Wilshire

Numbers in Context – 3Q15

September 2015 Asset Class Assumptions

Wilshire

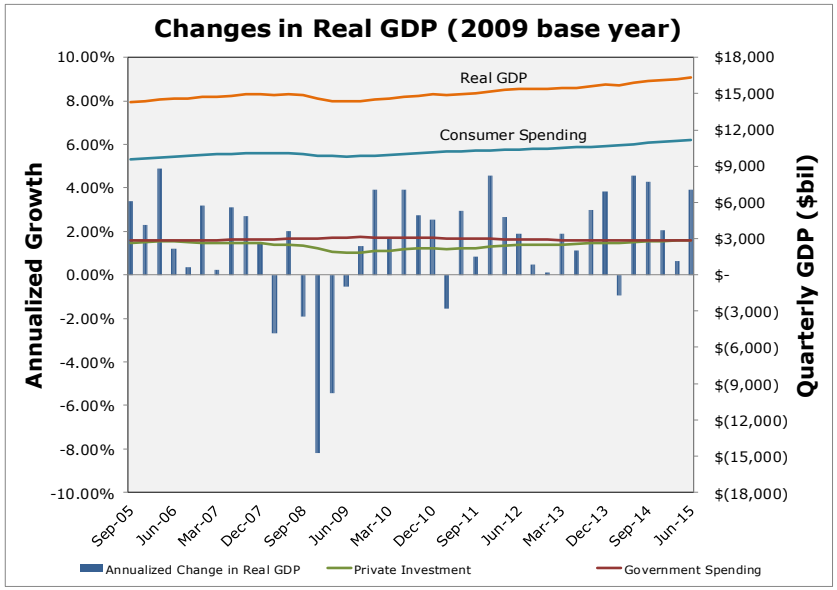
	Total Return (%)			Risk (%)
	Dec. 2014	Q3 2015	Change	Dec. 2014
Investment Categories:				
U.S. Stocks	6.25	6.75	0.50	17.00
Dev ex-U.S. Stocks	6.25	6.75	0.50	18.00
Emerging Mkt Stocks	6.25	6.75	0.50	26.00
Global Stocks	6.45	6.95	0.50	17.15
Private Markets	8.80	9.65	0.85	27.50
Cash Equivalents	1.45	1.30	(0.15)	1.25
Core Bonds	3.35	3.30	(0.05)	5.00
LT Core Bonds	3.45	4.00	0.55	10.00
TIPS	2.90	2.85	(0.05)	6.00
High Yield Bonds	5.15	5.85	0.70	10.00
EMD Local Currency (h)	5.60	5.85	0.25	5.00
U.S. RE Securities	4.85	5.15	0.30	17.00
Private Real Estate	5.70	5.90	0.20	14.00
Commodities	3.70	3.60	(0.10)	15.00
MLPs	8.85	10.95	2.10	17.00
Real Asset Basket	6.15	6.55	0.40	8.35
Inflation:	1.70	1.60	(0.10)	1.75
Returns minus Inflation:				
U.S. Stocks	4.55	5.15	0.60	
U.S. Bonds	1.65	1.70	0.05	
Cash Equivalents	(0.25)	(0.30)	(0.05)	
Stocks minus Bonds:	2.90	3.45	0.55	
Bonds minus Cash:	1.90	2.00	0.10	

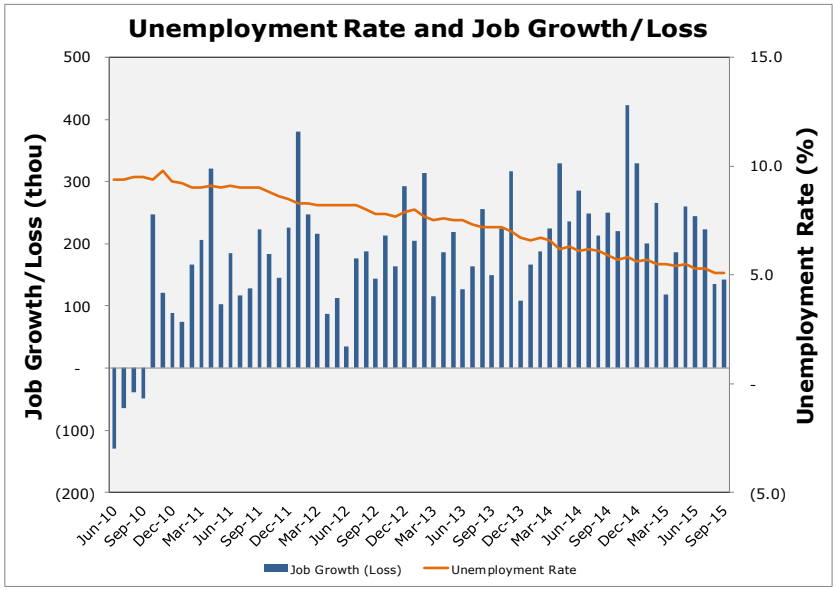
Economic Review

Wilshire

September 30, 2015	Key Economic Indicators			
CPI (all items)	Monthly Change		Cumulative Change	
Seasonally adjusted	Sep-15	-0.2	3-Month	-0.1
	Aug-15	-0.1	12-Month	0.0
	Jul-15	0.1	10-Yr Annual	1.8
Breakeven Inflation	10-Year	1.4		
Consumer Sentiment	Sep-15	87.2		
Unv. of Michigan Survey	Aug-15	91.9		
	1-Yr Ago	84.6	10-Yr Avg	77.3
Manufacturing	Sep-15	50.2	Change in Manufacturing Sector	
Inst. for Supply Mgmt	Aug-15	51.1	>50	Expansion
Purchasing Mngrs' Idx	1-Yr Avg	53.4	<50	Contraction

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





Data sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve Bank of St. Louis, Barclays Capital

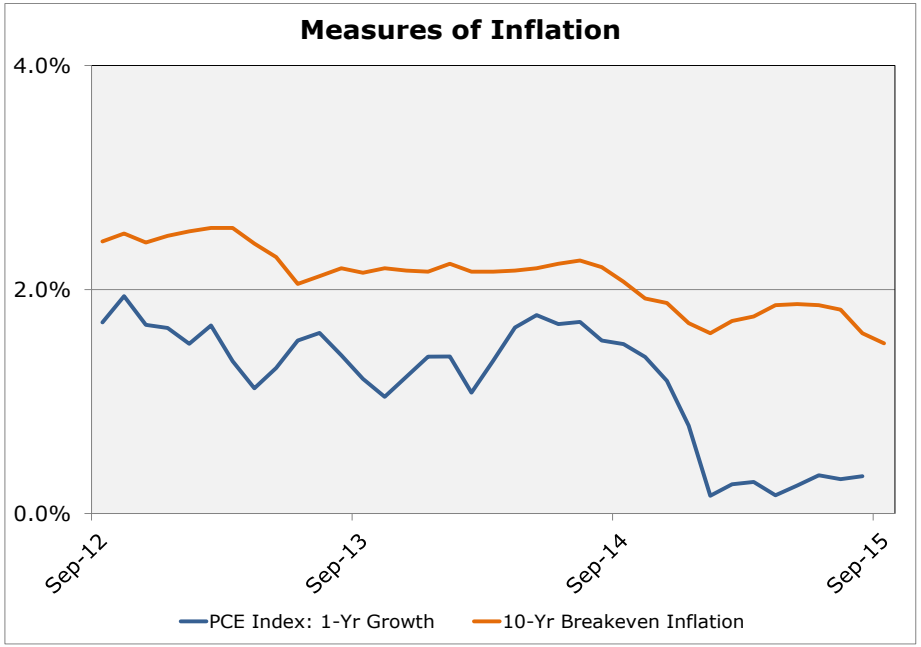
Inflation Breakdown

Wilshire

- Main source of price pressure is within 'Shelter' due to surging rental prices
- Fed's favored inflation measure, Personal Consumption Expenditures Index, running well below their target of 2%; expectations trending downward

U.S. CPI as of September, 2015

Item	Weight within Index	1-Year Change
All items	100%	0.0%
Shelter	33%	3.2%
Food	14%	1.6%
Energy	8%	-18.4%
Medical care services	6%	2.4%
New vehicles	4%	0.5%
Apparel	3%	-1.4%
Used cars and trucks	2%	-1.7%
Core Inflation	78%	1.9%

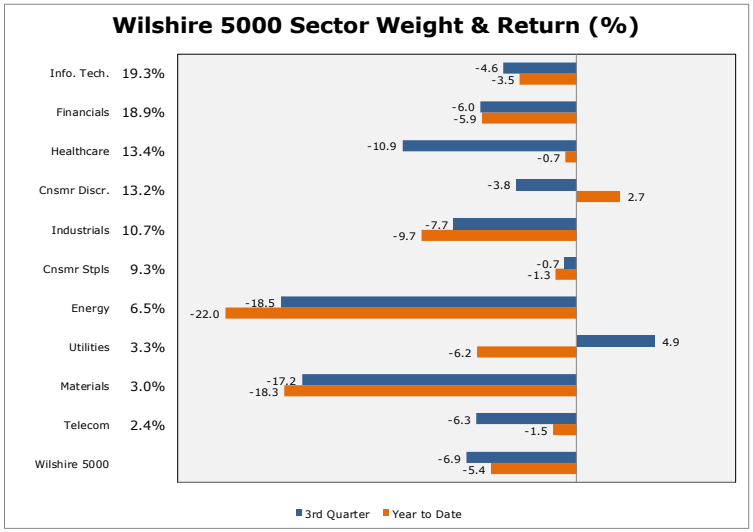


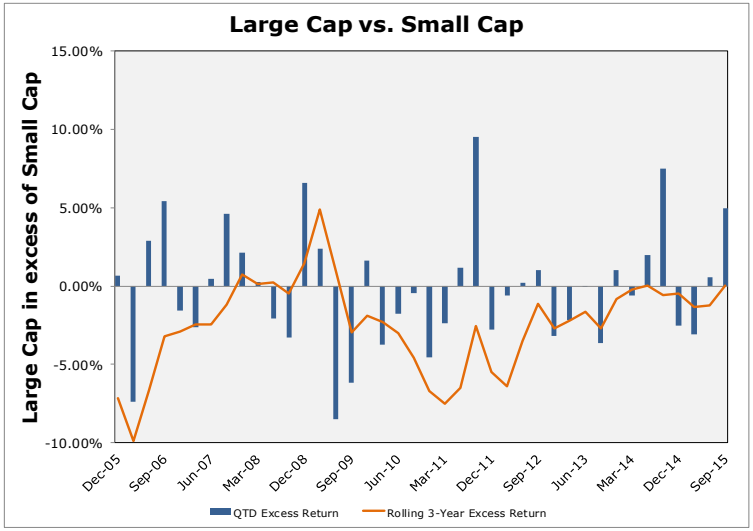
Source: Bureau of Labor Statistics, Federal Reserve

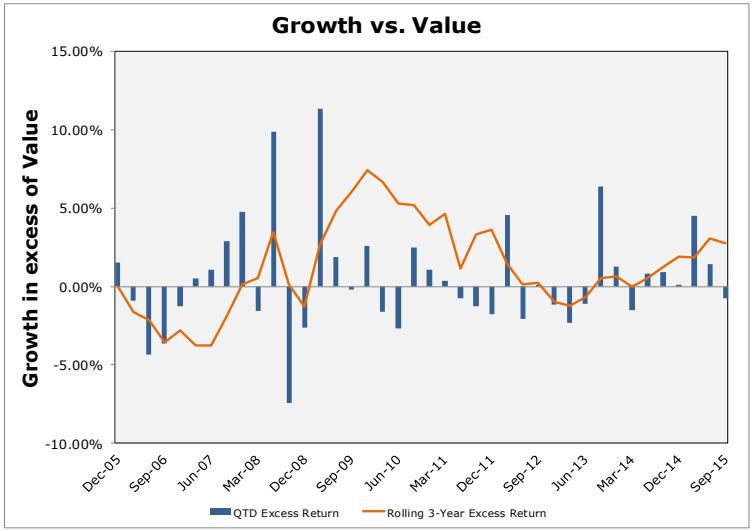
U.S. Equity Market

Wilshire

September 30, 2015	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Wilshire 5000	-6.9	-5.4	-0.4	12.4	13.2	7.0
Wilshire U.S. Large Cap	-6.4	-5.1	-0.4	12.4	13.2	6.9
Wilshire U.S. Small Cap	-10.9	-7.3	-0.1	12.4	12.9	8.1
Wilshire U.S. Large Growth	-6.6	-2.4	2.6	14.2	14.2	7.9
Wilshire U.S. Large Value	-6.3	-7.6	-3.1	10.9	12.3	5.8
Wilshire U.S. Small Growth	-12.9	-6.9	-0.6	12.7	13.3	8.6
Wilshire U.S. Small Value	-8.9	-7.6	0.4	12.1	12.5	7.6
Wilshire REIT Index	2.9	-3.0	11.7	10.1	12.5	6.8
MSCI USA Minimum Volatility Index	-1.4	-1.1	6.6	11.8	13.5	7.2
FTSE RAFI U.S. 1000 Index	-7.9	-7.7	-3.3	12.9	13.1	7.8





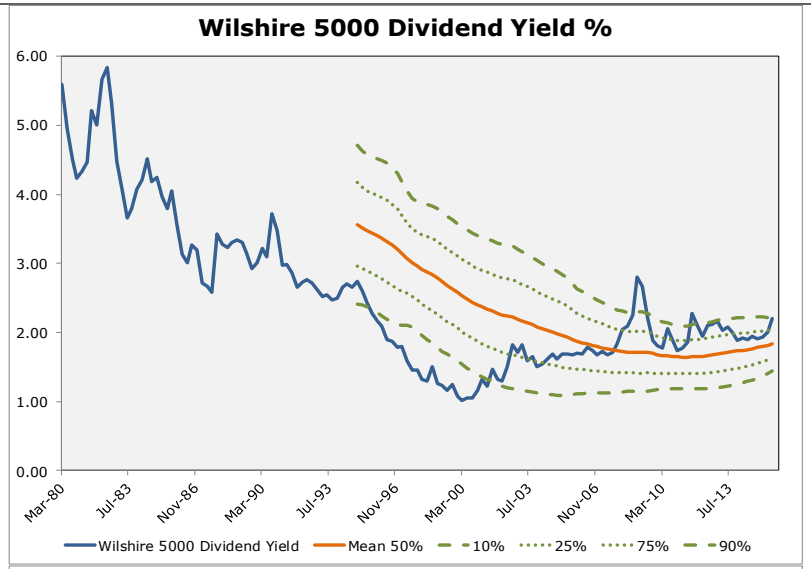


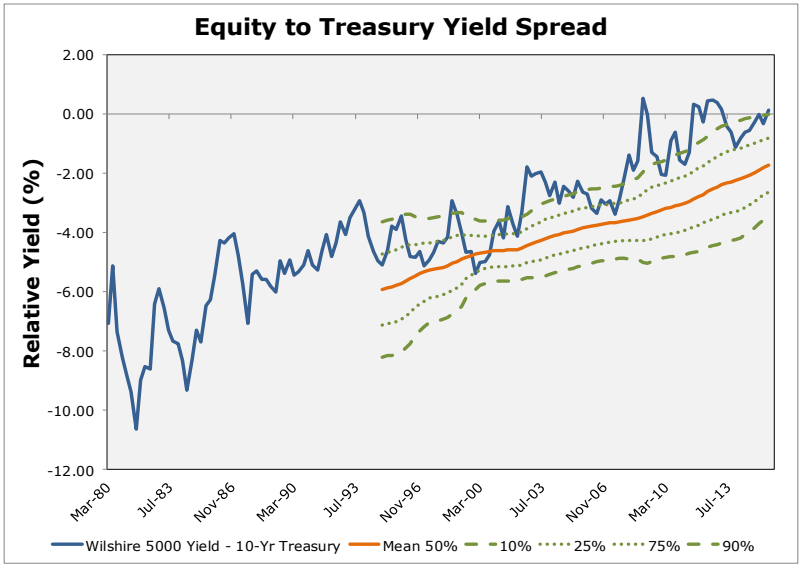
Data sources: Wilshire Compass, Wilshire Atlas

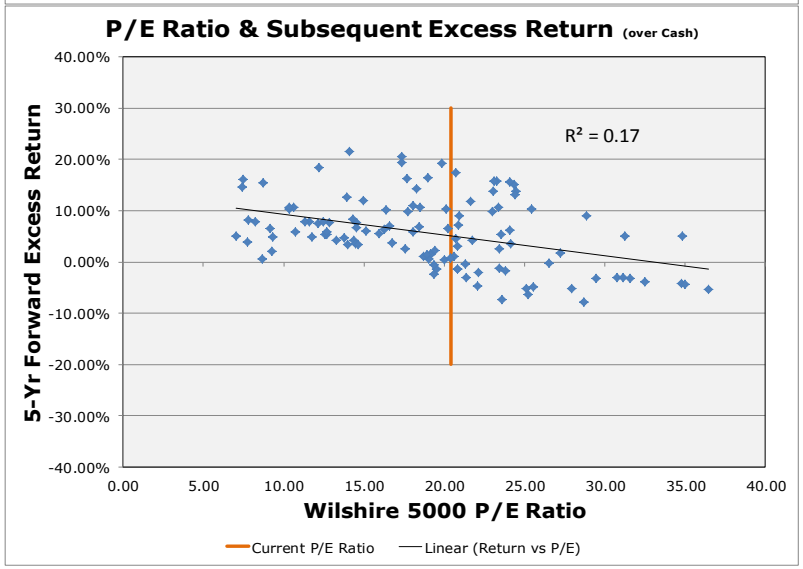
U.S. Equity Valuations

Wilshire

- Dividend yield above the 15-year average; at the 89%-percentile outcome
- Spread (discount) between the dividend yield and Treasuries has decreased as yields have fallen through the years





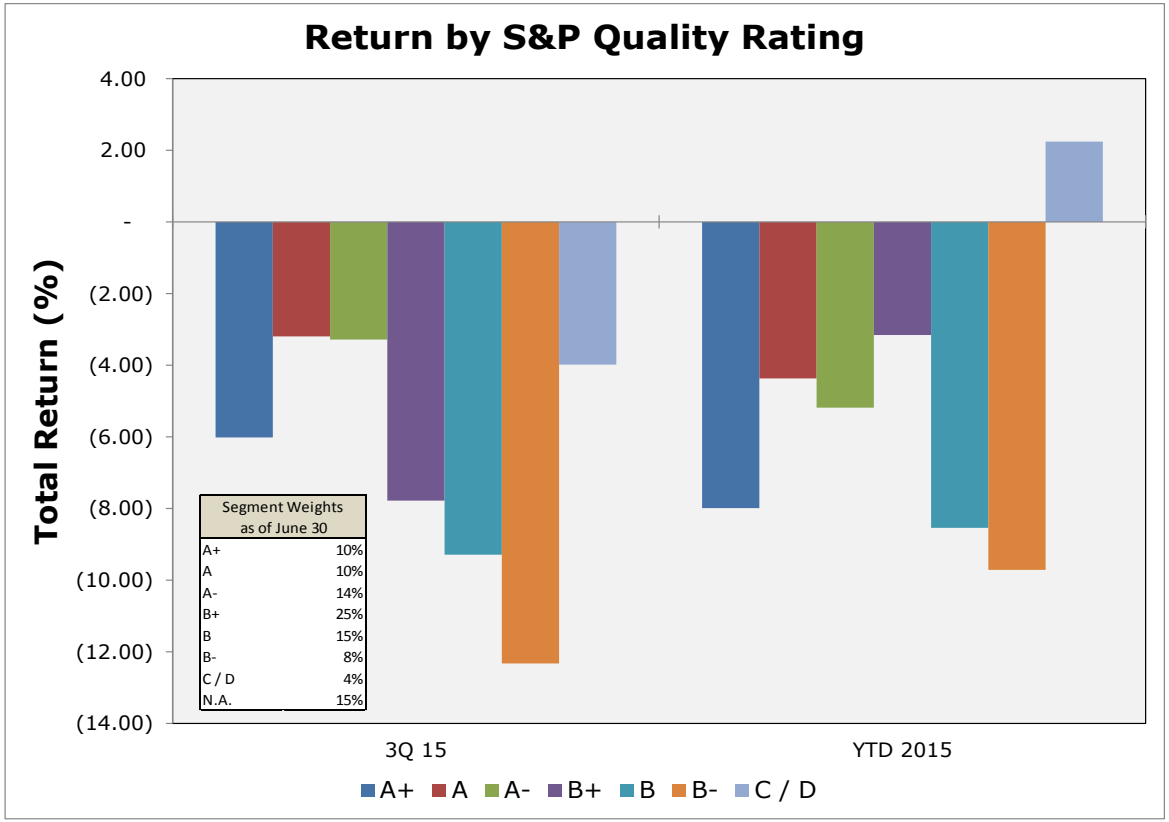


Source: Wilshire Compass, Wilshire Atlas, Barclays Capital

Returns by Quality Segment

Wilshire

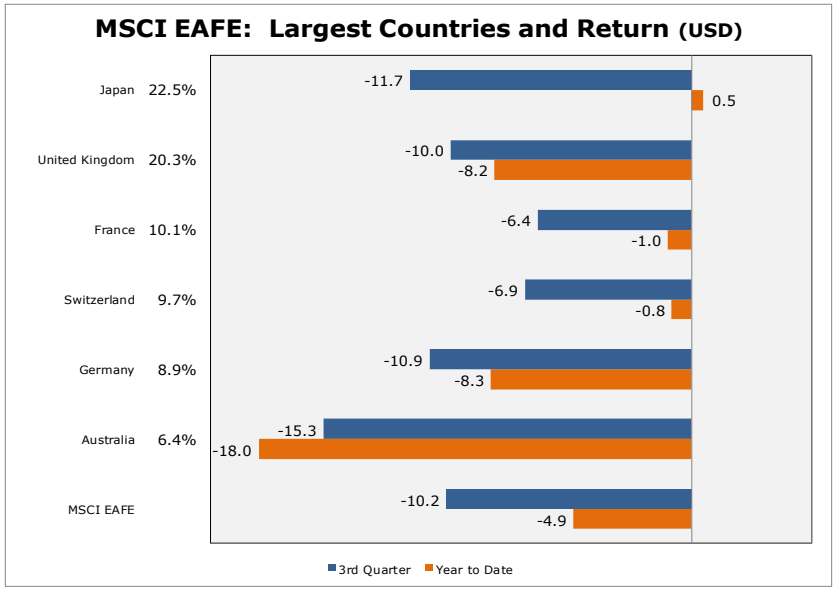
Performance by quality ranking has been mixed in 2015, the highest quality names are underperforming while the lowest rated names are actually positive for the year

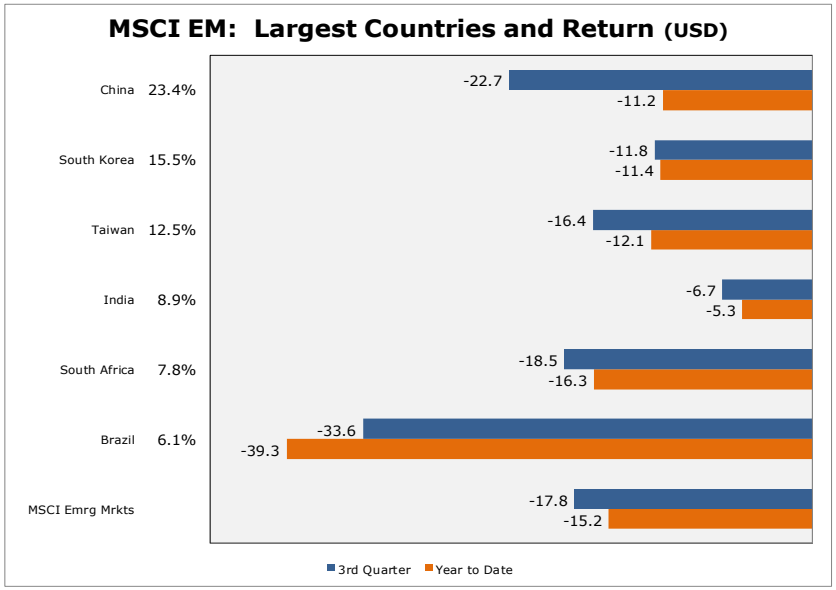


Data sources: Wilshire Atlas

Non-U.S. Equity Market

September 30, 2015	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
MSCI ACWI ex-US ($g)	-12.1	-8.3	-11.8	2.8	2.3	3.5
MSCI EAFE ($g)	-10.2	-4.9	-8.3	6.1	4.4	3.4
MSCI Emerging Markets ($g)	-17.8	-15.2	-19.0	-4.9	-3.2	4.6
MSCI Frontier Markets ($g)	-10.5	-13.0	-23.8	6.7	2.5	-1.5
MSCI ACWI ex-US Growth ($g)	-10.7	-5.7	-7.8	4.0	3.1	4.0
MSCI ACWI ex-US Value ($g)	-13.5	-10.9	-15.7	1.5	1.4	2.9
MSCI ACWI ex-US Small ($g)	-9.9	-2.2	-6.1	5.9	4.2	5.5
MSCI EAFE Minimum Volatility Idx	-4.7	2.1	2.3	8.0	7.6	6.8
FTSE RAFI Developed ex-US Index	-11.9	-8.0	-12.5	5.7	3.0	3.8
MSCI EAFE LC (g)	-8.9	-0.6	1.2	13.2	8.2	3.8
MSCI Emerging Markets LC (g)	-12.0	-6.9	-6.8	2.4	2.1	6.9



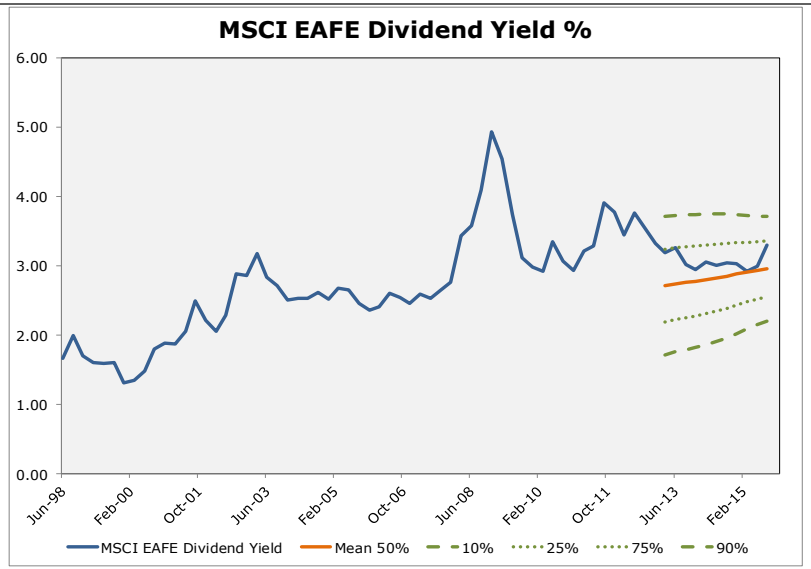


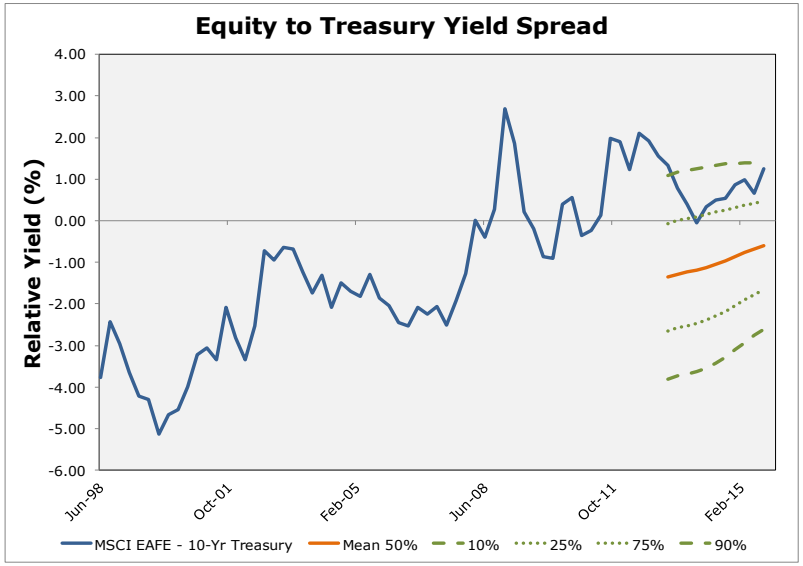
Data sources: Wilshire Compass

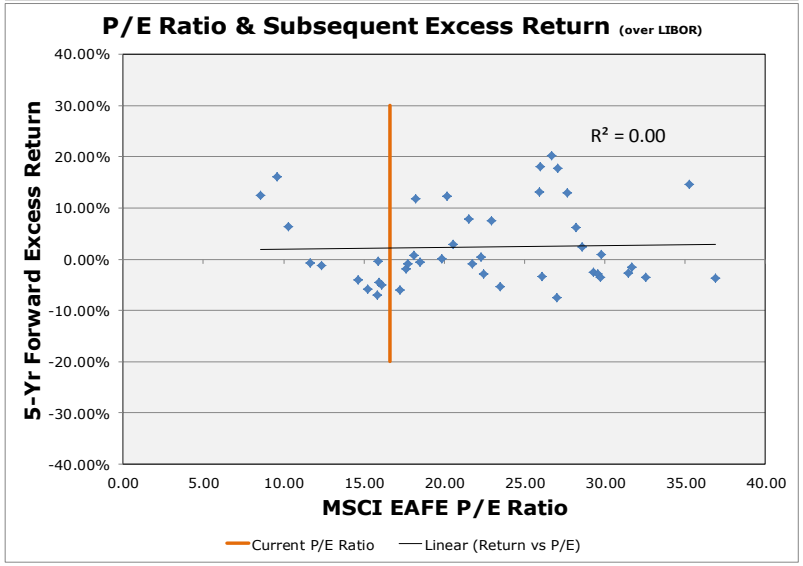
Developed Market Equity Valuations

Wilshire

- Dividend yield is above the 15-year average
- Spread between Developed Equity and the 10-Year Treasury has been narrowing







Source: Wilshire Compass, Wilshire Atlas, Barclays Capital

Divergent Performance in Emerging Markets

Wilshire

- Degree of foreign capital investment plays a role in divergent performance; the greater the reliance on foreign funds, the greater the sensitivity to market corrections
- Countries with a commodities-based income have felt the strain of lower energy prices
- Countries issuing debt in USD are susceptible to Fed tightening / higher debt service costs

1-Year Returns (%) - as of September 30, 2015

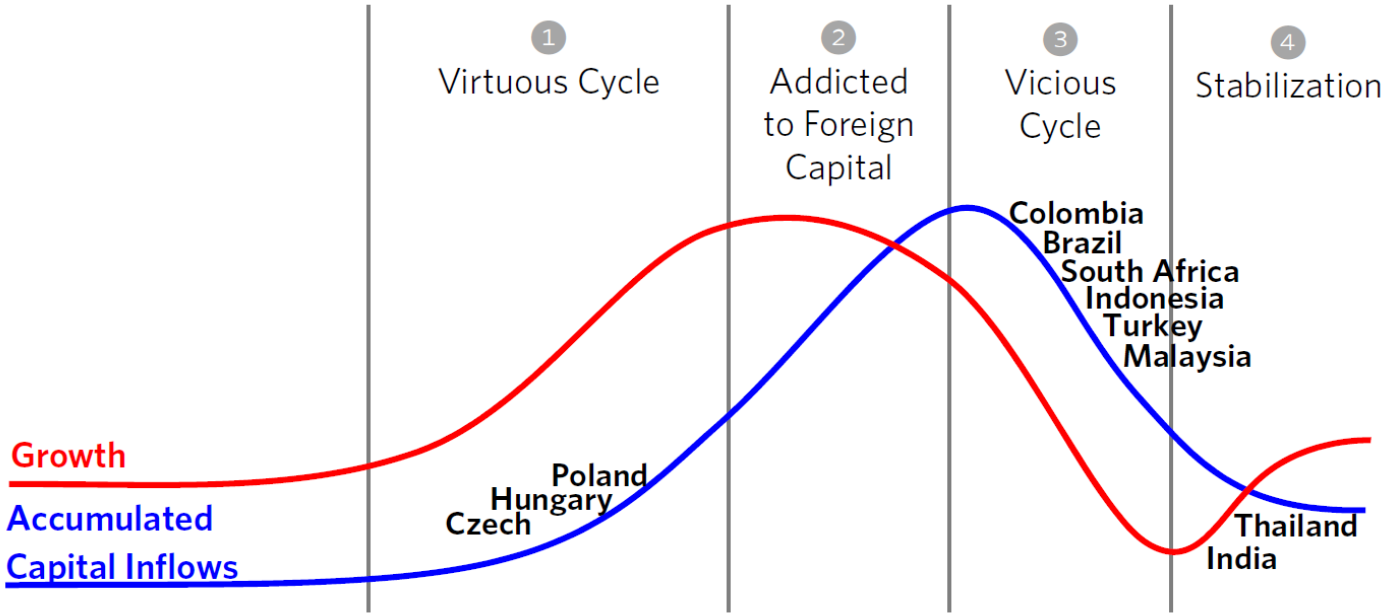
Country / Region	Local Currency	USD	Currency Impact
China	-5.2	-5.0	0.2
India	-1.5	-5.9	-4.4
Indonesia	-19.4	-32.9	-13.6
Malaysia	-11.1	-33.7	-22.6
Taiwan	-4.0	-11.3	-7.3
EM Far East	**-7.5**	**-14.1**	**-6.5**
Brazil	-16.1	-48.4	-32.3
Columbia	-24.2	-50.5	-26.2
Mexico	-4.1	-24.0	-19.9
EM Latin America	**-12.5**	**-38.7**	**-26.1**
Czech Republic	-13.2	-22.3	-9.2
Hungary	21.7	6.7	-15.1
Poland	-15.2	-26.3	-11.1
Russia	9.5	-28.8	-38.3
Turkey	1.2	-23.8	-25.0
EM Europe & ME	**1.4**	**-27.1**	**-28.4**
South Africa	5.0	-14.2	-19.2
EM Region	**-7.1**	**-19.3**	**-12.2**

Source: MSCI

Balance of Payments Cycle

Wilshire

- As economic growth within an economy fades, so does foreign capital
- Eastern European countries are benefiting from European Central Bank easing
- Commodity producing economies, reliant on foreign capital (Stage 3), have been the most susceptible to global market stress

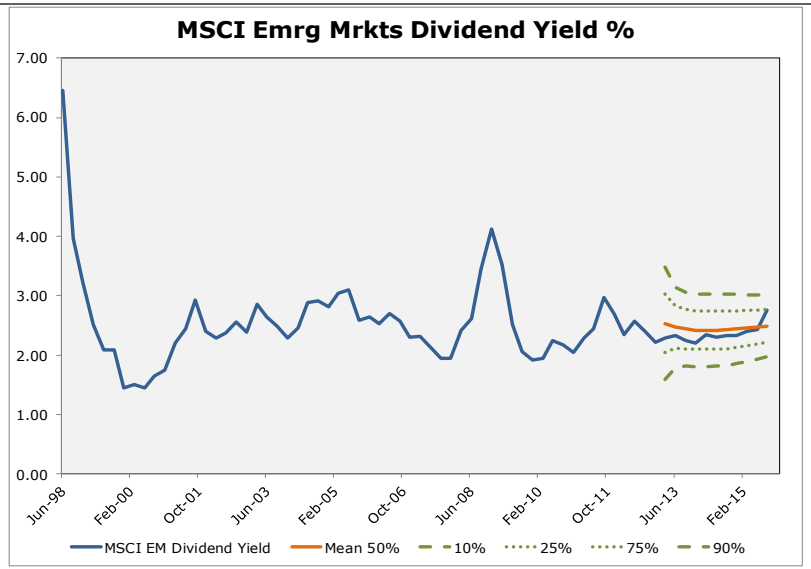


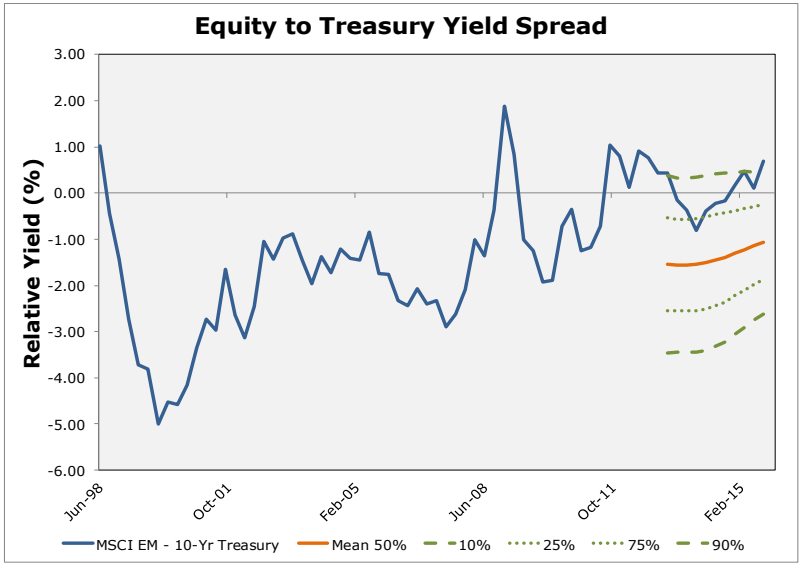
Source: Bridgewater

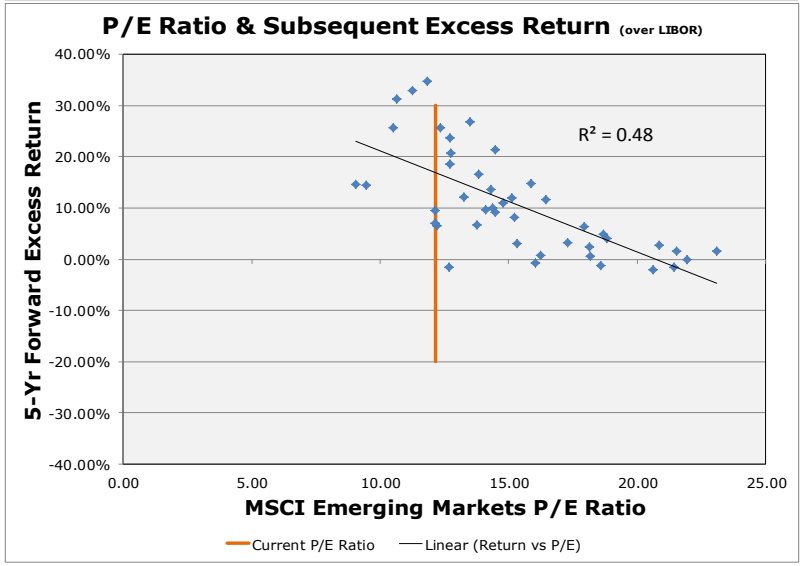
Emerging Market Equity Valuations

Wilshire

- Current dividend yield above its 15-year average; at the 74%-percentile outcome
- Spread between Emerging Market Equity and the 10-Year Treasury has been narrowing



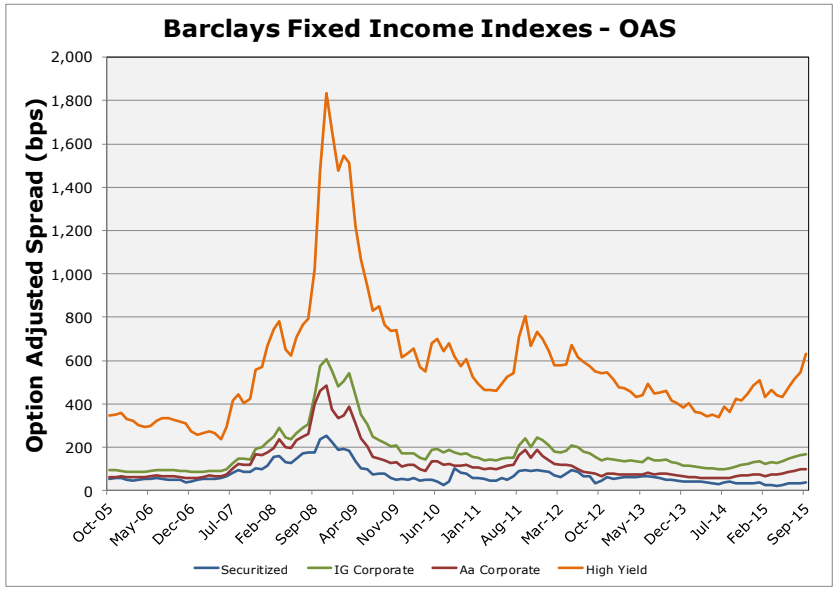


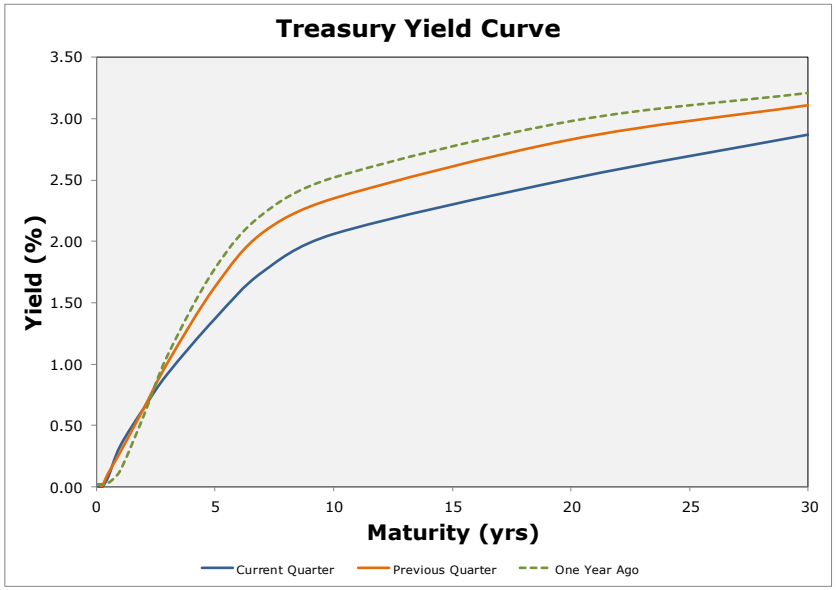


Source: Wilshire Compass, Wilshire Atlas, Barclays Capital

U.S. Fixed Income Market

September 30, 2015	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Barclays Aggregate Bond Index	1.2	1.1	2.9	1.7	3.1	4.6
Barclays Treasury Index	1.8	1.8	3.8	1.3	2.5	4.4
Barclays Gov't-Related Index	-0.1	0.0	1.5	1.3	2.6	4.3
Barclays Securitized Index	1.3	1.7	3.4	2.0	3.1	4.6
Barclays Corporate IG Index	0.8	-0.1	1.7	2.2	4.3	5.4
Barclays LT Gov't/Credit Index	2.2	-2.4	3.1	2.2	6.0	6.6
Barclays LT Treasury Index	5.1	0.2	8.8	2.8	6.2	7.0
Barclays LT Gov't-Related Index	-1.1	-4.0	0.3	1.5	5.6	6.5
Barclays LT Corporate IG Index	1.1	-3.7	0.2	2.0	5.8	6.4
Barclays U.S. TIPS Index	-1.2	-0.8	-0.8	-1.8	2.5	4.0
Barclays High Yield Index	-4.9	-2.5	-3.4	3.5	6.1	7.3
Treasury Bills	0.0	0.0	0.0	0.1	0.1	1.3



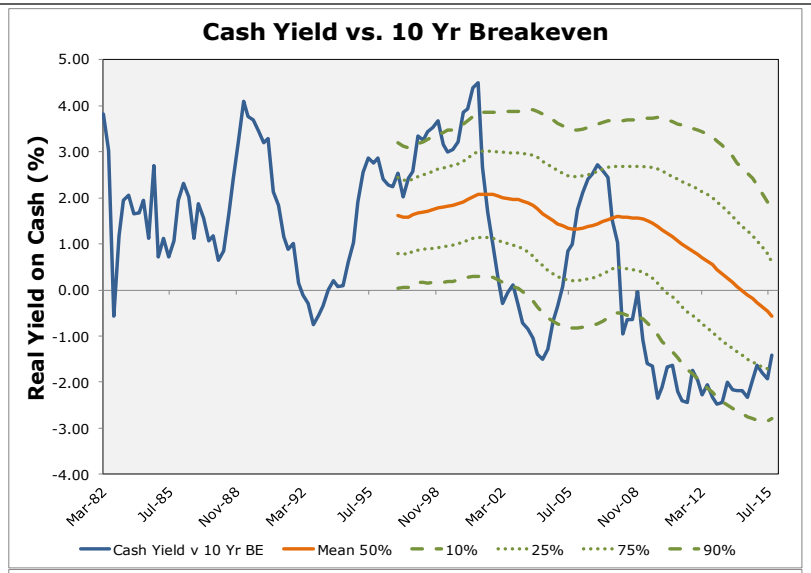


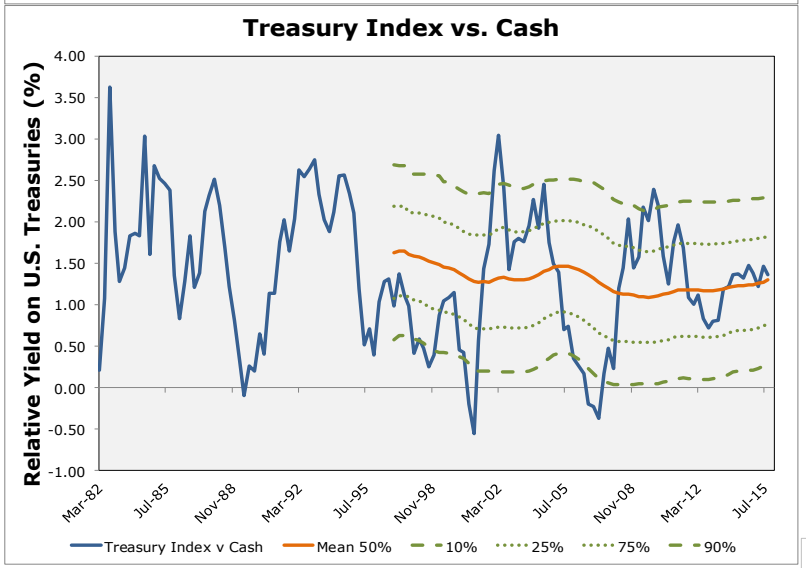
Data sources: Wilshire Compass, Barclays Capital, U.S. Treasury

Cash and Treasury Environment

Wilshire

- Real yield on cash is currently quite depressed
  - Negative versus long-term inflation forecast
  - At the 31%-percentile, this outcome only occurs 31% of the time under a normal distribution
- Spread between the broad Treasury market and cash is near the 15-year average



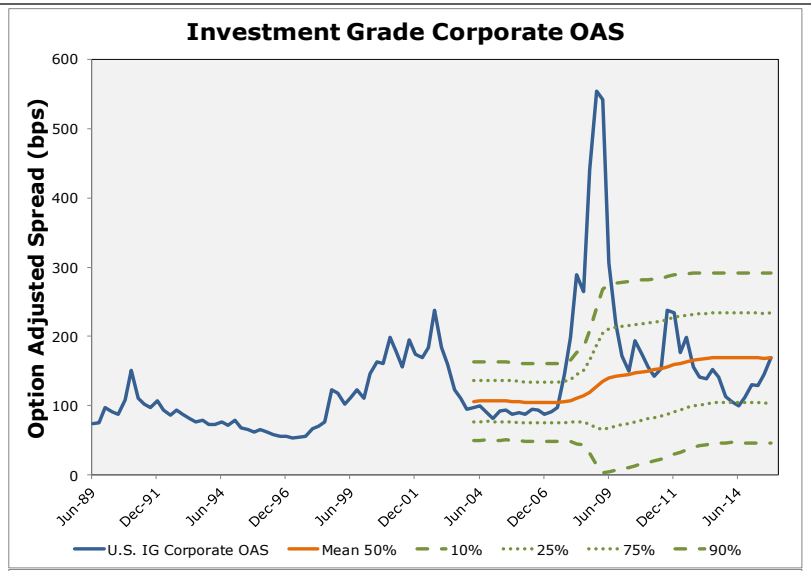


Source: Wilshire Compass, U.S. Treasury, Barclays Capital

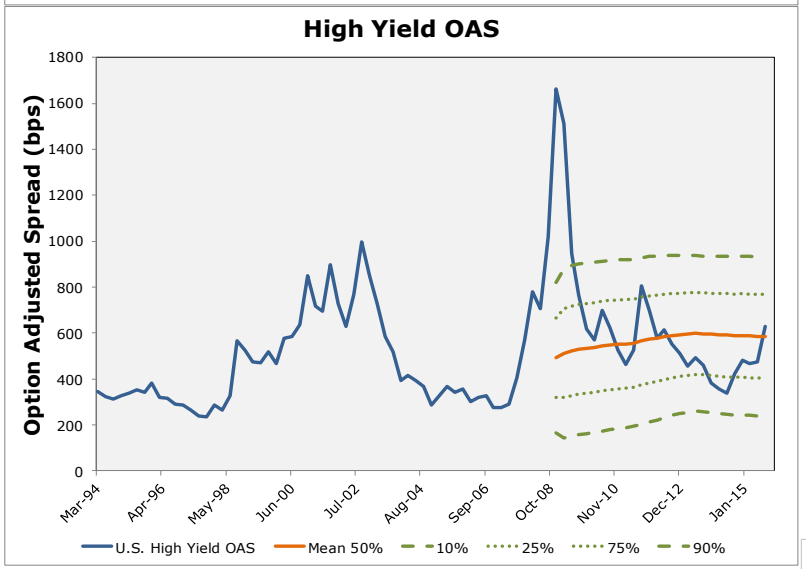
Relative Fixed Income Yields

Wilshire

- Spread versus Treasuries on the investment grade index is equal to its 15 year historical average, at the 50%-percentile outcome



- Spreads on high yield bonds have moved above the historical average, currently at the 57%-percentile outcome



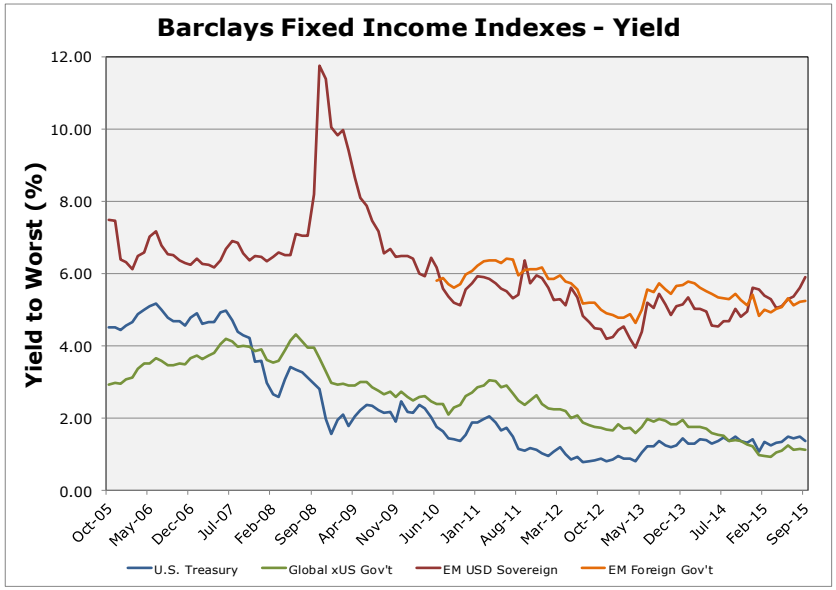
Source: Barclays Capital

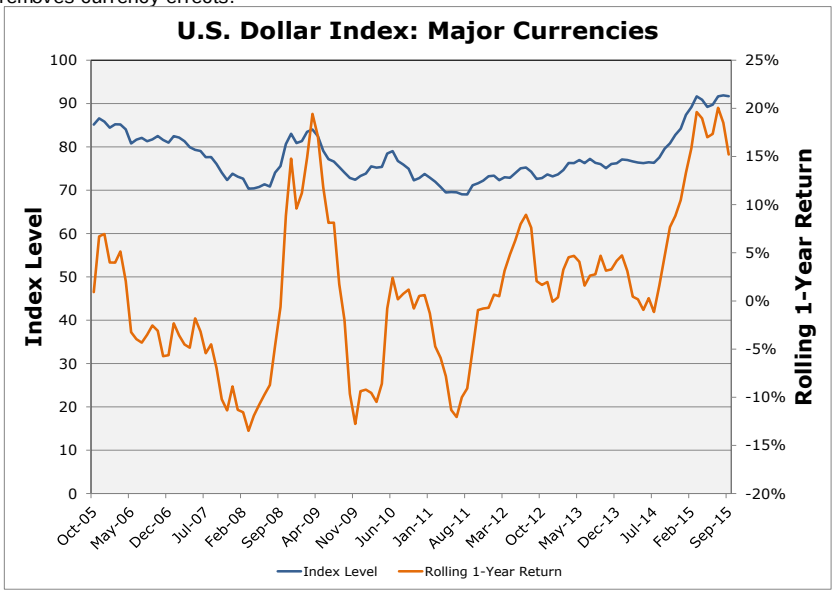
Non-U.S. Fixed Income Market

Wilshire

September 30, 2015	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Developed Markets						
Barclays Global Aggregate xUS	0.6	-4.8	-7.7	-4.0	-0.9	3.0
Barclays Global Aggregate xUS *	1.5	0.8	3.4	4.0	3.8	4.3
Barclays Wrld Govt xUS IL Bond	-1.4	-3.7	-3.4	0.8	2.6	4.1
Barclays Wrld Govt xUS IL Bond *	1.0	1.1	5.9	5.0	5.2	4.8
Emerging Mrkts (Hard Currency)						
Barclays EM USD Aggregate	-2.4	0.3	-1.4	1.3	4.7	6.9
Emerging Mrkts (Foreign Currency)						
Barclays EM Local Currency Govt	-8.3	-11.3	-15.0	-4.7	-0.8	n.a.
Barclays EM Local Currency Govt *	-0.3	-0.2	0.9	1.2	2.4	n.a.
Euro vs. Dollar	0.2	-7.8	-11.6	-4.6	-3.9	-0.8
Yen vs. Dollar	2.2	0.1	-8.4	-13.4	-7.0	-0.6
Pound vs. Dollar	-3.7	-2.9	-6.6	-2.1	-0.8	-1.6

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



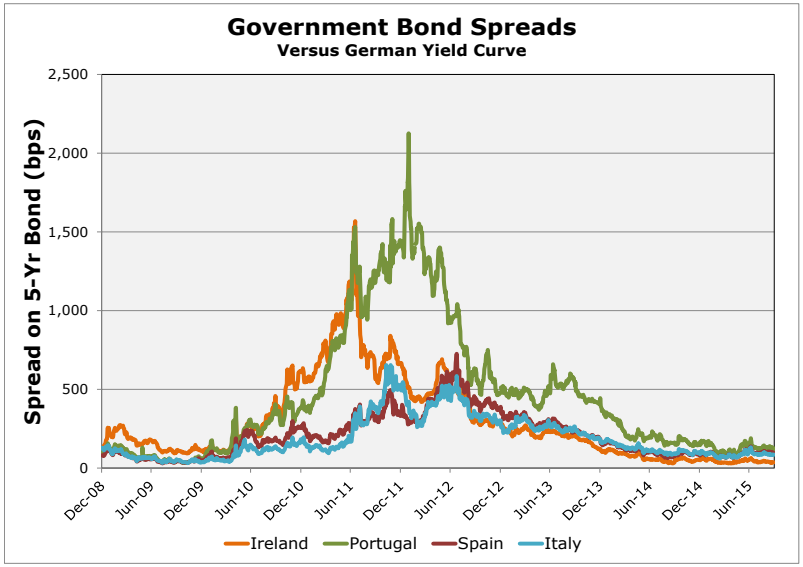


Data sources: Wilshire Compass, Barclays Capital

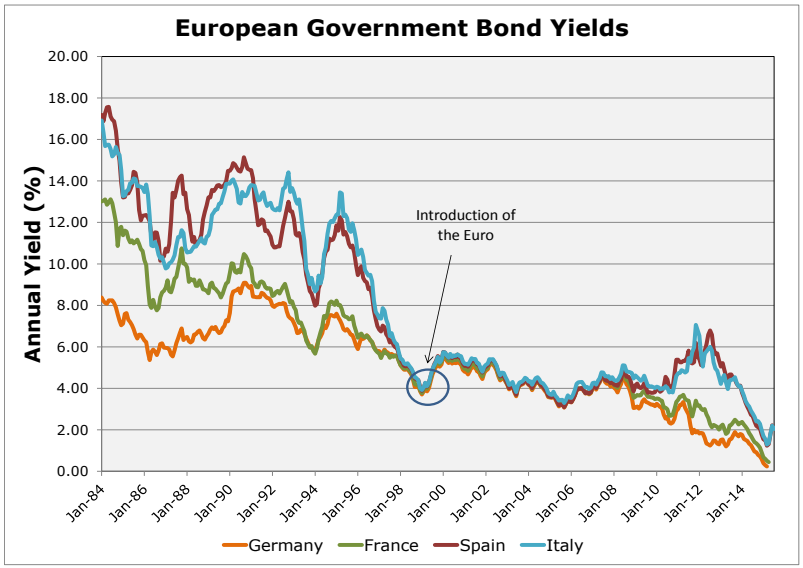
European Debt Issues

Wilshire

- Events in Greece did not seem to effect bond yields in other European economies to a major degree



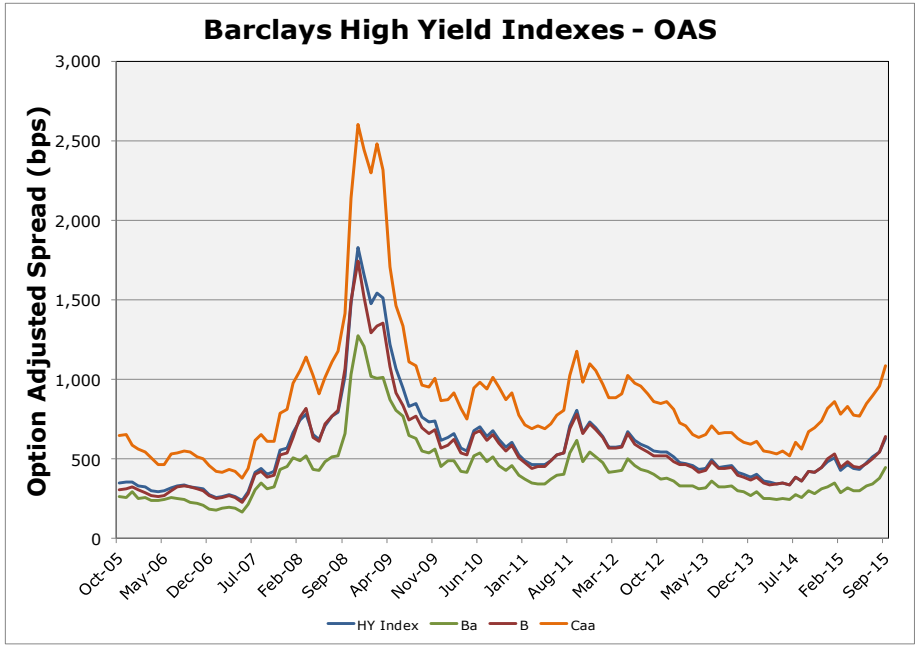
- Yields on government bonds in the most dominant European economies, Germany and France, are nearing zero



Source: Barclays Capital, International Monetary Fund

High Yield Bond Market

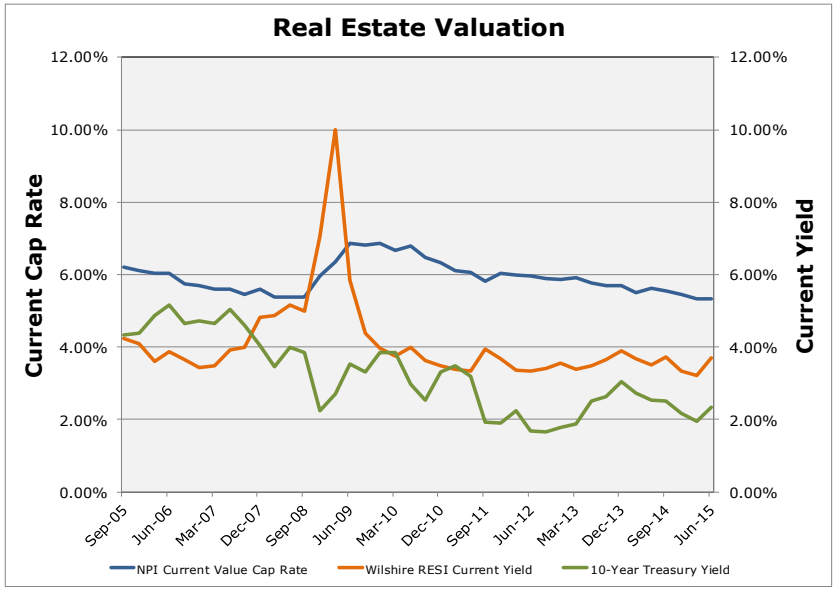
September 30, 2015	Weight	Qtr	Ytd	1 Yr	3 Yr
Barclays High Yield Index	100%	-4.9	-2.5	-3.4	3.5
Quality Distribution					
Ba U.S. High Yield	44.5%	-3.1	-0.9	0.0	4.1
B U.S. High Yield	40.3%	-5.6	-2.8	-4.3	3.1
Caa U.S. High Yield	14.7%	-7.3	-5.0	-8.7	3.4
Ca to D U.S. High Yield	0.3%	-28.6	-43.7	-57.0	-27.1
Non-Rated U.S. High Yield	0.2%	-7.4	-9.5	-11.9	1.3

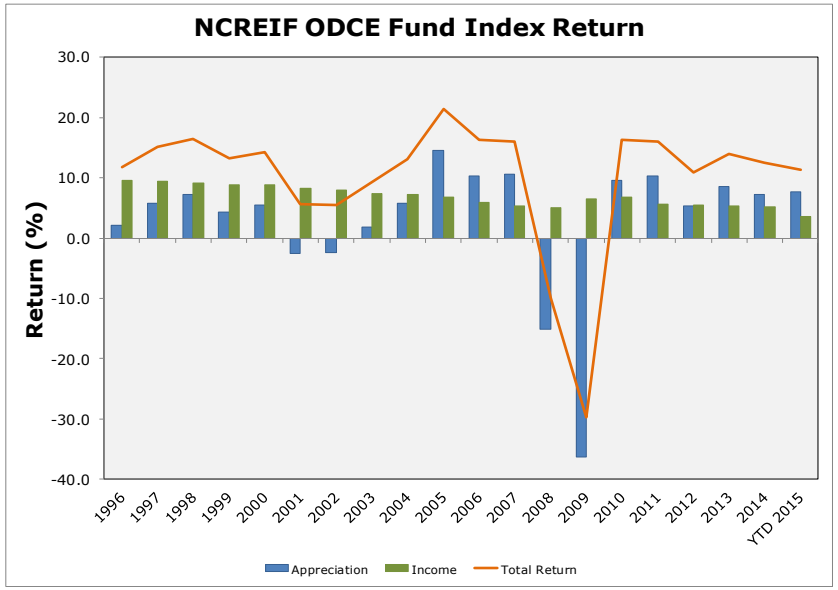


Data sources: Barclays Capital

Real Assets

September 30, 2015	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Barclays U.S. TIPS Index	-1.2	-0.8	-0.8	-1.8	2.5	4.0
Bloomberg Commodity Index	-14.5	-15.8	-26.0	-16.0	-8.9	-5.7
Wilshire Global REIT Index	1.0	-3.1	7.8	8.6	11.1	6.3
NCREIF ODCE Fund Index	3.7	11.3	14.9	13.4	14.0	6.7
Alerian MLP Index (Oil & Gas)	-22.1	-30.7	-39.2	-3.6	3.9	8.2



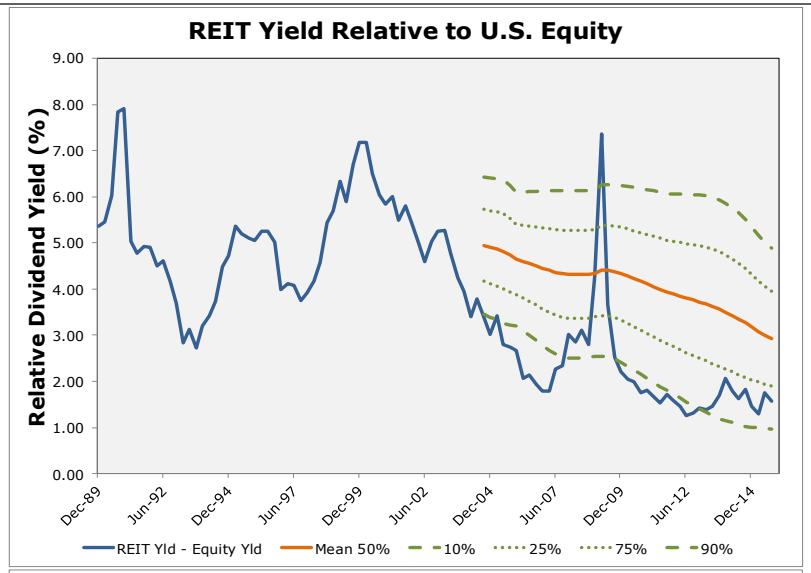


Data sources: Wilshire Compass, National Council of Real Estate Investment Fiduciaries

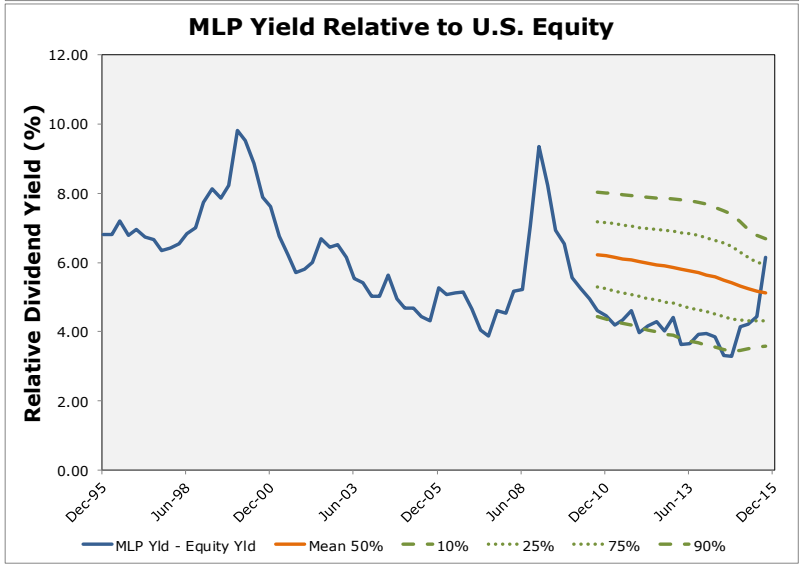
Relative Yield on Real Assets

Wilshire

- REIT yields typically run higher than the earnings yield for the broad equity market
- Current relative yield at the 19%-percentile outcome



- Major swing in relative MLP yield since September of last year
- Current relative yield at the 80%-percentile outcome

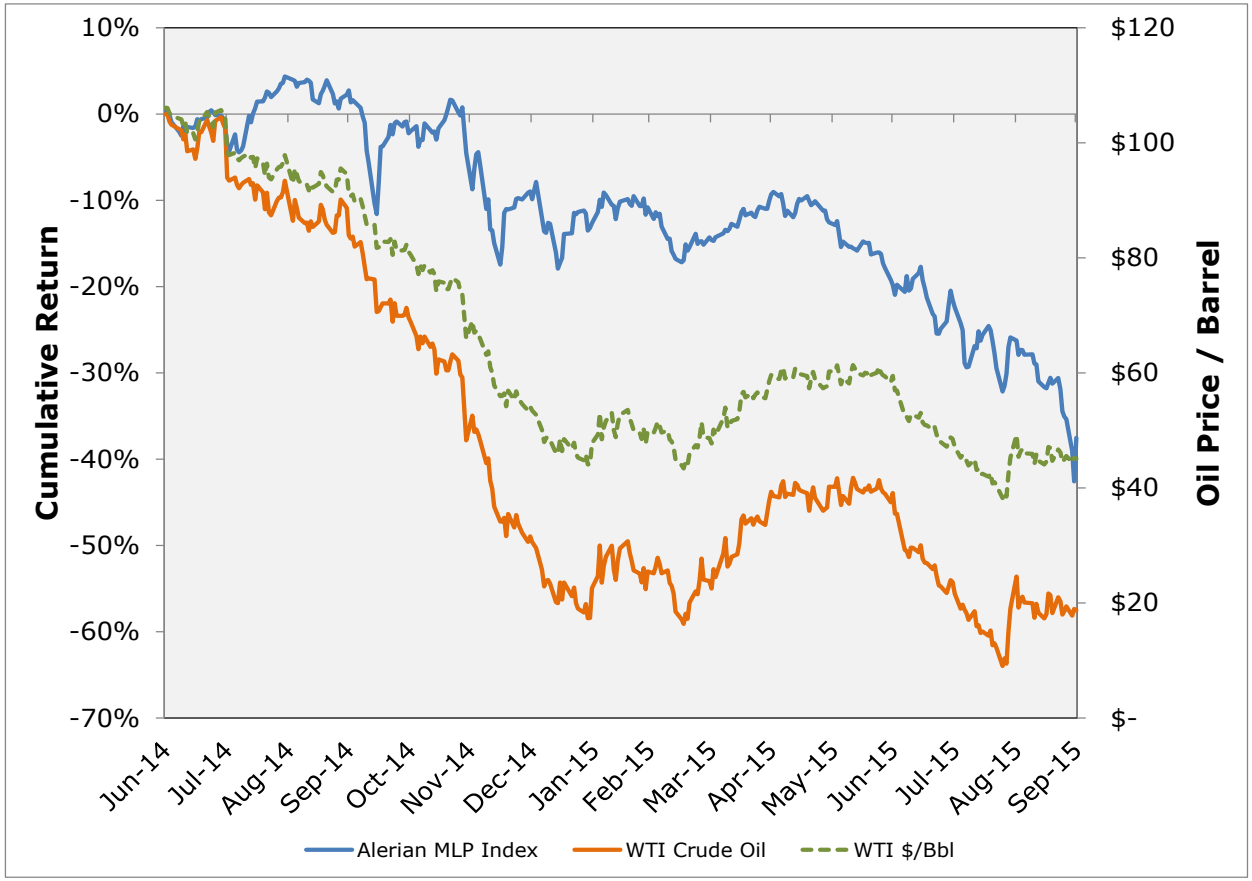


Source: Wilshire Compass, Wilshire Atlas, Alerian

MLP Performance: 2014-15

Wilshire

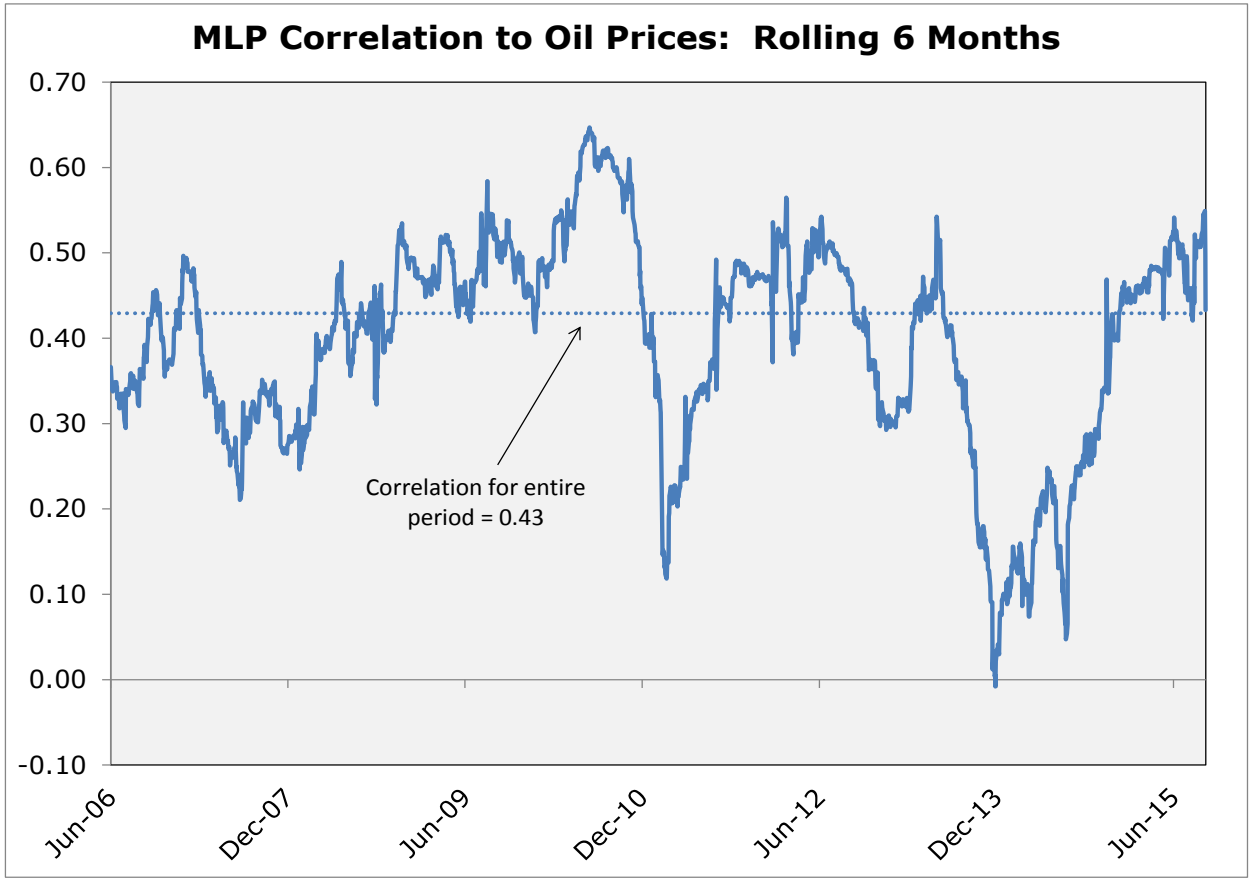
- Sell-off in MLPs has coincided with falling oil prices – although valuation levels and tighter capital markets have played a role
- Drop in MLPs less pronounced than oil prices, which is historically the norm



Source: Alerian, US. Energy Information Administration

MLP Correlation to Oil

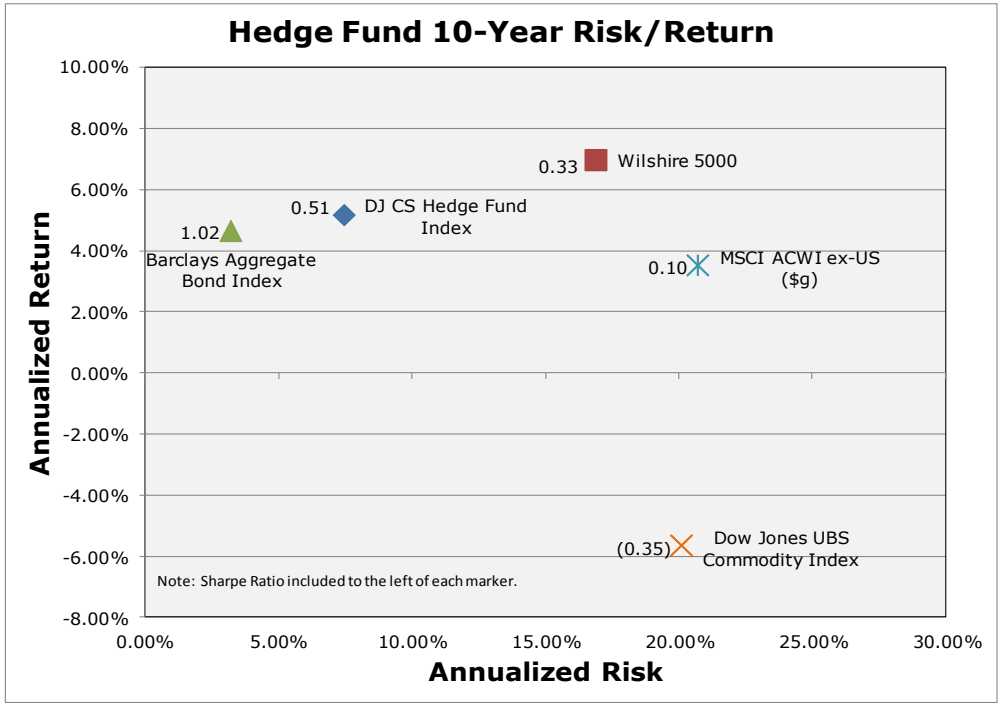
- Although midstream energy assets are operated to minimize exposure to commodity prices, a statistical correlation does exist
- However, broader economic drivers could be moving both markets



Source: Alerian, US. Energy Information Administration

Hedge Fund Performance

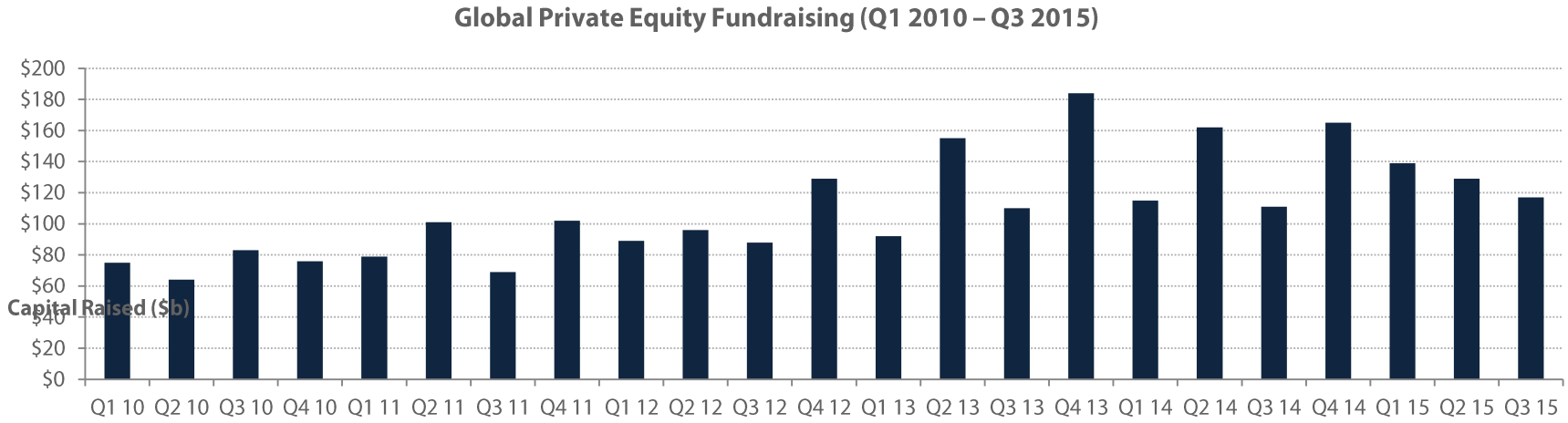
September 30, 2015	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
DJ CS Hedge Fund Index	-2.5	-0.6	0.1	5.0	4.5	5.2
Event Driven Index	-6.0	-4.1	-6.1	5.1	3.7	5.3
Global Macro Index	-3.0	-0.4	0.0	2.7	4.3	6.9
Long/Short Equity Index	-1.5	1.9	4.2	9.0	6.1	5.9
Multi-Strategy Index	0.1	3.3	4.5	7.8	7.5	6.3
Wilshire 5000	-6.9	-5.4	-0.4	12.4	13.2	7.0
MSCI ACWI ex-US ($g)	-12.1	-8.3	-11.8	2.8	2.3	3.5
Barclays Aggregate Bond Index	1.2	1.1	2.9	1.7	3.1	4.6
Dow Jones UBS Commodity Index	-14.5	-15.8	-26.0	-16.0	-8.9	-5.7

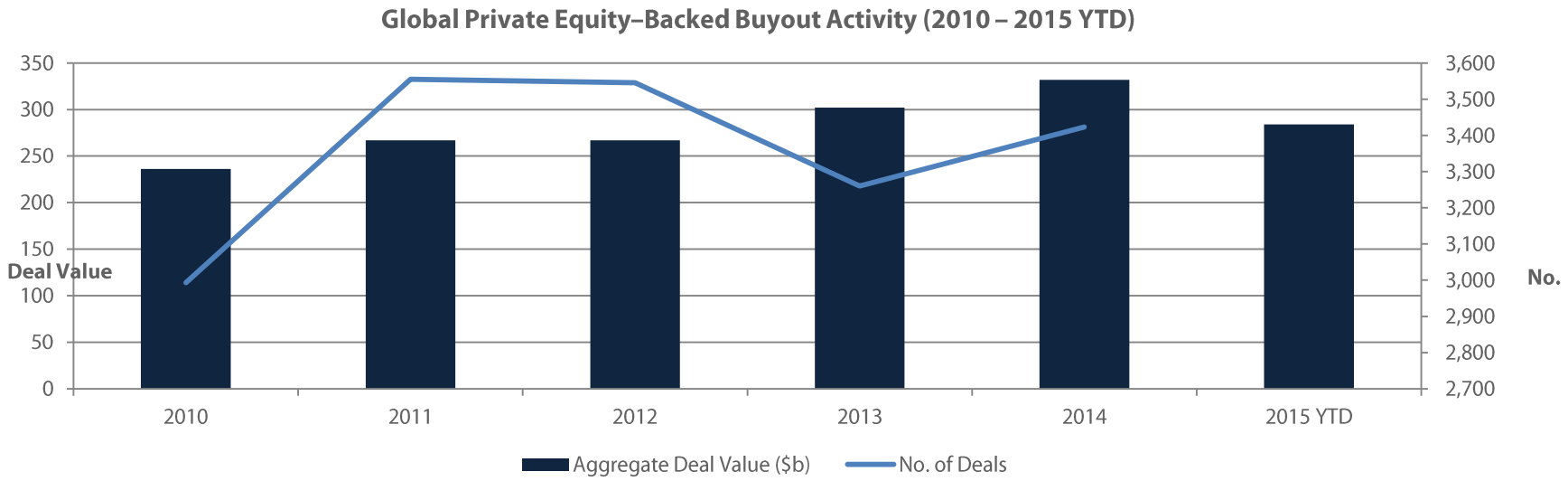


Data sources: Wilshire Compass

Private Equity – Fundraising & Investment Activity

Wilshire

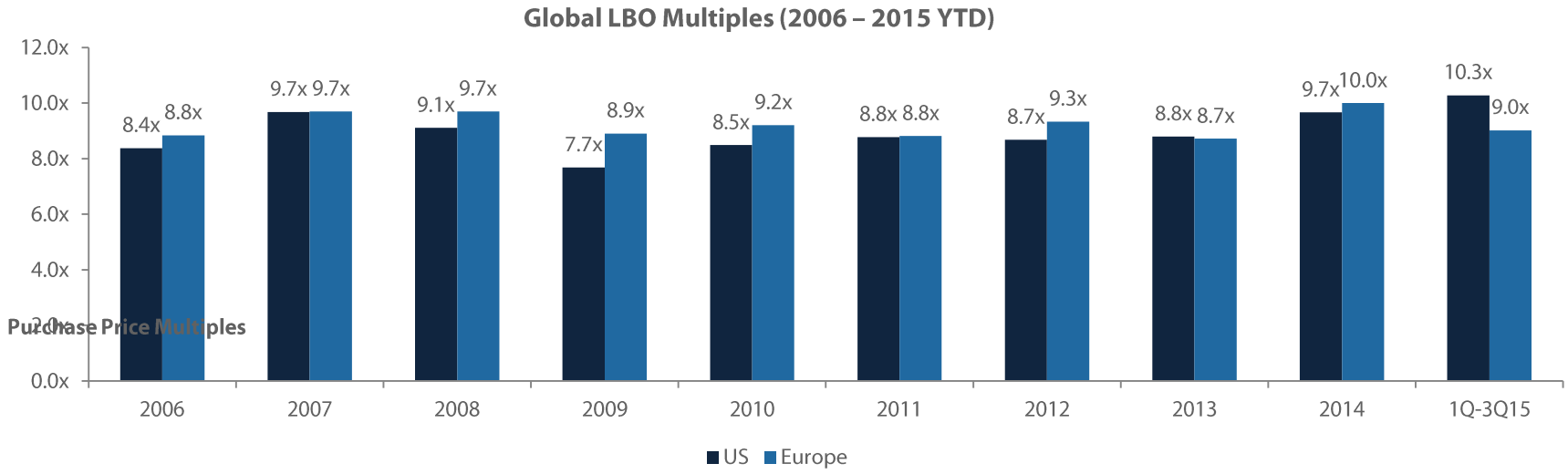


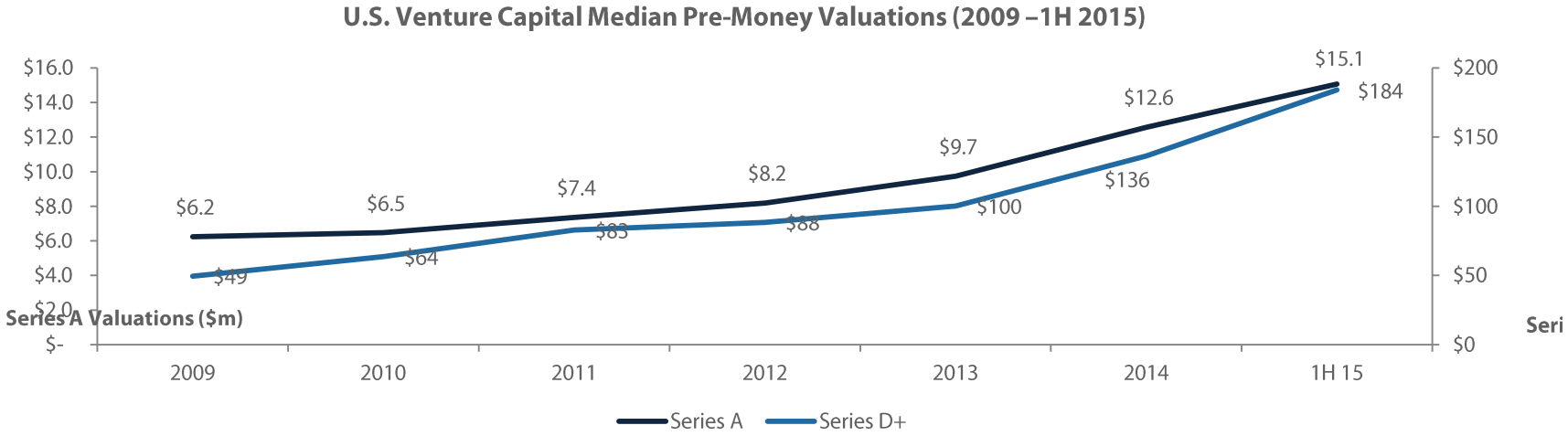


Sources: Preqin. 2015 YTD through Q3.

Private Equity – Pricing & Valuations

Wilshire

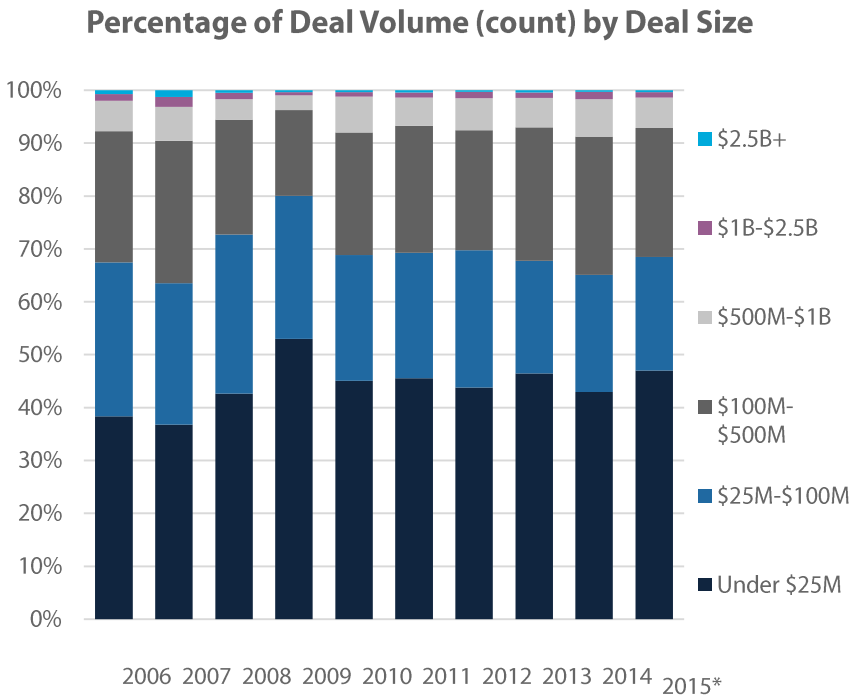


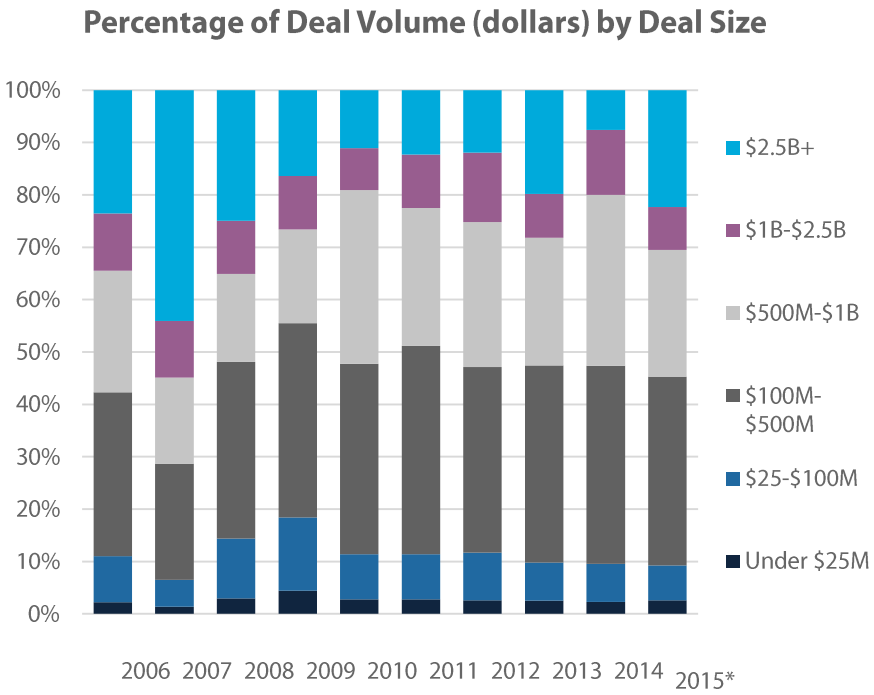


Source: S&P LCD; Pitchbook.

Private Equity – U.S. Investment Activity by Deal Size

Wilshire





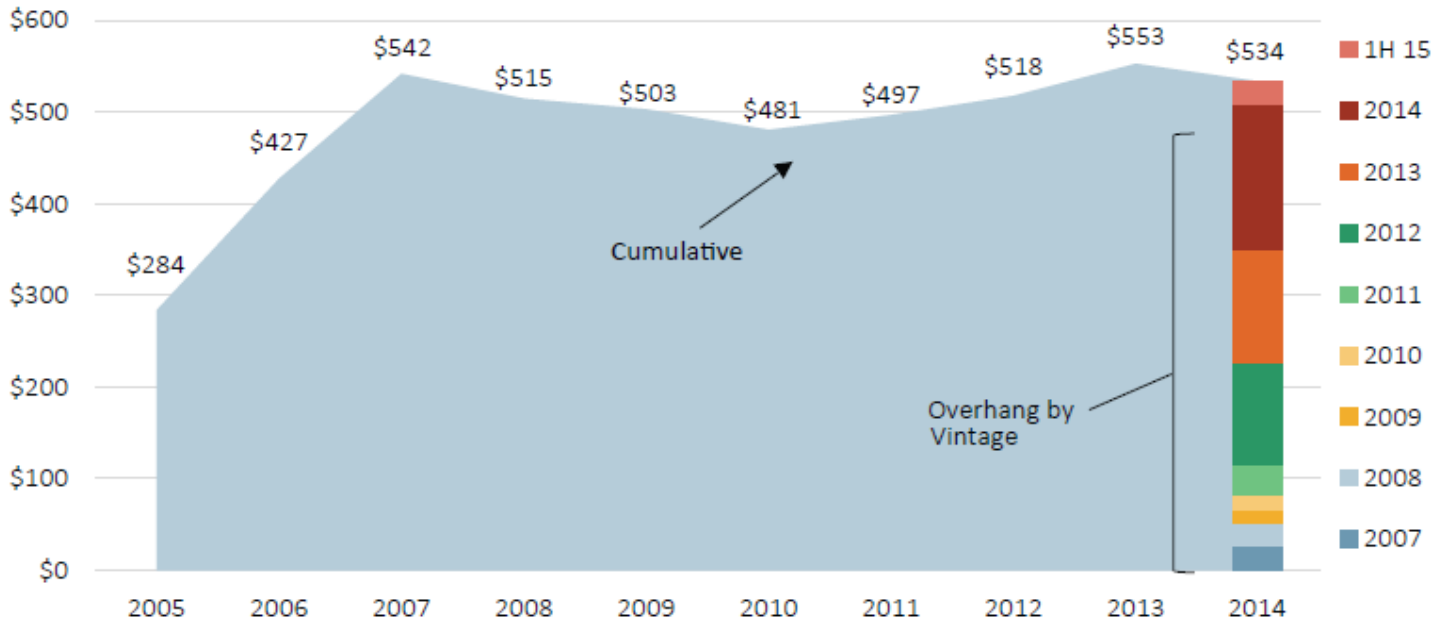
- Smaller deals continue to dominant deal activity by count
- Significantly more mega transaction ($2.5b+) volume in 2015

Source: Pitchbook. * Through September 30, 2015.

Private Equity – Capital Overhang

Wilshire

Cumulative Vintage Year Overhang



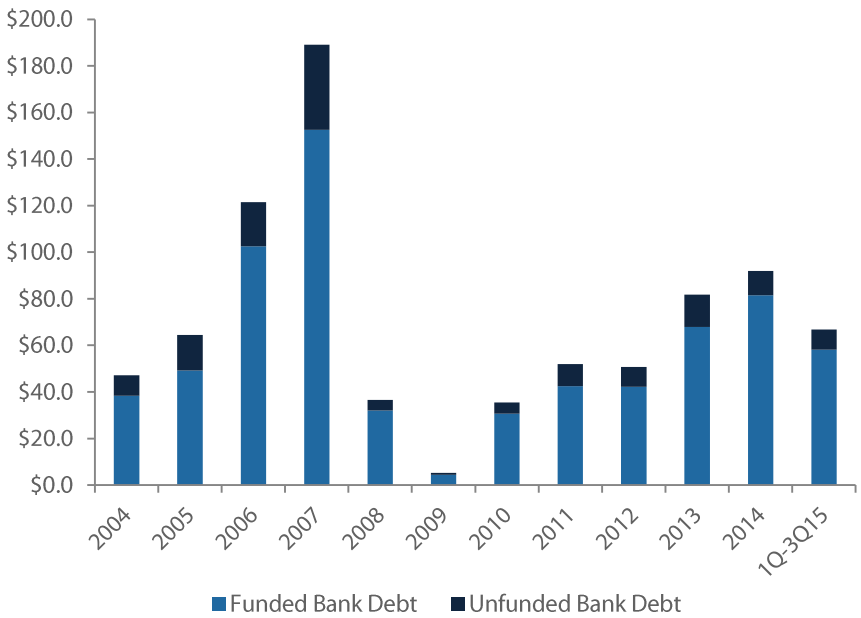
- Total private equity overhang significantly grew to an estimated $542 billion during the run-up to the financial crisis
- While the overhang slightly decreased across 2007 through 2010, the overhang has generally increased since then

Source: Pitchbook. As of August 2015.

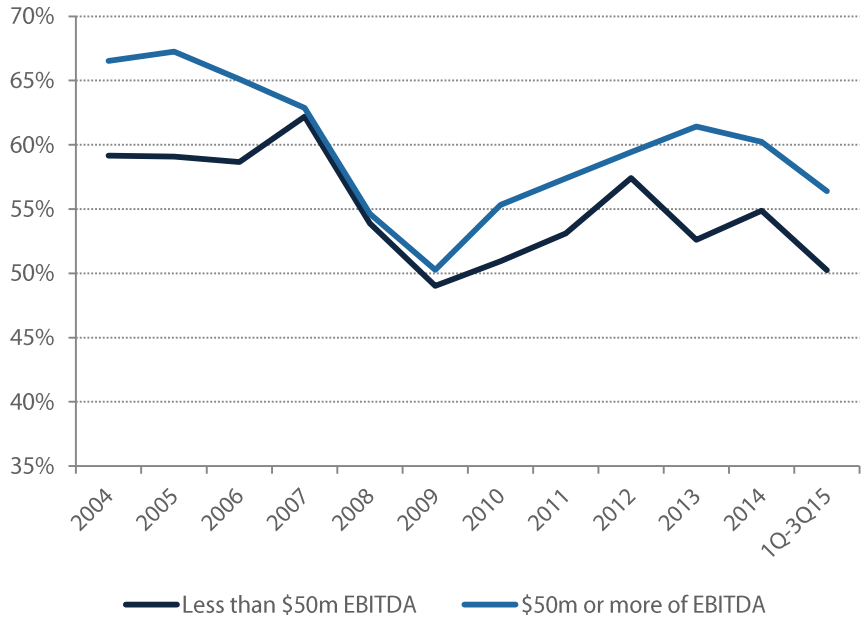
Private Equity – U.S. Debt Markets

Wilshire

Total U.S. Leveraged Buyout Loan Volume ($b)



Percentage of Debt Used in Buyouts

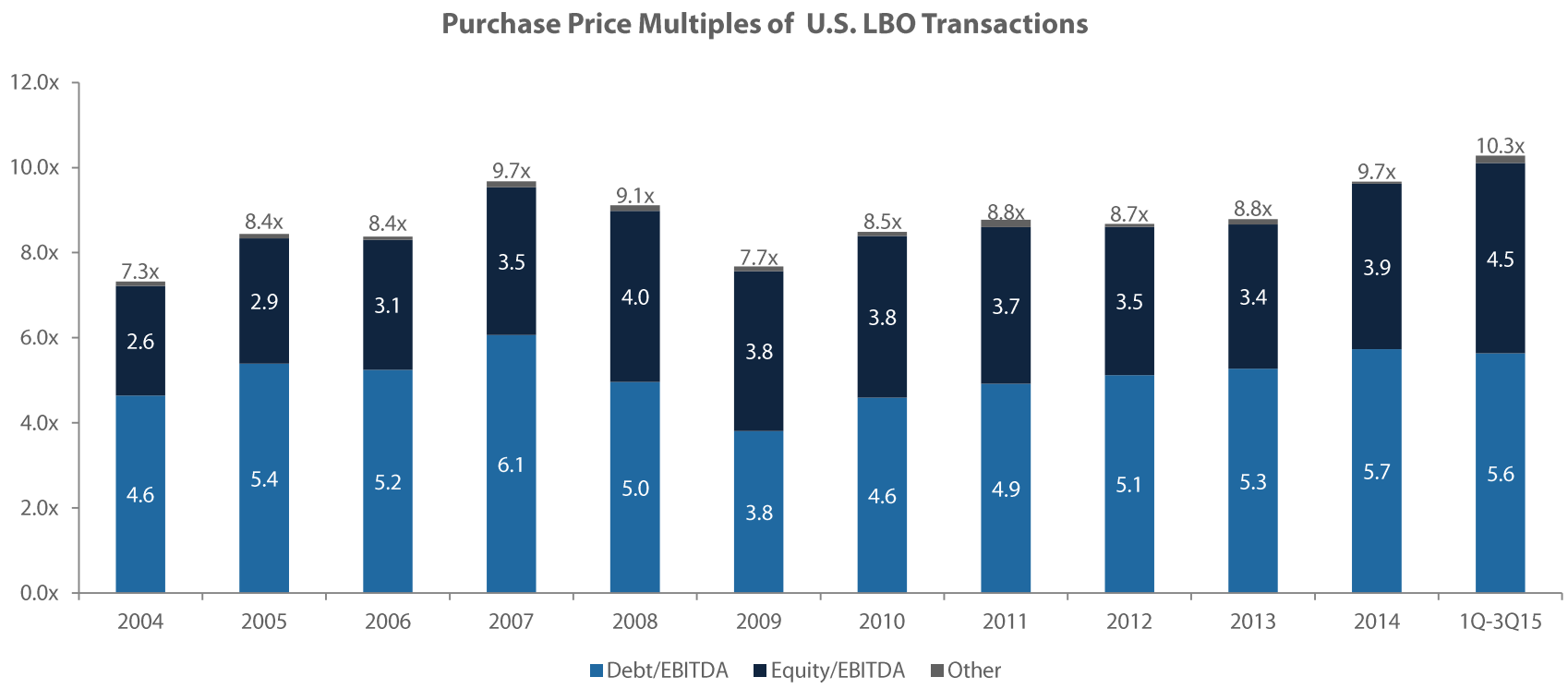


- The amount of capital available for leverage has decreased considerably since its peak volume in 2007, but continues to increase from the trough in 2009
- Historically, middle-market transactions apply less leverage than large-cap deals

Source: S&P LCD.

Private Equity – U.S. LBO Purchase Price Multiples

Wilshire

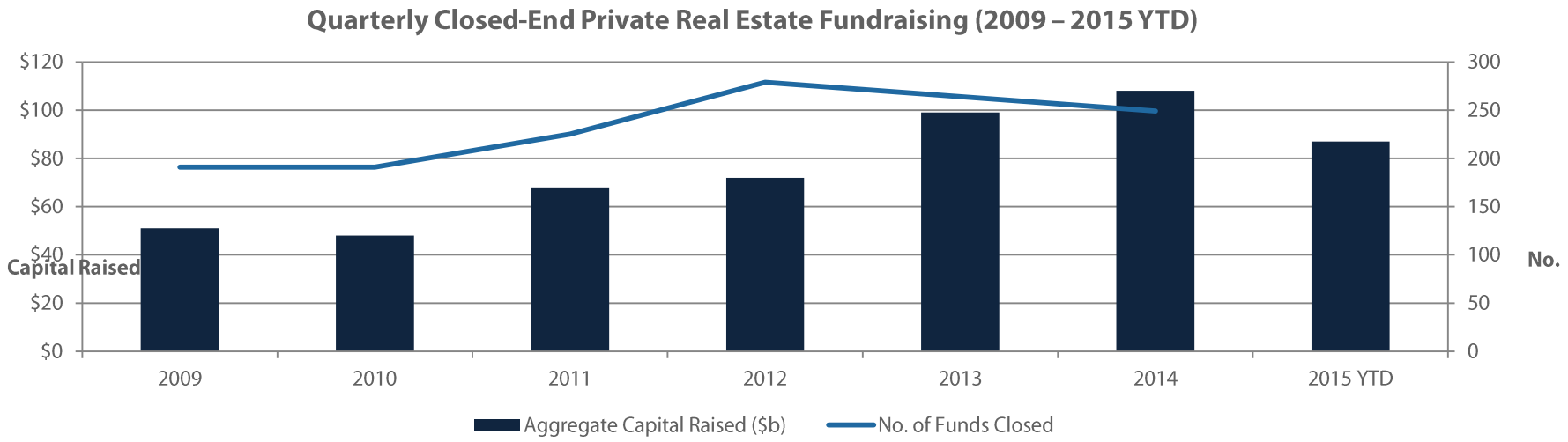


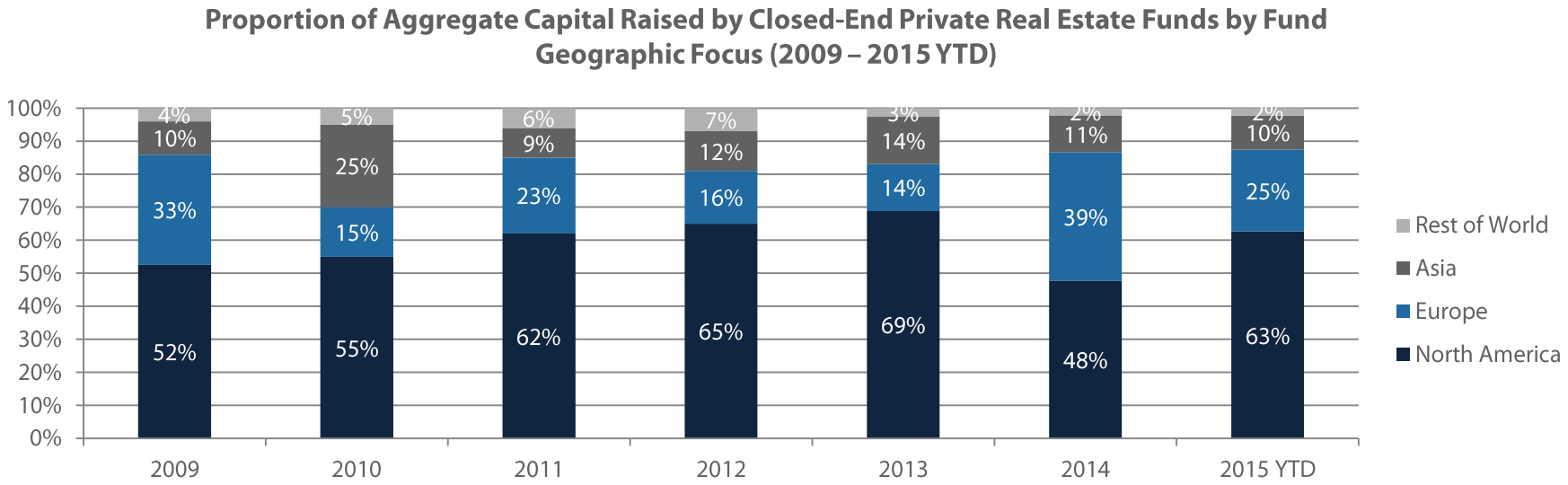
- As debt has become more readily available, purchase price multiples have increased from the low point in 2009
- Pricing in 2015 has eclipsed the 10.x threshold, which is a recent high

Source: S&P LCD.

Private Real Estate – Fundraising Activity

Wilshire



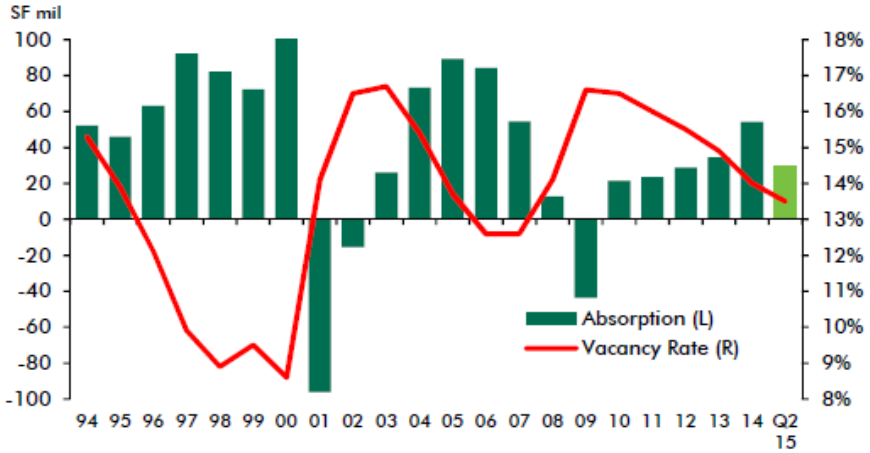


Sources: Preqin. 2015 YTD through Q3.

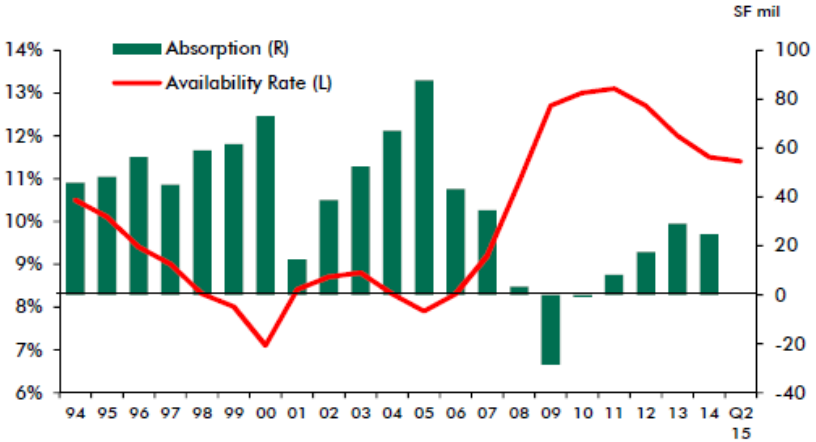
Commercial Property (as of 2Q 2015)

Wilshire

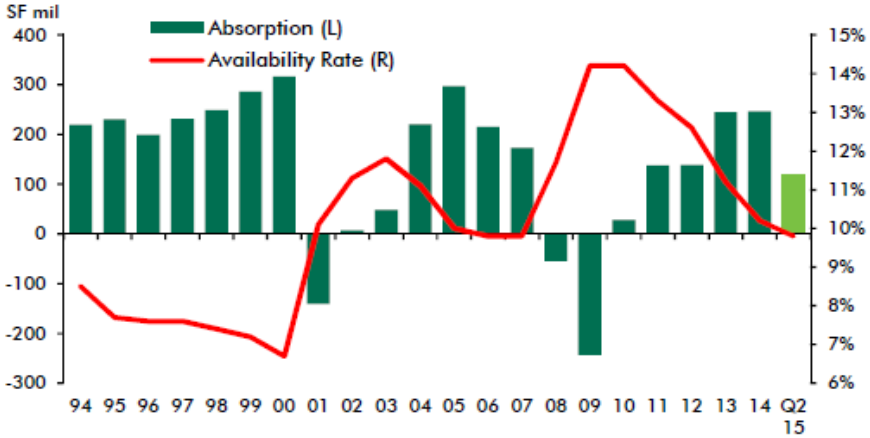
Office



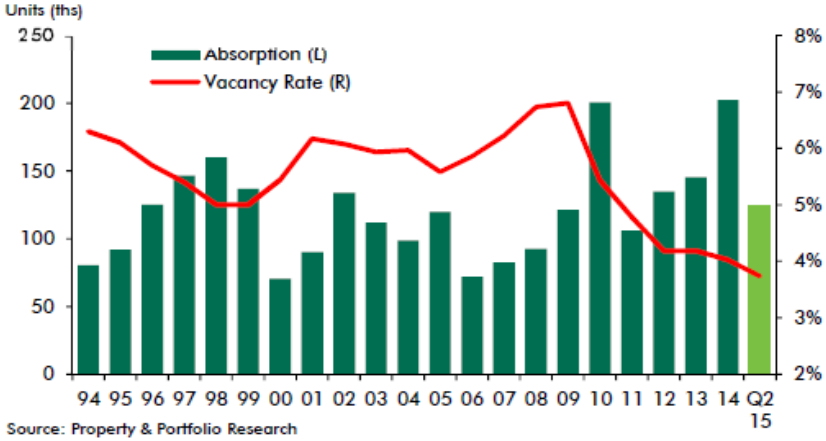
Retail



Industrial



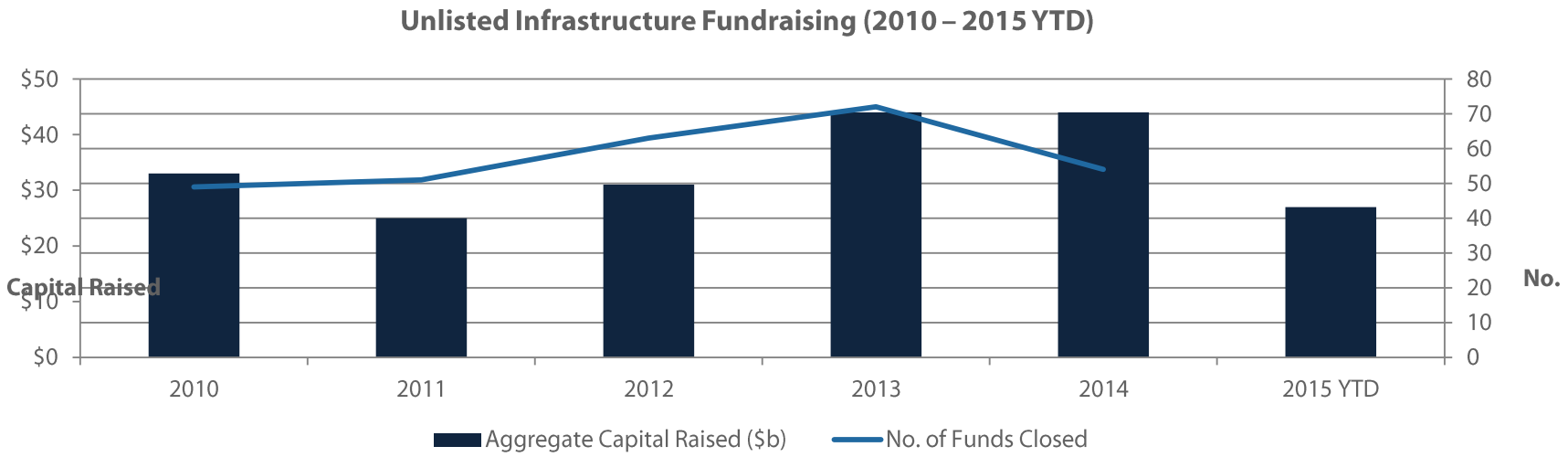
Apartment

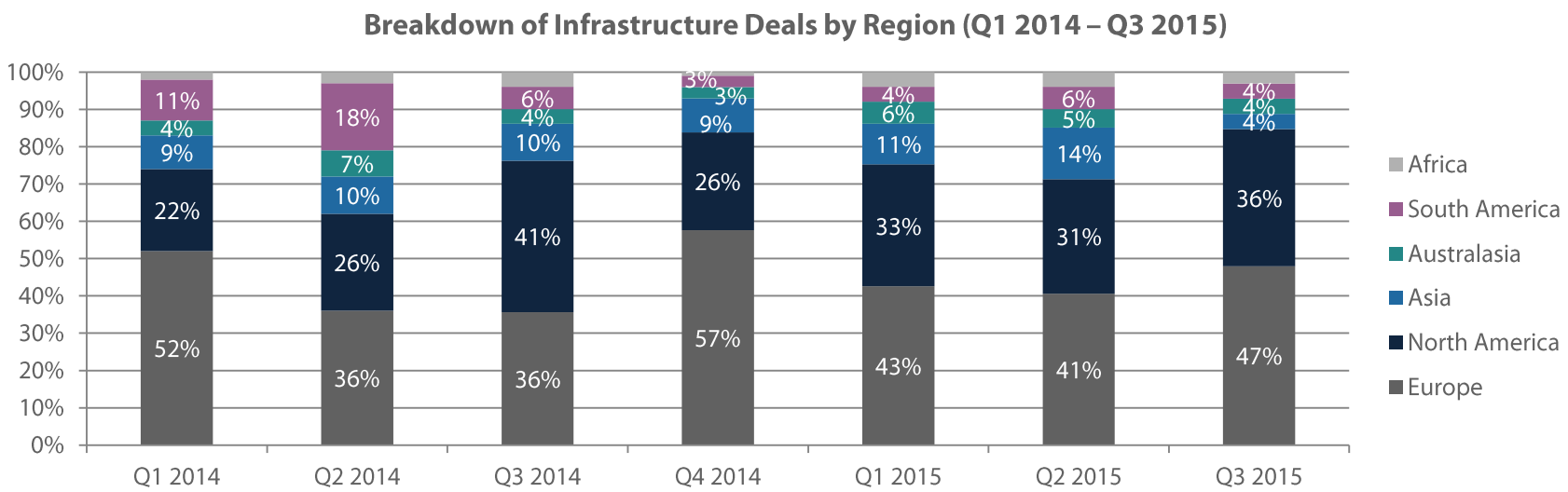


Source: CB Richard Ellis

Unlisted Infrastructure – Fundraising Activity

Wilshire



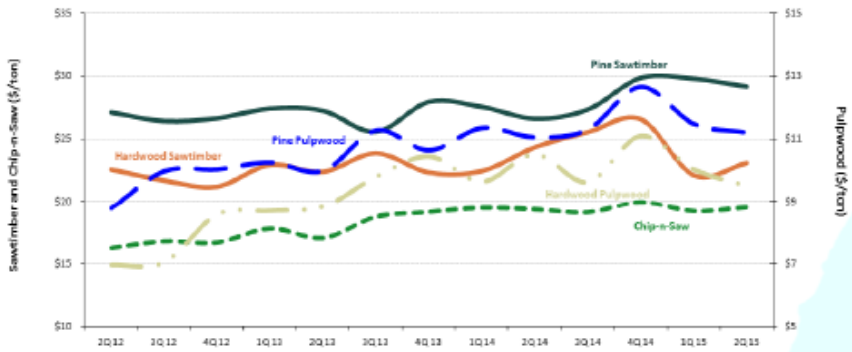


Sources: Preqin. 2015 YTD through Q3.

Timber *(as of 2Q 2015)*

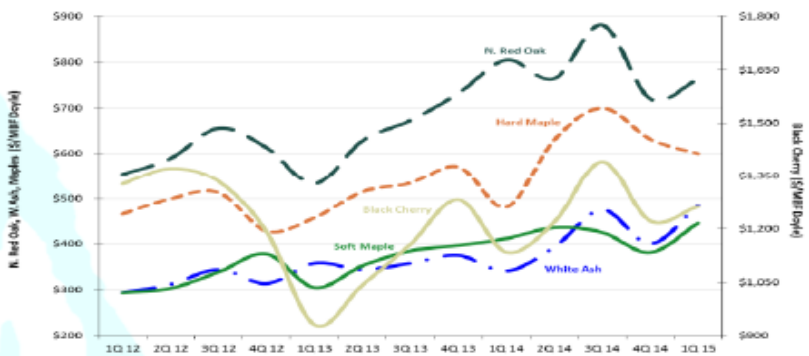
Wilshire

Southeastern Timber Prices



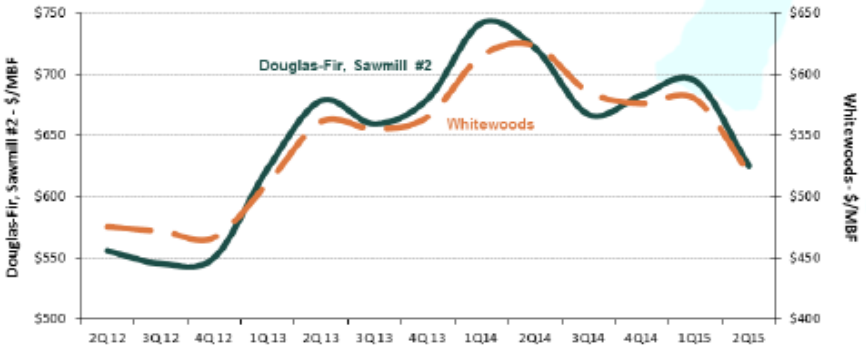
Source: Forest2Market®

Northeastern Hardwood Timber Prices



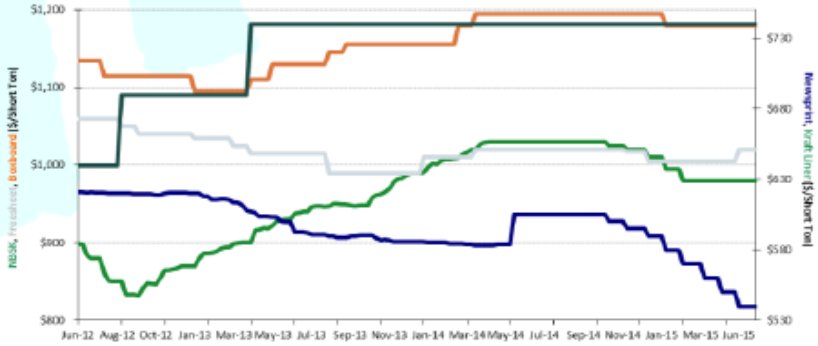
Source: Pennsylvania Woodlands Timber Market Report - Northwest Region

Pacific Northwest Timber Prices



Source: Log Lines®

Pulp and Paper



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

Source: Forest Investment Associates