

Program Roles, Investment Constraints, and Outlooks

Investment Office

November 12, 2013

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Objectives and Session Overview

Fundamental Economic Assumptions

**Program Roles, Capital Market Assumptions,
Constraints, and Outlooks**

Wrap Up

Objectives and Session Overview

Objectives

- Provide context and discuss the general economic outlook – Why are these assumptions prudent?
- Recap of key inputs into the Asset Liability Management analysis

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Fundamental Economic Assumptions

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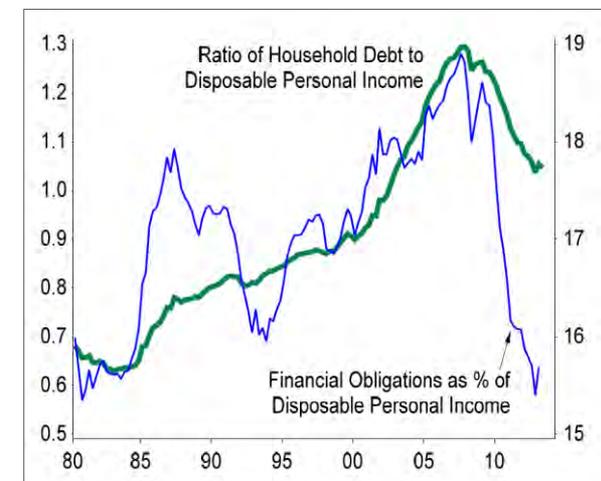
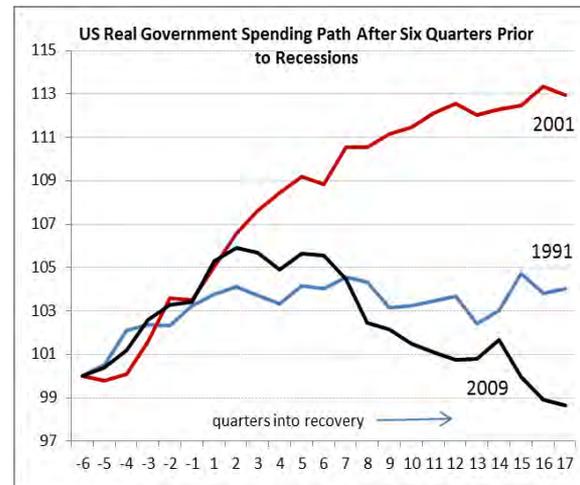
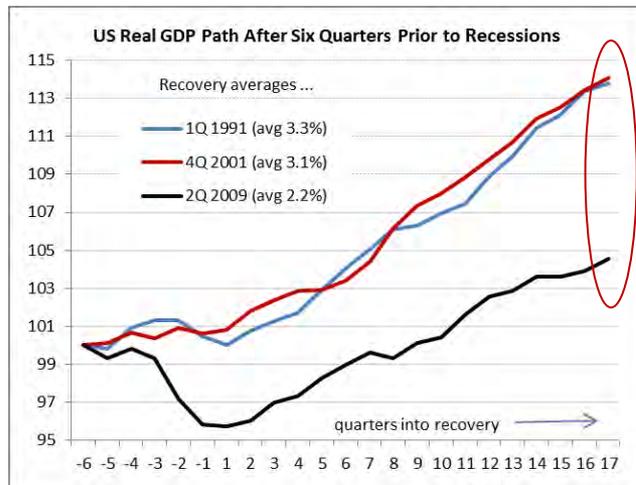
Wrap Up

Fundamental Economic Assumptions: 3-Years

- US economic growth remains slow but stable
- Inflation remains low
- The upside risks to growth are largely supply side and less inflationary
- The downside risks are most evident around policy
- International economic conditions will depend on difficult growth transitions in Japan, China and commodity exporting emerging markets
- Europe will remain a low growth region

Slow Growth Recovery so Far

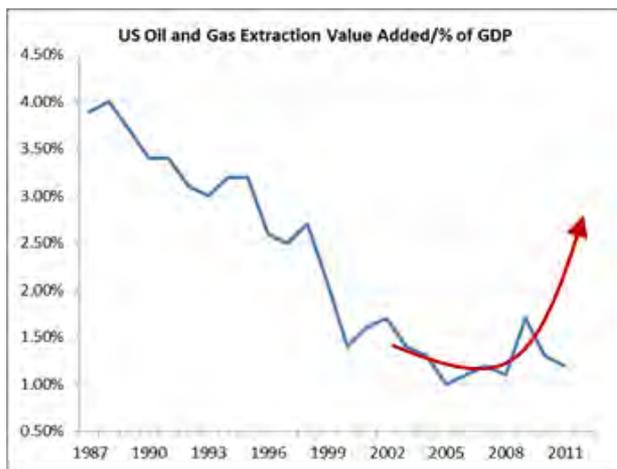
- US economic activity is well below previous recession and recovery phases
- Falling government spending and household deleveraging are key factors



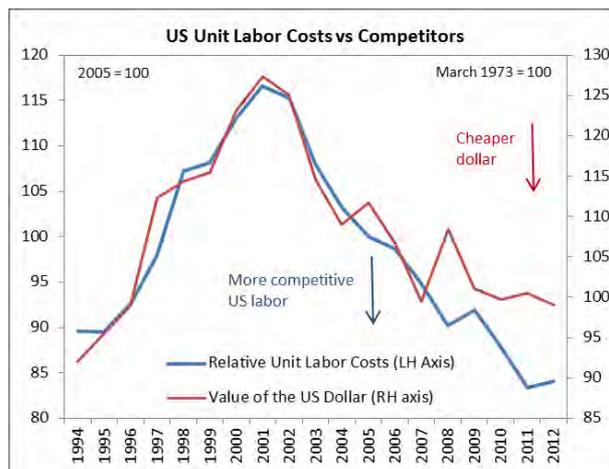
Potential Upside Surprises – Supply Side

- Favorable supply side shocks could boost GDP without inflation

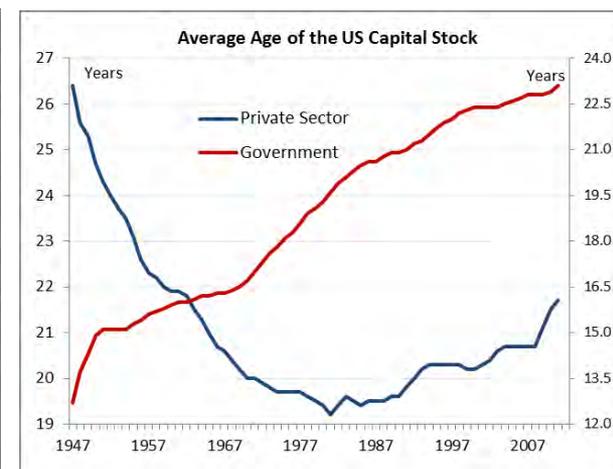
Oil and Gas extraction's GDP share will rise, based on output projections



US manufacturing is much more competitive than in 2000



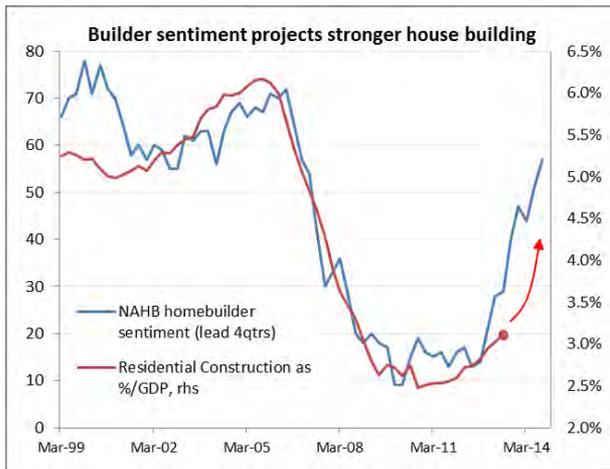
A rising age of capital stock may stimulate a higher investment rate



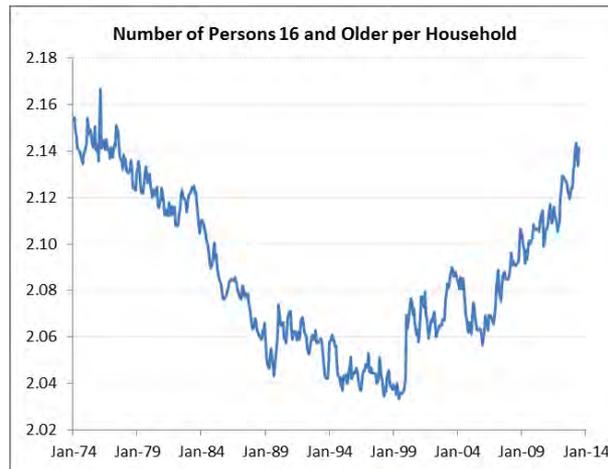
Potential Upside Surprises – Housing

- The supply response in the housing market to higher prices has been gradual

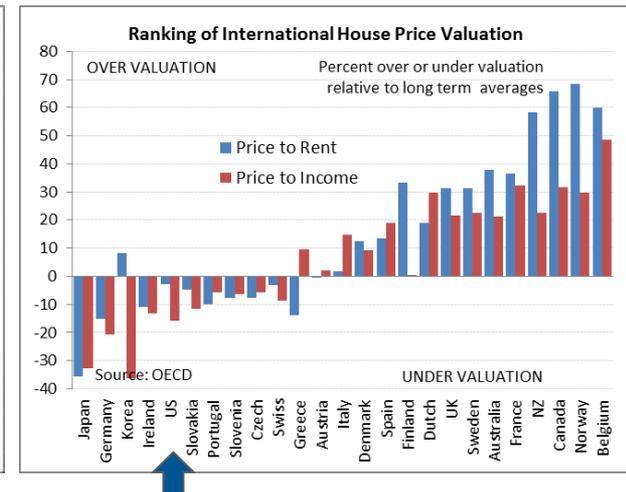
Housing investment likely to rise as a % of GDP



Household size up, as population growth has outpaced new homes

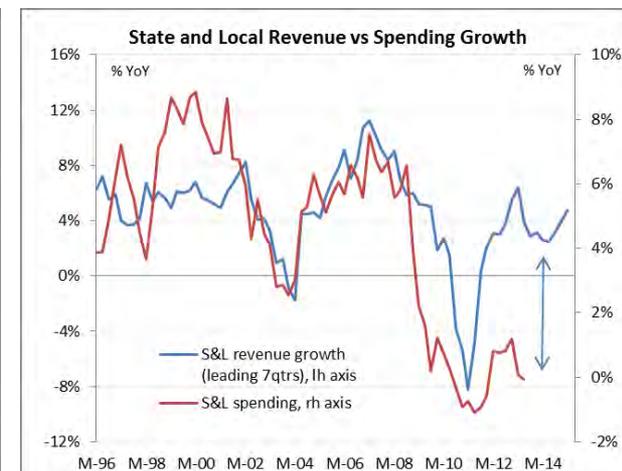
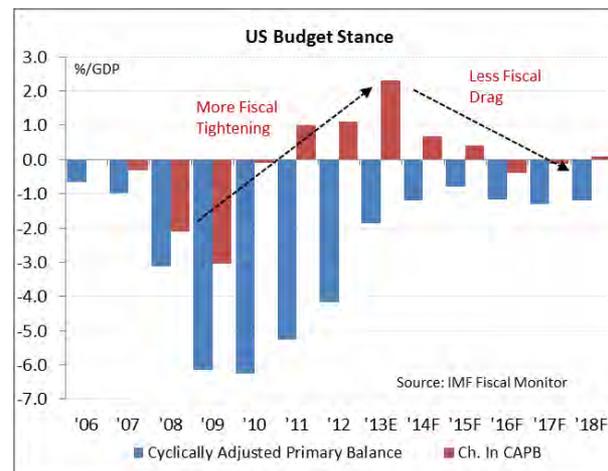
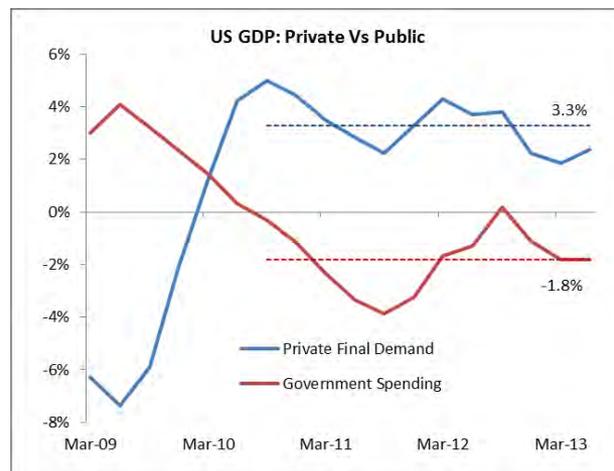


US house prices are still low by past and international standards



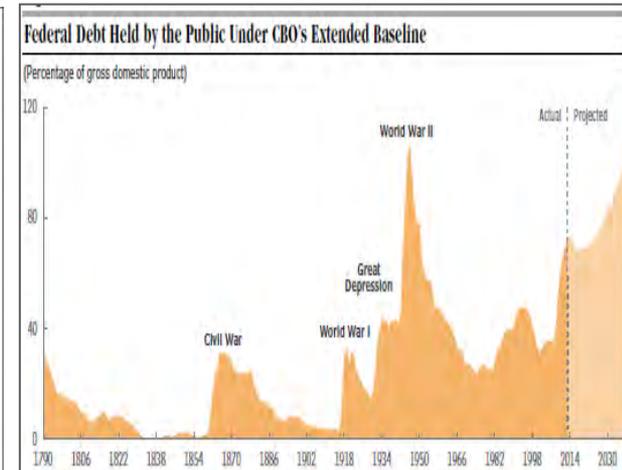
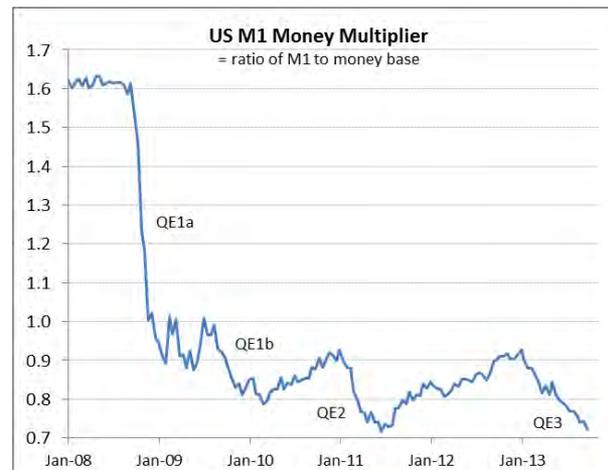
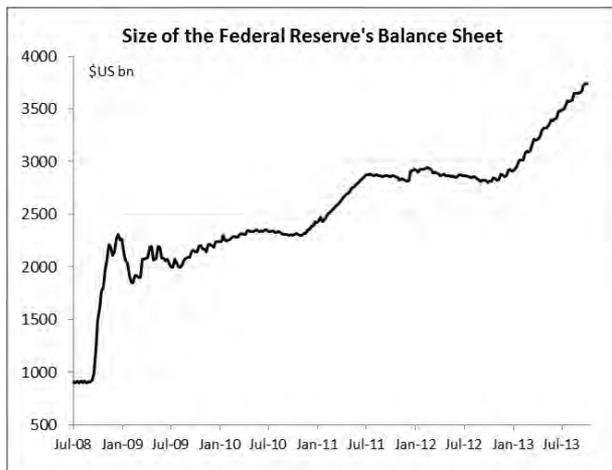
And We are Near Maximum Point of Fiscal 'Drag'

- Solid private sector growth has coexisted with very weak government demand for three years
- US fiscal consolidation may hit a less onerous phase
- Ongoing Federal sequester, replenishment of reserves, and unfunded liabilities by state and local authorities will slow the recovery



Potential Downside Surprises - Policy

- The surge in the Federal Reserve Balance sheet has not been inflationary
- The Fed can likely manage the 'exit.' But there are risks of policy missteps
- The Federal debt has the potential to surge again should policy makers not act

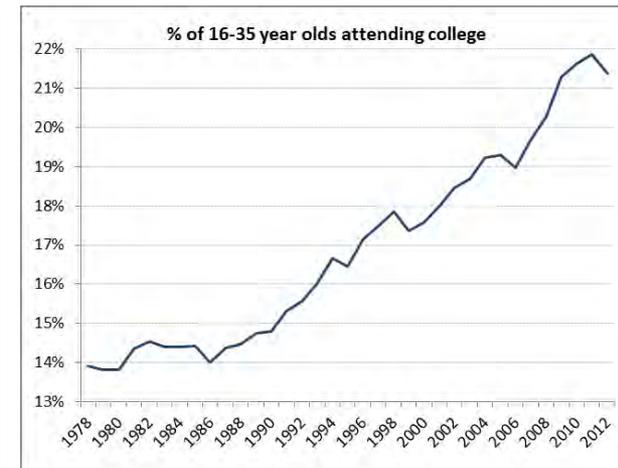
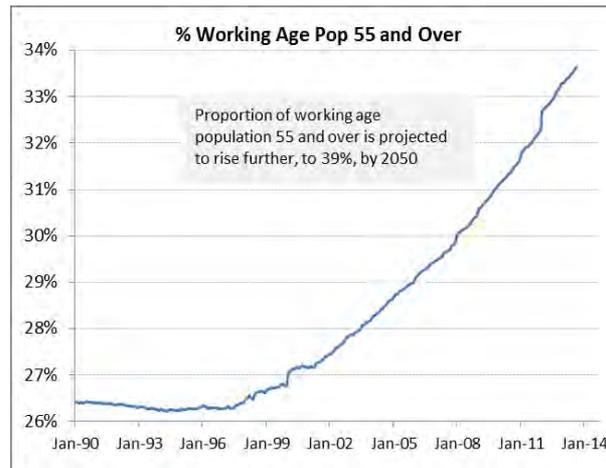
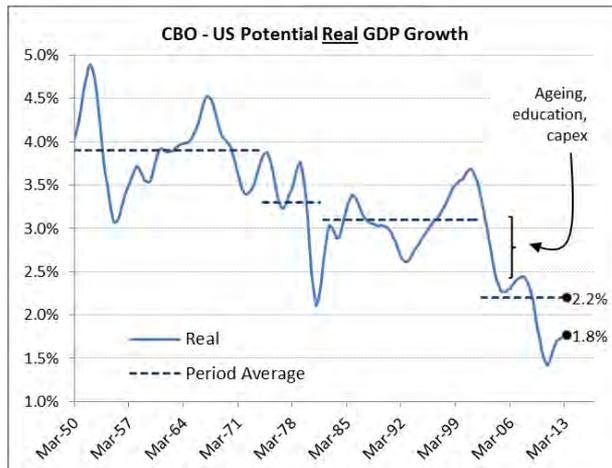


Fundamental Economic Assumptions: 10-Years

- US economic expansion rate may be constrained by slow growth in the labor force
- US budget deficit improvements may start to reverse as policy makers face challenges related to rising age dependency ratios
- China's voracious appetite for commodities will dissipate in the decade ahead, suppressing energy, metals and steel prices
- Falling commodity prices should translate into higher disposable income and create opportunities in consumer goods trade and investment

Potential Real Growth has Eased

- The CBO projects potential GDP growth of just 2.2% per annum in the next decade
- An aging population and increased recourse to education by the young are key factors



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Program Outlooks

Discussion on Program Outlooks

- Capacity
- Return Forecasts
- Binding Constraints
- Additional Questions

Global Equity

Role & Characteristics

- Total return oriented
- Capture equity risk premium through ownership of companies
- *High growth risks, liquid, some cash yield*

Capital Market Assumptions ¹			Investment Constraints		
Expected Compound Return	Volatility	Cash Yield	Lower Bound	Upper Bound	Pacing Model
7.75%	17.40%	2.73%	0%	100%	N/A

Private Equity

Role & Characteristics

- Enhance equity returns
- Capture illiquidity premium
- *Negligible cash yield, high growth risks, illiquid*

Capital Market Assumptions ¹			Investment Constraints		
Expected Compound Return	Volatility	Cash Yield	Lower Bound	Upper Bound	Pacing Model
9.33%	25.00%	0.00%	0%	12%	Yes

Global Fixed Income

Role & Characteristics

- Economic diversification
- Reliable source of income
- *Cash yield, low growth risks, liquid*

Capital Market Assumptions ¹			Investment Constraints		
Expected Compound Return	Volatility	Cash Yield	Lower Bound	Upper Bound	Pacing Model
3.49%	7.00%	3.70%	15%	100%	N/A

Real Estate

Role & Characteristics

- Stable cash yield with real property ownership
- Economic diversifier
- Partial inflation hedge
- *Cash yield, growth risks, inflation protection, illiquid*

Capital Market Assumptions ¹			Investment Constraints		
Expected Compound Return	Volatility	Cash Yield	Lower Bound	Upper Bound	Pacing Model
7.00%	14.00%	2.00%	0%	11%	Yes

Infrastructure & Forestland

Role & Characteristics - Infrastructure

- Predictable returns with essential infrastructure assets ownership
- Economic diversifier, moderate long-term inflation protection
- *Cash yield, moderate growth risks, moderate inflation protection, illiquid*

Role & Characteristics - Forestland

- Forestland properties ownership
- Long-term inflation protection
- *Moderate cash yield, moderate growth risks, inflation protection, illiquid*

Capital Market Assumptions ¹			Investment Constraints		
Expected Compound Return	Volatility	Cash Yield	Lower Bound	Upper Bound	Pacing Model
7.00%	11.00%	2.50%	1%	2%	Yes

Inflation Assets

Role & Characteristics

- Strong liquid inflation protection
- *Inflation protection, moderate growth risks, low cash yield, liquid*

Capital Market Assumptions ¹			Investment Constraints		
Expected Compound Return	Volatility	Cash Yield	Lower Bound	Upper Bound	Pacing Model
2.95%	7.25%	0.88%	2%	6%	N/A

Liquidity

Role & Characteristics

- Exhibit safety and capital preservation properties
- Provide effective risk protection during financial crisis

Capital Market Assumptions ¹			Investment Constraints		
Expected Compound Return	Volatility	Cash Yield	Lower Bound	Upper Bound	Pacing Model
1.95%	3.00%	2.02%	2%	100%	N/A

Absolute Return Strategies (ARS)

Role & Characteristics

- Economic diversifier to equity risk
- Capital protection
- *Moderate returns, low growth risks, moderate liquidity*

Capital Market Assumptions ¹			Investment Constraints		
Expected Compound Return	Volatility	Cash Yield	Lower Bound	Upper Bound	Pacing Model
5.89%	7.00%	0.00%	0%	2%	N/A
			0%	5%	

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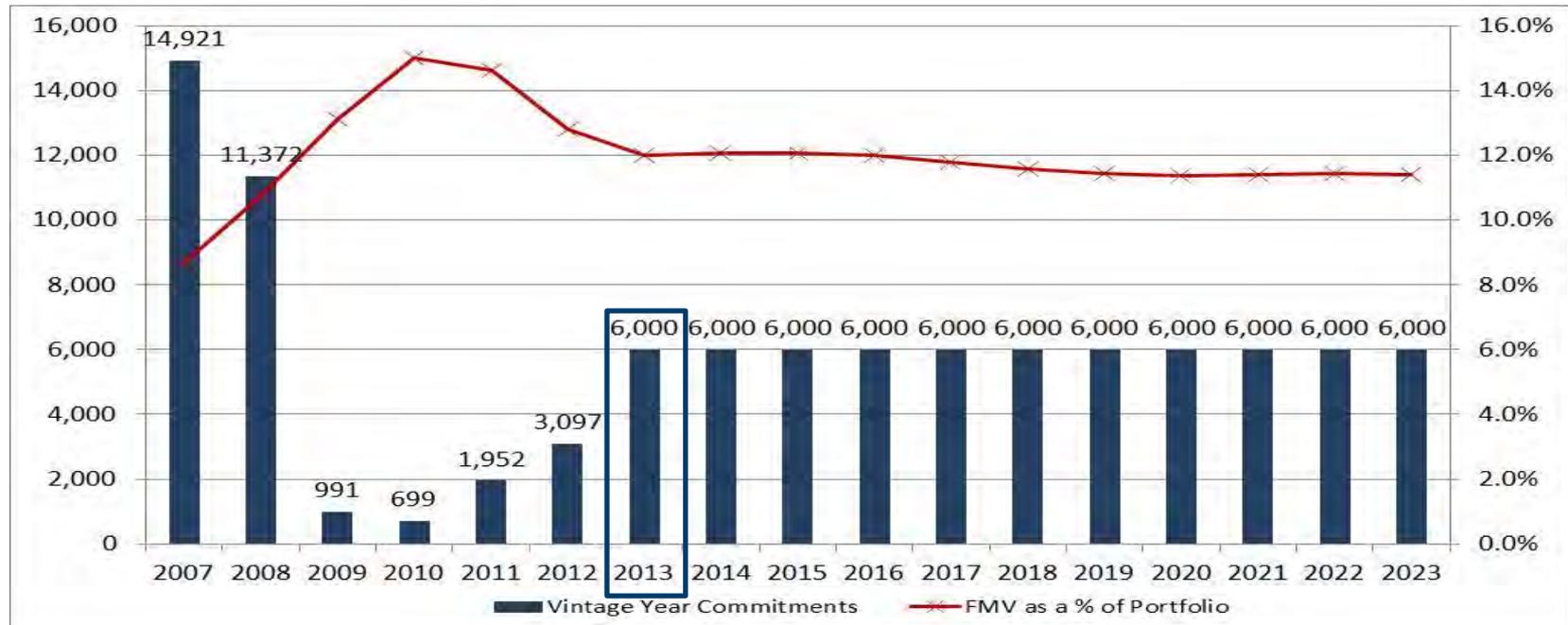
- Remaining Questions
- Next Steps

Appendix

- Private Equity Pacing Model
- Real Assets Pacing Model
- 2013 Capital Market Assumptions

Base Case Scenario – \$6 Billion Commitments

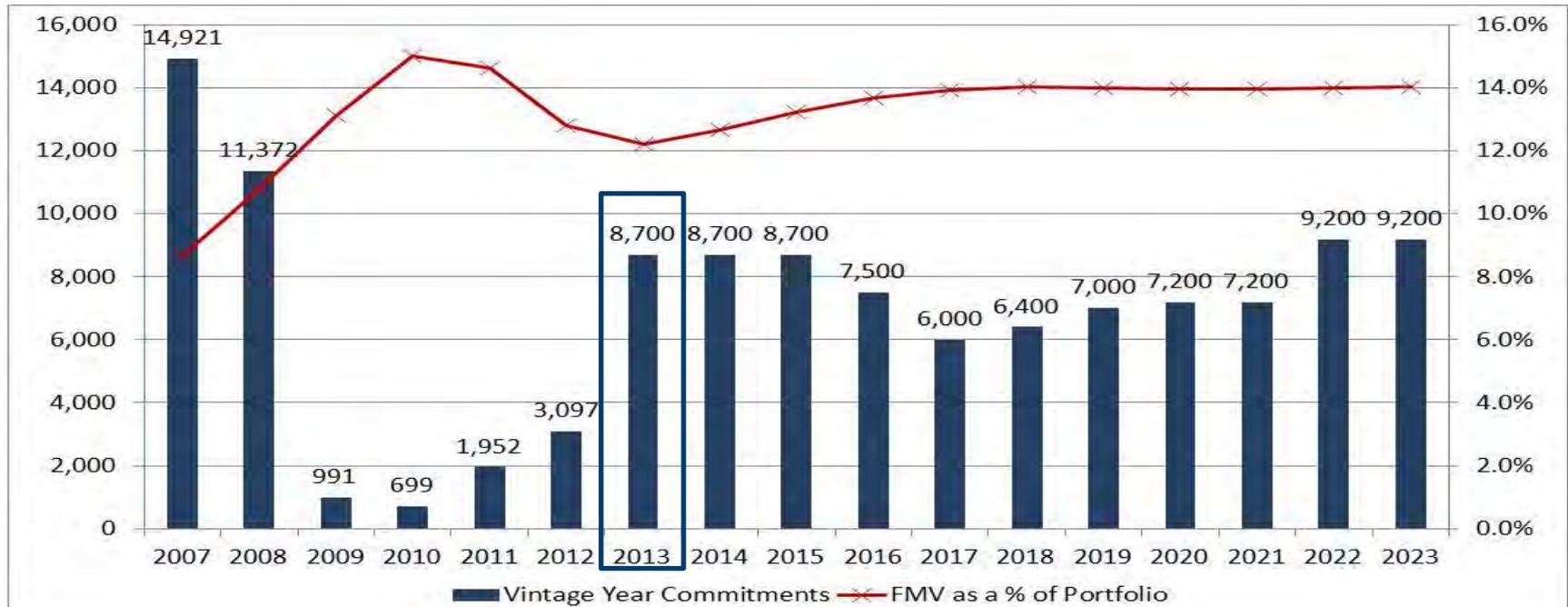
(\$'s in millions)



\$ in millions	2010	2011	2012	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E
Vintage Year Commitments	699	1,952	3,097	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Total FMV =	33,890	32,850	31,896	31,393	33,111	34,668	35,920	36,881	37,727	38,665	39,923	41,484	43,074	44,395
FMV as a % of Portfolio	15.0%	14.6%	12.8%	12.0%	12.1%	12.1%	12.0%	11.8%	11.6%	11.4%	11.4%	11.4%	11.4%	11.4%
Net Cash Flow	(\$913)	\$3,107	\$3,921	\$3,123	\$1,107	\$1,419	\$1,855	\$2,258	\$2,471	\$2,456	\$2,219	\$2,025	\$2,130	\$2,546

Base Case – \$8.7 Billion Commitment Growing

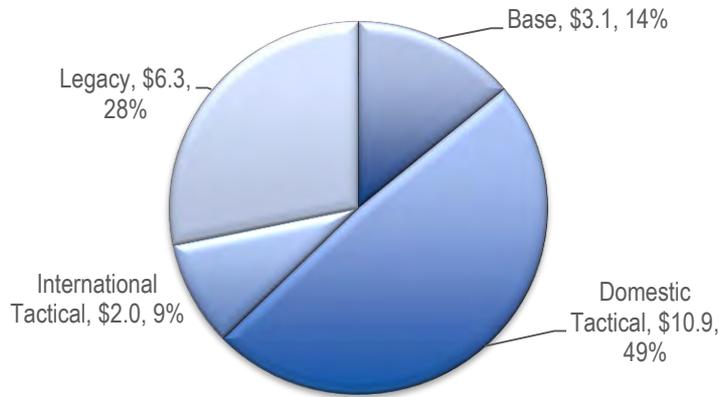
(\$'s in millions)



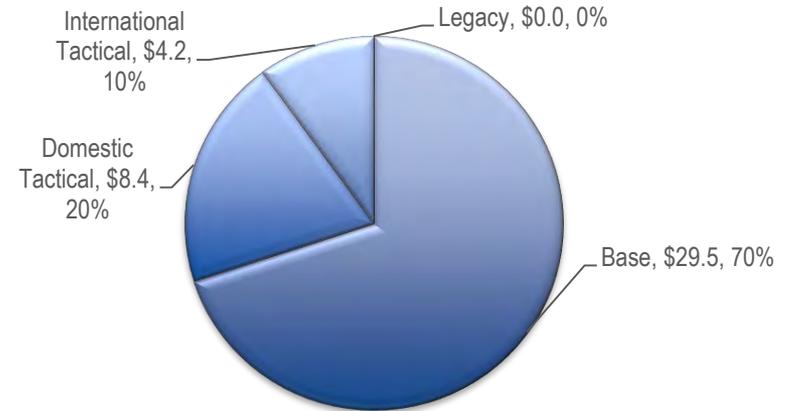
\$ in millions	2010	2011	2012	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E
Vintage Year Commitments	699	1,952	3,097	8,700	8,700	8,700	7,500	6,000	6,400	7,000	7,200	7,200	9,200	9,200
Total FMV =	33,890	32,850	31,896	31,906	34,703	37,925	41,036	43,581	45,605	47,330	49,052	50,795	52,709	54,597
FMV as a % of PERF	15.0%	14.6%	12.8%	12.2%	12.7%	13.2%	13.7%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%
Net Cash Flow	(\$913)	\$3,107	\$3,921	\$2,610	\$73	(\$102)	\$288	\$1,135	\$1,897	\$2,378	\$2,535	\$2,664	\$2,644	\$2,846

Real Estate Allocations¹

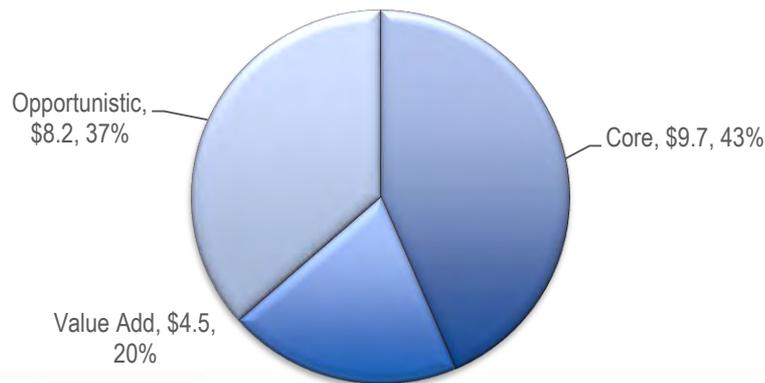
Strategy (March 31, 2013)



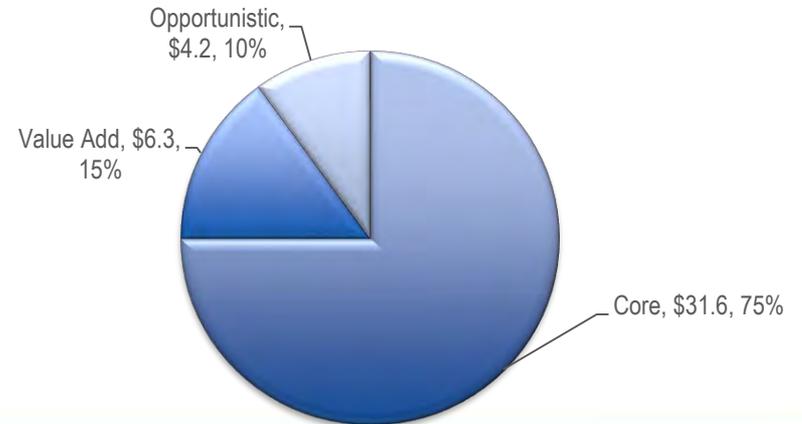
Strategy (2020 Forecast)



Risk Classification (March 31, 2013)

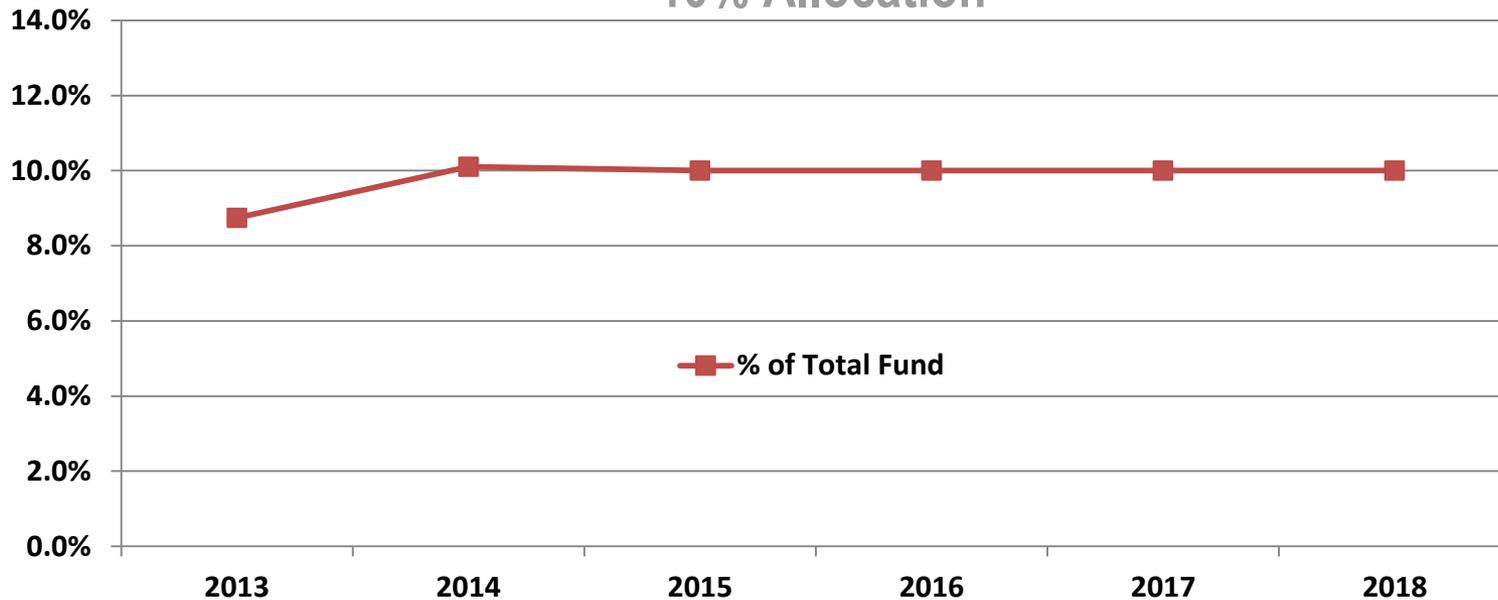


Risk Classification (2020 Forecast)



Real Estate Pacing Forecast

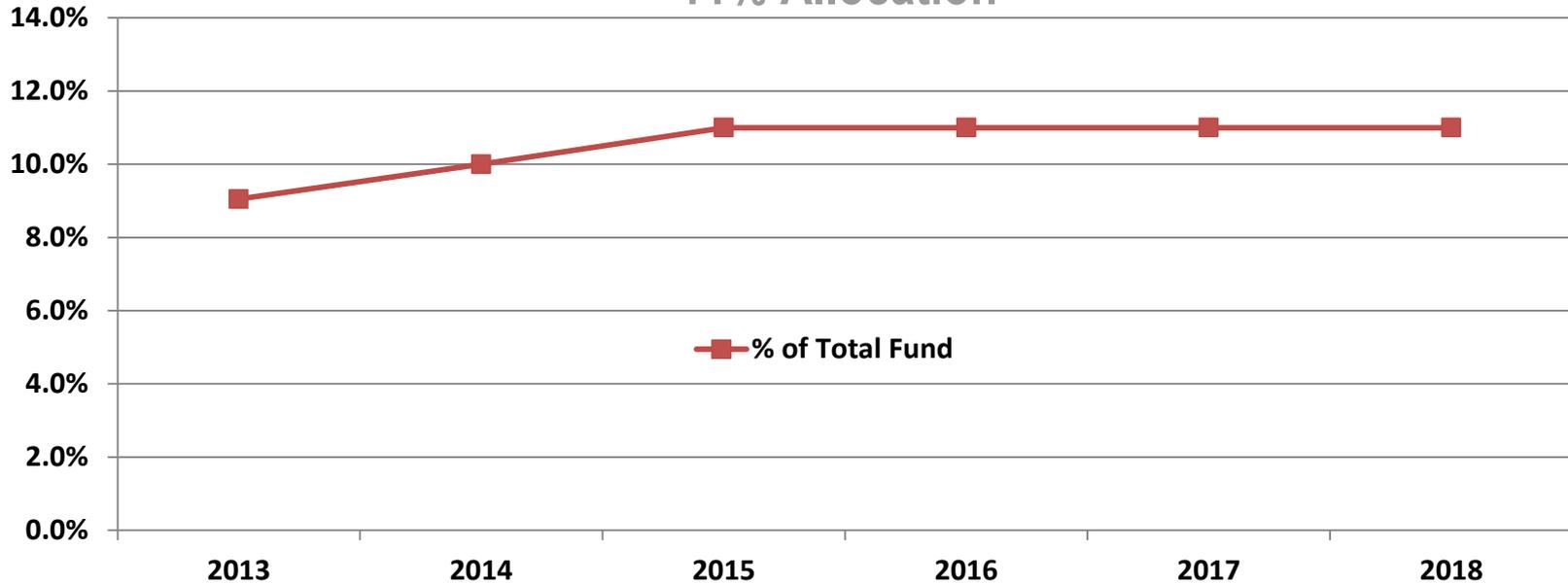
10% Allocation



Fiscal Year End (\$ in millions)	2013	2014	2015	2016	2017	2018
Ending Real Estate NAV - existing portfolio ¹	23,652	22,100	26,100	27,000	28,300	29,900
Vintage Year Capital Invested		6,000	3,200	3,700	3,700	3,500
Total Real Estate NAV	23,652	28,100	29,300	30,700	32,000	33,400
% of Total Fund	8.7%	10.0%	10.0%	10.0%	10.0%	10.0%

Real Estate Pacing Forecast

11% Allocation

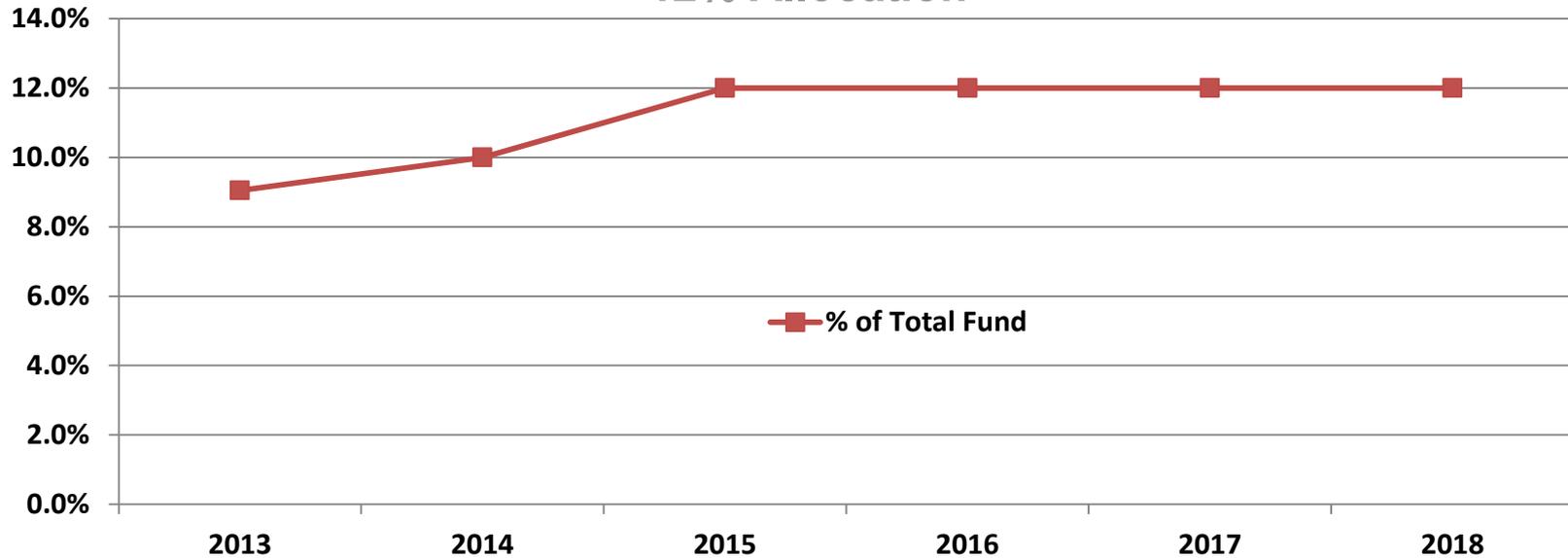


Fiscal Year End (\$ in millions)	2013	2014	2015	2016	2017	2018
Ending Real Estate NAV - existing portfolio ¹	23,652	22,100	26,100	27,000	28,300	29,900
Vintage Year Capital Invested		6,000	6,100	6,700	6,900	6,800
Total Real Estate NAV	23,652	28,100	32,200	33,700	35,200	36,700
% of Total Fund	9.0%	10.0%	11.0%	11.0%	11.0%	11.0%



Real Estate Pacing Forecast

12% Allocation

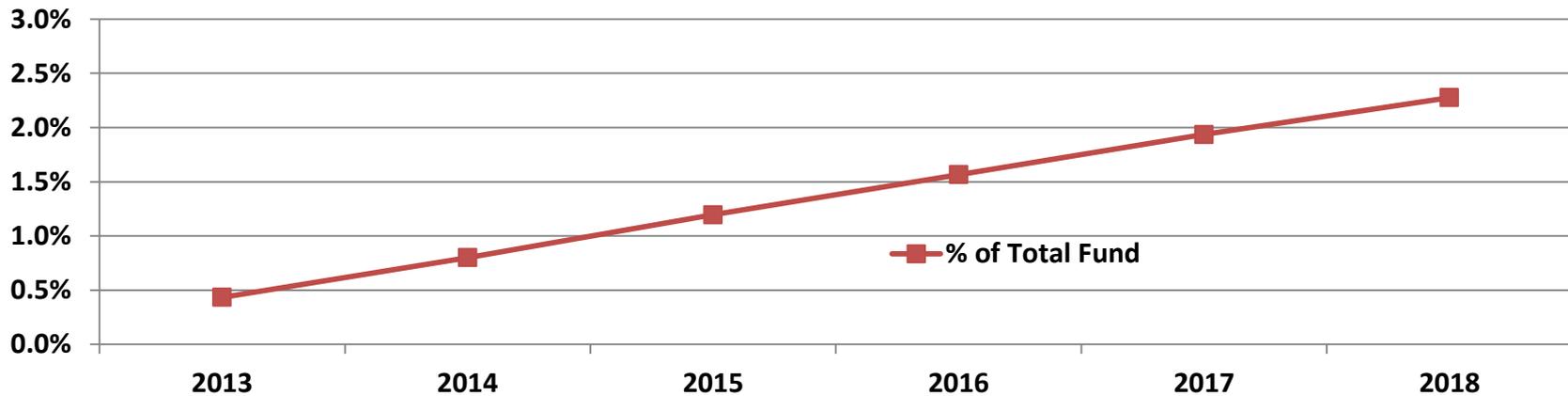


Fiscal Year End (\$ in millions)	2013	2014	2015	2016	2017	2018
Ending Real Estate NAV - existing portfolio ¹	23,652	22,100	26,100	27,000	28,300	29,900
Vintage Year Capital Invested		6,000	9,100	9,800	10,100	10,200
Total Real Estate NAV	23,652	28,100	35,200	36,800	38,400	40,100
% of Total Fund	9.0%	10.0%	12.0%	12.0%	12.0%	12.0%



Infrastructure Pacing Forecast

2% Allocation



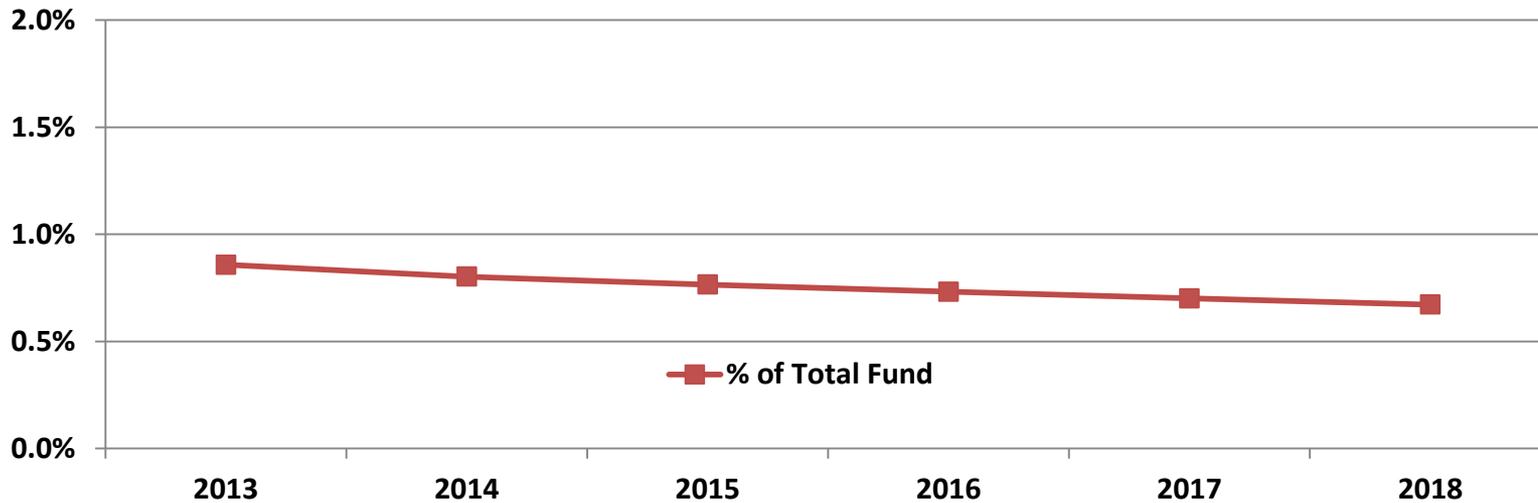
Fiscal Year End (\$ in millions)	2013	2014	2015	2016	2017	2018
Ending Infrastructure NAV - existing portfolio ¹	1,135	1,135	2,235	3,500	4,800	6,200
Vintage Year Capital Invested		1,100	1,275	1,300	1,400	1,400
Total Infrastructure NAV	1,135	2,235	3,500	4,800	6,200	7,600
% of Total Fund	0.4%	0.8%	1.2%	1.6%	1.9%	2.3%



¹Ending existing NAV includes forecasted appreciation and contributions less distributions.

Forestland Pacing Forecast

1% Allocation



Fiscal Year End (\$ in millions)	2013	2014	2015	2016	2017	2018
Ending Forestland NAV - existing portfolio ¹	2,242	2,242	2,242	2,242	2,242	2,242
Vintage Year Capital Invested		-	-	-	-	-
Total Forestland NAV	2,242	2,242	2,242	2,242	2,242	2,242
% of Total Fund	0.9%	0.8%	0.8%	0.7%	0.7%	0.7%

Appendix: 2013 Capital Market Assumptions

Asset Class	Arithmetic E(R)	Compound E(R)	Volatility (St. Dev.)	Cash Yield	Correlations								Constraints	
					Public Equity	Private Equity	Fixed Income	Real Estate	Infra. & Forest	Inflation Assets	Liquid	ARS	Floor	Cap
Global Equity	9.15	7.75	17.40	2.73	1.00	0.73	0.21	0.37	0.27	0.03	0.00	0.50	0%	100%
Private Equity	12.15	9.33	25.00	0.00	0.73	1.00	0.12	0.38	0.20	0.01	0.00	0.35	0%	12%
Fixed Income	3.73	3.49	7.00	3.70	0.21	0.12	1.00	0.13	0.20	0.25	0.50	0.06	15%	100%
Real Estate	7.91	7.00	14.00	2.00	0.37	0.38	0.13	1.00	0.50	0.10	0.05	0.27	0%	11%
Infra. & Forest.	7.56	7.00	11.00	2.50	0.27	0.20	0.20	0.50	1.00	0.20	0.20	0.20	1%	2%
Inflation Assets	3.20	2.95	7.25	0.88	0.03	0.01	0.25	0.10	0.20	1.00	0.14	0.00	2%	6%
Liquidity	2.00	1.95	3.00	2.02	0.00	0.00	0.50	0.05	0.20	0.14	1.00	0.10	2%	100%
ARS	6.12	5.89	7.00	0.00	0.50	0.35	0.06	0.27	0.20	0.00	0.10	1.00	0%	2%