

NORTH CAROLINA
DEPARTMENT OF STATE TREASURER



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STATE TREASURER OF NORTH CAROLINA
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INVESTMENT MANAGEMENT DIVISION

Inflation Portfolio Review

May 17, 2018



Role in the Portfolio

Inflation Protection

- Provide some degree of protection against the risks associated with inflation

Attractive Absolute Returns

- Provide an attractive return over the long-term by making investments that provide a nominal total return that rises with inflation

Competitive Relative Returns

- Achieve or exceed the return on the performance benchmark over a long period of time, within reasonable risk parameters

Diversification

- Enhance the diversification of the Fund's total investment portfolio relative to public equity and nominal fixed income

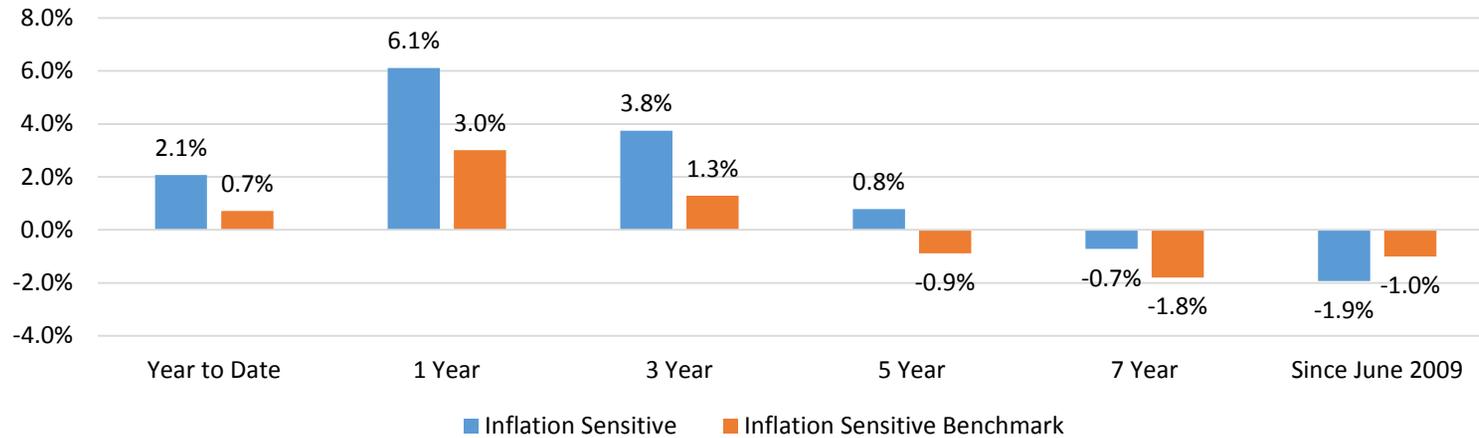
Liquidity

- Provide a source of liquidity to the Fund when other Portfolios are experiencing lower returns due to unanticipated inflation

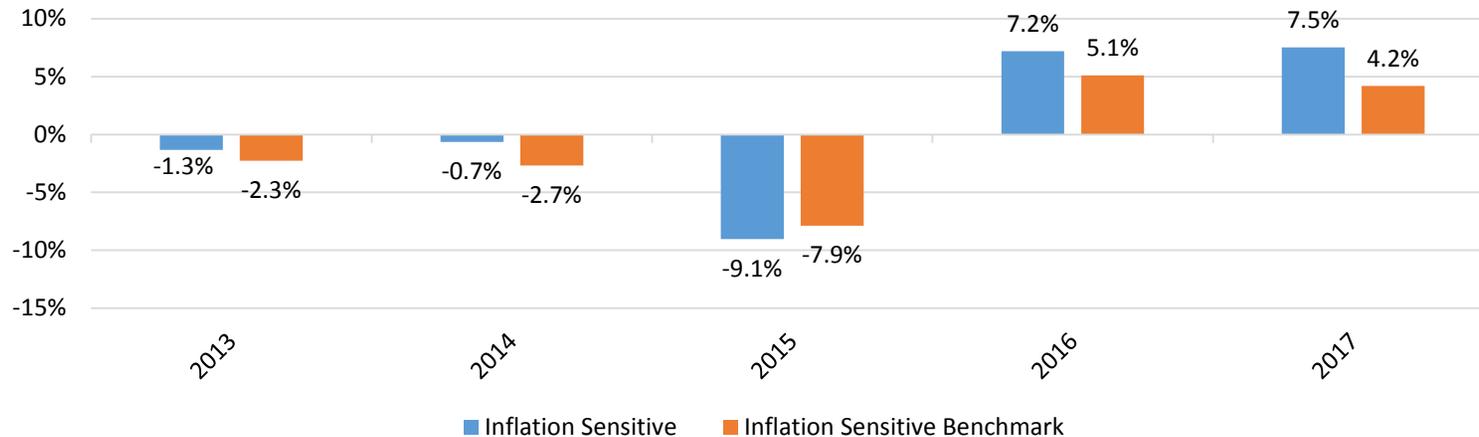
Portfolio Performance

As of March 31, 2018

Annualized Performance



Calendar Year Performance



Notes:

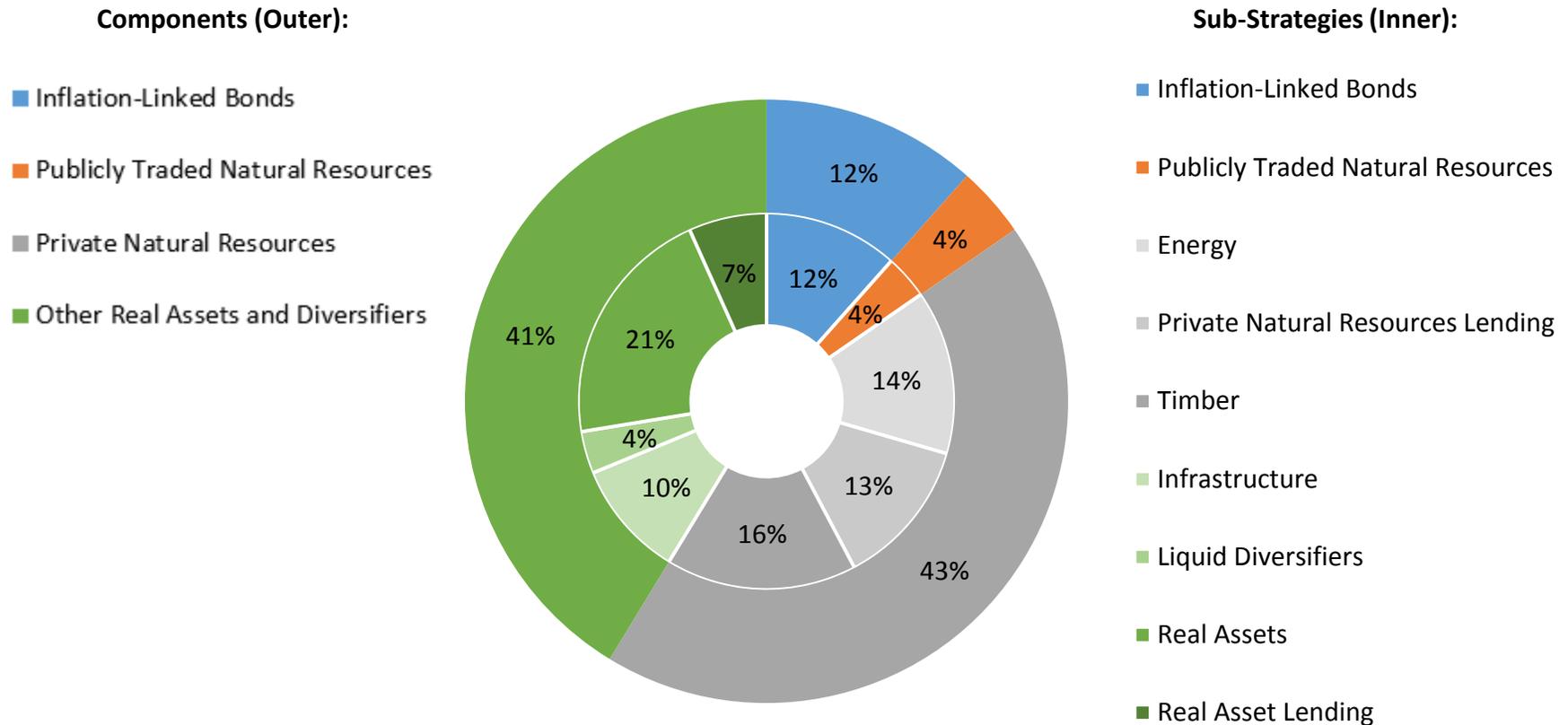
Periods greater than one year are annualized

See slide 22 for details on the composition of the Inflation Sensitive Benchmark

Current Portfolio Allocation

As of March 31, 2018

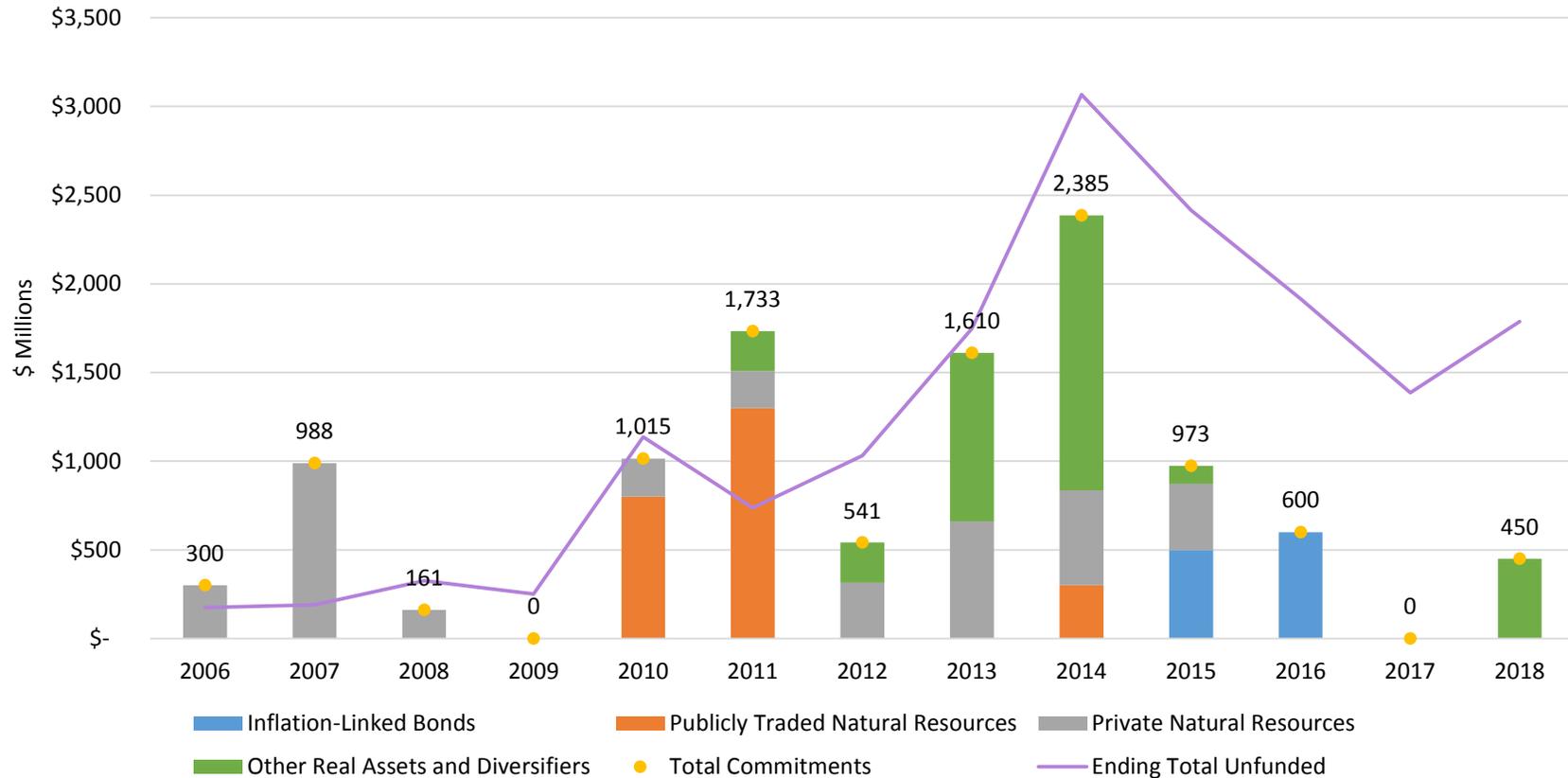
Allocation by Component and Sub-Strategy



Portfolio History

As of March 31, 2018

Historical New Commitments by Component and Total Unfunded

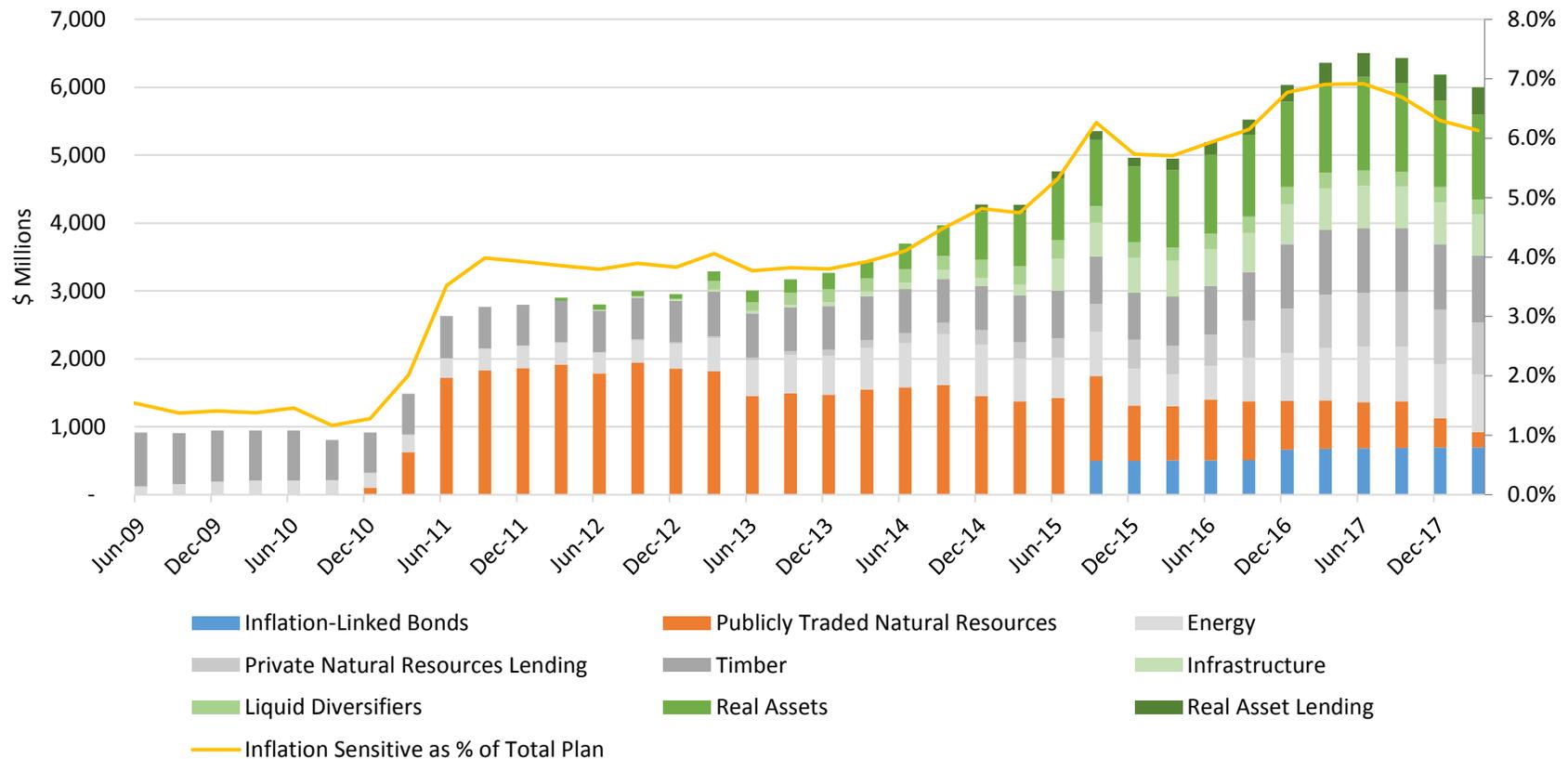


- Increased Other Real Assets and Diversifiers in 2013, 2014
- Added Inflation Linked Bonds in 2015, 2016

Portfolio History

As of March 31, 2018

Historical Allocation by Sub-Strategy

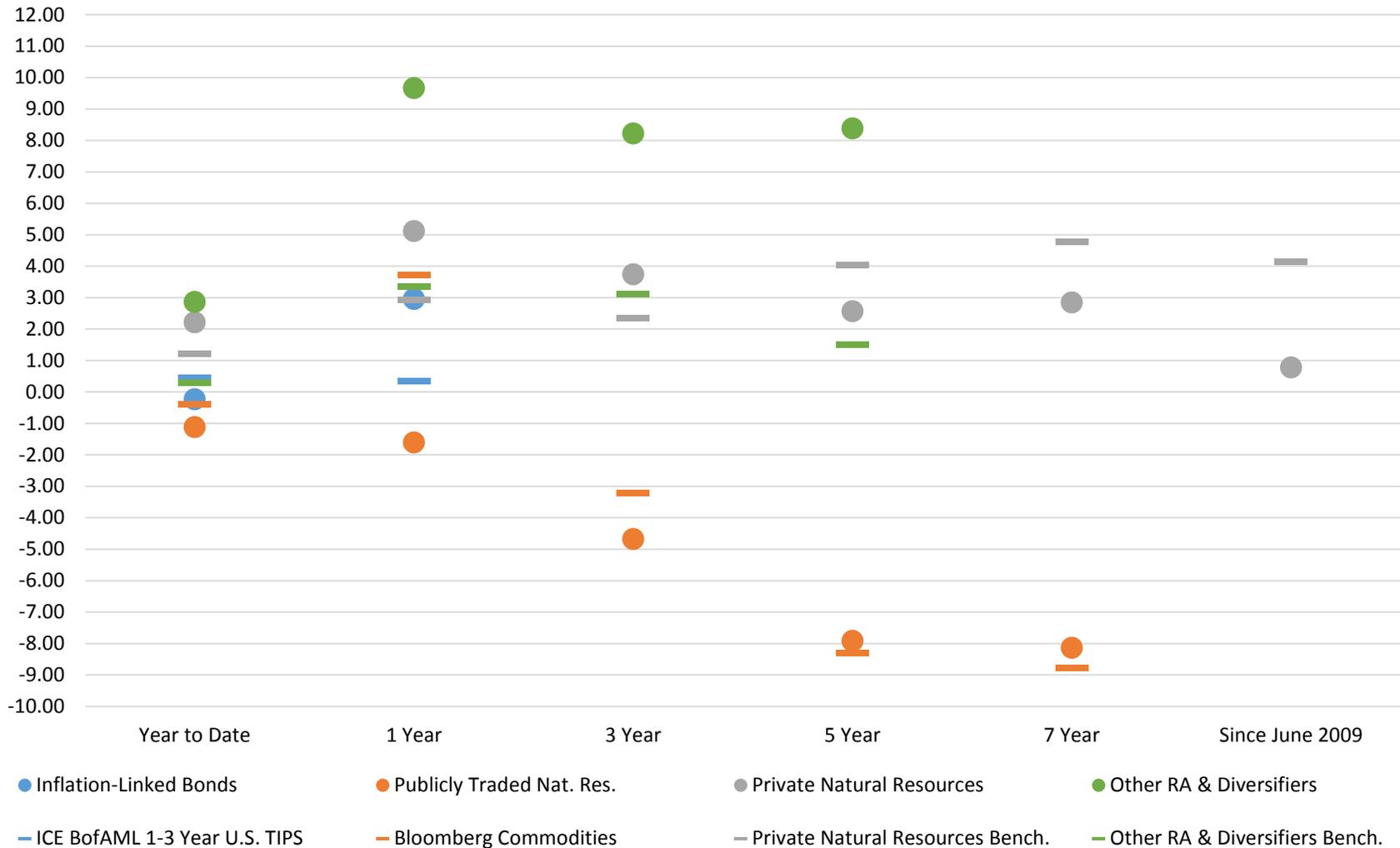


- Inflation Sensitive Portfolio diversification has expanded substantially
- 25 managers and 49 funds / co-investments

Portfolio Performance

As of March 31, 2018

Performance by Component



Notes:

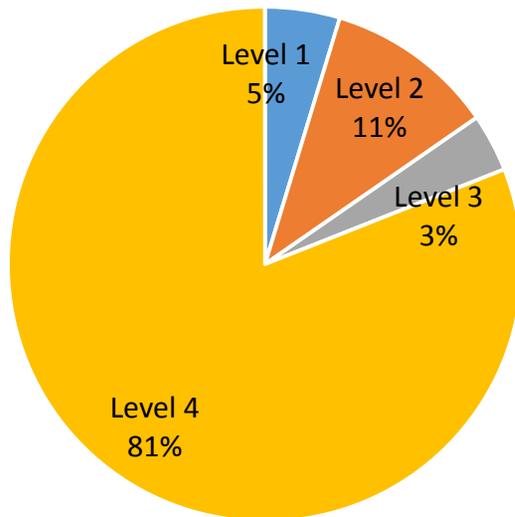
Periods greater than one year are annualized

See slide 22 for details on the composition of the Inflation Sensitive Benchmark

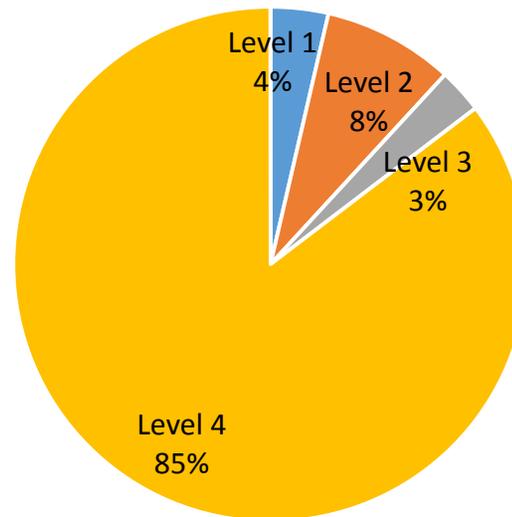
Portfolio Liquidity

As of March 31, 2018

Market Value



Market Value + Unfunded



Note: Level 1 Liquidity = T+3; Level 2 = T+3 to 12 Months; Level 3 = 12 to 24 Months; Level 4 = Greater than 24 Months



Portfolio Performance

As of March 31, 2018

Historical 5-Year Correlation

	NCRS	Pub Eq	Priv Eq	NC RE	Opp FI	IG FI	Infl Sen	Core RE	M Strat
NCRS	1.00								
Pub Eq	0.95	1.00							
Priv Eq	0.10	0.02	1.00						
NC RE	(0.22)	(0.30)	0.42	1.00					
Opp FI	0.43	0.53	0.35	0.12	1.00				
IG FI	0.31	0.05	(0.02)	(0.03)	(0.34)	1.00			
Infl Sen	0.52	0.45	0.24	0.03	0.61	0.01	1.00		
Core RE	0.16	0.15	0.12	0.06	0.13	0.10	(0.22)	1.00	
M Strat	0.89	0.97	(0.04)	(0.34)	0.51	(0.06)	0.38	0.14	1.00

Note: Correlation data is based on quarterly return data

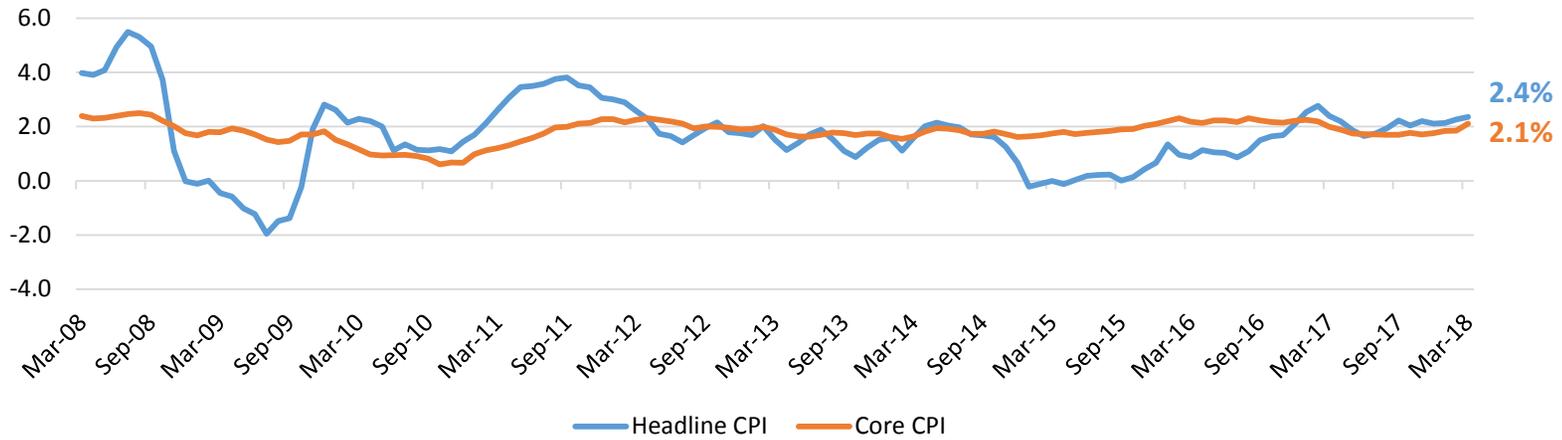


Recent Accomplishments

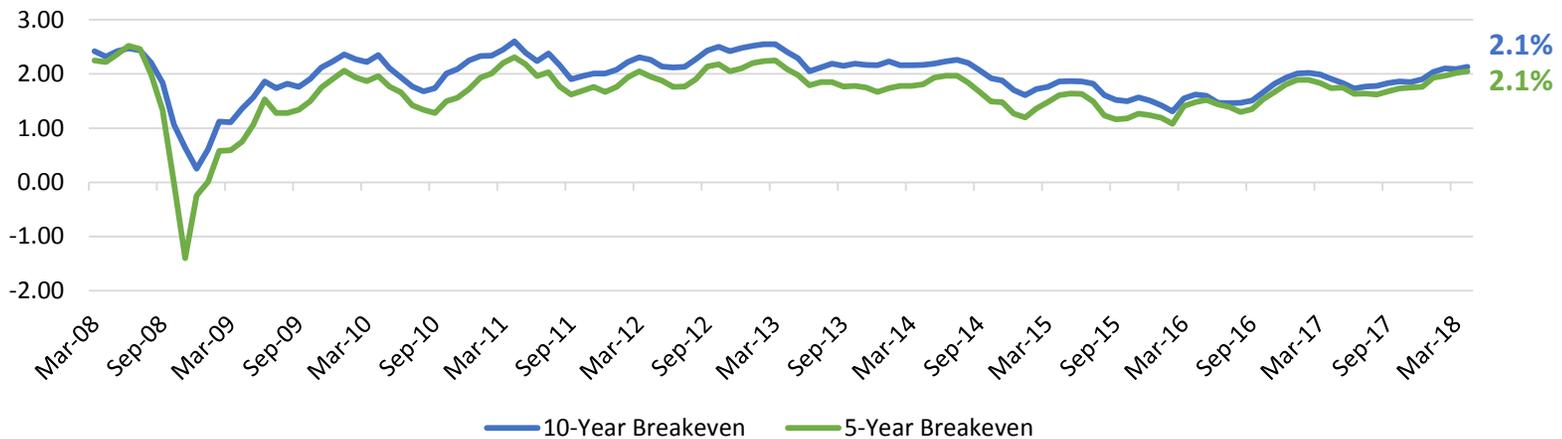
	Accomplishments	Better Economics	Better Governance	Customized Exposure	Diligence Resources
1	Fee Savings	✓			
2	Customized Inflation-Linked Bonds	✓	✓	✓	
3	Fund of One Relationships	✓	✓	✓	
4	Cross Asset Class Collaboration	✓	✓	✓	✓

Current Inflation Environment

CPI Year over Year Change

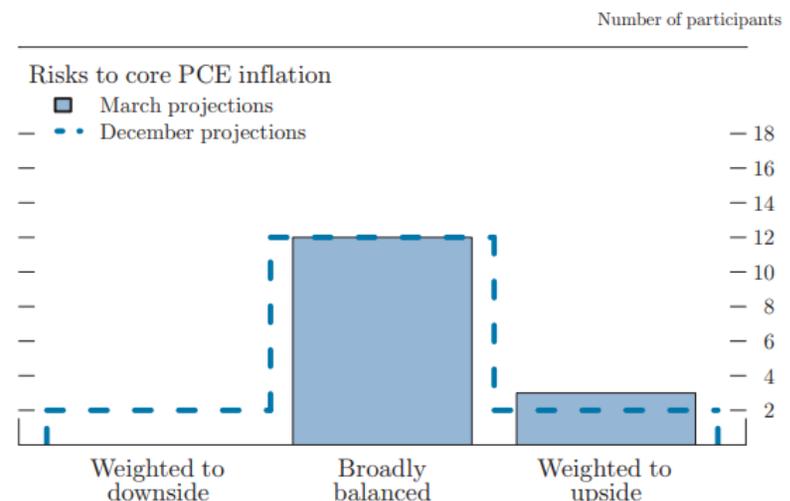
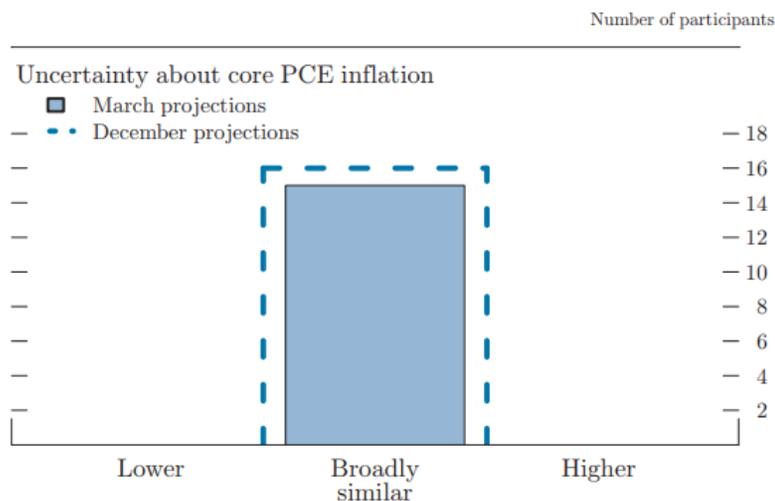
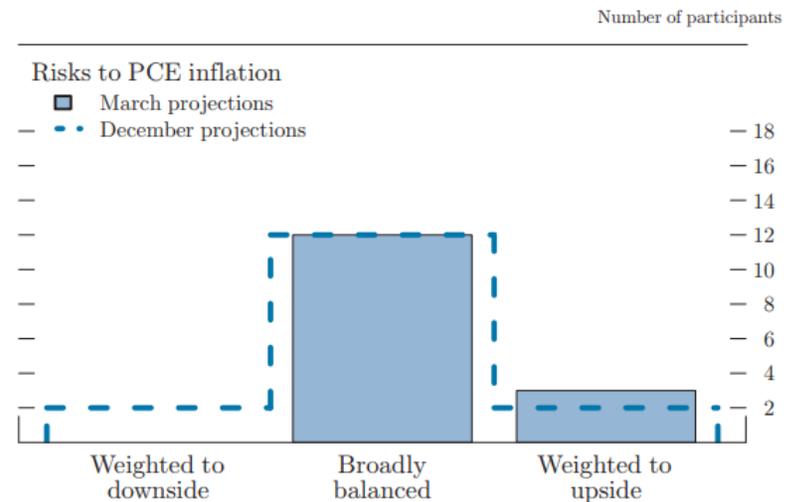
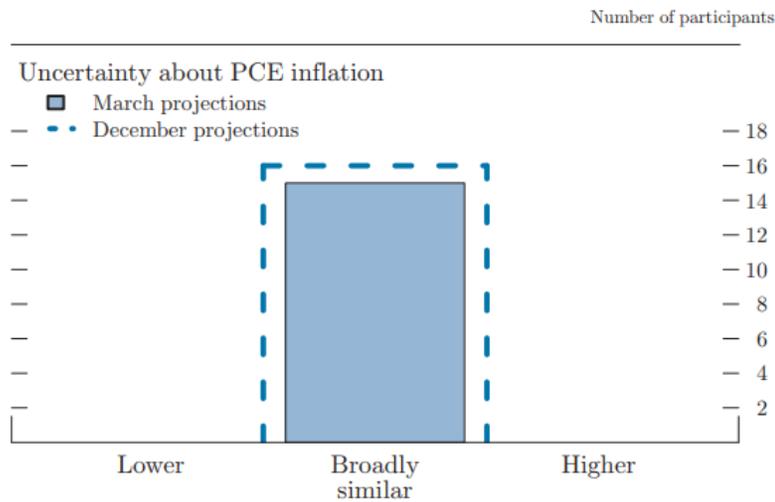


Inflation Breakeven Rates



Current Inflation Environment

Strengthening FOMC Inflation Expectations





Strategic Considerations

- 1) Rationalization of current manager lineup; focus on high conviction opportunities
- 2) Increase portfolio liquidity while strengthening the customized inflation-linked bond portfolio
- 3) Continuously evaluate the various policy sub strategies and their relationship with inflation
- 4) Seek to maintain vintage diversification



Team Introduction

Ronald Funderburk, CFA

Director

9 years with IMD

13 Years Industry Experience

Ty Powers, CFA

Portfolio Manager

2 years with IMD

20 Years Industry Experience

Renee Guerin, CFA

Portfolio Manager

2 years with IMD

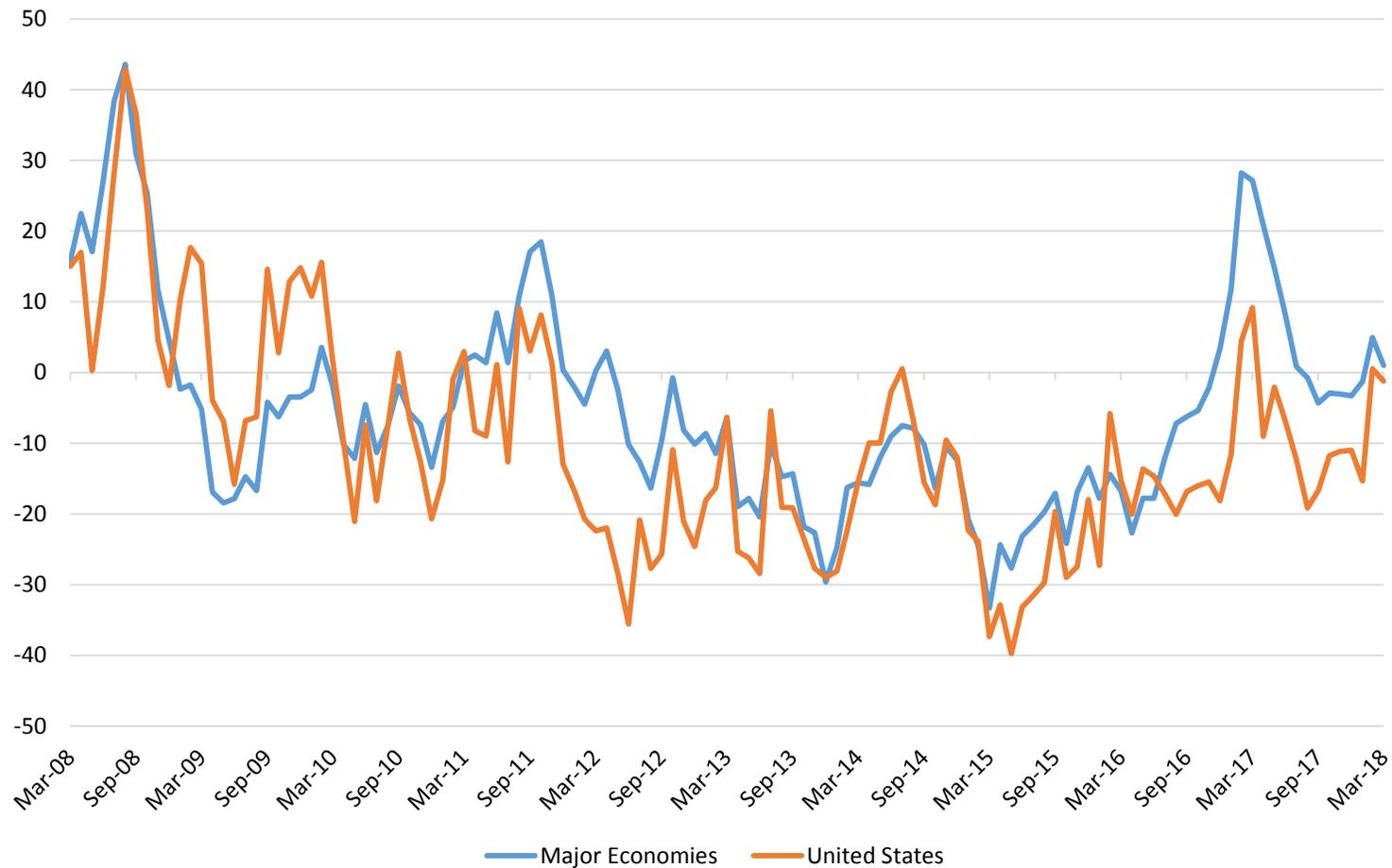
7 Years Industry Experience



Appendix

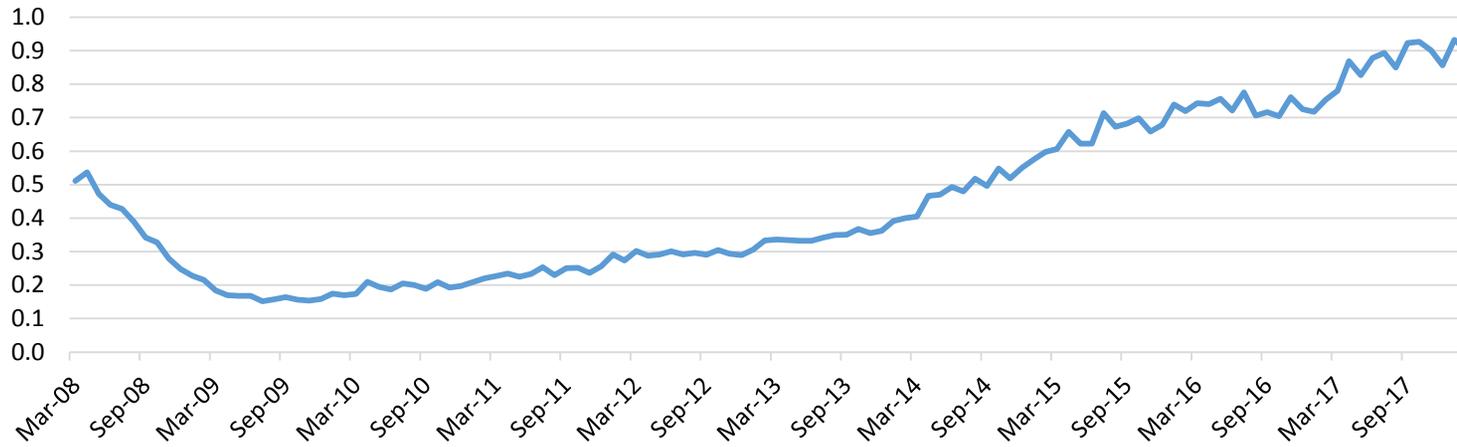
Current Inflation Environment

Inflation Surprise Index



Current Inflation Environment

Vacancy to Unemployment Ratio

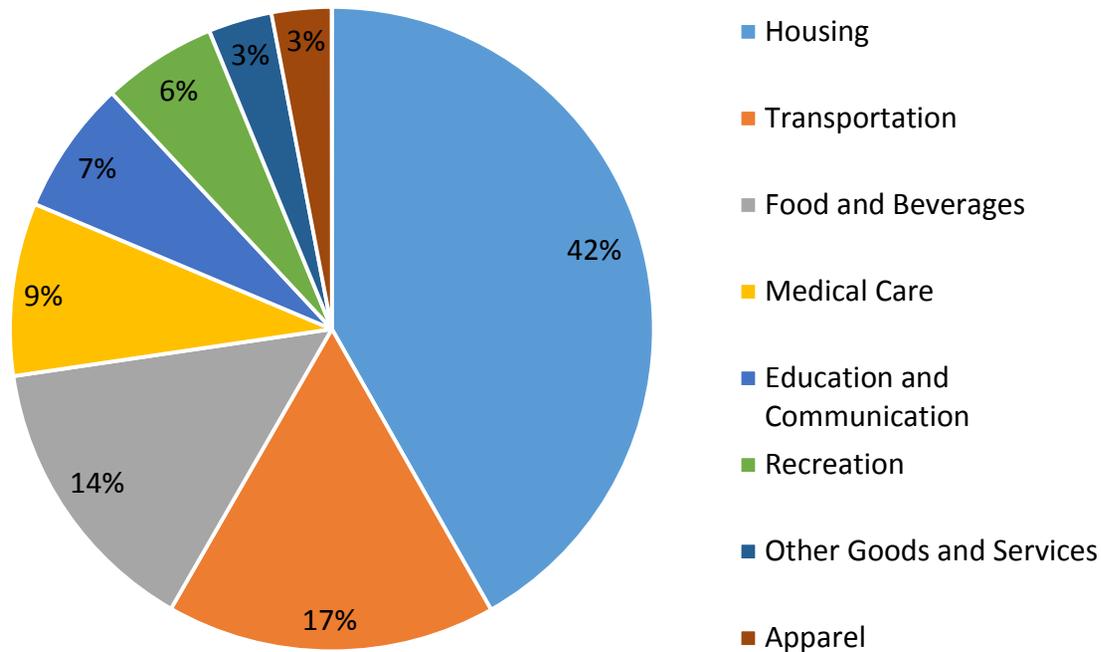


Average Hourly Earnings – Year over Year Change

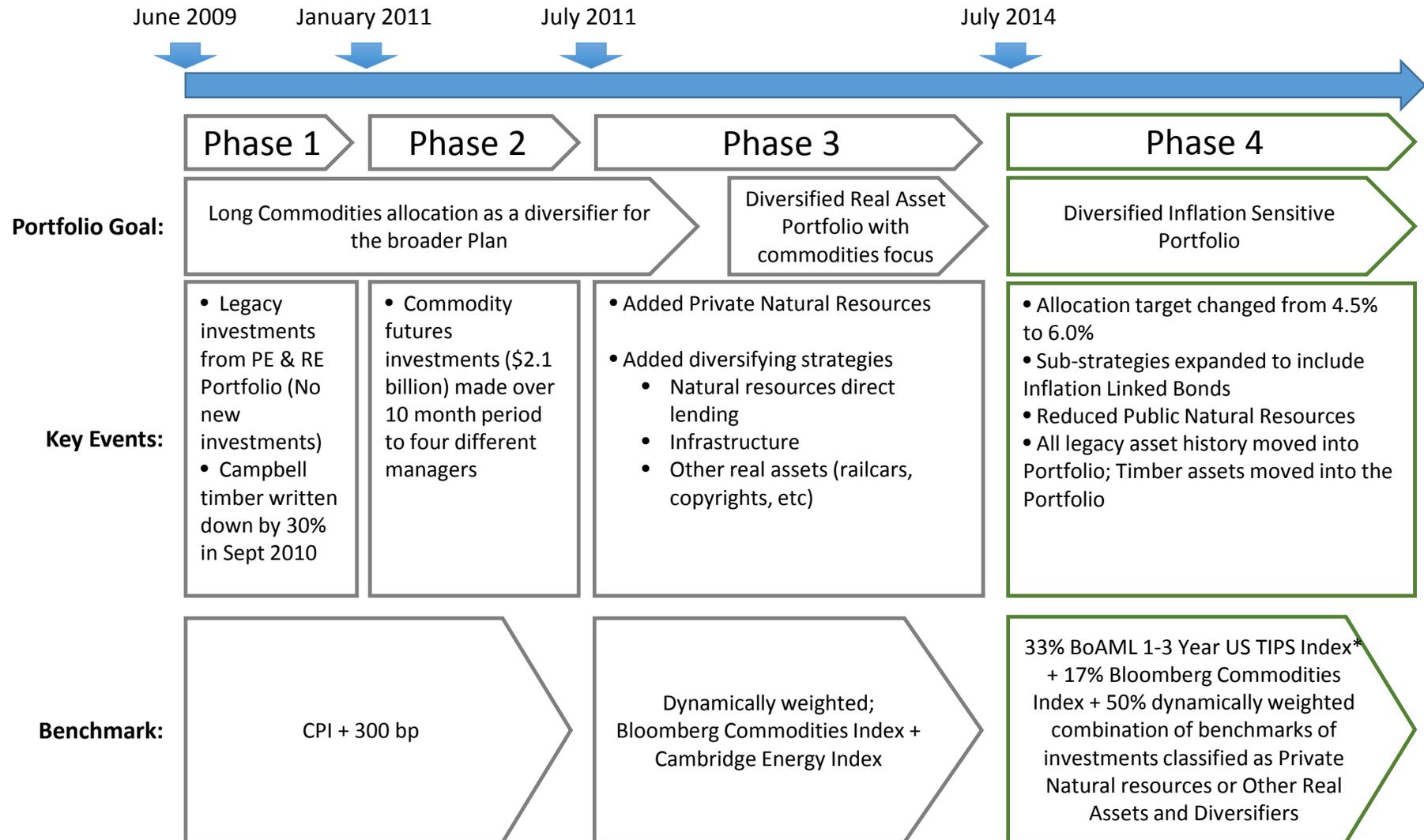


CPI Composition

All Urban Consumers (CPI-U) U.S. Average



Portfolio History

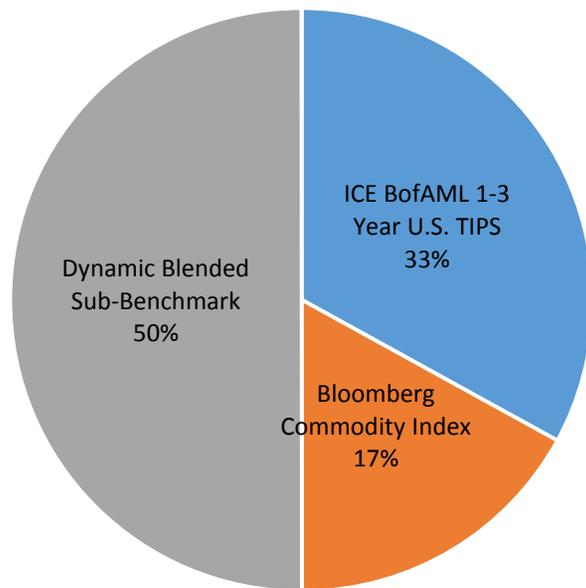


*Source: BofA Merrill Lynch, used with permission; see disclaimer on page 23

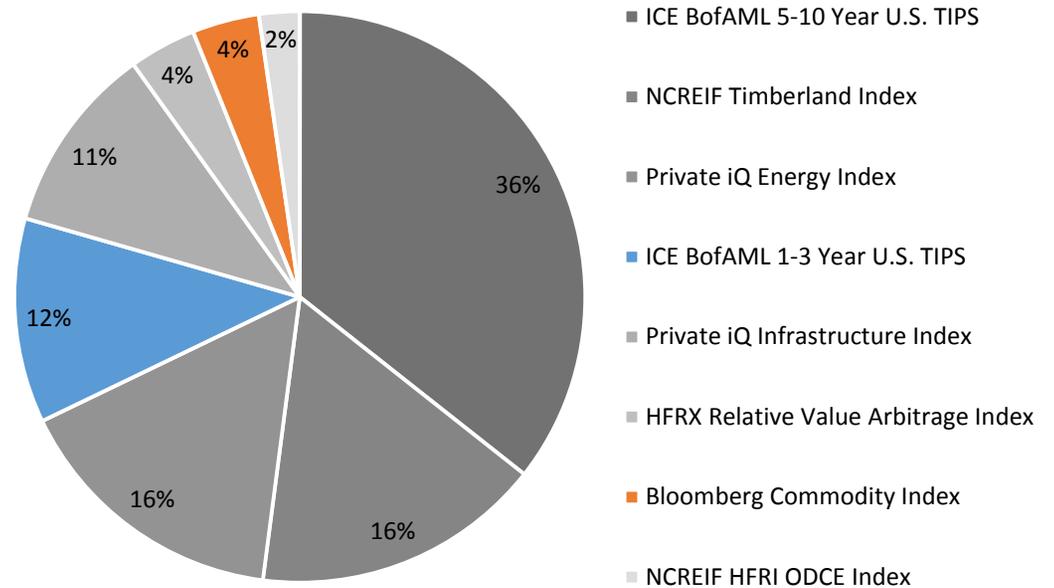
Inflation Sensitive Benchmark Composition

As of March 31, 2018

Long-Term Target Benchmark



Current Benchmark Composition



Note: See slide 22 for details on the composition of the Inflation Sensitive Benchmark



Inflation Portfolio IRR by Vintage

As of March 31, 2018

Vintage Year	Inflation-Linked Bonds	Publicly Traded Natural Resources	Private Natural Resources	Other Real Assets and Diversifiers	All
1993	-	-	9.38	-	<u>9.38</u>
2006	-	-	0.25	-	<u>0.25</u>
2007	-	-	6.88	-	<u>6.88</u>
2008	-	-	0.14	-	<u>0.14</u>
2010	-	-8.17	-7.15	-	<u>-7.99</u>
2011	-	-10.34	0.29	5.33	<u>-6.85</u>
2012	-	-	8.04	5.63	<u>6.96</u>
2013	-	-	8.01	6.54	<u>6.89</u>
2014	-	-3.99	17.31	12.38	<u>10.57</u>
2015	1.03	-	8.38	15.85	<u>5.14</u>
2016	3.83	-	-	-	<u>3.83</u>
All	<u>2.78</u>	<u>-8.89</u>	<u>2.54</u>	<u>8.39</u>	<u>0.61</u>

Notes:

All data presented are based on currently available information at time of publication and may be revised subsequently.

The Inflation Sensitive Benchmark is the dynamically weighted combination of the ICE Bank of America Merrill Lynch 1-3 Years U.S. Inflation-Linked Treasury Index (Inflation-Linked Bonds)*, the Bloomberg Commodities Index (Public Natural Resources), and a combination of the benchmarks of investments classified within Private Natural Resources or Other Real Assets and Diversifiers.

The Private Natural Resources Benchmark is the dynamically weighted combination of the benchmarks of investments classified within Private Natural Resources.

The Other Real Assets and Diversifiers Benchmark is the dynamically weighted combination of the benchmarks of investments classified within Other Real Assets and Diversifiers.

The Inflation Sensitive asset class (G.S. 147-69.2(b)(9a)) was created by the General Assembly in June 2009. It included some investments that were previously authorized under other provisions of G.S. 147-69.2.

*Source: BofA Merrill Lynch, used with permission. See disclaimer on next page.



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