

NORTH CAROLINA
DEPARTMENT OF STATE TREASURER



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INVESTMENT MANAGEMENT DIVISION

Inflation Portfolio Review

February 24, 2021



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

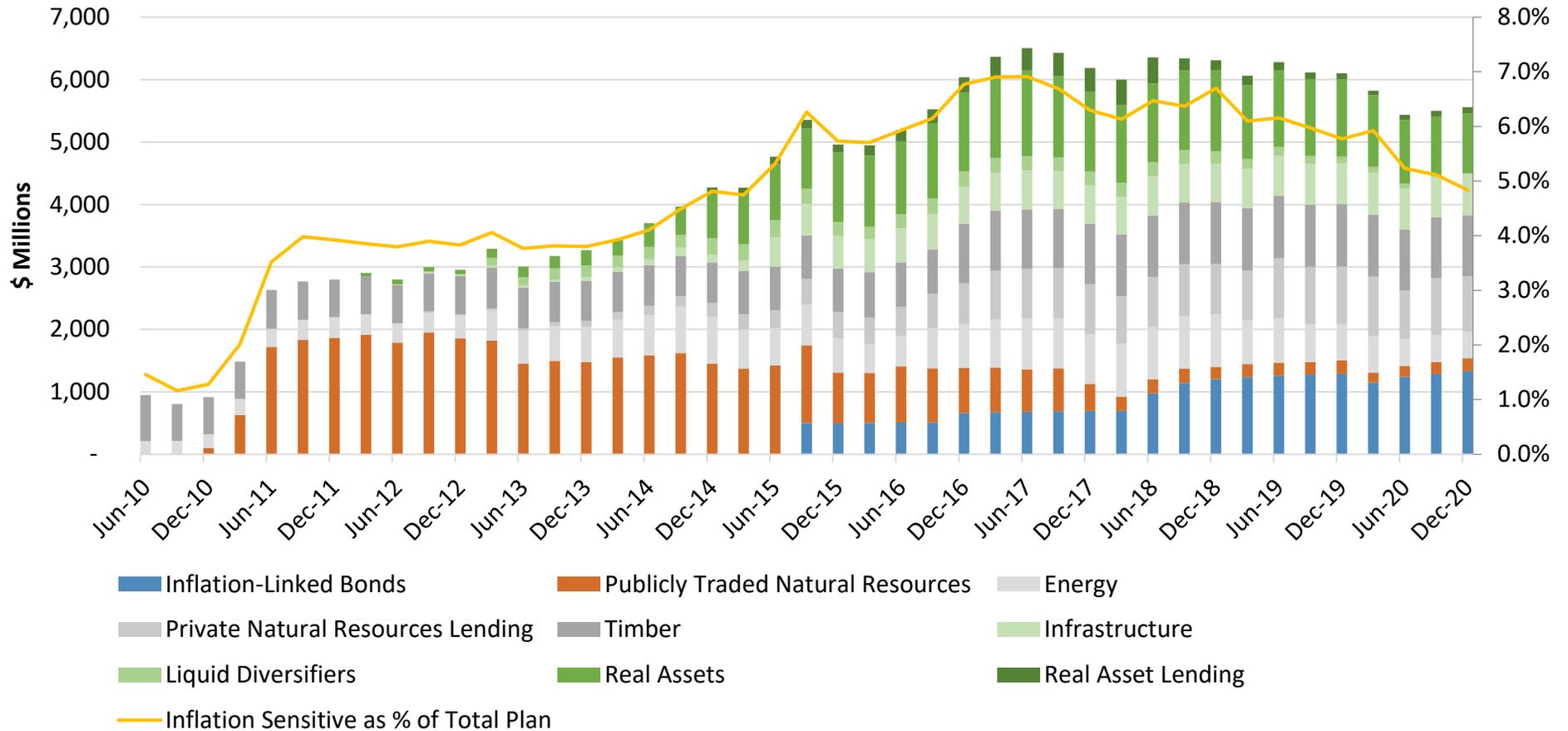
Liquidity

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

Portfolio History

As of December 31, 2020

Historical Allocation by Sub-Strategy

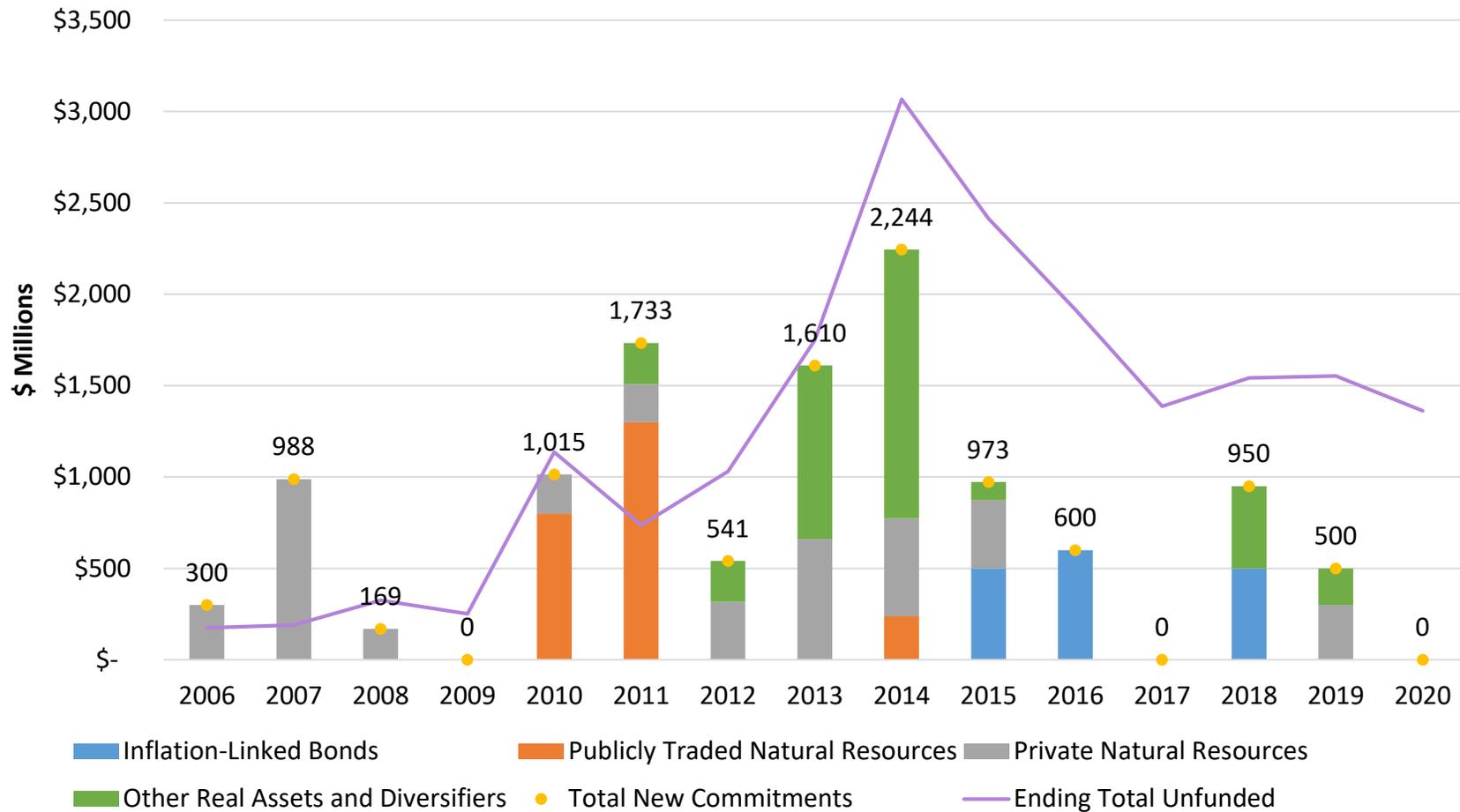


- Inflation Sensitive Portfolio diversification has expanded substantially
- 24 managers and 47 funds / co-investments

Portfolio History

As of December 31, 2020

Historical New Commitments by Component and Total Unfunded



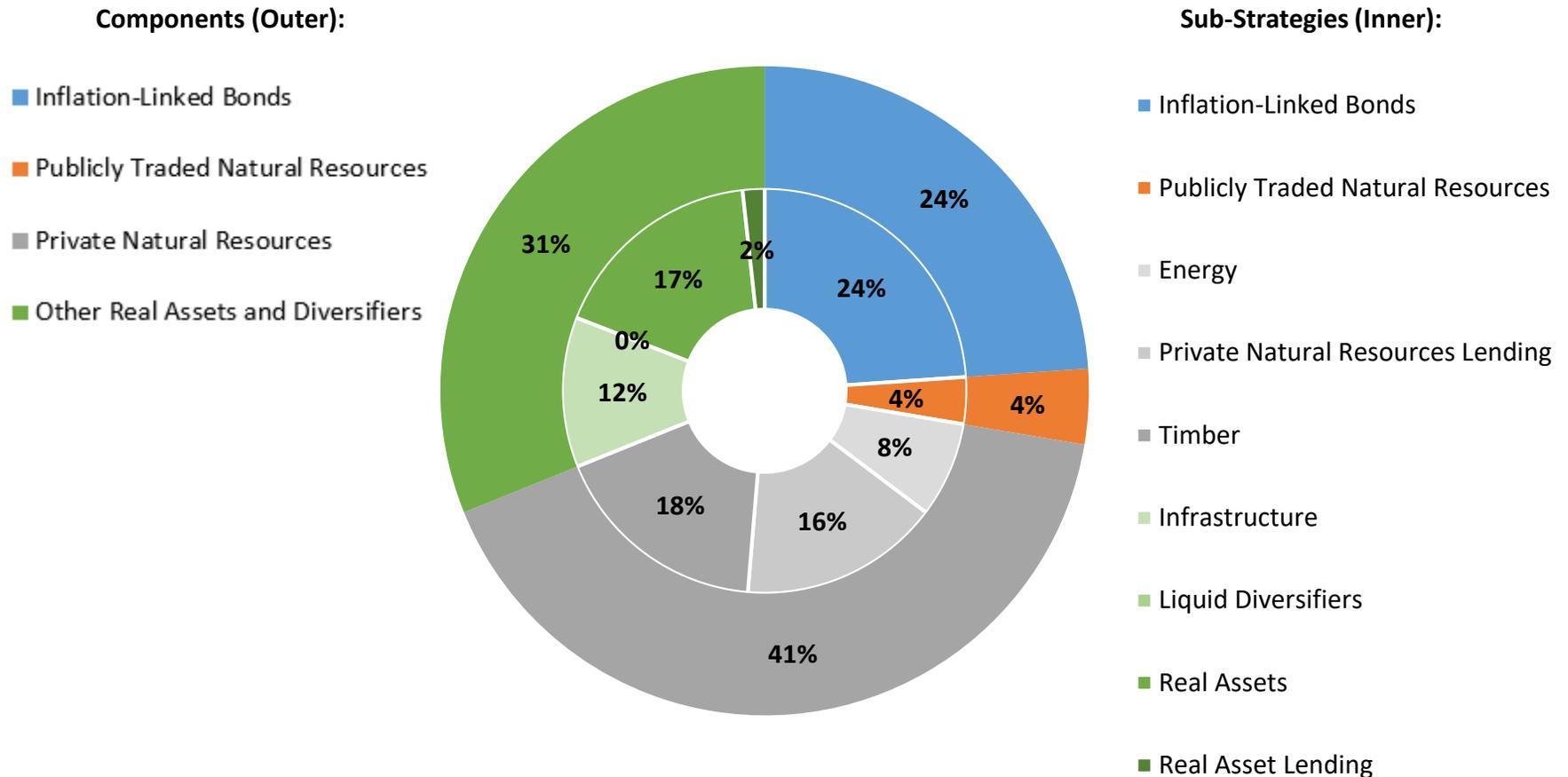
Note: Unfunded values are as of each respective calendar year end



Current Portfolio Allocation

As of December 31, 2020

Allocation by Component and Sub-Strategy



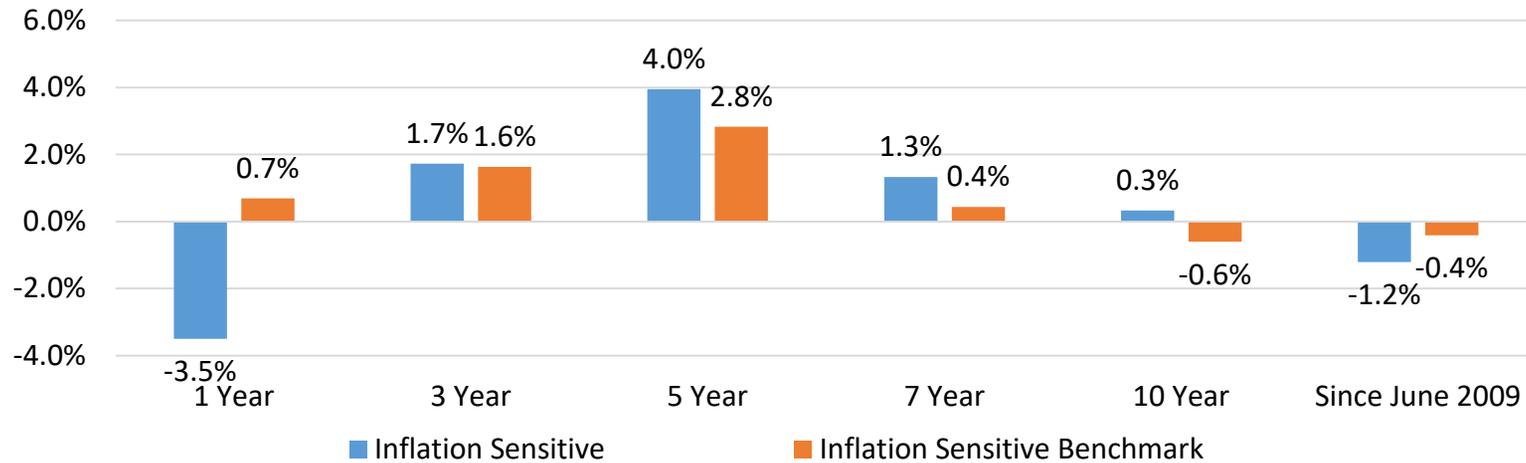
Note: Information is based on market value



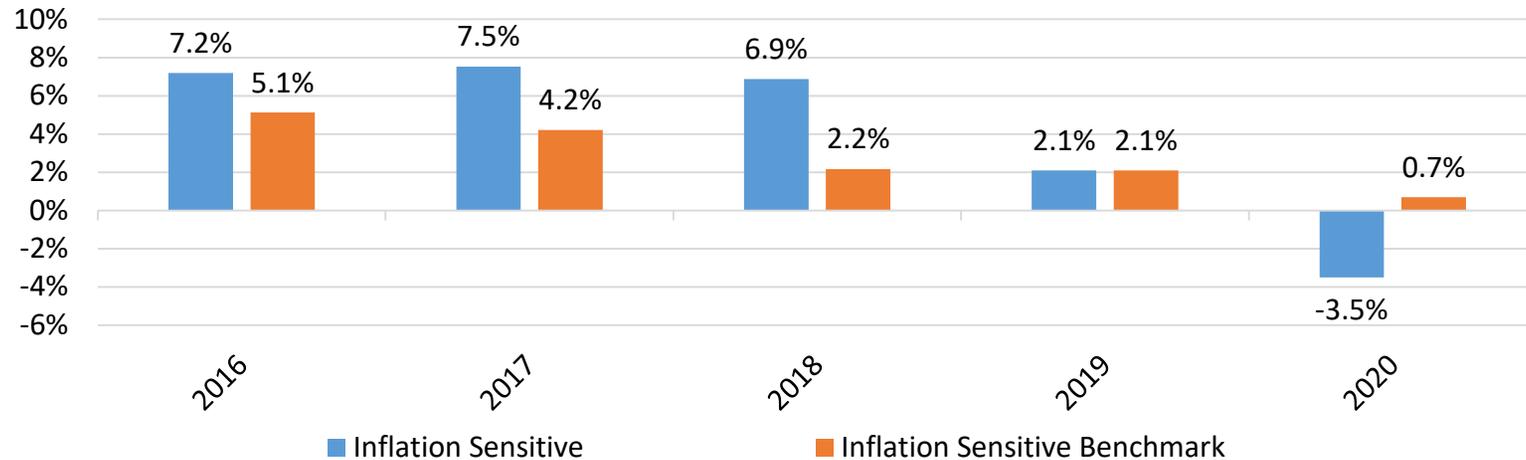
Portfolio Performance

As of December 31, 2020

Annualized Performance



Calendar Year Performance



Notes:

Periods greater than one year are annualized

See slide 28 for details on the composition of the Inflation Sensitive Benchmark

Portfolio Performance

As of December 31, 2020

Performance by Component



Notes:

Periods greater than one year are annualized

See slide 28 for details on the composition of the Inflation Sensitive Benchmark



Public Market Performance Comparisons

As of December 31, 2020

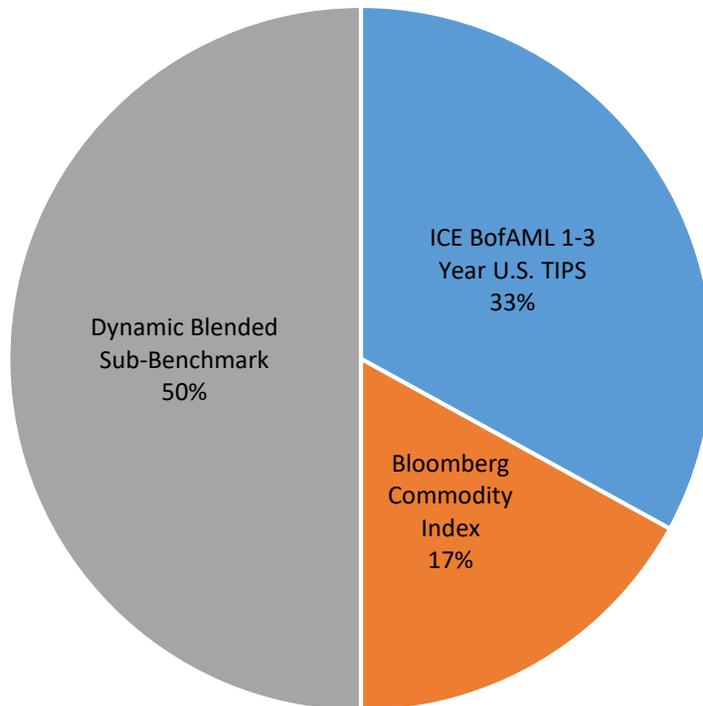
	Calendar Year 2020	Q1	Q2	Q3	Q4
S&P 500	18.39	-19.60	20.54	8.93	12.14
S&P 500 Energy	-33.68	-50.45	30.51	-19.72	27.76
Bloomberg Commodities Index	-3.50	-23.53	5.04	9.04	10.17
Bloomberg Barclays High Yield Energy	-0.34	-38.94	40.01	2.88	13.30
Bloomberg Barclays High Yield	7.11	-12.68	10.18	4.60	6.45
Bloomberg Barclays 1-3 Year TIPS	3.81	-1.34	2.51	1.43	1.89
Bloomberg Barclays 5-10 Year TIPS	11.48	1.41	4.69	3.21	1.74
Bloomberg Barclays 5-10 Year Treasuries	9.09	8.66	0.86	0.35	-0.81



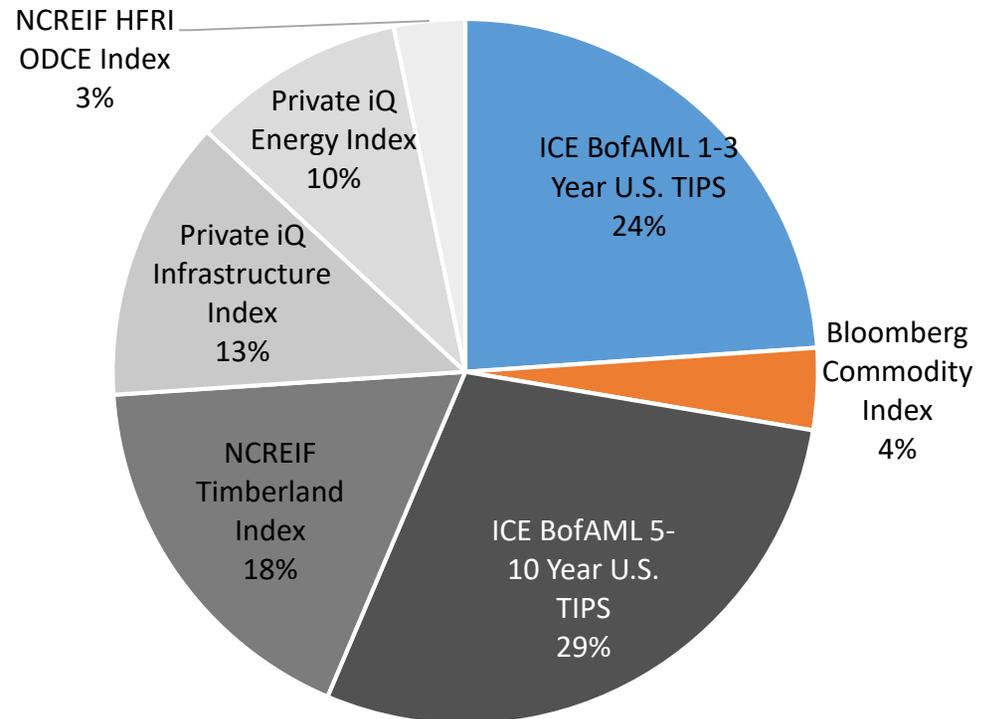
Inflation Sensitive Benchmark Composition

As of December 31, 2020

Long-Term Target Benchmark



Benchmark Composition by Current Market Weight



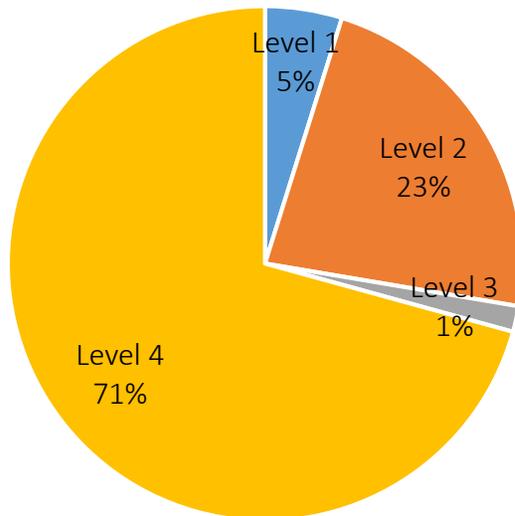
Note: See slide 28 for details on the composition of the Inflation Sensitive Benchmark



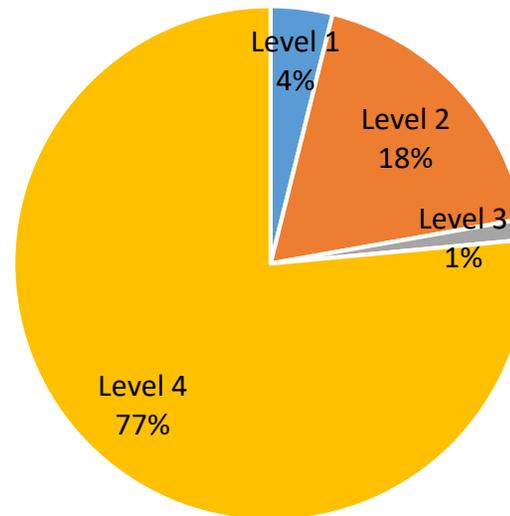
Portfolio Liquidity

As of December 31, 2020

Market Value



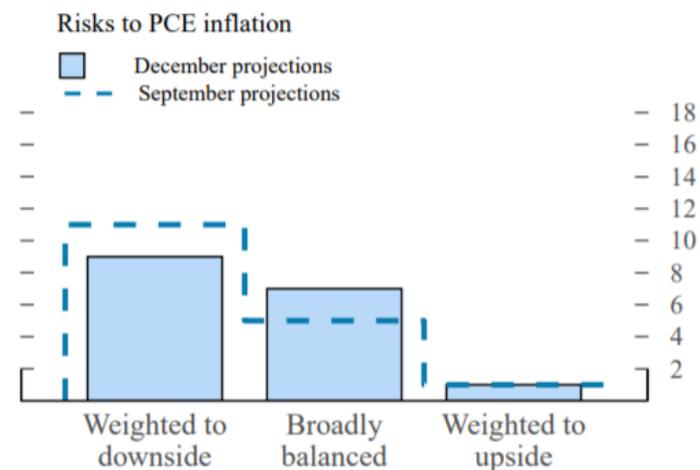
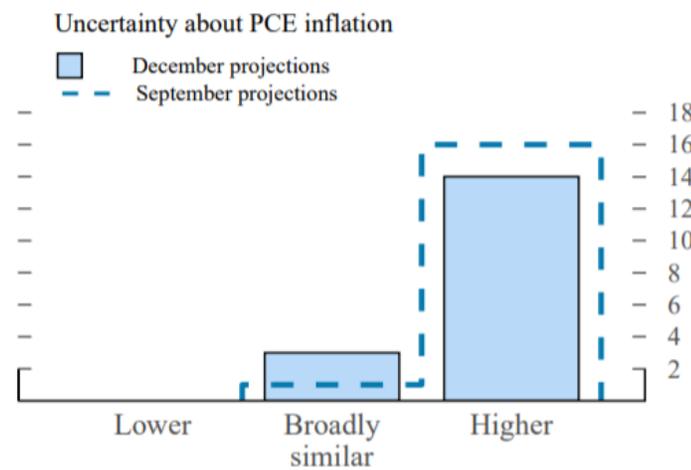
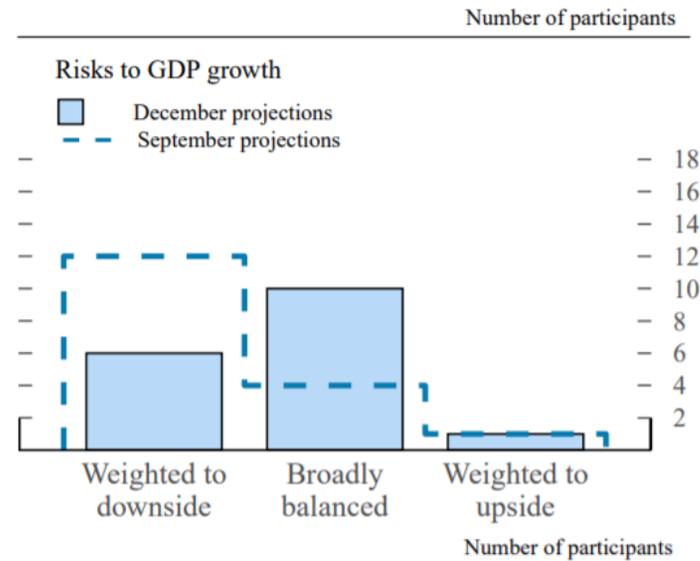
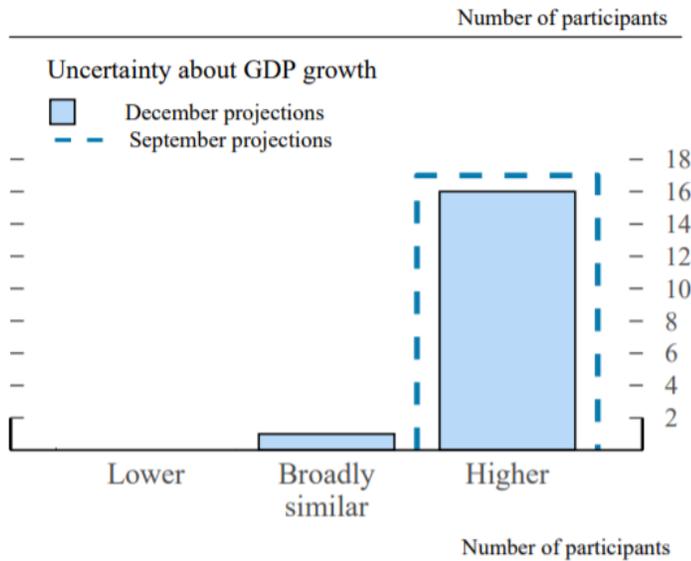
Market Value + Unfunded



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

Current Inflation Environment

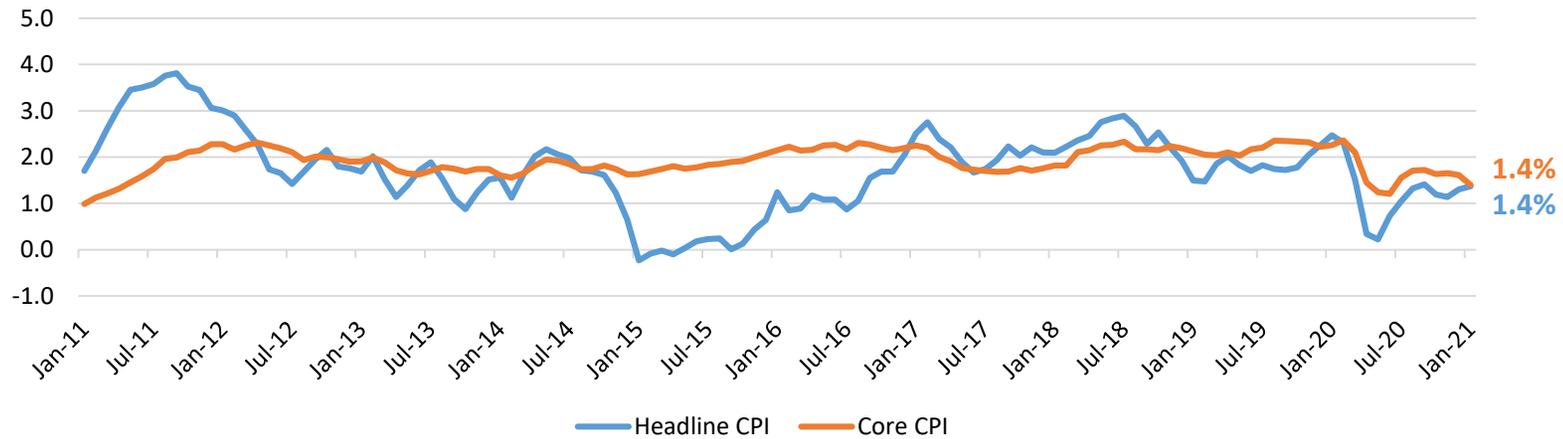
Federal Reserve's uncertainty around growth and inflation remain elevated



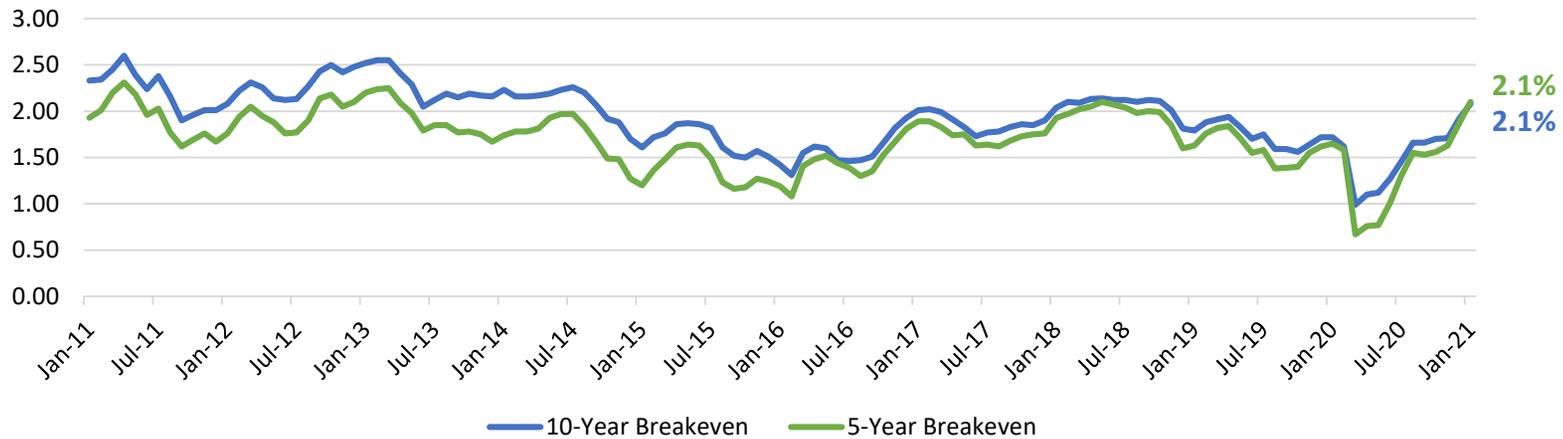
Current Inflation Environment

A widening gap between breakeven expectations and CPI may suggest a convergence to come

CPI Year over Year Change



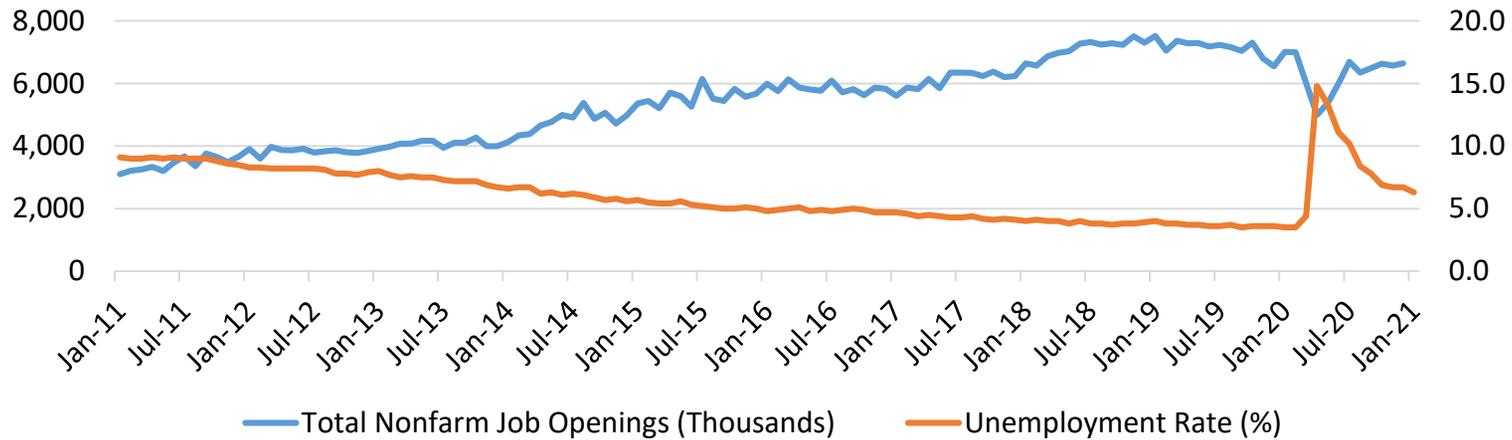
Inflation Breakeven Rates



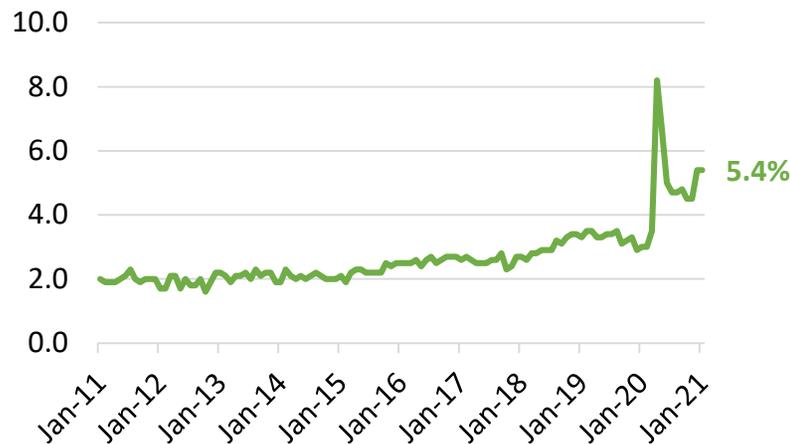
Current Inflation Environment: Labor

Despite the initial pullback, the labor market appears to be fairly tight again overall

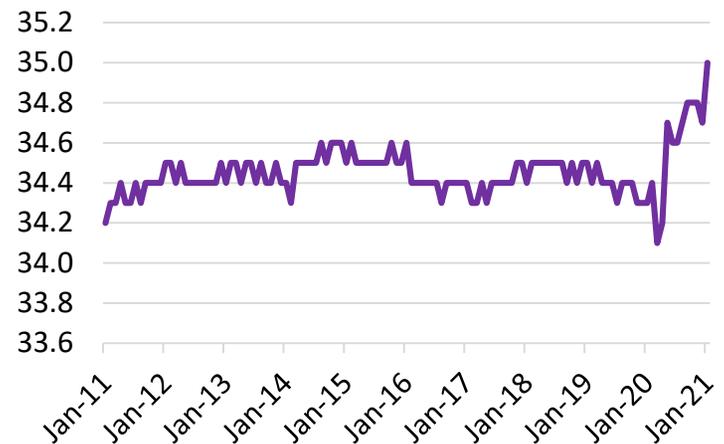
Vacancies vs. Unemployment



Average Hourly Earnings – YoY Change



Average Weekly Hours – Private Sector

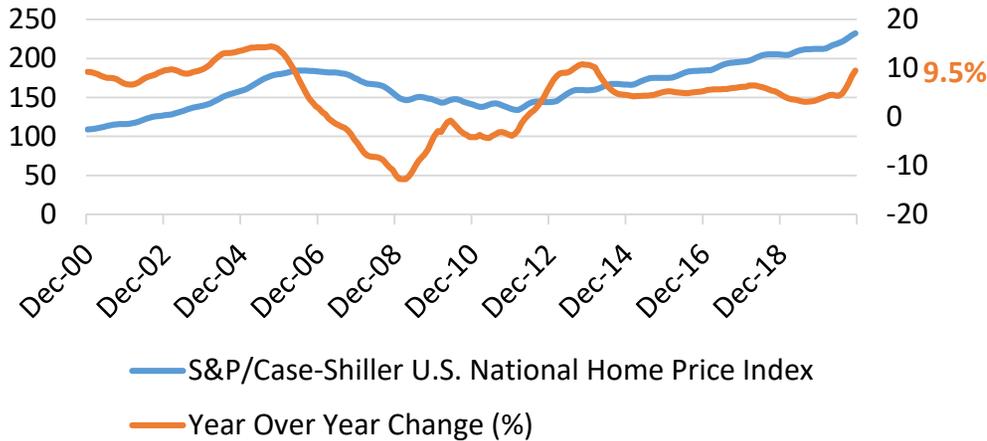




Housing Market Review

Housing is supported by constrained supply and low rates, boosting household balance sheets

Home Price Appreciation



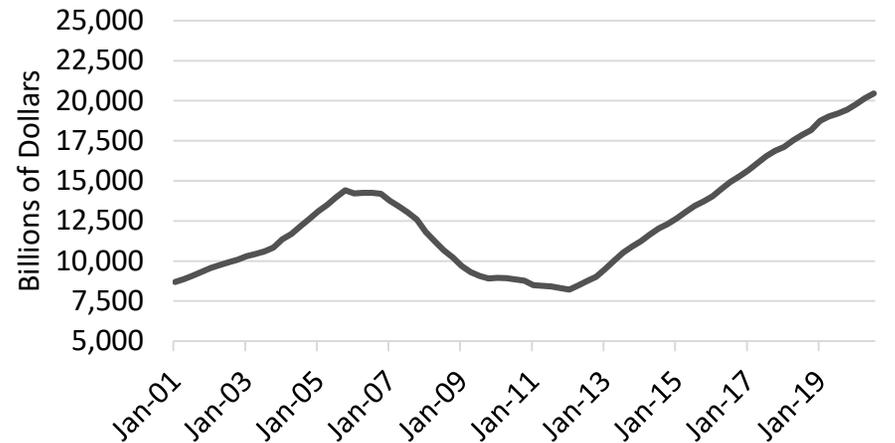
U.S. Months' Supply of Houses



Housing Affordability Index



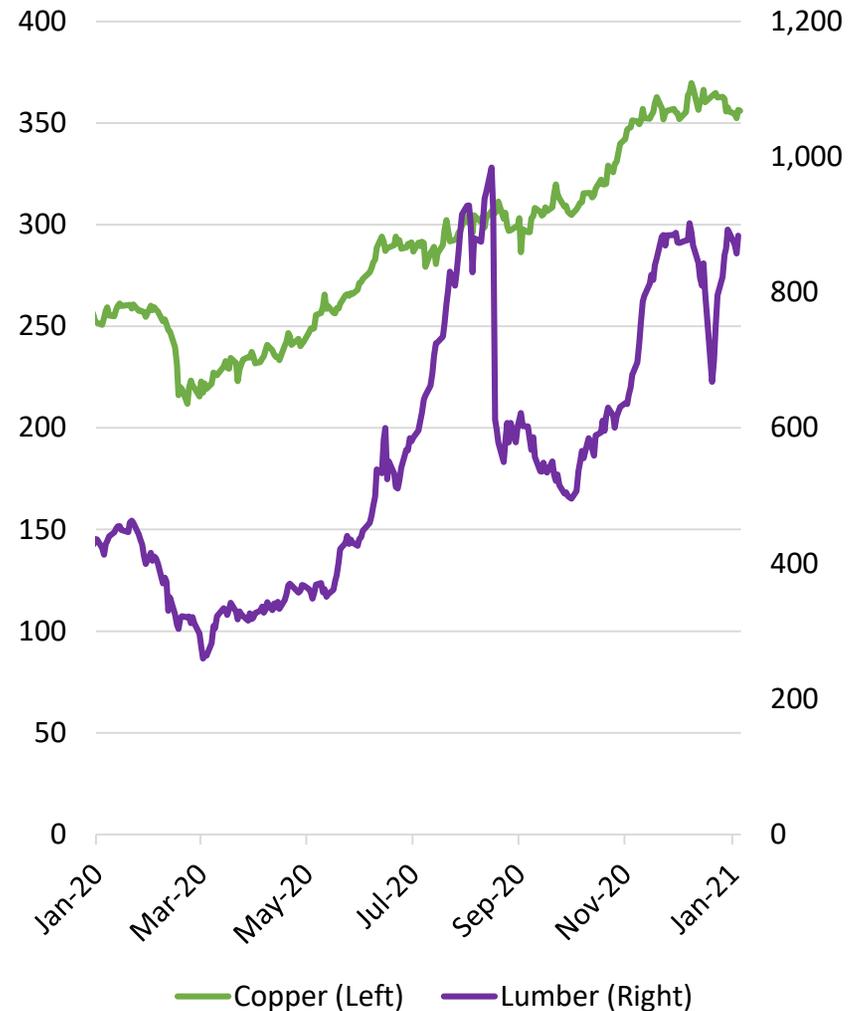
U.S. Household Owners' Equity in Real Estate





Current Inflation Environment

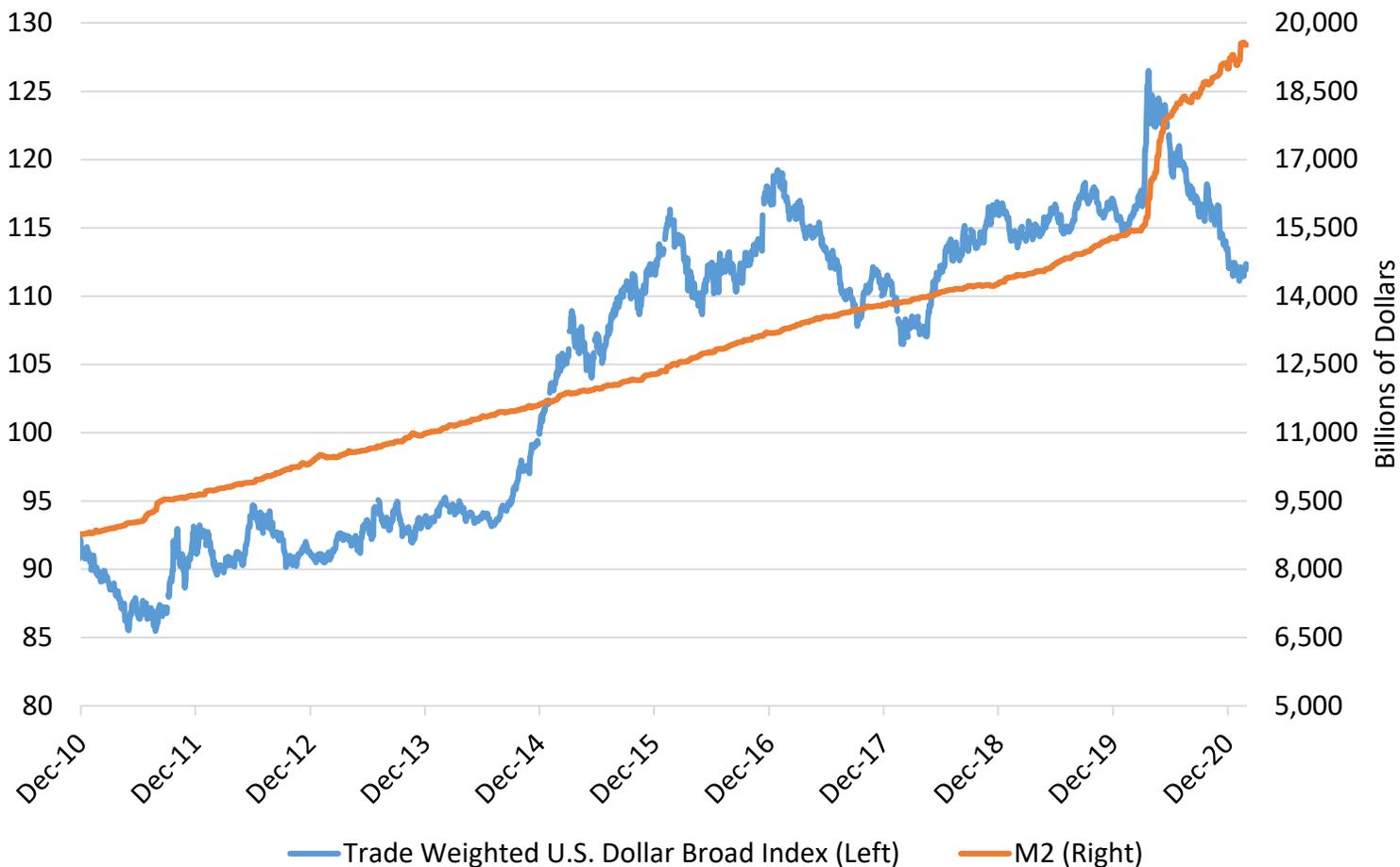
Commodity prices have rallied back strongly and demand has caused some supply disruptions





Current Inflation Environment

Unprecedented levels of liquidity have weakened the Dollar, which may lead inflation higher and should continue to be supportive of commodity prices and real asset valuations





Risks to the Current Inflationary Outlook

Downward Pressure

- Technological advancement
- Innovation in the Global Supply Chain (i.e., E-commerce, operational efficiency)
- U.S. Energy Independence

Uncertain

- Geopolitical unrest
- New fiscal policies
- Unresolved U.S./China Trade War
- Further economic impact from the Coronavirus
- K-Shaped Recovery

Upward Pressure

- Federal Reserve and Central Banks remain accommodative
- US Housing Demand
- Recovering / tightening labor market
- Supply Chain Disruptions
- Weaker Dollar
- Potential Increased Regulatory Environment



Strategic Considerations for 2021

- 1) Rationalize current manager lineup; focus on high conviction opportunities
- 2) Maintain vintage and strategy diversification
- 3) Add strategies that are linked to inflation where there are currently gaps in the portfolio combined with opportunities for attractive valuations



Strategies of Interest for 2021

Energy	Technology & Data	Logistics and Other Essential Infrastructure	Health Care	Real Estate	Research Alternative Stores of Value
<ul style="list-style-type: none">• Energy Transition• Renewables• Storage & Intermittency Management• Private debt across multiple sectors• Midstream	<ul style="list-style-type: none">• Cell Towers• Data Centers• Fiber• Music Royalties	<ul style="list-style-type: none">• Transportation (i.e., leasing assets)• Storage• Traditional Infrastructure• Real Asset Focused Secondaries• Agriculture	<ul style="list-style-type: none">• Dental• Vision• Primary Care• Veterinarian• Drug Royalties• Real Estate for Medical Practices	<ul style="list-style-type: none">• Single Family Rentals• REITS• RMBS• Residential Whole Loans• Timberland	<ul style="list-style-type: none">• Currencies• Gold• Silver• Industrial Metals & Mining



Team Overview

Ronald Funderburk, CFA

Director

12 years with IMD

16 Years Industry Experience

Ty Powers, CFA

Portfolio Manager

4 years with IMD

25 Years Industry Experience

Renee Guerin, CFA

Portfolio Manager

4 years with IMD

10 Years Industry Experience



Appendix



Impact of K-Shaped Recovery Unknown

Percent Change in All Consumer Spending*

In the United States, as of January 03 2021, total spending by high-income consumers decreased by 6.5% compared to January 2020.

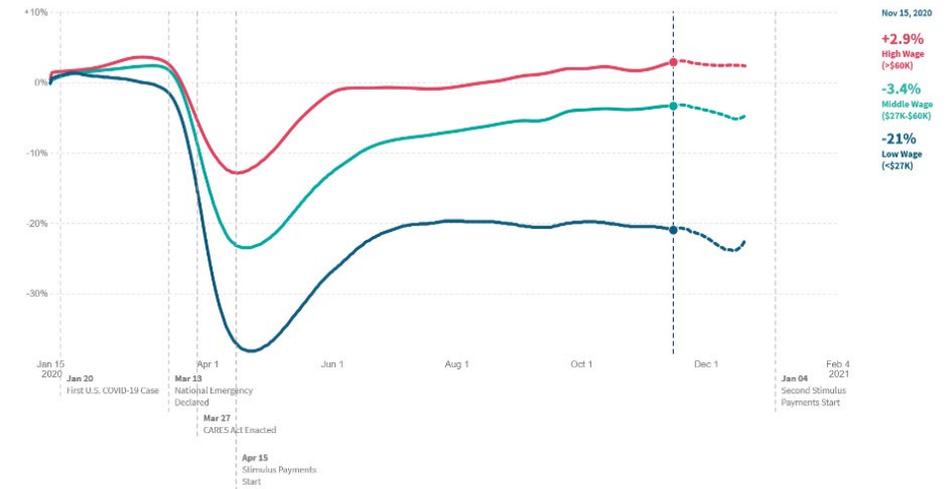


*Change in average consumer credit and debit card spending, indexed to January 4-31, 2020 and seasonally adjusted. The dashed segment of the line is provisional data, which may be subject to non-negligible revisions as newer data is posted. This series is based on data from Affinity Solutions.
Last updated: January 26, 2021 next update expected: February 04, 2021

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Percent Change in Employment*

In the United States, as of November 15 2020, employment rates among workers in the bottom wage quartile decreased by 21% compared to January 2020 (not seasonally adjusted).



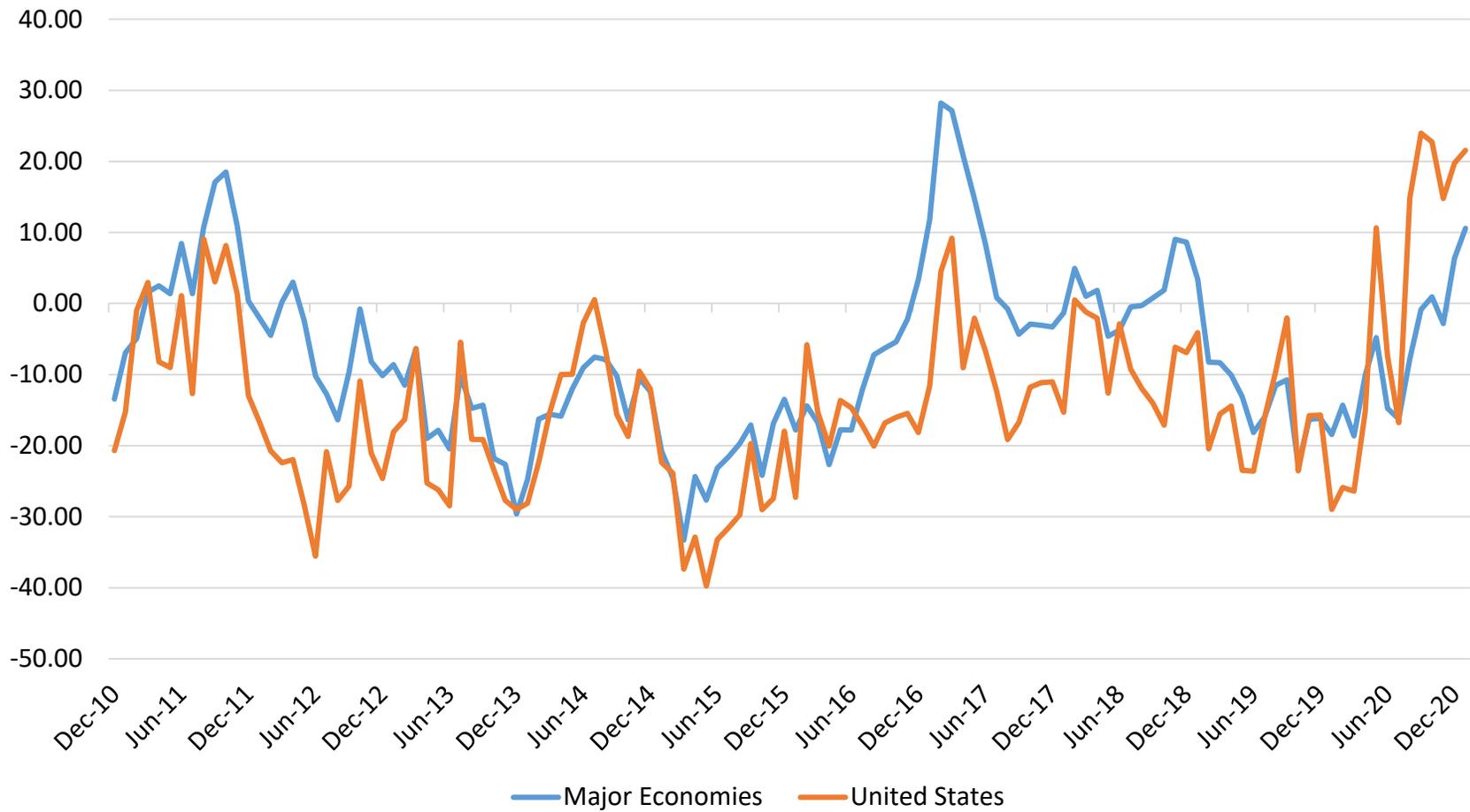
*Change in employment rates (not seasonally adjusted), indexed to January 4-31, 2020. This series is based on payroll data from Paychex and Inmat, worker-level data on employment and earnings from FARM, and BLS household data from BLS. The dotted line in the low-wage series is a prediction of employment rates based on known data.
Last updated: February 01, 2021 next update expected: February 05, 2021

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Current Inflation Environment

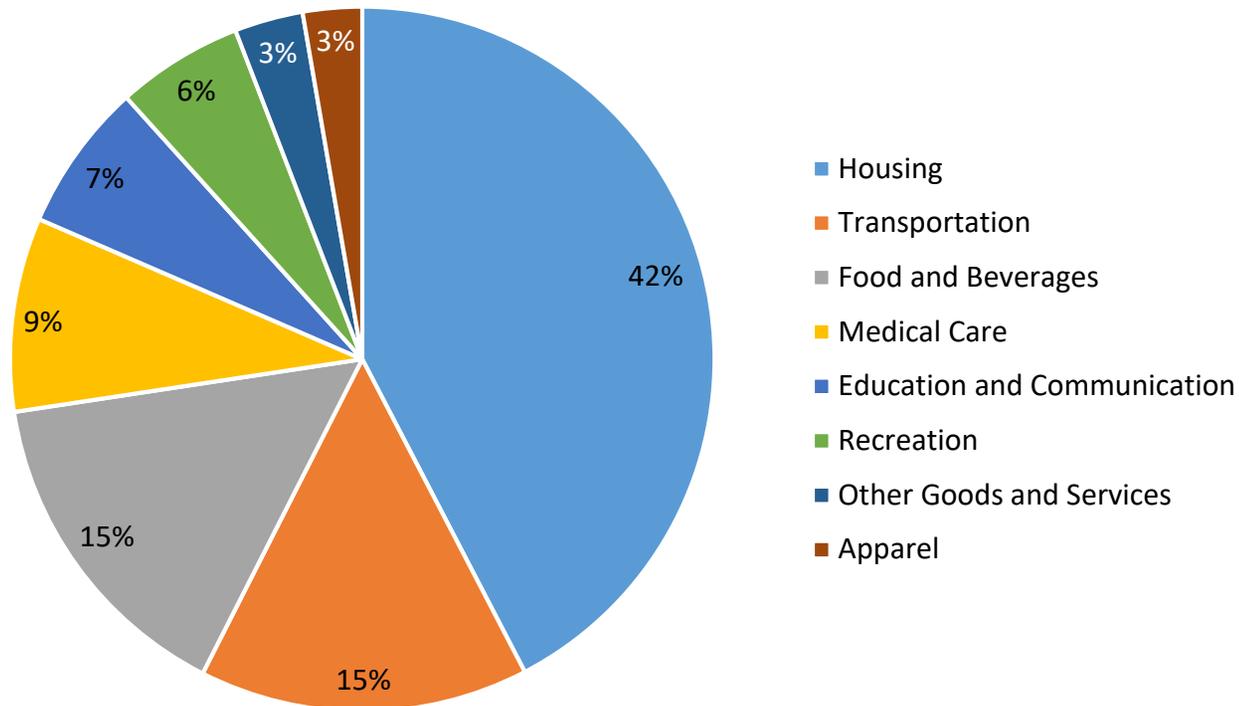
Inflation Surprise Index



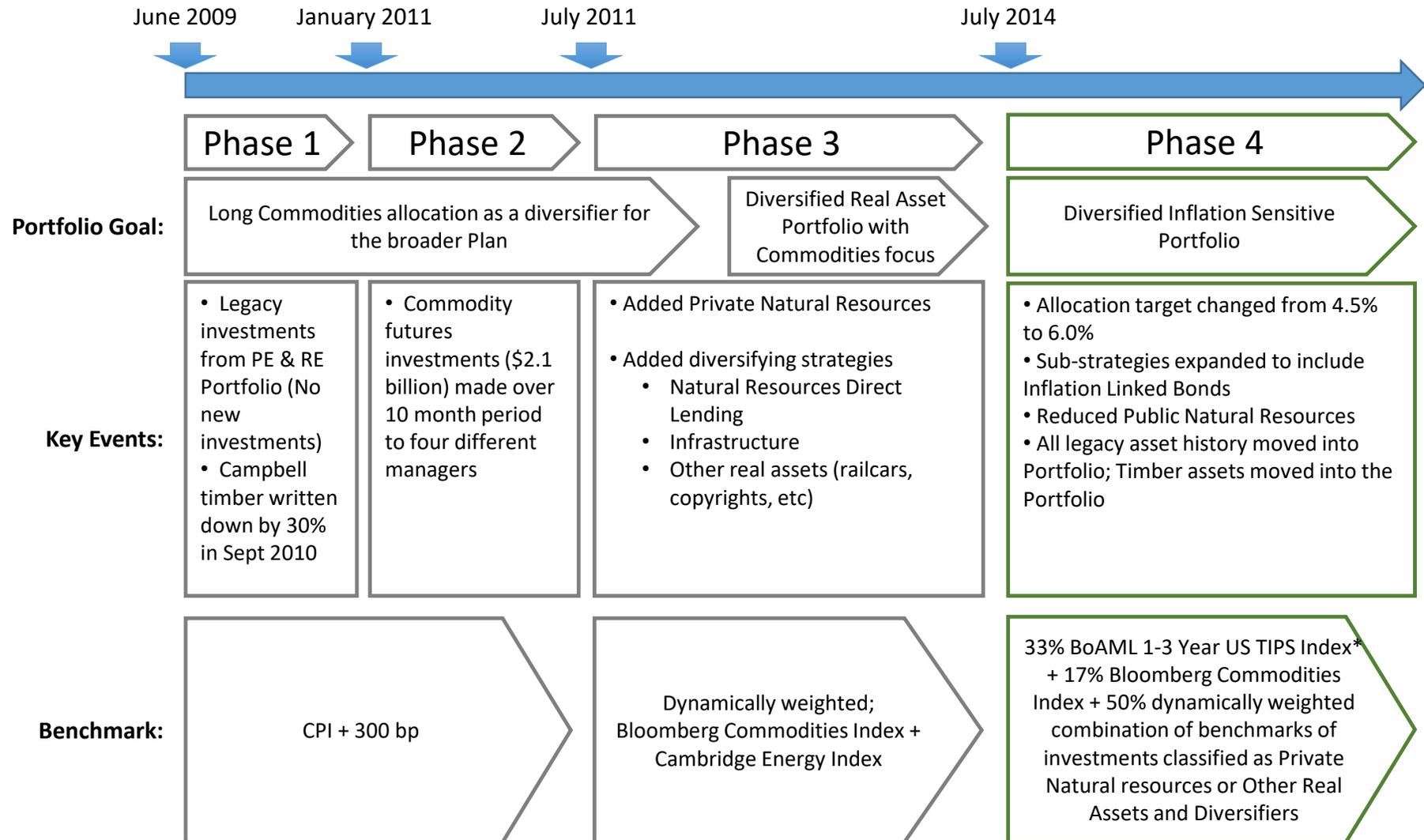


CPI Composition

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



Portfolio History



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



Inflation Portfolio IRR by Vintage Year

As of December 31, 2020

Vintage Year	Inflation-Linked Bonds	Publicly Traded Natural Resources	Private Natural Resources	Other Real Assets and Diversifiers	All
1993	-	-	9.38	-	9.38
2006	-	-	0.32	-	0.32
2007	-	-	-8.19	-	-8.19
2008	-	-	-6.29	-	-6.29
2010	-	-7.19	-29.36	-	-9.16
2011	-	-10.33	-1.75	3.22	-6.62
2012	-	-	3.41	7.70	5.44
2013	-	-	1.92	6.91	5.70
2014	-	-3.98	6.73	8.48	6.68
2015	1.44	-	5.93	11.17	4.75
2016	4.07	-	-	-	4.07
2017	-	-	-3.48	-	-3.48
2018	-	-	-	18.24	18.24
2019	-	-	36.90	-	36.51
2020	-	-	-	-	-
All	3.64	-8.35	0.77	7.39	0.79



Portfolio Performance

As of December 31, 2020

Inflation Sensitive Portfolio Correlation

	Total Pension Plan	Public Equity	Private Equity	Non-Core Real Estate	Opportunistic Fixed Income	Investment Grade Fixed Income	Core Real Estate	Multi-Strategy
3-Year Correlation	0.12	0.02	0.77	0.51	0.79	(0.65)	0.59	0.38
5-Year Correlation	0.17	0.06	0.54	0.45	0.82	(0.57)	0.55	0.44



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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