20.50 (46%)	12.36 (49%)	15.01 (50%)
RUSSELL 2000	5.67 (37%)	20.74 (42%)	12.18 (52%)	13.79 (73%)
# of Products	181	178	174	169

Source: Wilshire Compass. Performance represents gross composite returns.

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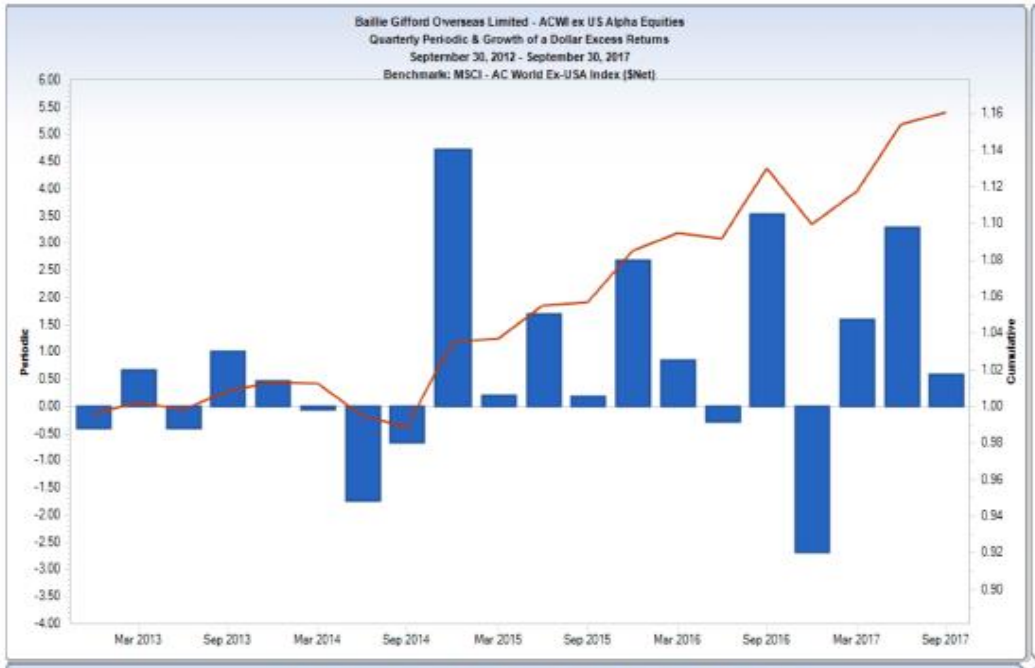
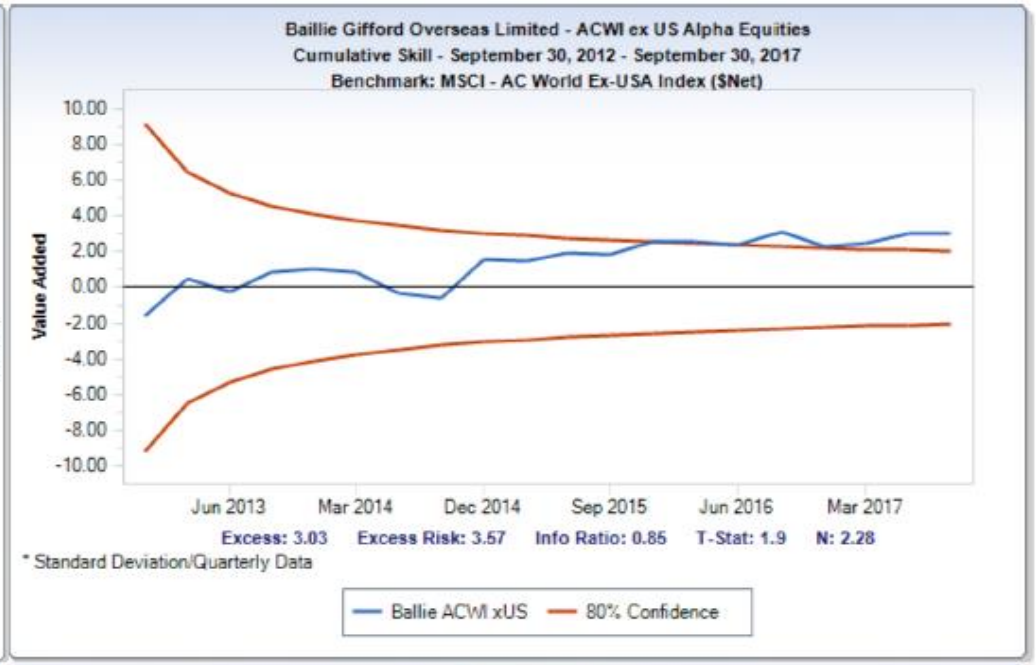
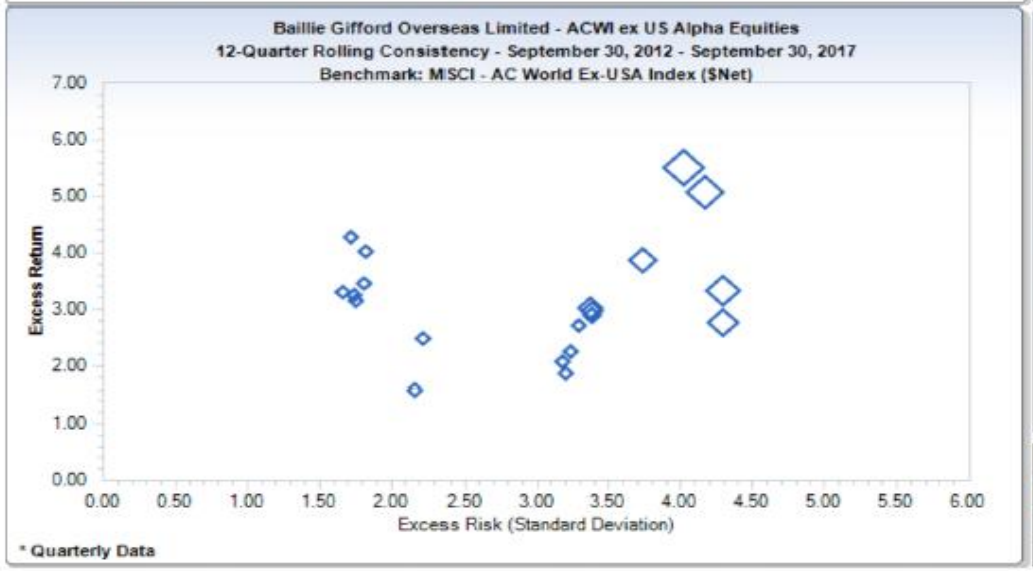
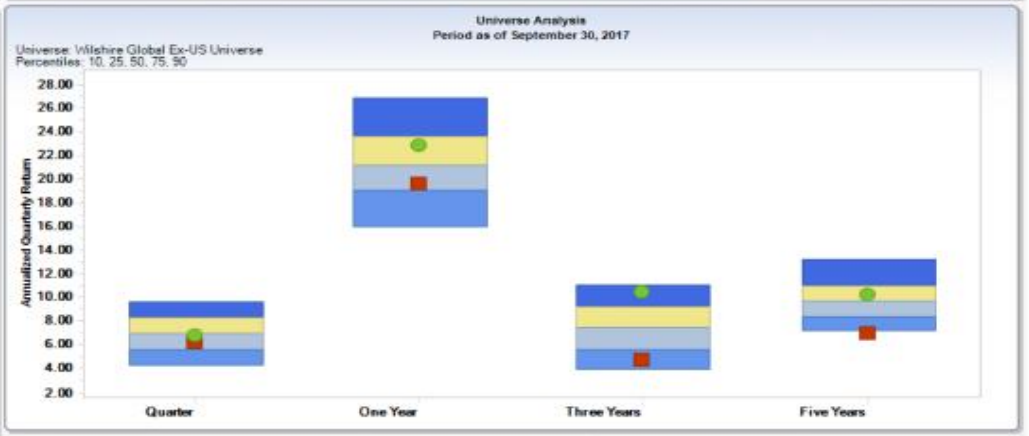
Baillie Gifford ACWI Ex-US Alpha









	Quarter	One Year	Three Years	Five Years
Baillie ACWI xUS	6.79 (55%)	22.87 (34%)	10.47 (15%)	10.21 (36%)
MS ACW xUS $N	6.18 (68%)	19.61 (67%)	4.70 (87%)	6.97 (92%)
# of Products	147	147	140	123

Source: Wilshire Compass. Performance represents gross composite returns.

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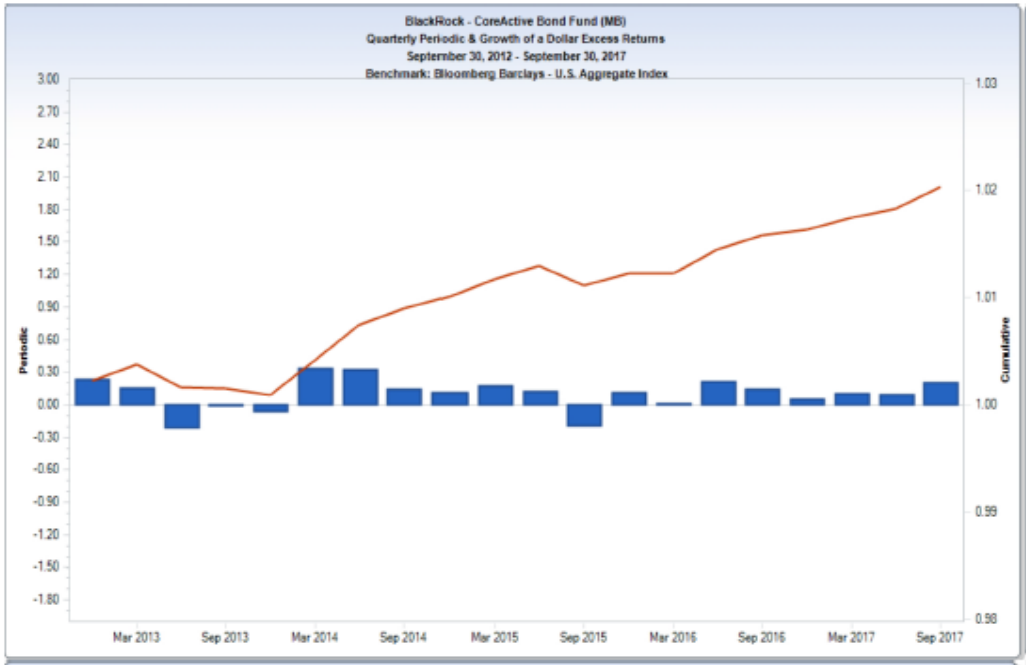
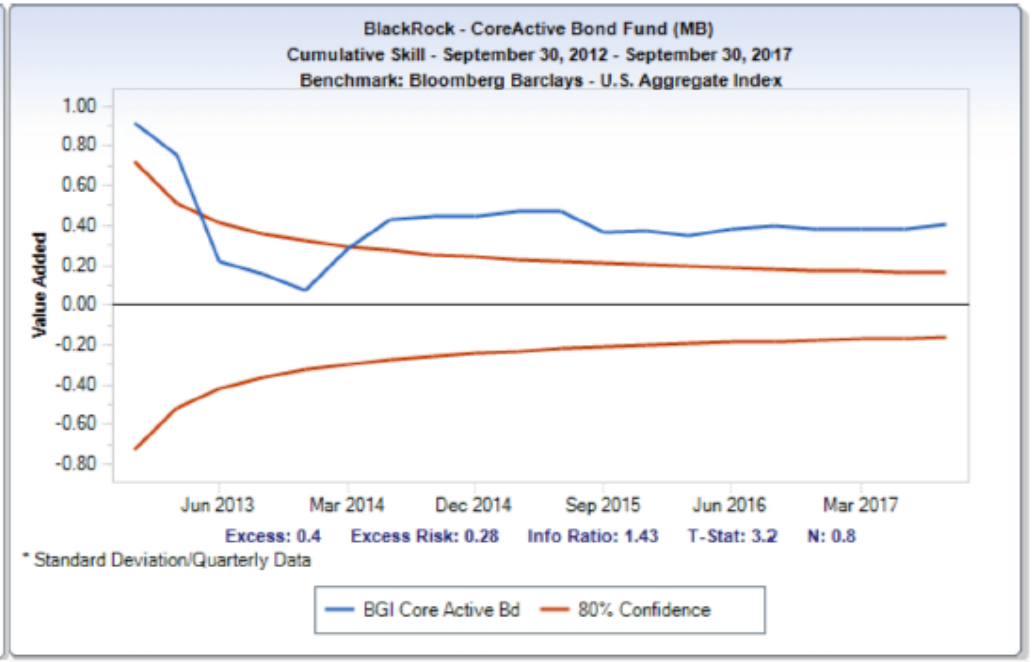
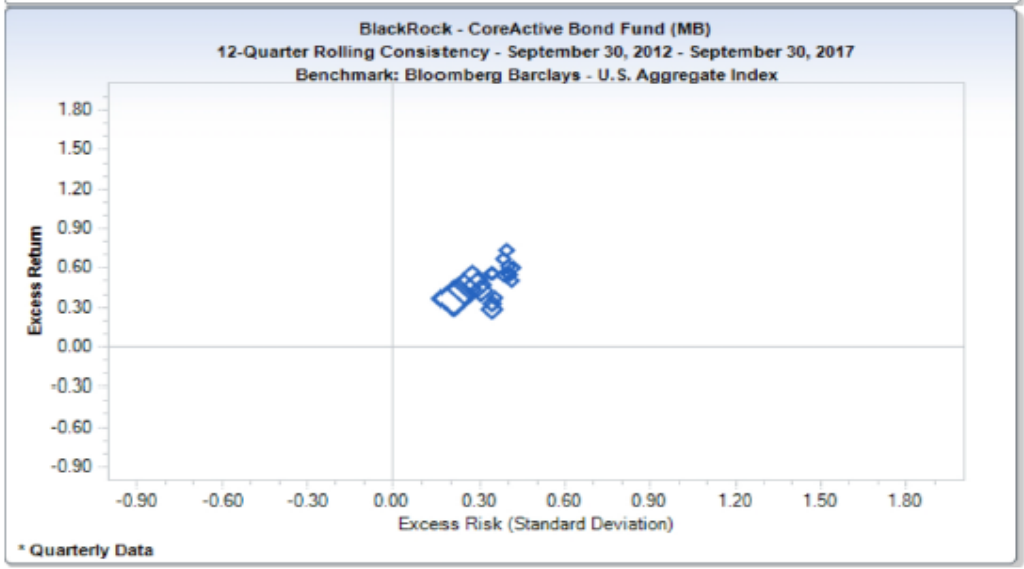
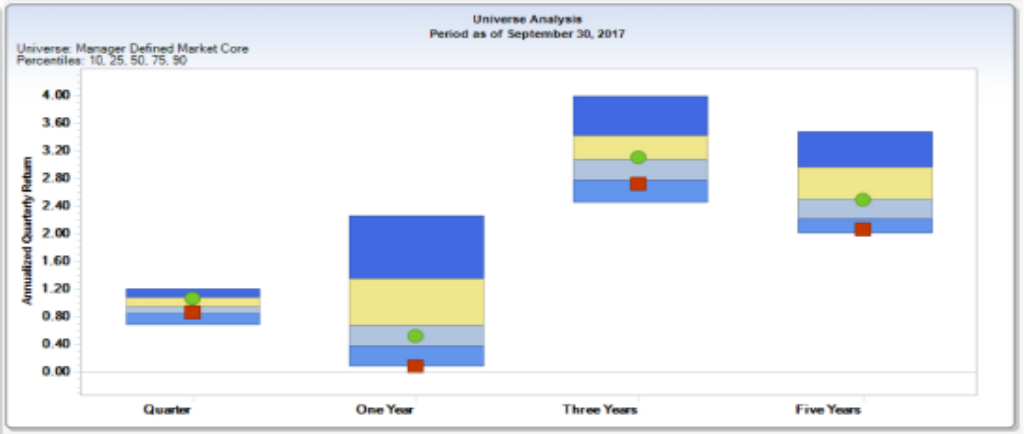
BlackRock Core Active Bond









	Quarter	One Year	Three Years	Five Years
BGI Core Active Bd	1.05 (28%)	0.51 (62%)	3.10 (50%)	2.48 (52%)
BC Aggregate	0.85 (74%)	0.07 (91%)	2.71 (77%)	2.06 (86%)
# of Products	158	156	150	143

Source: Wilshire Compass. Performance represents gross composite returns.

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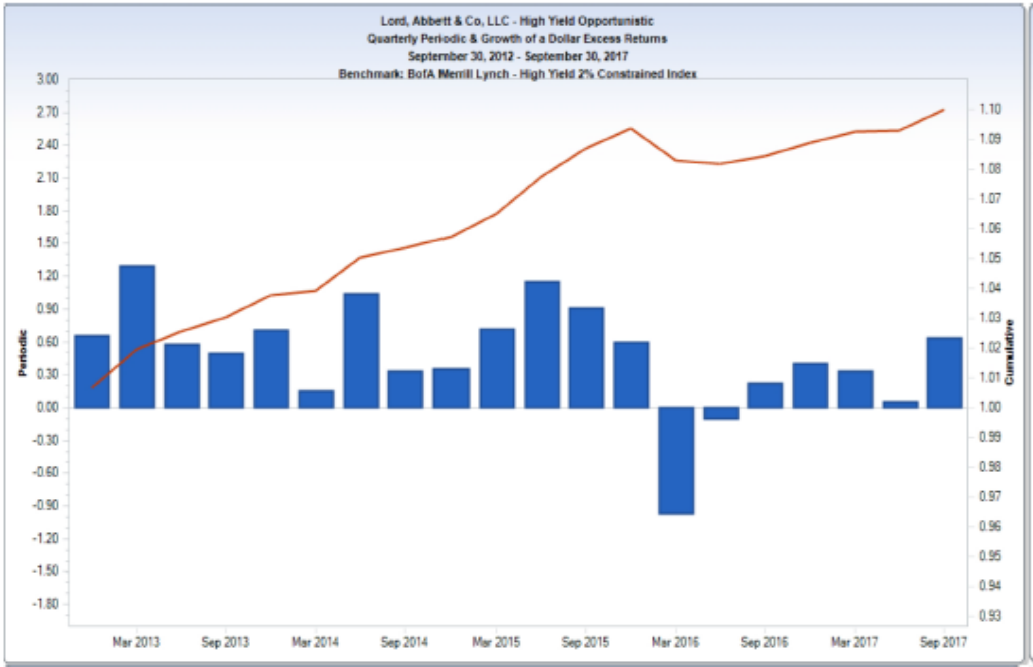
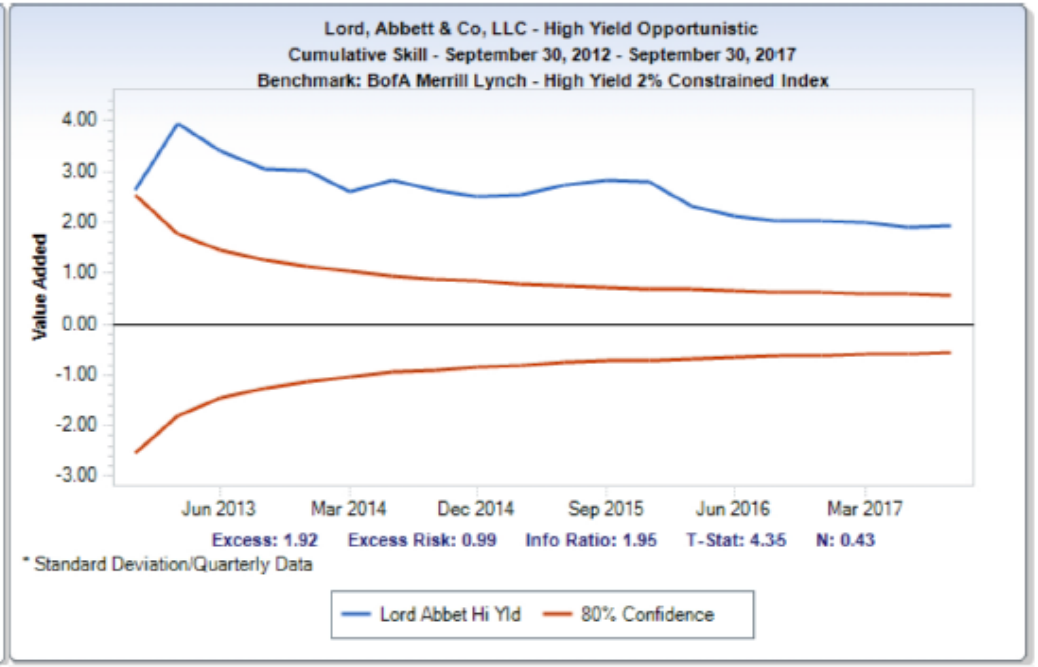
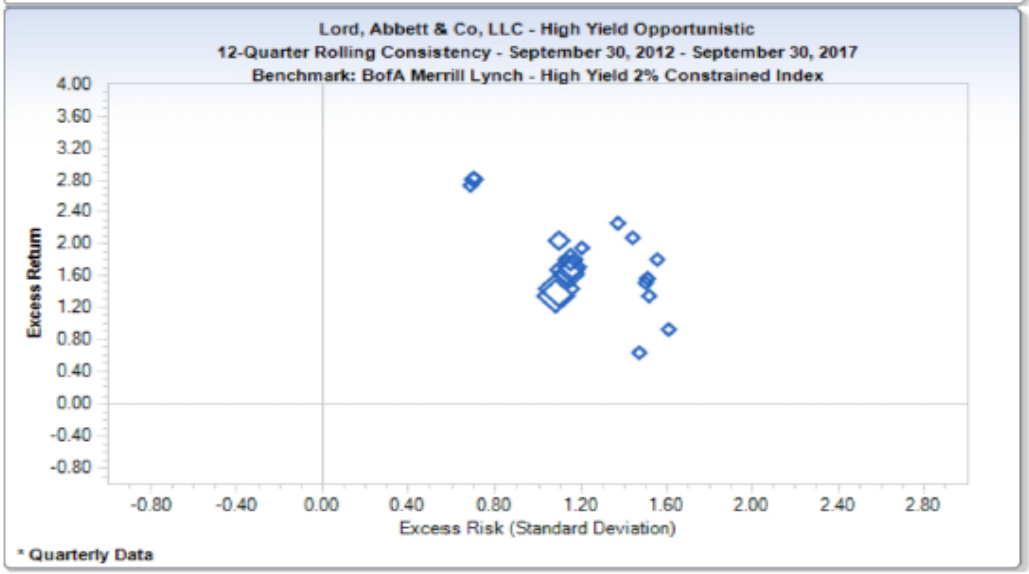
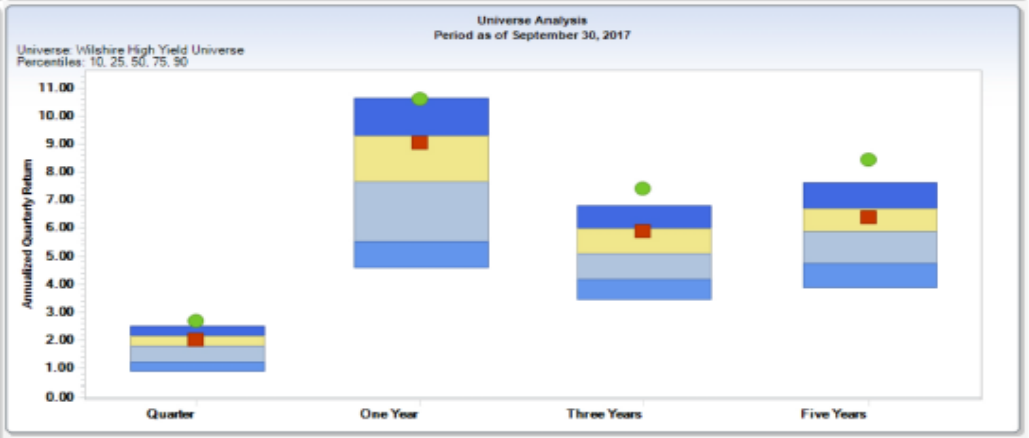
Lord, Abbett High Yield Opp.









	Quarter	One Year	Three Years	Five Years
Lord Abbet Hi Yld	2.67 (9%)	10.60 (11%)	7.40 (6%)	8.43 (6%)
ML HYConstrain	2.02 (34%)	9.03 (30%)	5.87 (28%)	6.38 (39%)
# of Products	282	280	272	247

Source: Wilshire Compass. Performance represents gross composite returns.

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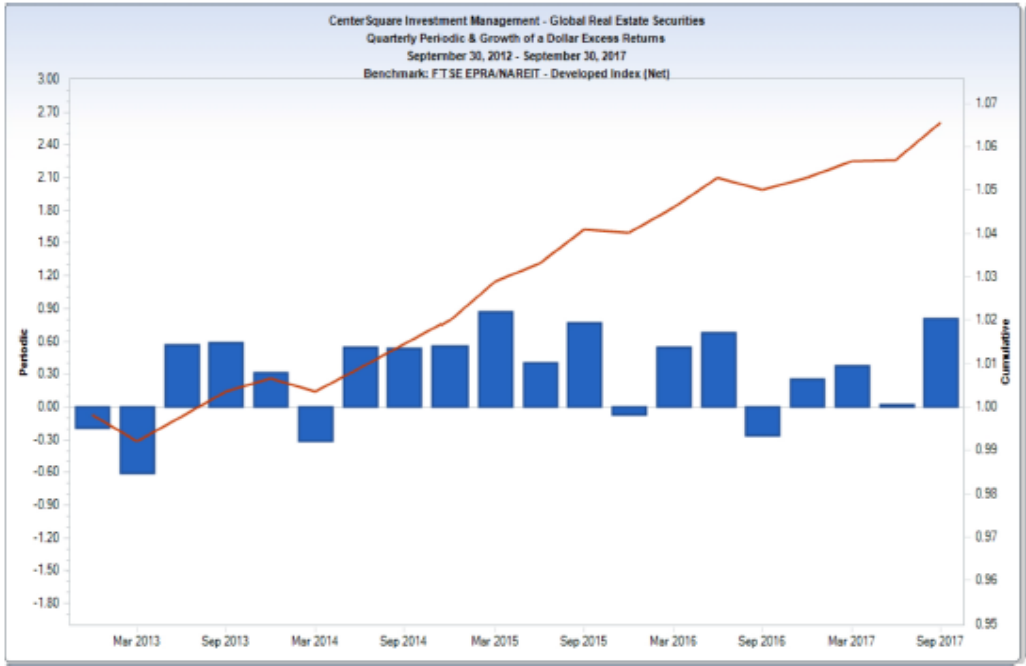
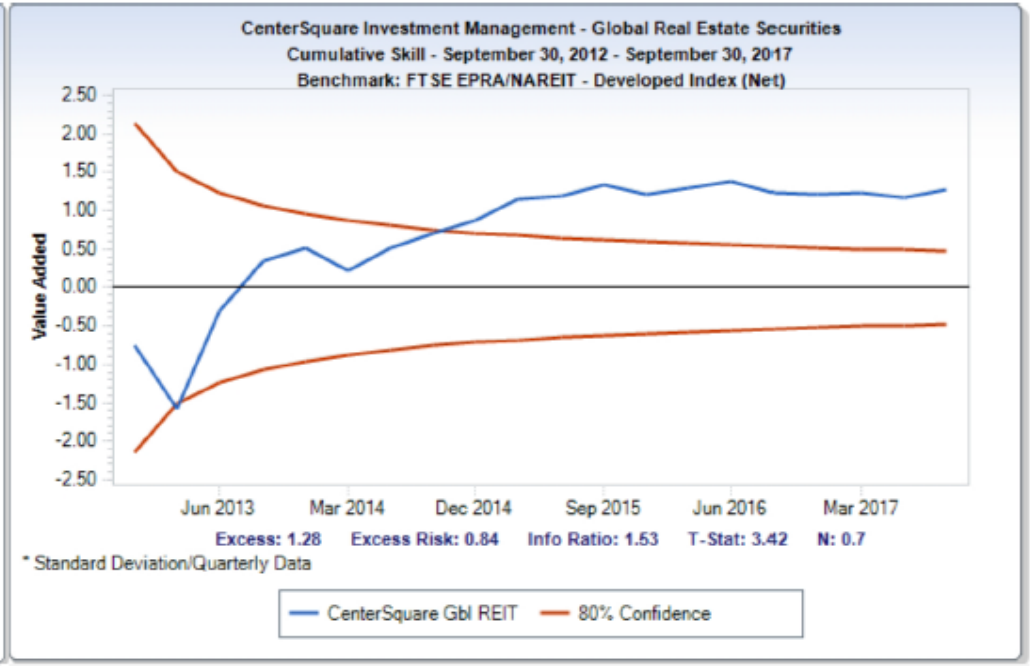
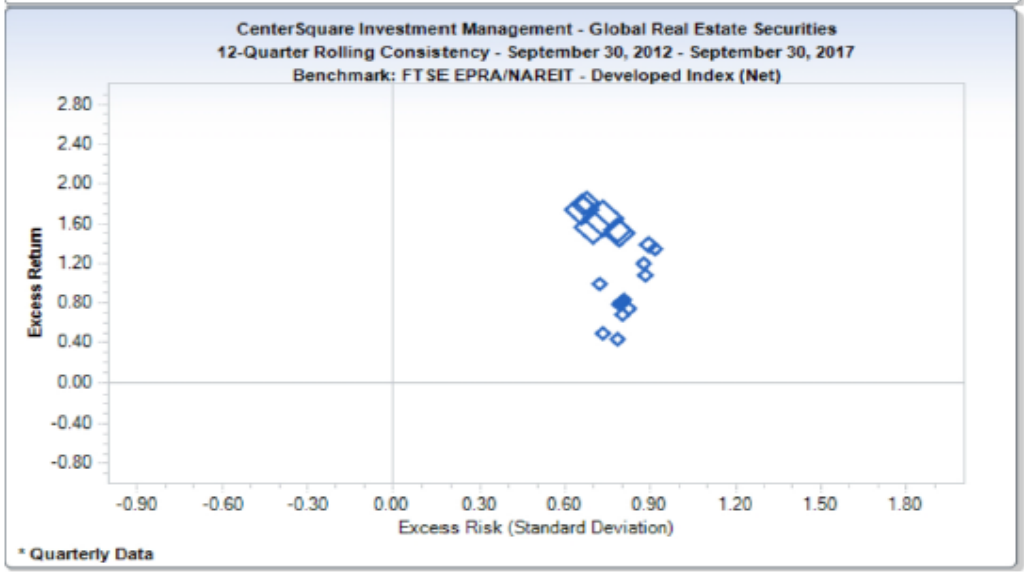
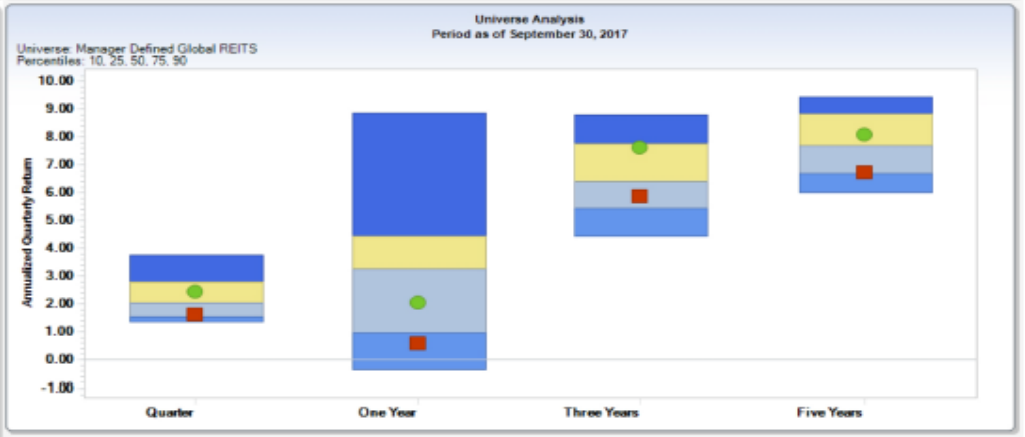
CenterSquare Global REITS









	Quarter	One Year	Three Years	Five Years
CenterSquare Gbl REIT	2.43 (36%)	2.04 (61%)	7.62 (29%)	8.09 (38%)
NAREIT Global N	1.61 (73%)	0.57 (82%)	5.87 (72%)	6.73 (75%)
# of Products	55	54	51	44

Source: Wilshire Compass. Performance represents gross composite returns.

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Universe Analysis

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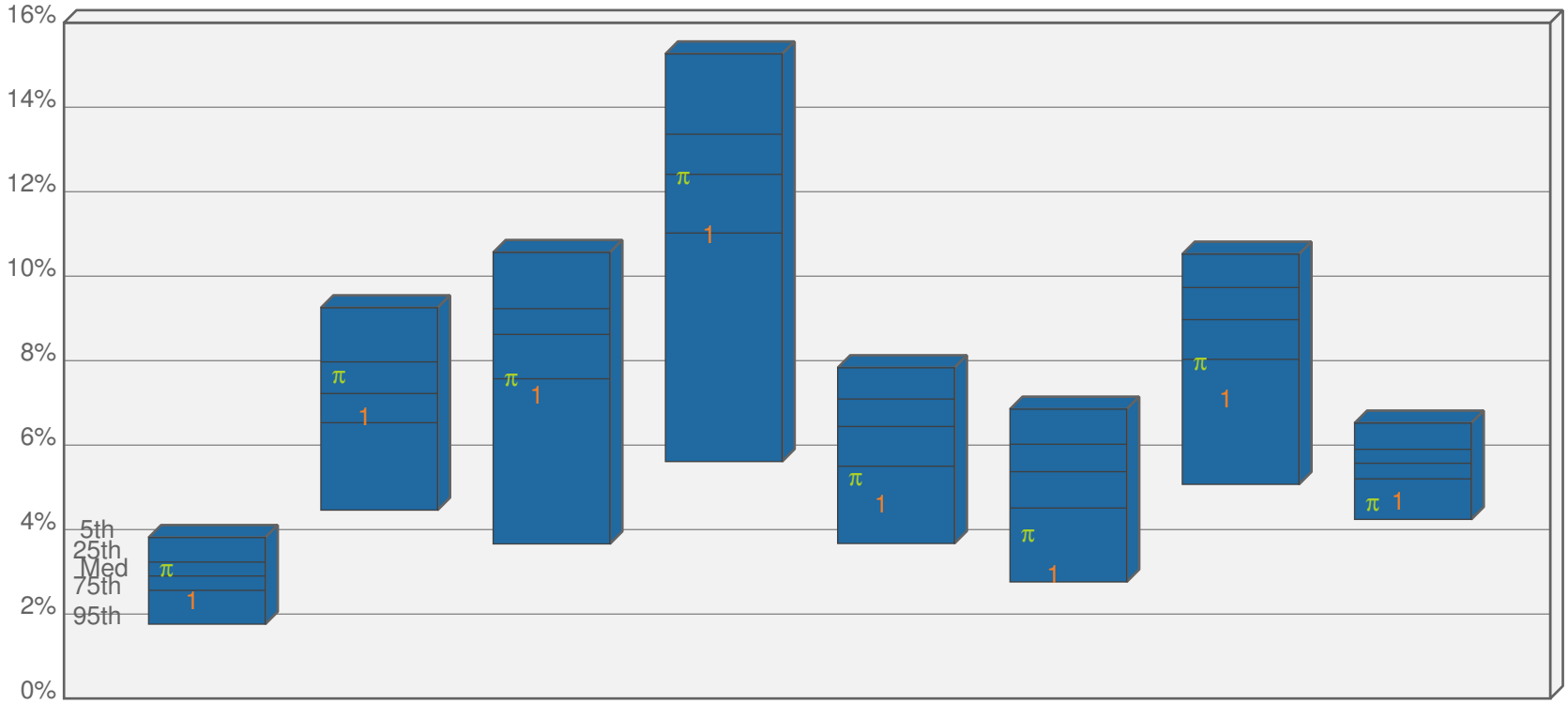
PERFORMANCE COMPARISON

Total Fund Composite

Periods Ended June 30, 2017



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
π Total Fund Composite	3.09 (37)	7.67 (31)	7.61 (74)	12.38 (51)	5.25 (81)	3.92 (84)	8.00 (75)	4.65 (87)
1 Policy Index	2.32 (85)	6.68 (69)	7.19 (80)	10.98 (76)	4.61 (88)	2.95 (92)	7.11 (86)	4.68 (87)
5th %tile	3.81	9.25	10.56	15.26	7.83	6.85	10.52	6.52
25th %tile	3.23	7.97	9.23	13.36	7.09	6.02	9.73	5.90
Median	2.90	7.22	8.62	12.41	6.44	5.37	8.97	5.57
75th %tile	2.56	6.53	7.57	11.02	5.50	4.51	8.03	5.20
95th %tile	1.76	4.46	3.66	5.61	3.67	2.76	5.07	4.24
Number of Funds	179	179	179	178	173	169	168	139

*TUCS Total Ret of Master Trusts - Public Universe - Gross of Fees

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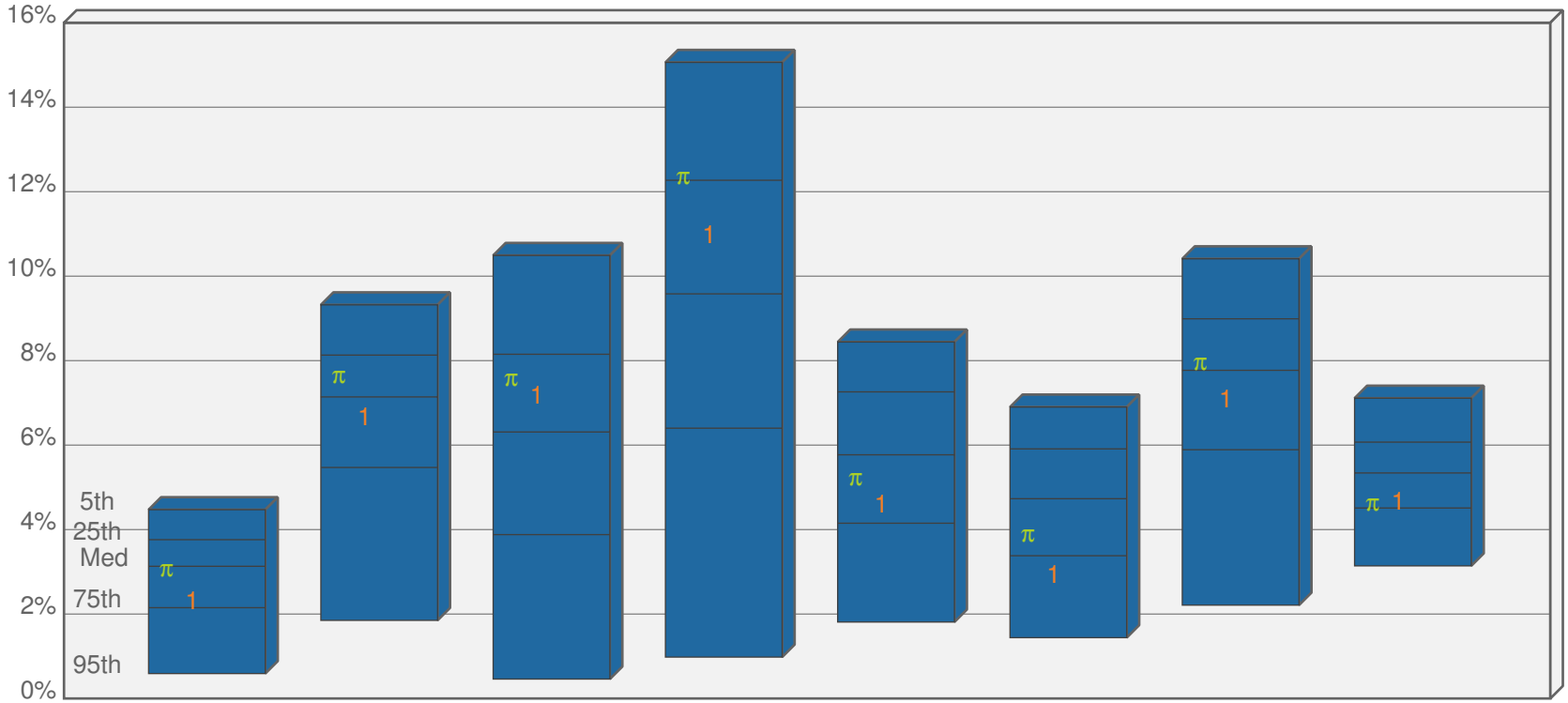
PERFORMANCE COMPARISON

Total Fund Composite

Periods Ended June 30, 2017



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
π Total Fund Composite	3.09 (51)	7.67 (38)	7.61 (33)	12.38 (23)	5.25 (62)	3.92 (68)	8.00 (45)	4.65 (71)
1 Policy Index	2.32 (72)	6.68 (59)	7.19 (38)	10.98 (36)	4.61 (71)	2.95 (78)	7.11 (63)	4.68 (71)
5th %tile	4.47	9.32	10.49	15.06	8.44	6.90	10.41	7.11
25th %tile	3.76	8.13	8.15	12.27	7.26	5.91	8.99	6.07
Median	3.13	7.14	6.31	9.58	5.77	4.73	7.77	5.34
75th %tile	2.15	5.47	3.88	6.40	4.15	3.38	5.89	4.51
95th %tile	0.59	1.85	0.46	0.98	1.81	1.44	2.21	3.14
Number of Funds	212	212	212	212	212	204	191	140

*TUCS Total Ret of Master Trusts - Corporate Portfolios Universe - Gross of Fees

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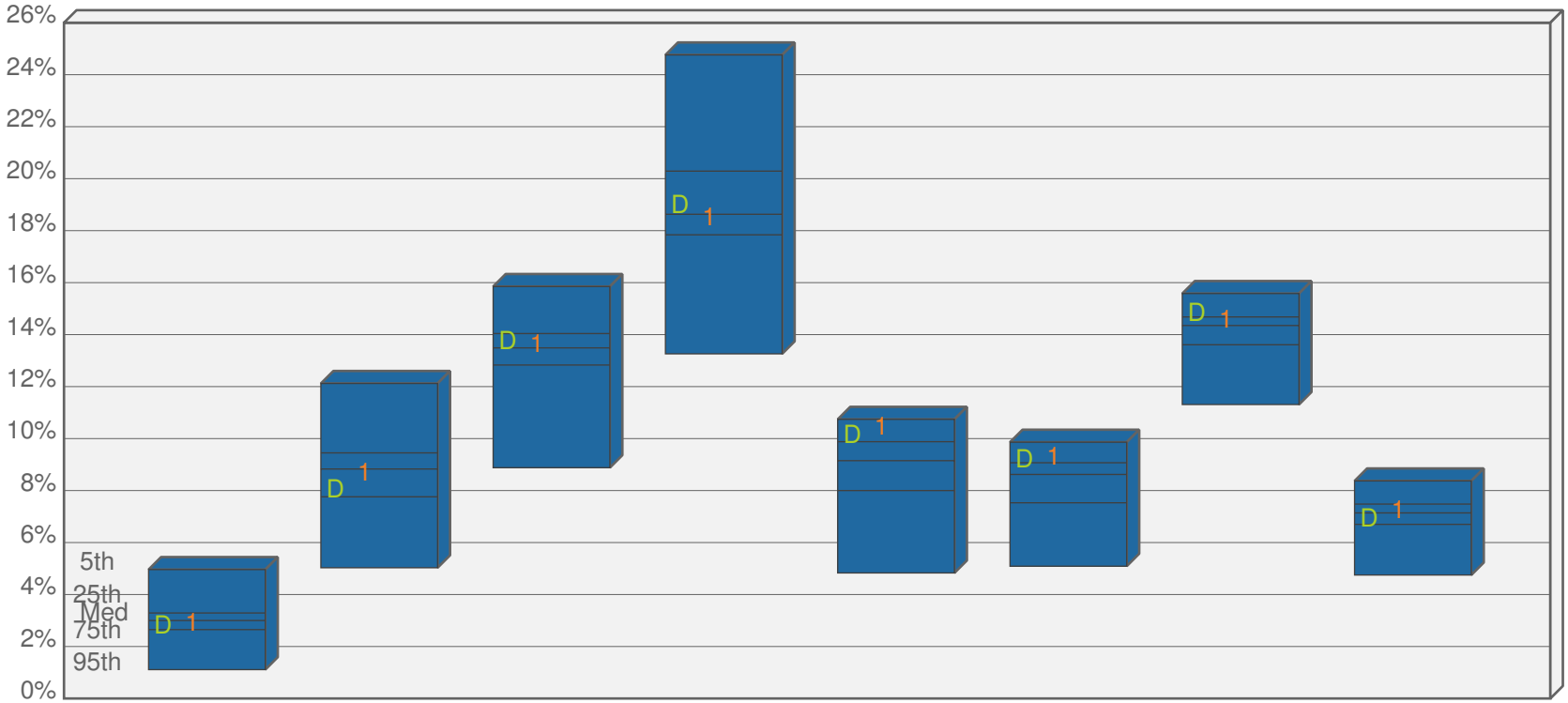
PERFORMANCE COMPARISON

Domestic Equity Composite

Periods Ended June 30, 2017



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
D Domestic Equity Composit	2.84 (64)	8.09 (68)	13.78 (35)	19.01 (42)	10.16 (15)	9.23 (20)	14.87 (10)	6.95 (59)
1 Wilshire 5000	2.95 (56)	8.73 (54)	13.67 (38)	18.54 (53)	10.48 (11)	9.34 (18)	14.61 (35)	7.29 (39)
5th %tile	4.96	12.12	15.85	24.76	10.74	9.86	15.58	8.37
25th %tile	3.29	9.45	14.04	20.29	9.88	9.07	14.68	7.48
Median	3.00	8.83	13.49	18.63	9.15	8.62	14.35	7.14
75th %tile	2.65	7.76	12.83	17.84	8.00	7.53	13.61	6.70
95th %tile	1.11	5.03	8.88	13.26	4.83	5.09	11.31	4.75
Number of Funds	167	162	161	155	140	136	113	84

*TUCS Total Ret of US Equity Investment Pools Universe - Gross of Fees

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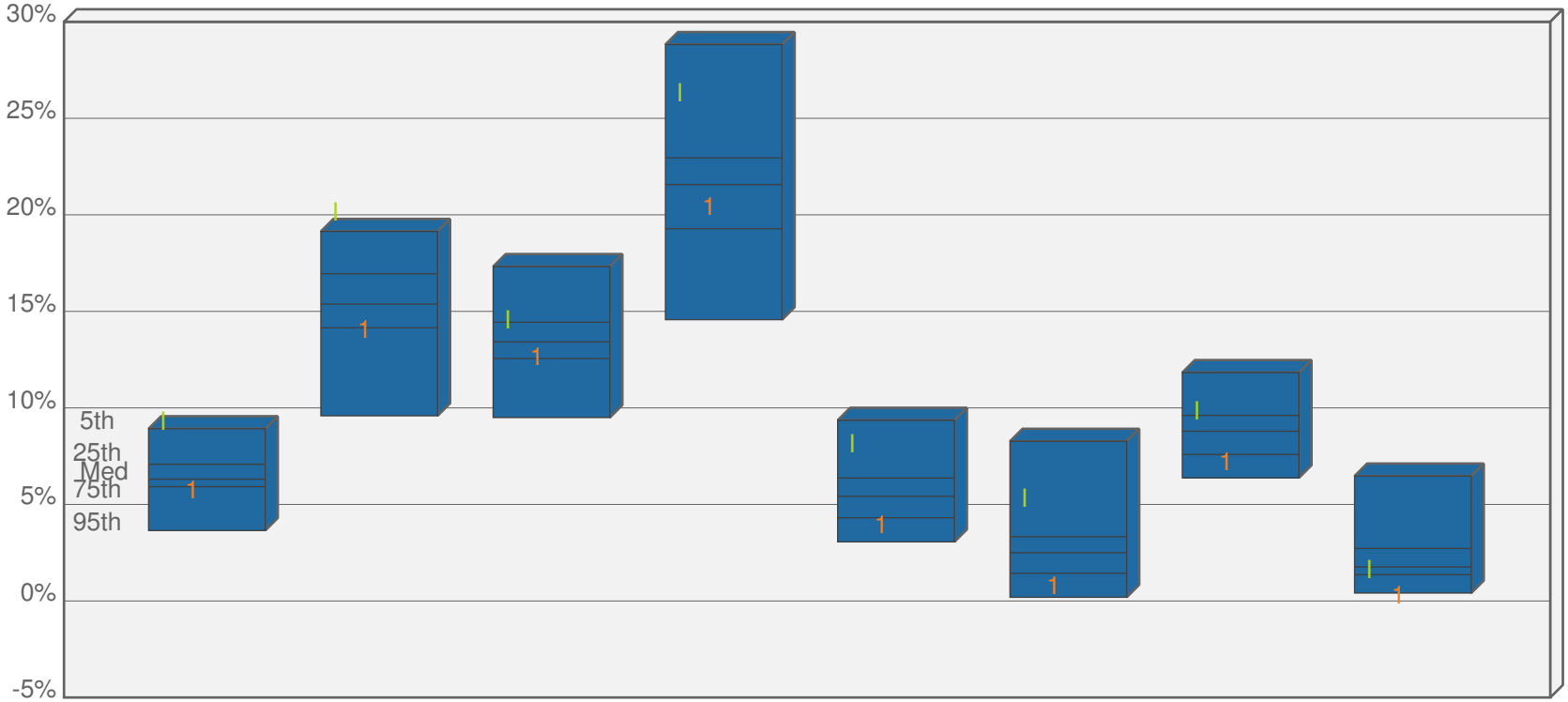
PERFORMANCE COMPARISON

Int'l Equity Composite

Periods Ended June 30, 2017



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
I Int'l Equity Composite	9.30 (2)	20.15 (3)	14.56 (19)	26.32 (6)	8.15 (8)	5.31 (10)	9.87 (20)	1.66 (58)
1 Policy Index	5.78 (84)	14.10 (77)	12.67 (72)	20.45 (65)	3.98 (84)	0.80 (88)	7.22 (90)	0.32 (96)
5th %tile	8.92	19.14	17.32	28.82	9.36	8.27	11.83	6.47
25th %tile	7.08	16.95	14.44	22.95	6.37	3.33	9.61	2.72
Median	6.31	15.38	13.42	21.57	5.42	2.50	8.79	1.76
75th %tile	5.92	14.15	12.56	19.28	4.31	1.43	7.59	1.36
95th %tile	3.65	9.59	9.50	14.57	3.06	0.19	6.38	0.41
Number of Funds	136	133	131	128	118	110	97	70

*TUCS Total Ret of Non-US Equity Investment Pools Universe - Gross of Fees

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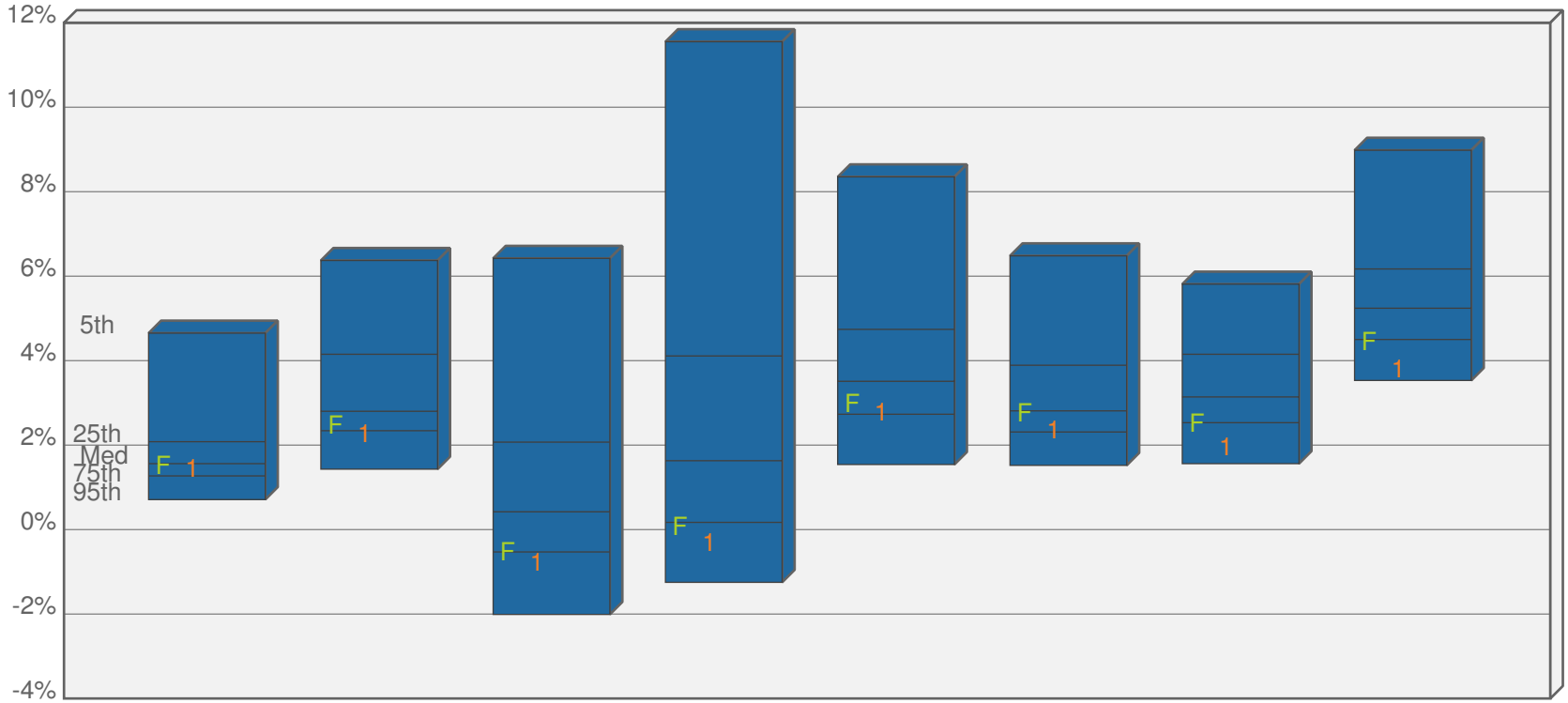
PERFORMANCE COMPARISON

Domestic Fixed Composite

Periods Ended June 30, 2017



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
F Domestic Fixed Composite	1.53 (54)	2.47 (71)	-0.53 (76)	0.07 (77)	2.99 (72)	2.76 (54)	2.53 (75)	4.45 (75)
1 Policy Index	1.45 (62)	2.27 (78)	-0.77 (83)	-0.31 (85)	2.79 (74)	2.36 (71)	1.96 (89)	3.82 (92)
5th %tile	4.65	6.37	6.42	11.55	8.35	6.48	5.81	8.98
25th %tile	2.08	4.15	2.07	4.11	4.74	3.89	4.15	6.17
Median	1.56	2.80	0.42	1.63	3.51	2.81	3.14	5.24
75th %tile	1.27	2.34	-0.53	0.17	2.73	2.31	2.53	4.50
95th %tile	0.71	1.43	-2.01	-1.25	1.54	1.52	1.56	3.53
Number of Funds	159	149	145	139	130	123	105	62

*TUCS Total Ret of Fixed Income Investment Pools Universe - Gross of Fees

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