



Inflation Portfolio Overview

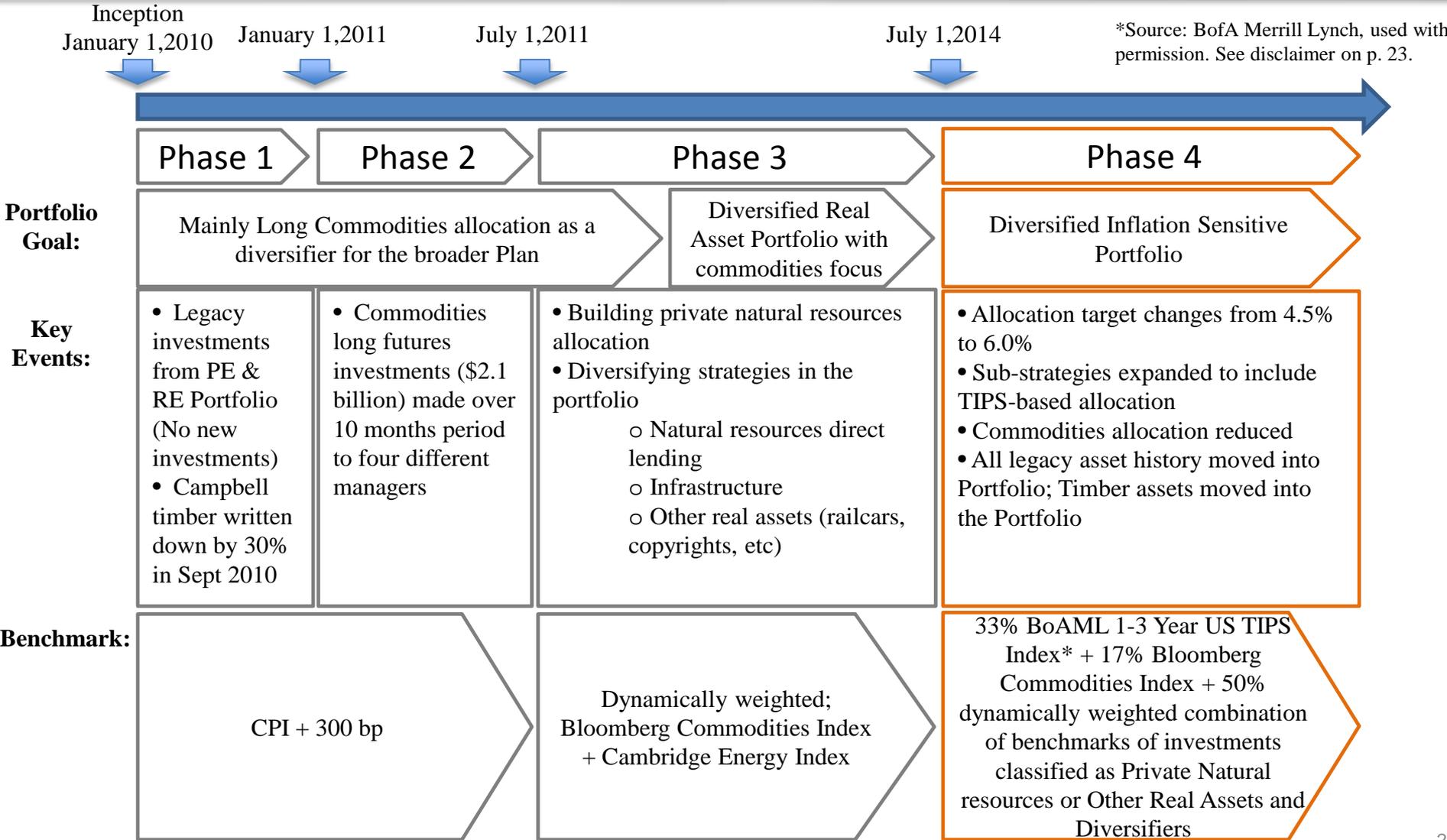
11/18/2015



North Carolina Department of State Treasurer
Investment Management

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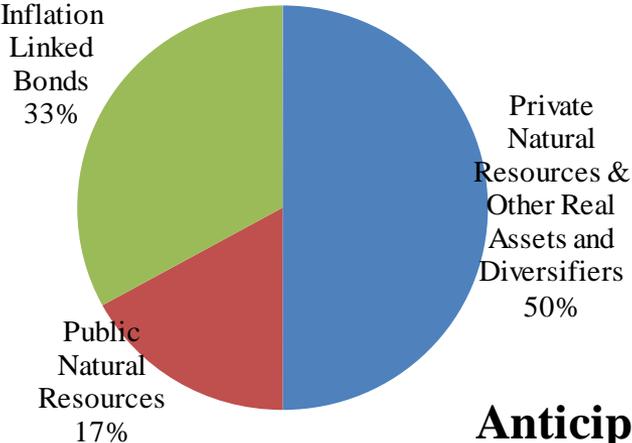
Inflation Portfolio History



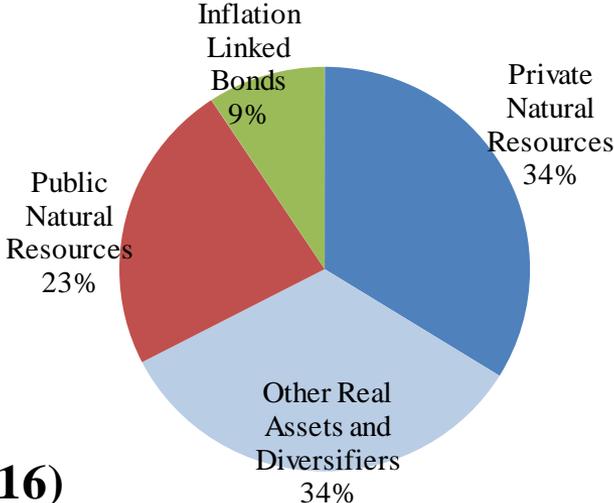
Inflation Portfolio Benchmark Misfit Risk

* Data as of 9/30/2015

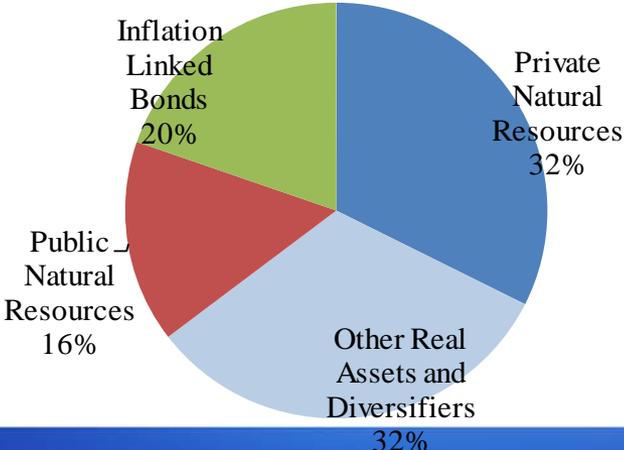
Inflation Sensitive Portfolio Benchmark



Current Portfolio by Strategy*



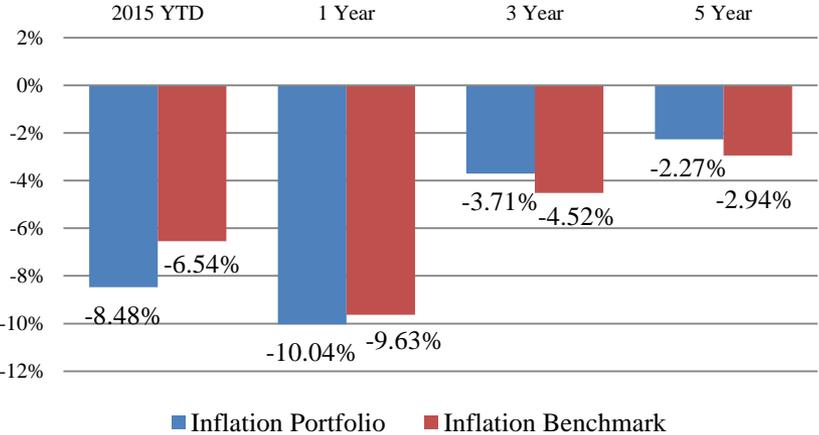
Anticipated (1Q16) by Strategy



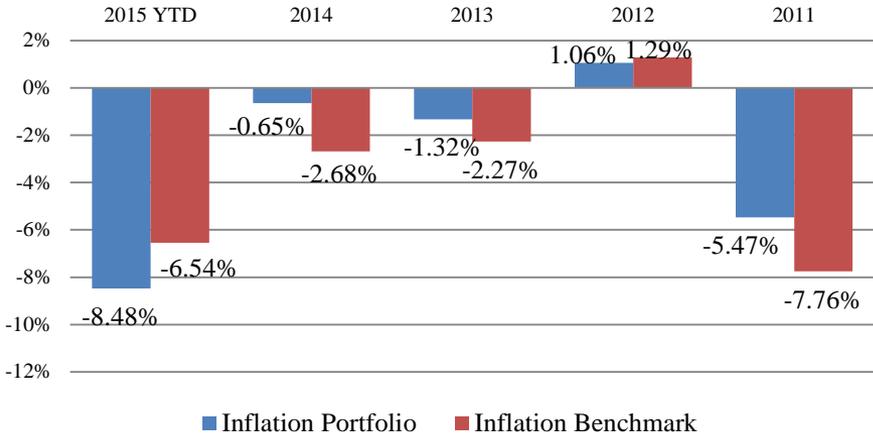
Inflation Portfolio Performance (1/2)

* Data as of 9/30/2015 (quarterly)

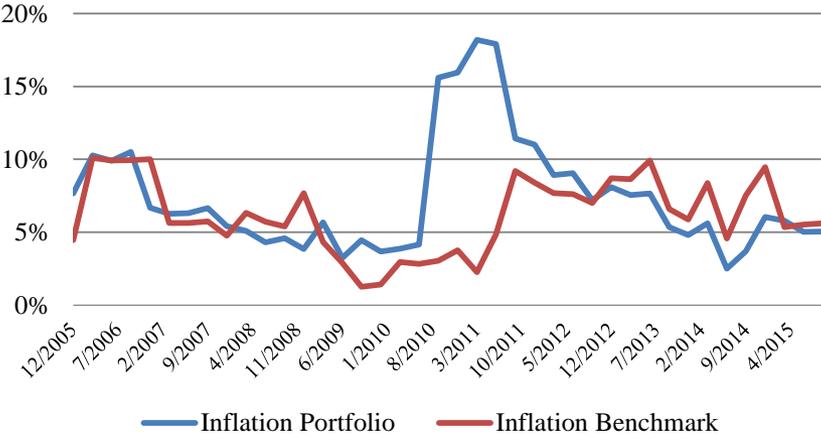
Annualized Performance



Calendar Year Performance



Rolling 1-Year Volatility



5-Year Correlation

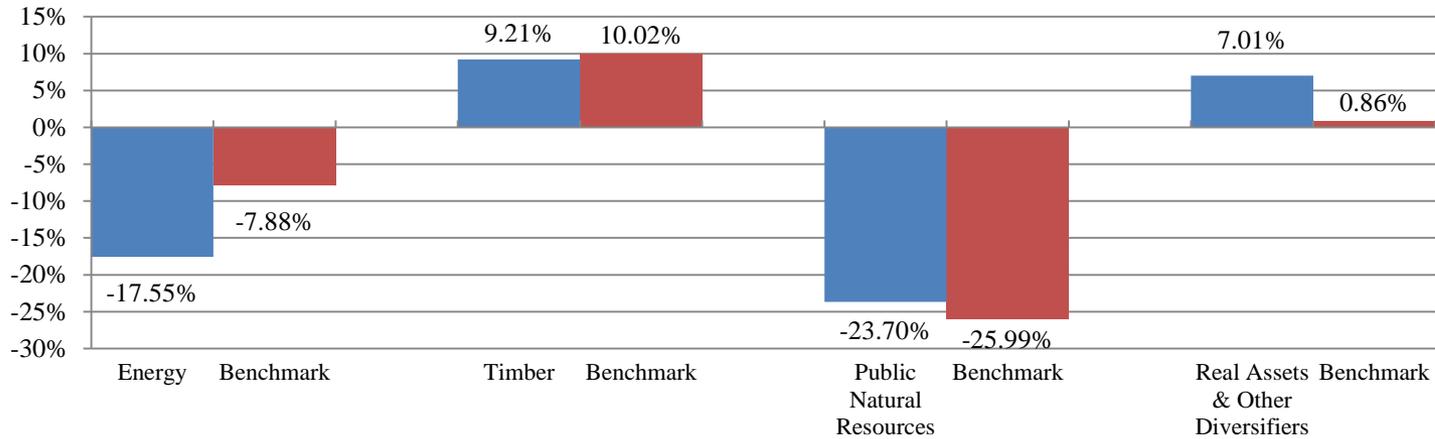
	Inflation Sensitive	Total Pension	Public Equity	IG FI	Non-Core Real Estate	Core Real Estate	Private Equity	Opp FI	Multi-Strategy
Inflation Sensitive	1.00								
Total Pension	0.77	1.00							
Public Equity	0.73	0.98	1.00						
IG FI	-0.26	-0.28	-0.46	1.00					
Non-Core Real Estate	-0.01	-0.34	-0.33	-0.16	1.00				
Core Real Estate	0.30	0.55	0.58	-0.38	-0.12	1.00			
Private Equity	0.22	0.00	-0.07	0.01	0.62	0.11	1.00		
Opp FI	0.65	0.66	0.67	-0.49	0.00	0.51	0.25	1.00	
Multi-Strategy	0.60	0.90	0.92	-0.31	-0.48	0.42	-0.18	0.48	1.00



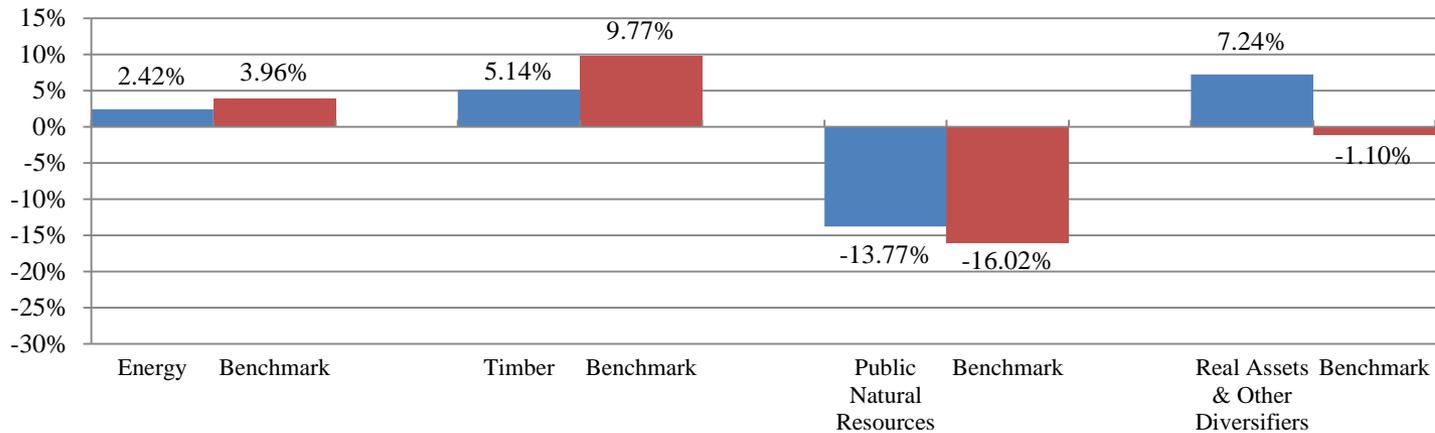
Inflation Portfolio Performance (2/2)

* Data as of 9/30/2015

1-Year Performance



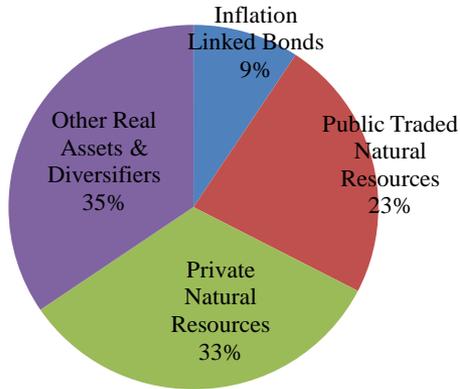
3-Year Performance



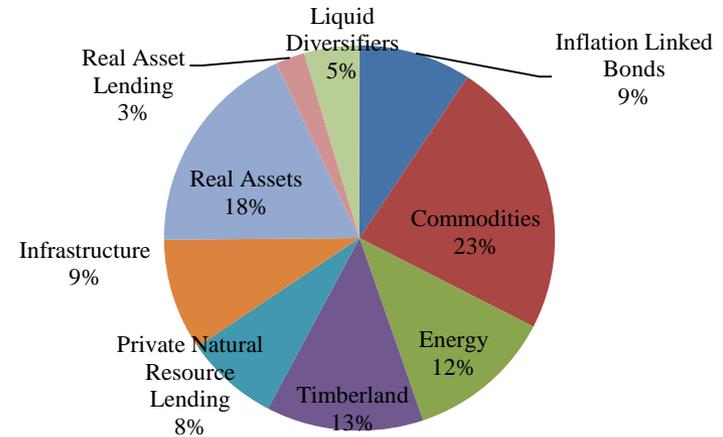
Inflation Portfolio Characteristics

1) DST internal liquidity profile
 * Data as of 9/30/2015 except for regional allocation (6/30/2015)

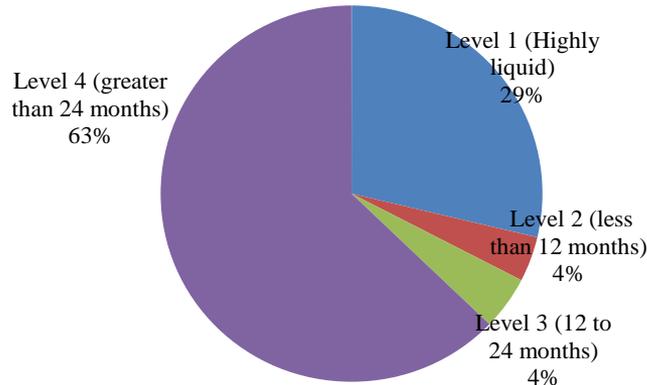
Market Value by Strategy



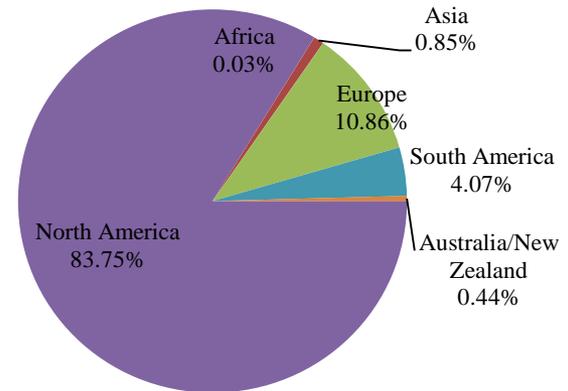
Market Value by Sub-Strategy



Portfolio Liquidity¹



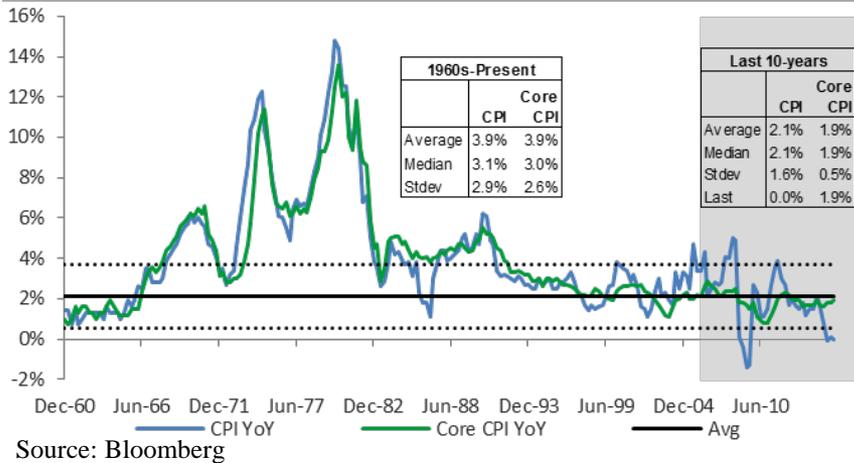
Market Value by Region (Excluding TIPS and Commodities)



Current Inflation Environment

- **CPI is near 65-year historical lows**
 - Recent declines have been mainly driven by declining energy prices as evidenced by the difference between Core CPI and CPI
- **This has led to modest inflation expectations as measured by market implied inflation, which has drifted below the Federal Reserve's inflation target of 2%**
 - The Federal Reserve has been effective at keeping inflation near their target with historical inflation averaging 2.1% for the last decade with a brief period of deflation following the Global Financial Crisis
 - Historical inflation since the 1960s has averaged 3.9%, with periods of significant right tails (as high as 15% in the late 70s / early 80s)
- **Low inflation expectations cheapen inflation sensitive assets, increasing the potential upside from inflation surprises**

Both CPI and Core CPI are near historical lows



Inflation expectations are significantly lower than the historical 10-year CPI average

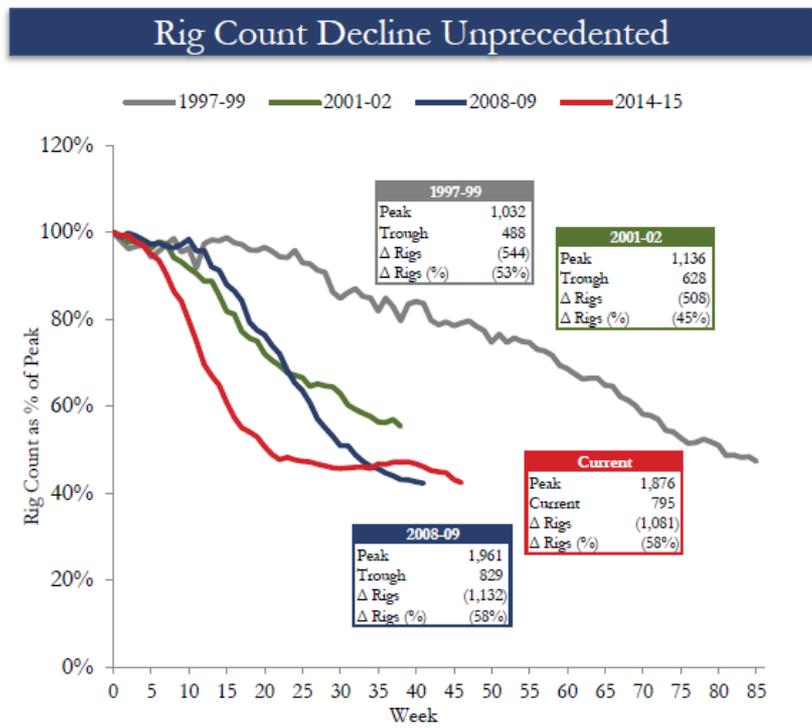
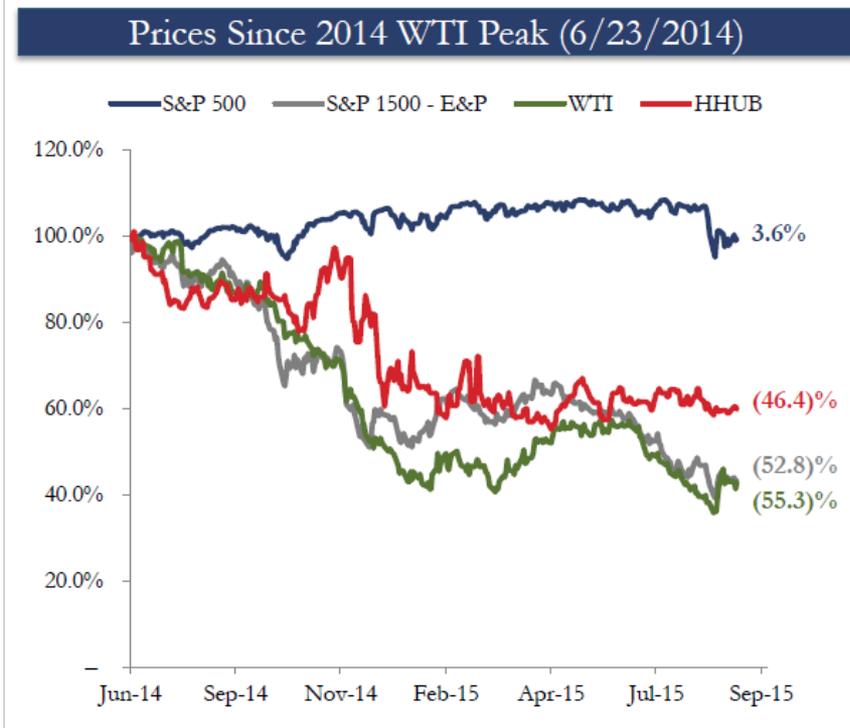


Source: BlackRock. Used with permission.



Current Energy Environment

- Crude prices have fallen ~55% and gas prices ~46% since the November 2014 OPEC meeting
 - Oil dropped below \$40.00 for the first time in over 6.5 years on August 24th
- Over 1,000 rigs released, or ~58% of peak rig count, in the last 12 months

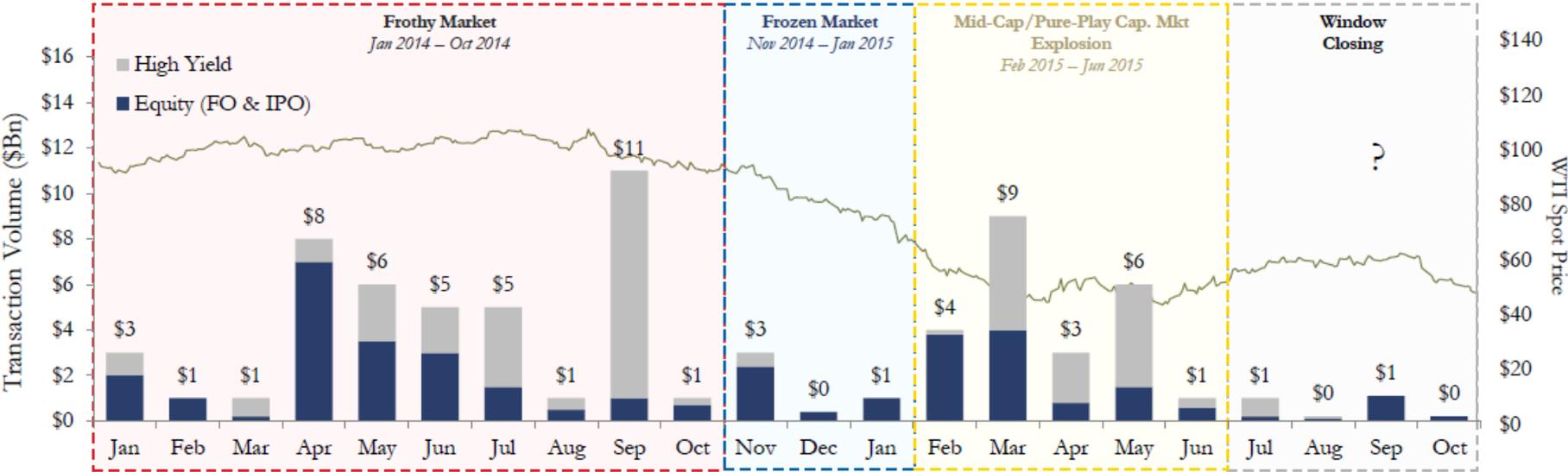


Source: EnCap. Used with permission.



Challenges Facing E&P Companies

- Capital markets showing weaker appetite for E&P securities in both equities and high yield markets
- High Yield E&P Index trading at ~13.8% vs. ~6.5% 12 months ago
- Many companies are overleveraged and undercapitalized to survive the prolonged downturn
- Fall borrowing base redetermination season has been challenging
- Many E&P companies are relatively unhedged in 2016



Source: EnCap. Used with permission.



Forward Looking Opportunity Set

More Attractive

- Energy
 - Lending
 - Select Private Equity
- Whole loans
 - Residential
 - Commercial
- Floating Rate Loans

Less Attractive

- Contracted Cash Flows
- US TIPS
- Global TIPS



Subcomponent Market Valuation

Perspective of Strategic Partner #1

Valuation	Serious Issues	Expensive		Fairly Priced		Dislocation
Risk	(No Investment)	Underpricing Risk		Appropriately Priced		Overpricing Risk
Liquidity Spectrum						
Liquid						
Illiquid						
Portfolio Subsectors						
I. Inflation Linked Bonds						
TIPS						
Global TIPS						
Floating Rate Debt						
II. Publicly Traded Natural Resources						
Commodities Futures						
Oil & Gas						1
Metals						1
Softs						
Agriculture						
MLPs						
Natural Resource Equities						1
Natural Resource Debt						1
III. Private Natural Resources						
Power						
Upstream						
Midstream						
Metals Mining						1
Coal						
Agriculture						
Timber						
Debt						
IV. Other Real Assets & Diversifiers						
Infrastructure						
Whole Loans						
Drug Royalties						
Asset Leasing						



Subcomponent Market Valuation

Perspective of Strategic Partner #2

Valuation	Expected Yield	Serious Issues	Expensive		Fairly Priced		Dislocation
Risk	Long-term	(No Investment)	Underpricing Risk		Appropriately Priced		Overpricing Risk
Liquidity Spectrum							
Liquid	5.50%						
Illiquid	8.50%						
Portfolio Subsectors							
I. Inflation Linked Bonds							
TIPS	2.50%						
Global TIPS	2.50%						
Floating Rate Debt	4.00%						
II. Publicly Traded Natural Resources							
Commodities Futures	4.00%						
Oil & Gas	4.00%						
Metals	4.00%						
Softs	2.00%						
Agriculture	2.00%						
MLPs	7.50%						
Natural Resource Equities	8.50%						
Natural Resource Debt	6.00%						
III. Private Natural Resources							
Power	8.00% to 12.00%						
Upstream	10.00% to 14.00%						
Midstream	8.00% to 12.00%						
Metals Mining	8.00% to 12.00%						
Coal	10.00% to 14.00%						
Agriculture	6.00% to 10.00%						
Timber	6.00% to 10.00%						
Debt	6.00% to 10.00%						
IV. Other Real Assets and Diversifiers							
Infrastructure	8.50%						
Whole Loans	8.50%						
Drug Royalties	8.50%						
Asset Leasing	8.50%						



Strategic Considerations for Discussion

1. Discuss portfolio sizing given low inflationary (possibly deflationary) environment
 - Amount of debt investments within the Portfolio

2. Portfolio Construction & Staging Portfolio
 - Discuss gap between CPI components and existing Portfolio
 - Discuss balance between tail hedging and current income focused strategies
 - Discuss additional liquid building blocks for effectively hedging inflation

3. Energy Market
 - Should we invest opportunistically?



Supplemental Information for Discussion



Staging Portfolio

Address misfit risk between current portfolio and new IPS benchmark

- Implement thoughtful liquid strategies within Inflation Linked Bonds subcomponent

- Staff has been working with various managers to design customized mandate for the Inflation Linked Bonds “Staging Portfolio”
- Currently discussing final business points with three managers; the goal is to structure two separately managed mandates with complementing strategies

- “Staging Portfolio Objectives” document
- Calls with each manager to address questions

10 Managers

- Managers submitted Proposals
- Proposals reviewed
 - Qualitative review
 - Quantitative review
 - Discussions with managers

10 Managers
15 Proposals

- On-Site diligence
- In-depth analysis

5 Managers
6 Proposals

- Fee discussions
- Business point discussions

3 Managers
3 Proposals

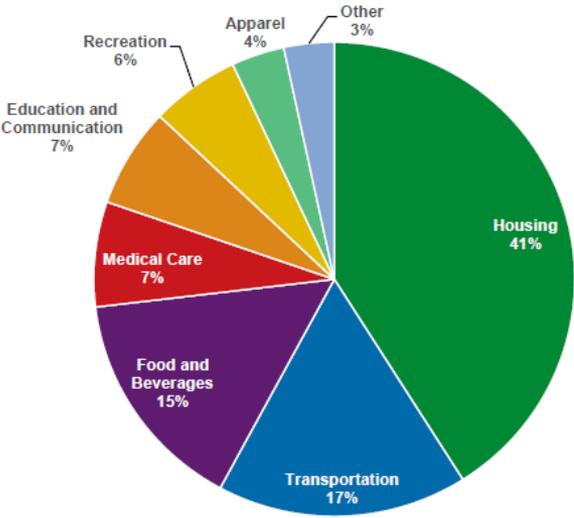
- Legal negotiations

2 Managers
2 Proposals



CPI Components

CPI Components



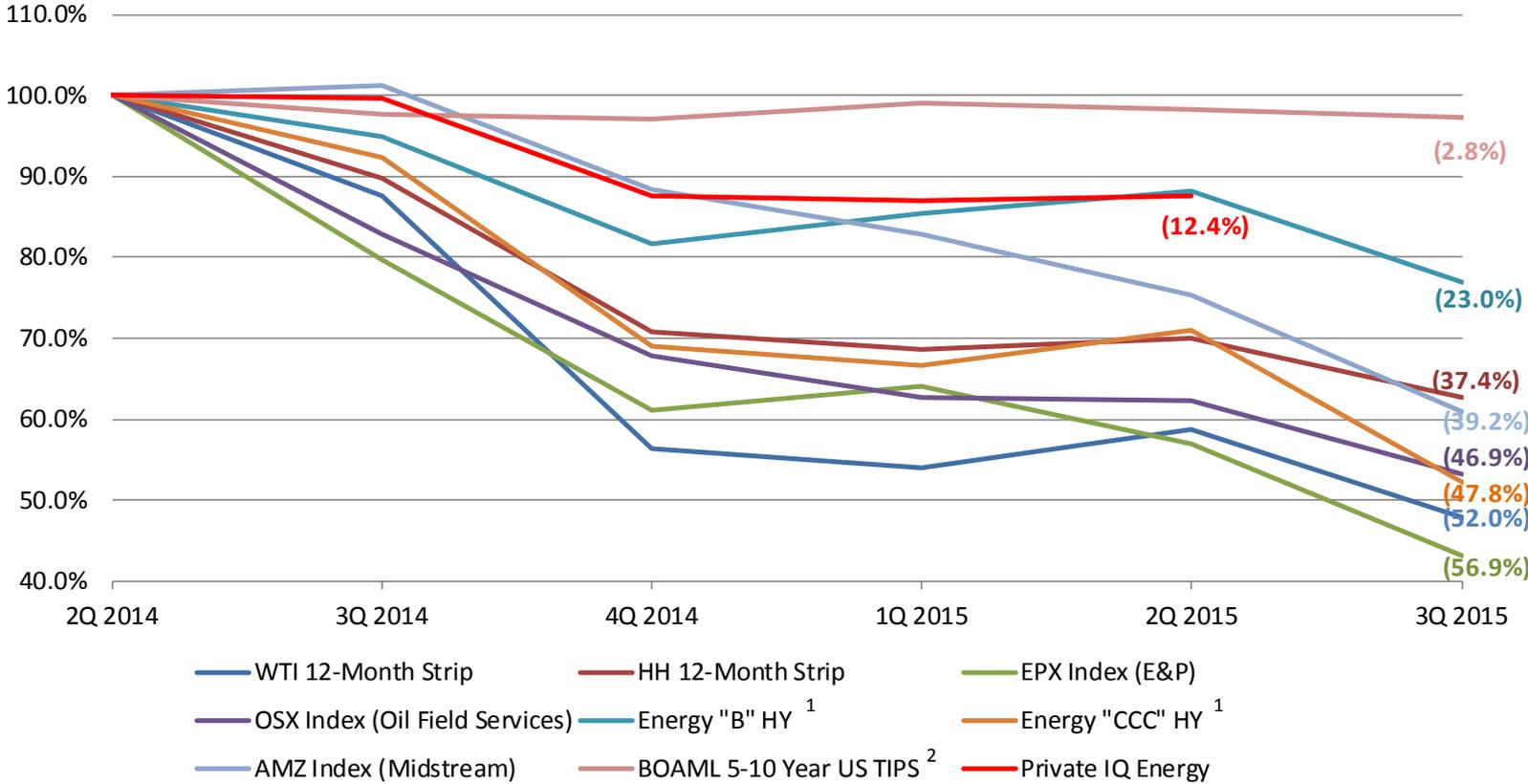
Component	Largest Weights within the Bucket
Housing (41.0%)	Owners' equivalent rent of residences (24.0%), rent of primary residence (6.6%)
Transportation (16.9%)	Expenditures on new and used motor vehicles (5.6%), motor fuel (5.5%), motor vehicle insurance (2.5%)
Food and Beverages (15.3%)	Expenditures on sugars (2.3%), meats / eggs (2.0%), fruits / vegetables (1.3%), cereals / bakery products (1.2%)
Medical Care (7.2%)	Expenditures on professional services (3.0%), hospital and related services (1.8%)
Education & Communication (6.8%)	Expenditures on information / info processing (1.8%), tuition / other school fees (3.1%)
Recreation (6.0%)	Expenditures on video and audio (1.9%), pets (1.1%)
Apparel (3.6%)	Expenditures on women's apparel (1.5%), men's apparel (0.9%), footwear (0.7%)
Other (3.4%)	Expenditures on personal care products and services (2.6%)

Source: BlackRock. Used with permission.



Energy Environment

Price Movement Since 6/30/2014

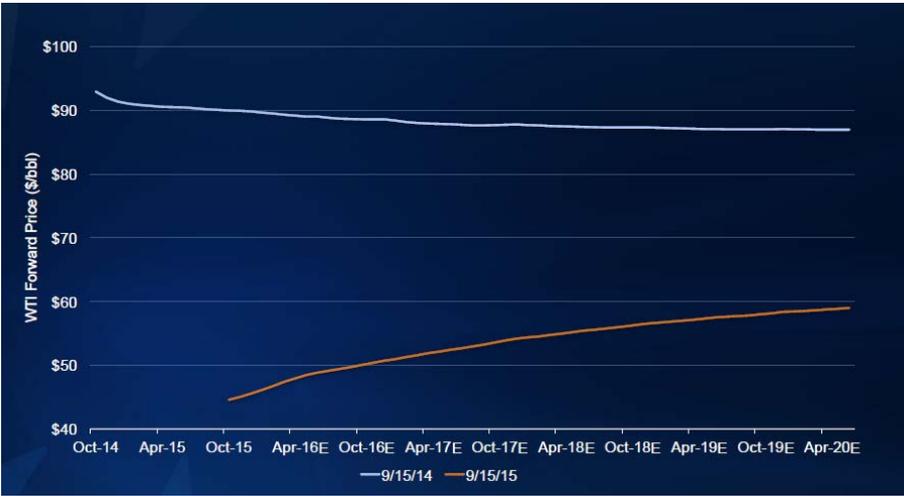


Source: Bloomberg. ⁽¹⁾ Source: High Yield data from Wells Fargo weekly High Yield Energy Relative Value Analysis Reports obtained through Bloomberg. ⁽²⁾ Source: BofA Merrill Lynch, used with permission. See disclaimer on p. 23.

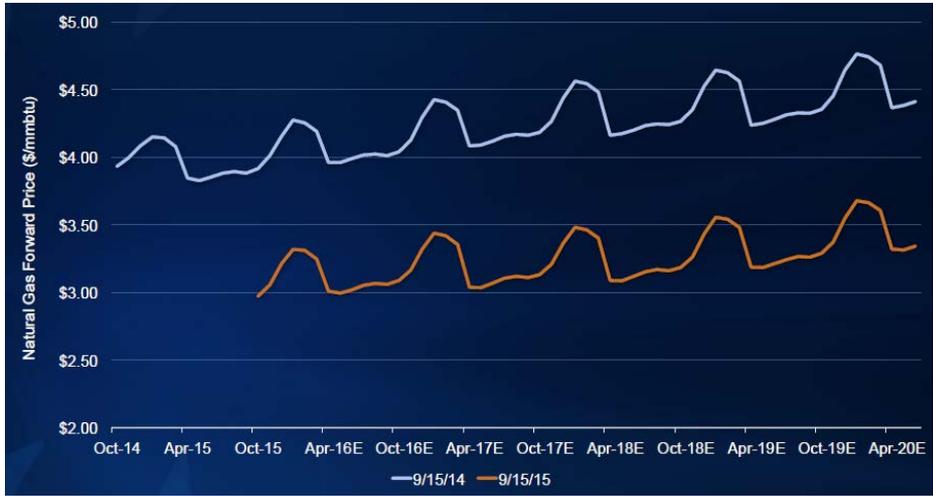


Current Energy Market

NYMEX WTI PRICES RELATIVE TO A YEAR AGO



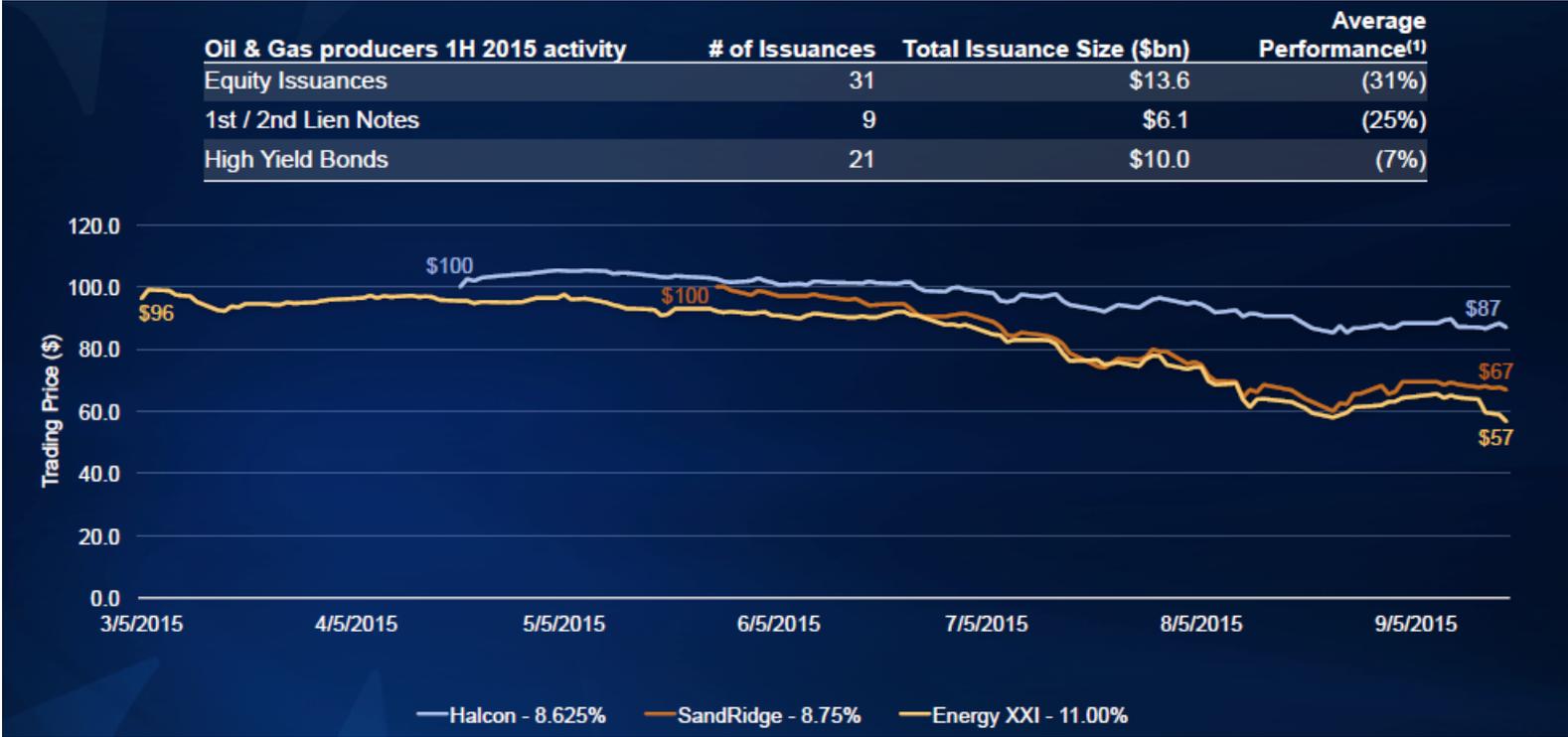
NYMEX NATURAL GAS PRICES RELATIVE TO A YEAR AGO



Source: EIG. Used with permission.



High Yield Issuance Performance in 2015



Source: EIG. Used with permission.



Inflation Portfolio Goal

New Investment Policy Statement (“IPS”) states top five objectives of the Inflation Sensitive Portfolio as:

1. Inflation protection: Provide some degree of protection against the risks associated with inflation
2. Attractive absolute returns: Provide an attractive return over the long-term by making investments that provide a nominal total return that rises with inflation
3. Competitive relative returns: Achieve or exceed the return on the performance benchmark over a long period of time, within reasonable risk parameters
4. Diversification: Enhance the diversification of the Fund’s total investment portfolio relative to public equity and nominal fixed income.
5. Liquidity: Provide a source of liquidity to the Fund when other Portfolios are experiencing lower returns due to unanticipated inflation.



Inflation Portfolio Subcomponents

The Portfolio has four major subcomponents:

1. **Inflation Linked Bonds:** Strategies that invest in Treasury Inflation Protected Securities, non U.S. inflation linked bonds, or floating rate debt.
2. **Publicly Traded Natural Resources:** Strategies that invest in commodity and natural resource public equity and public debt using long-only or hedged implementations.
3. **Private Natural Resources:** Strategies making non-public market equity or debt investments in timberland, energy, agriculture, and other natural resources implementations.
4. **Other Real Assets and Diversifiers:** Strategies including infrastructure, real assets (e.g., ships, airplanes, rail cars, mines, real estate, etc.), royalties, and combinations of any of this and the other subcomponents whose primary purpose is providing protection against risks associated with inflation.



Credit and Inflation Team

Ronald Funderburk, CFA

Director

7 years with IMD

11 Years Industry Experience

Kathy Hahn, CFA

Assistant Director

5 years with IMD

12 Years Industry Experience

Ryan Hill

Portfolio Manager

New Hire

10 Years Industry Experience

John Leraas

Portfolio Manager

New Hire

7.5 Years Industry Experience

Zhexing Zhang

Quantitative Analyst

1.5 Year with IMD

1.5 Years Industry Experience



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