

# NYC Fire Pension Fund Investment Meeting (Public)

## FIRE

**Schedule** Thursday, May 25, 2023 9:30 AM — 12:30 PM EDT  
**Venue** Zoom Meeting  
**Organizer** Kim Boston

### Agenda

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	PUBLIC AGENDA -	1
9:30 AM	Welcome and Opening	2
9:45 AM	Strategic Asset Allocation Capital Market Assumption Review:	3
	 FIRE Summary of 2023 LTCMA_vf.pdf	4

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**PUBLIC AGENDA -**

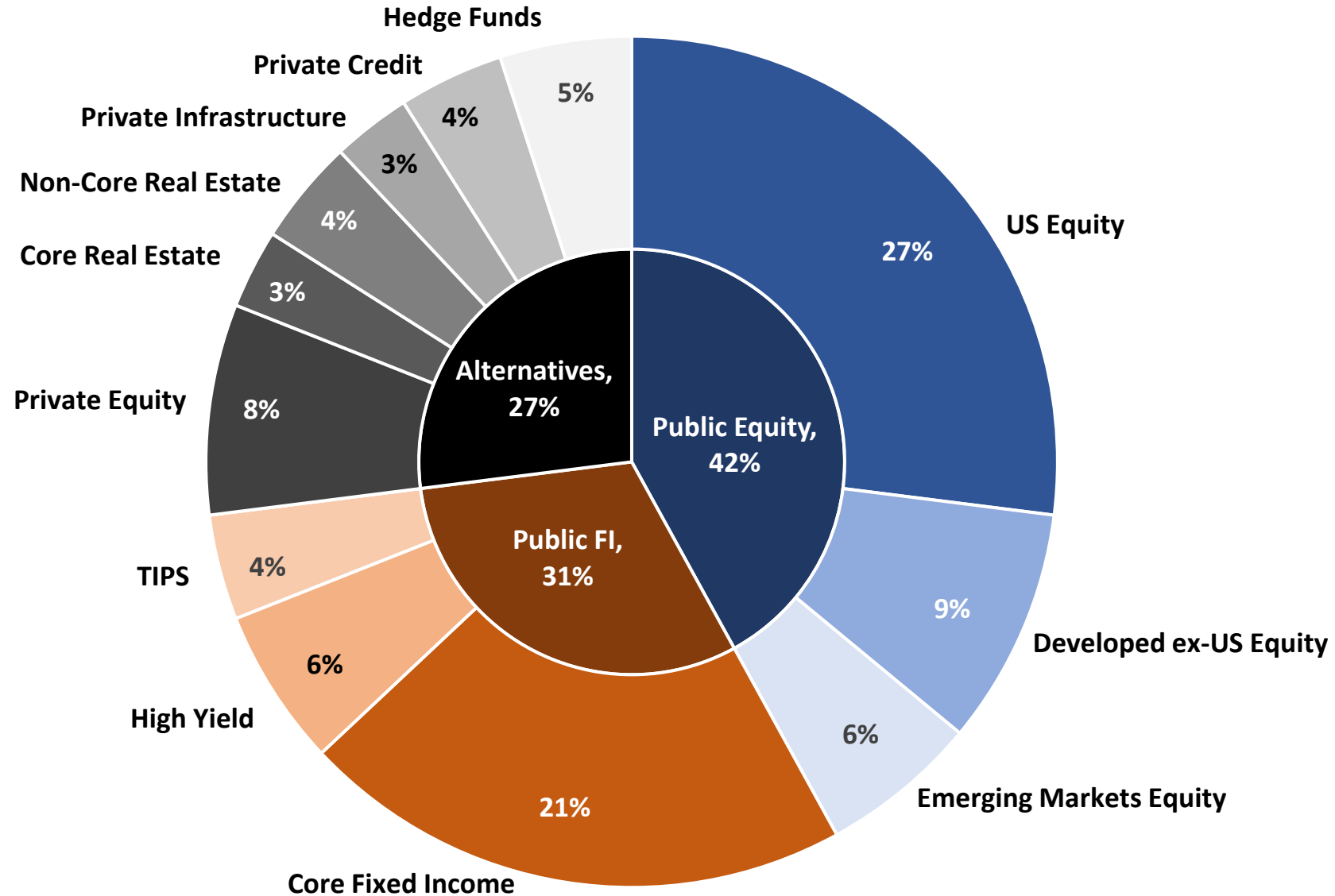
Welcome and Opening

# Strategic Asset Allocation Capital Market Assumption Review:

# 2023 CAPITAL MARKET ASSUMPTIONS



# FIRE ASSET ALLOCATION



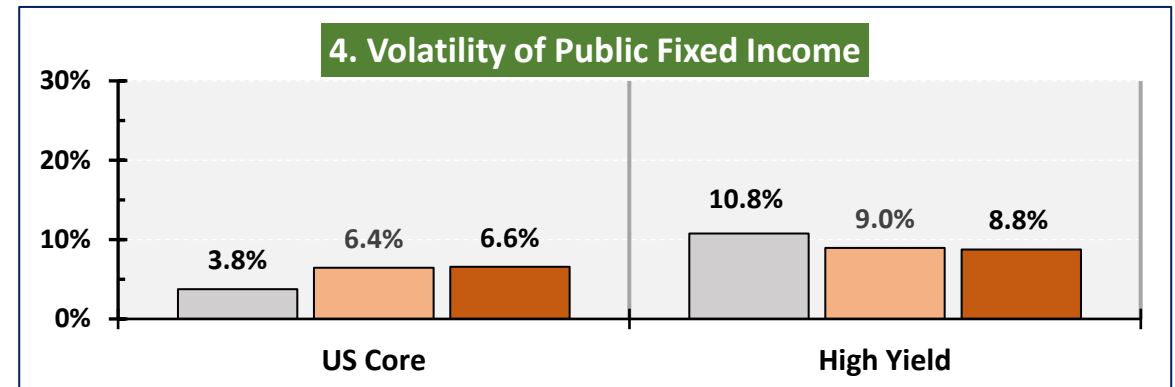
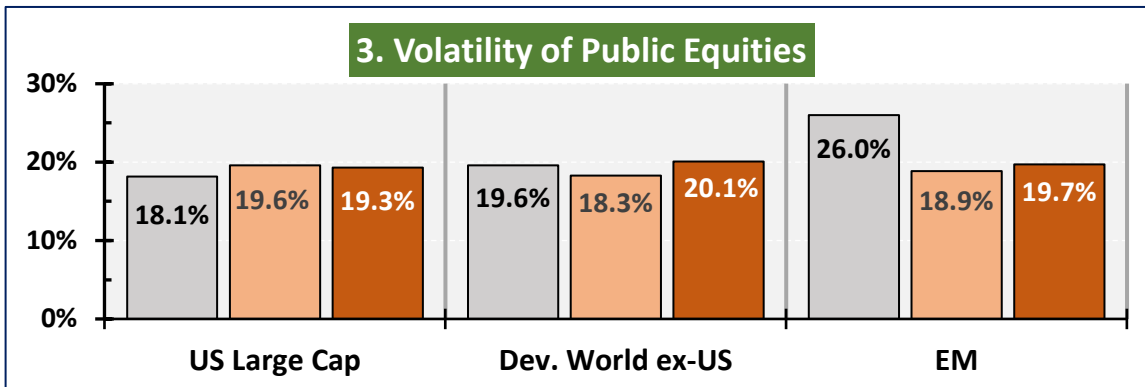
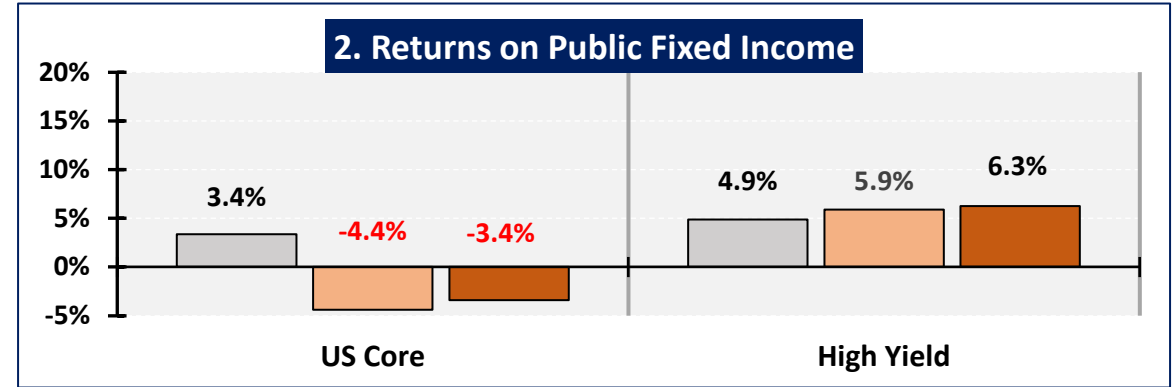
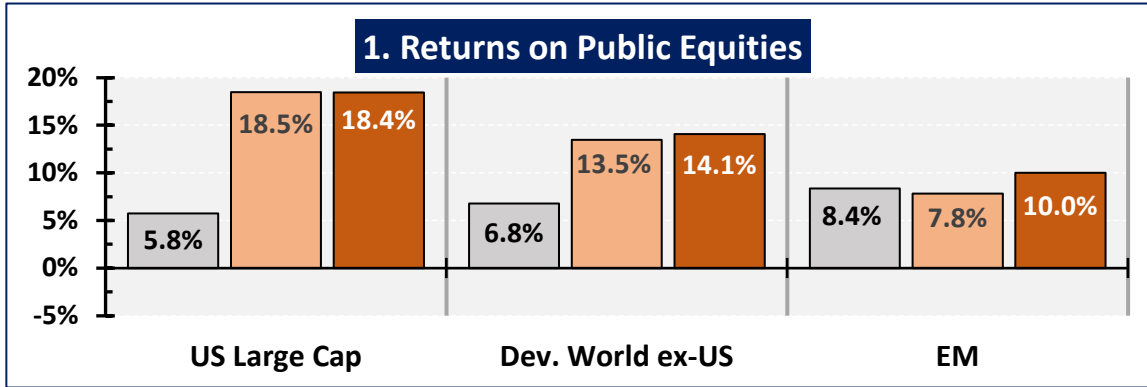
# FIRE BASKET CLAUSE UTILIZATION

Market	Asset Class	Allocation Apr-28, 2023	Basket Clause		
			Category	Utilization	
Public Equity	US Equity	24.2%	Non-Basket Asset	0.0%	
	Foreign Equity	Dev. ex-US	9.5%	Excess over 10%	4.0%
		EM	4.5%		
Public Fixed Income	Core Fixed Income	29.3%	Non-Basket Asset	0.0%	
	TIPS	3.6%	Non-Basket Asset	0.0%	
	High Yield	3.6%	Excess over 10%	0.0%	
Alternatives	Private Equity	8.2%	Basket Asset	8.2%	
	Private Credit	5.5%	Basket Asset	5.5%	
	Real Assets	Infrastructure	1.7%	Excess over 10%	0.0%
		Real Estate	5.7%		
	Hedge Funds	4.5%	Basket Asset	4.5%	
TOTAL		100.3%	<b>Utilization</b>	<b>22.2%</b>	



# 1. REVIEW: 2019 ASSUMPTIONS VS REALIZED OUTCOME

## Public Markets



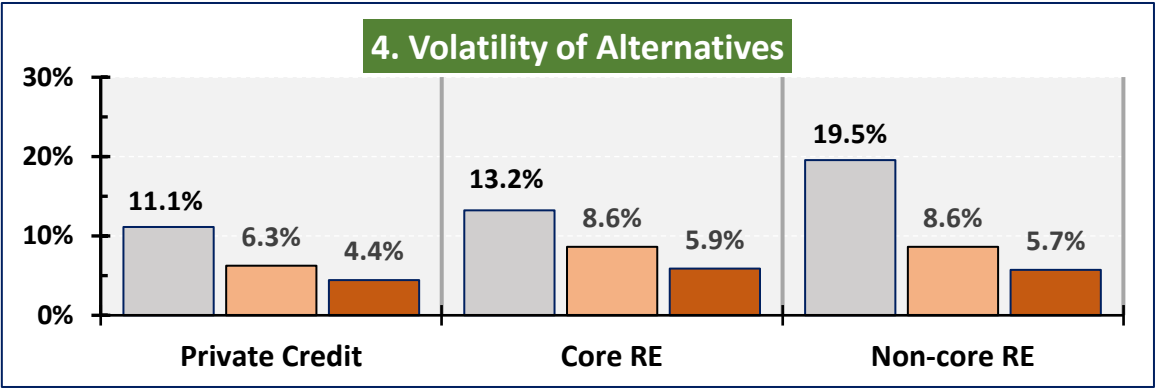
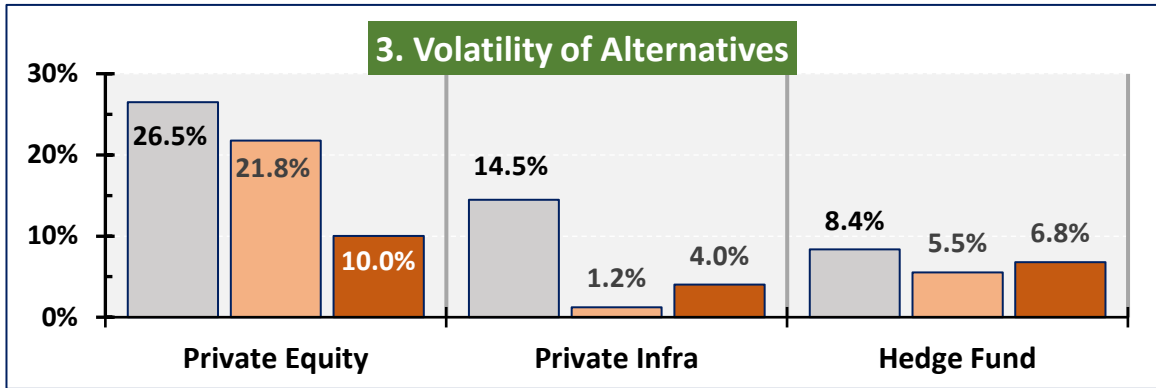
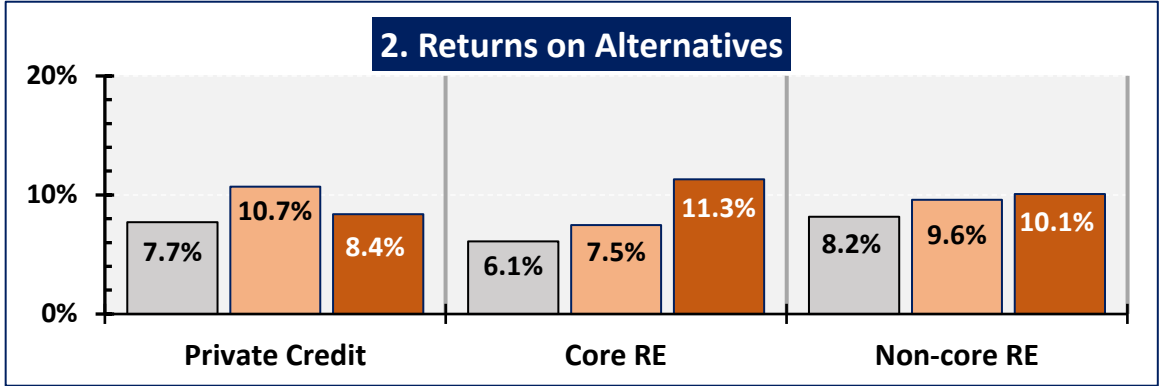
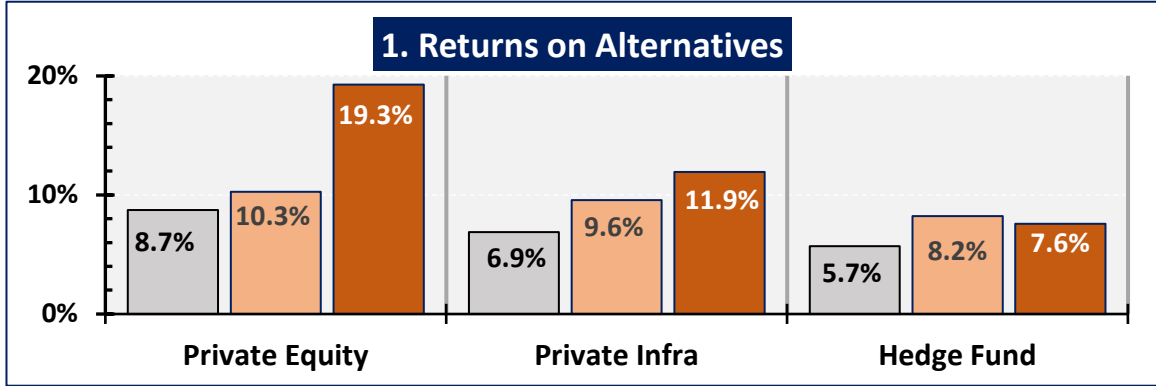
■ 2019 Assumptions - Average of the 10yr Capital Market Assumptions across five Systems

■ Benchmark Realized Outcome - Strategic Benchmark Performance from Q2 2019 to Q2 2023

■ Investment Realized Outcome - Realized performance net of fee from Q2 2019 to Q2 2023, average across five Systems

# 1. REVIEW: 2019 ASSUMPTIONS VS REALIZED OUTCOME

## Private Markets



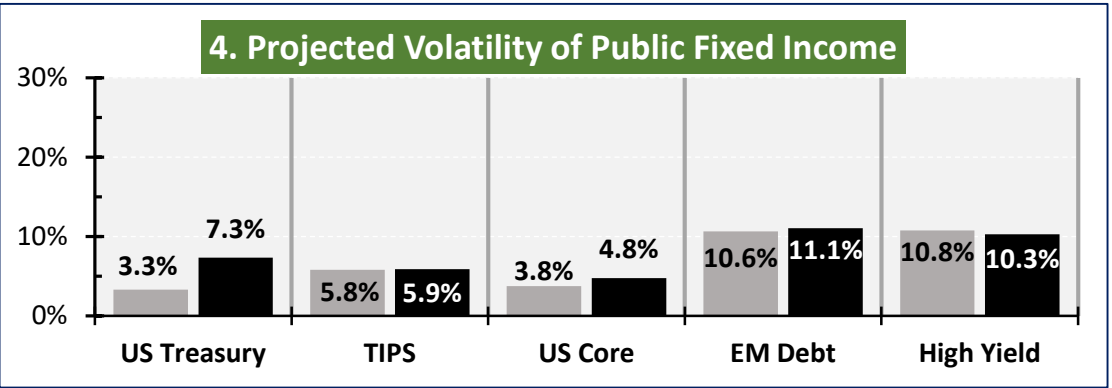
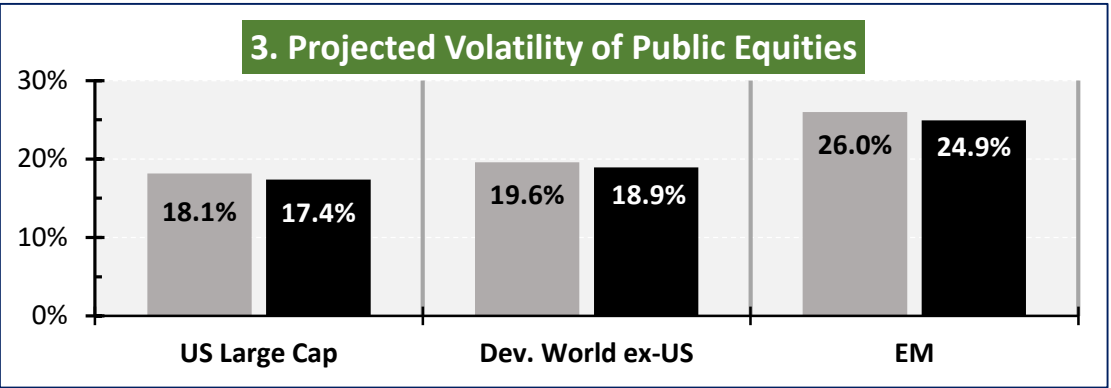
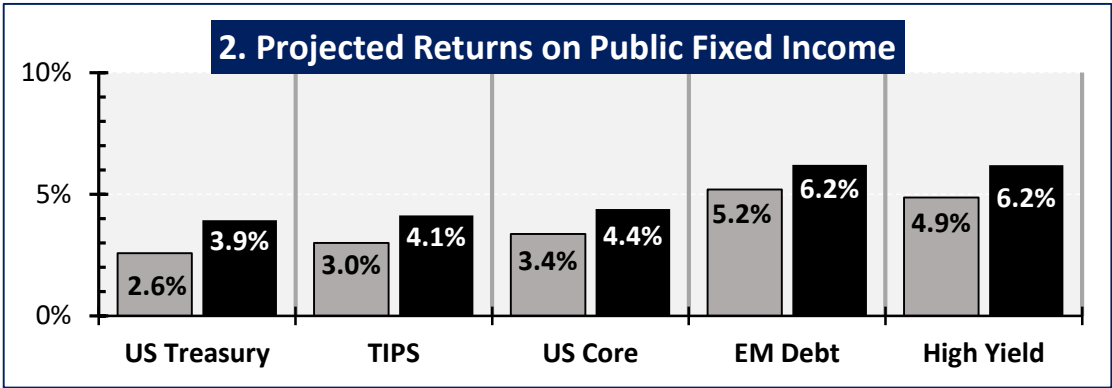
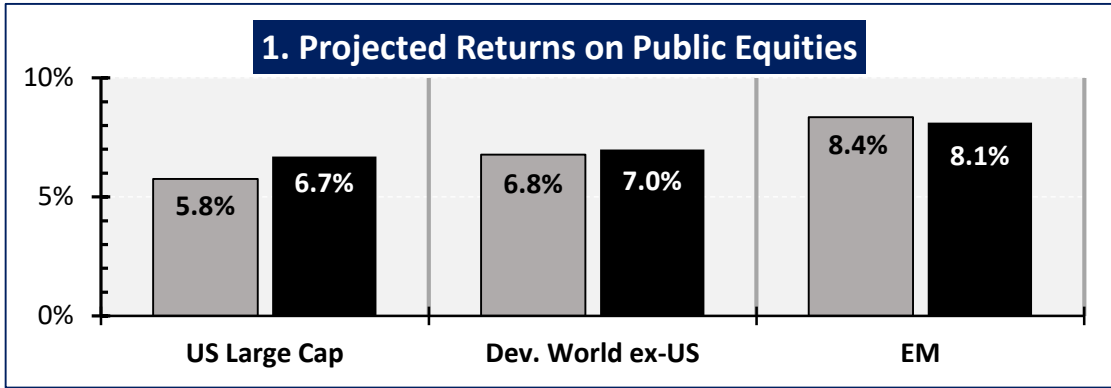
- 2019 Assumptions** - Average of the 10yr Capital Market Assumptions across five Systems
- Benchmark Realized Outcome** - Strategic Benchmark Performance from Q2 2019 to Q2 2023
- Investment Realized Outcome** - Realized performance net of fee from Q2 2019 to Q2 2023, average across five Systems (Hedge funds represent FPF and PPF only)



# 2. COMPARE: MARKET ASSUMPTIONS FROM 2019 TO 2023

## Public Markets

Average of Capital Market Assumptions across 5 General Consultants



■ 2019 Assumptions

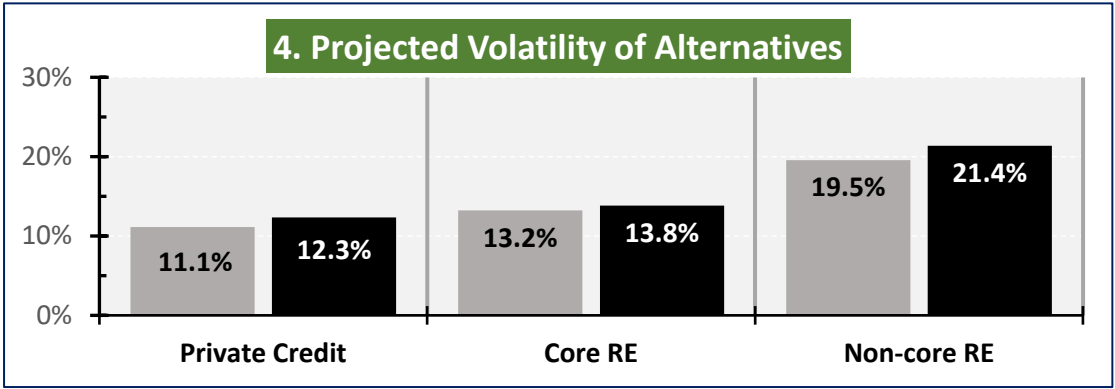
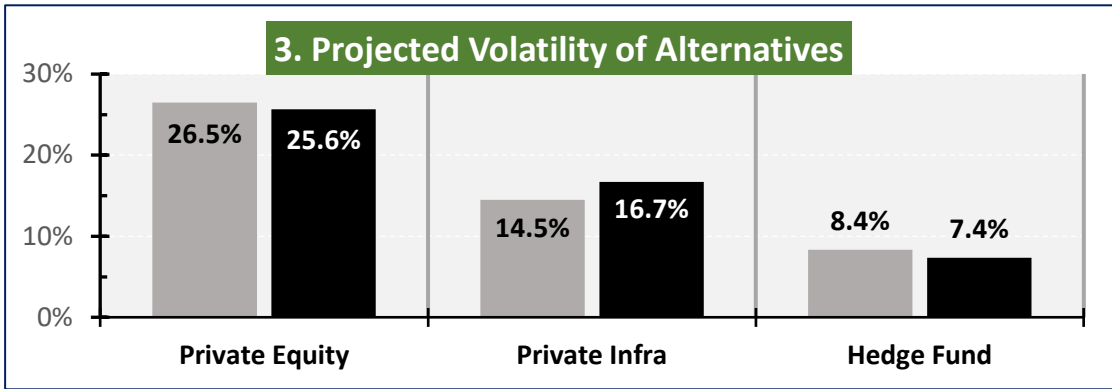
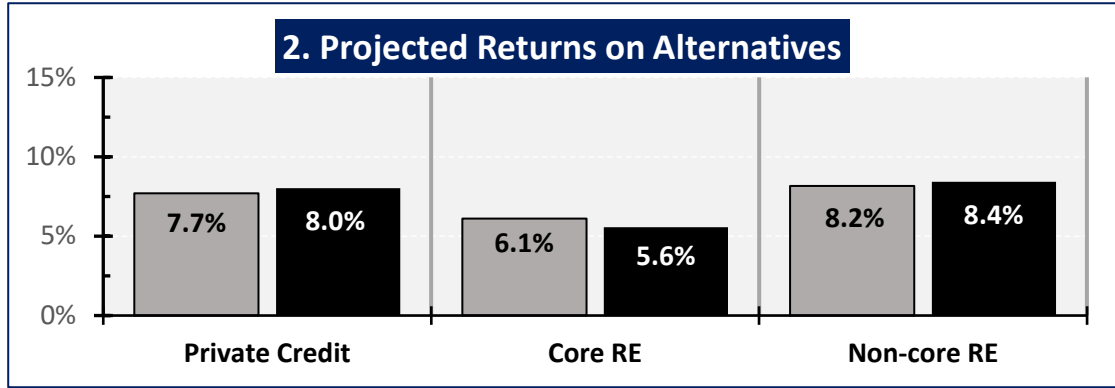
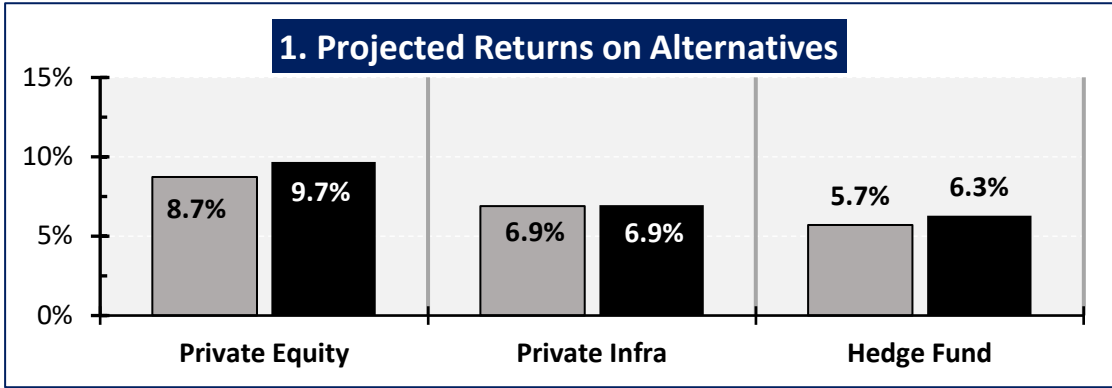
■ 2023 Assumptions



# 2. COMPARE: MARKET ASSUMPTIONS FROM 2019 TO 2023

## Private Markets

### Average of Capital Market Assumptions across 5 General Consultants



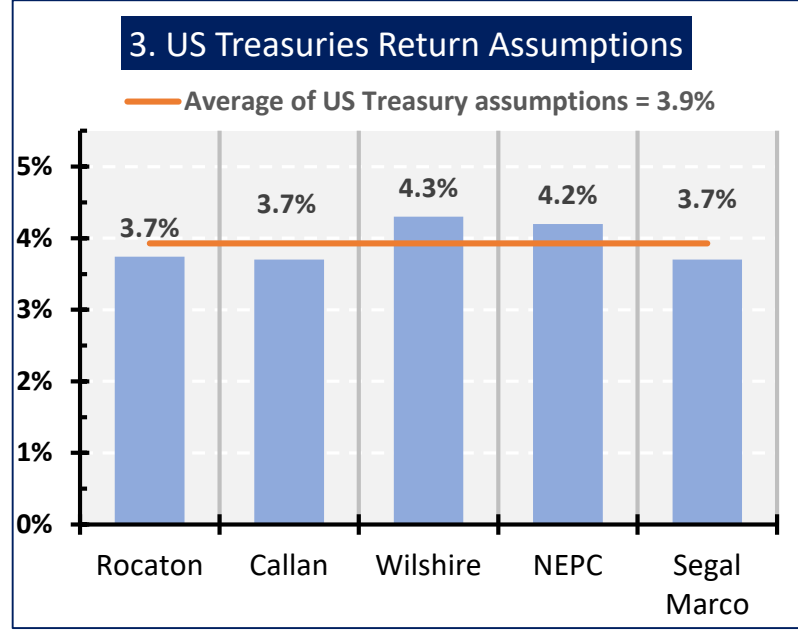
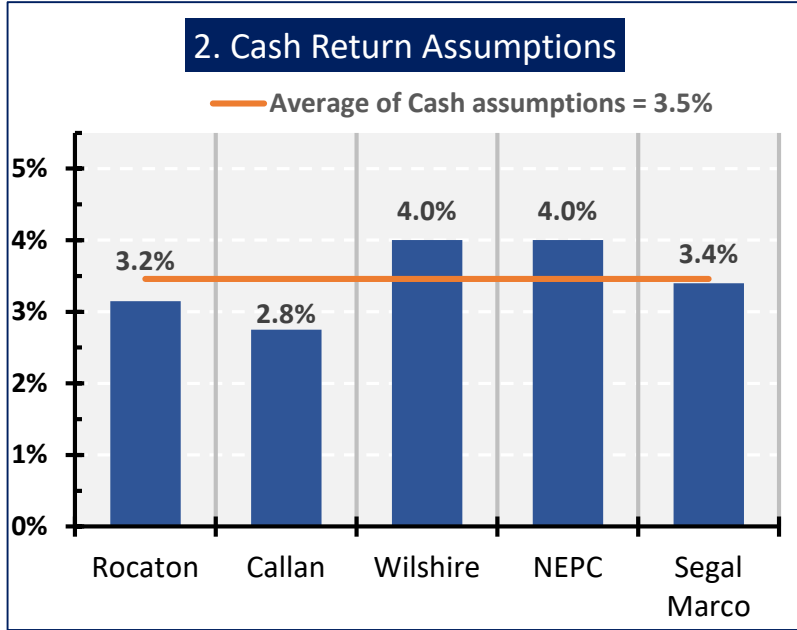
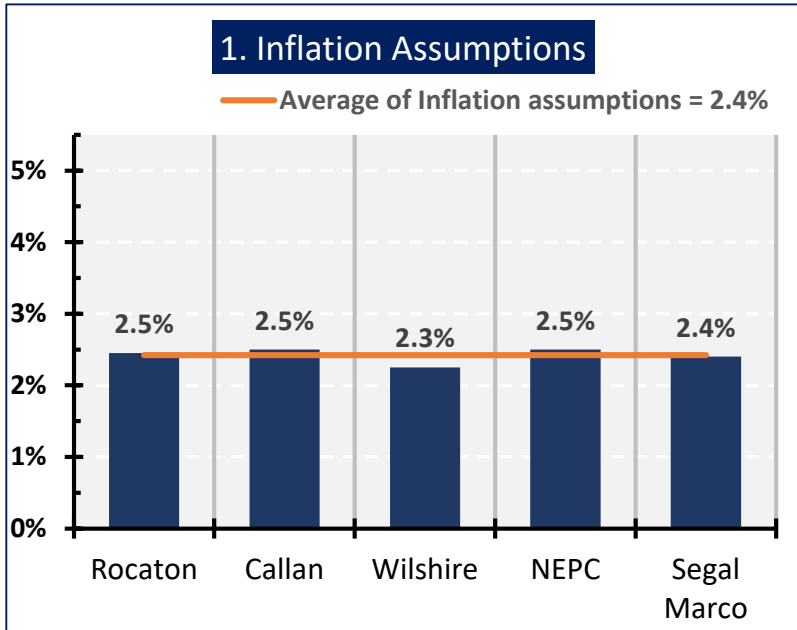
■ 2019 Assumptions

■ 2023 Assumptions



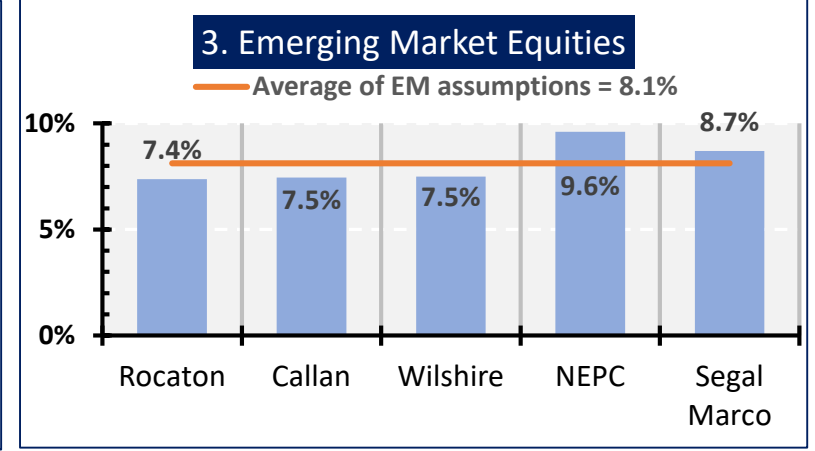
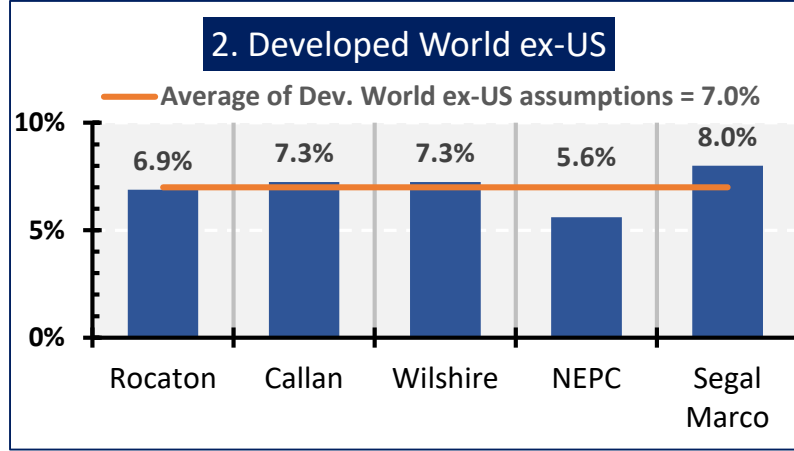
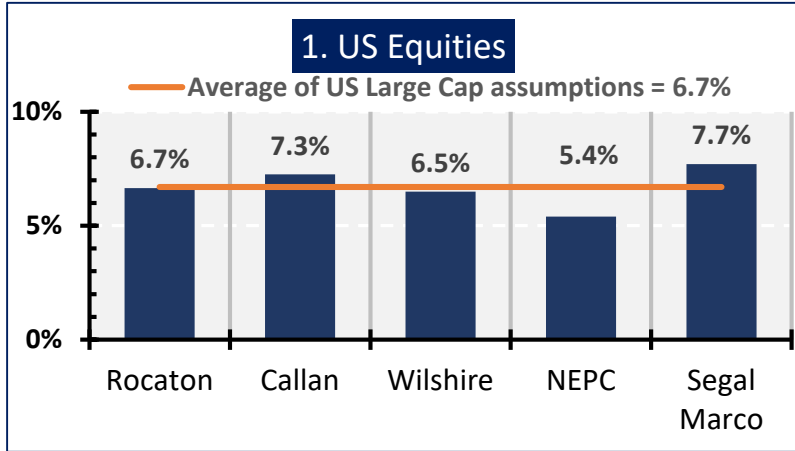
# 3. 2023 CAPITAL MARKET ASSUMPTIONS

## Macro Assumptions

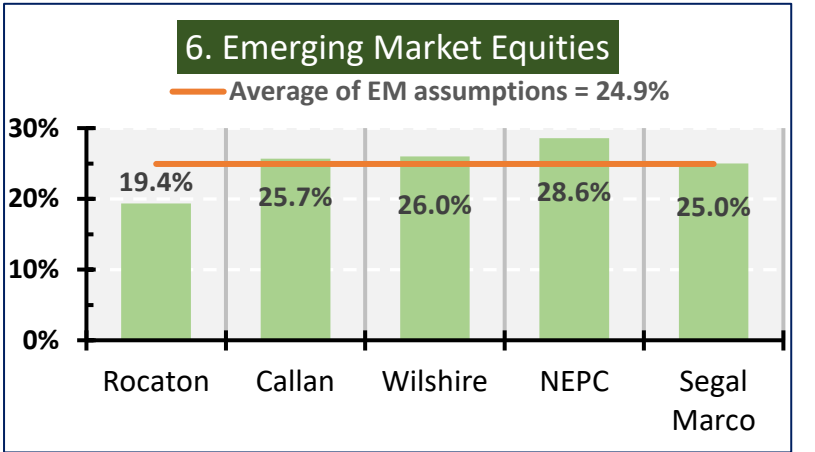
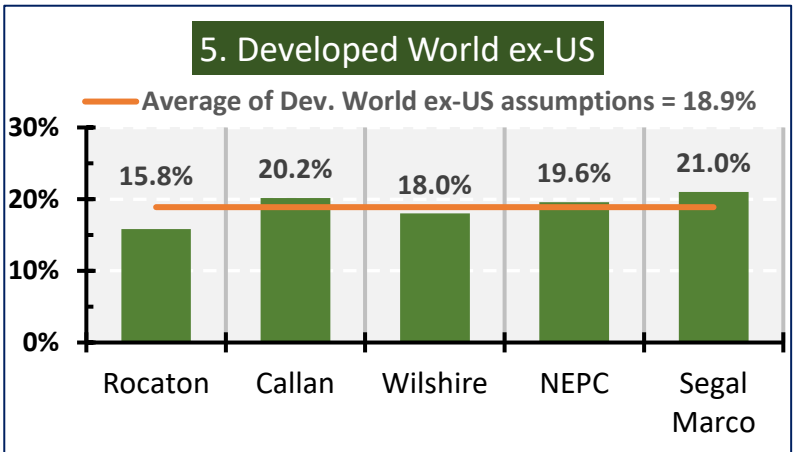
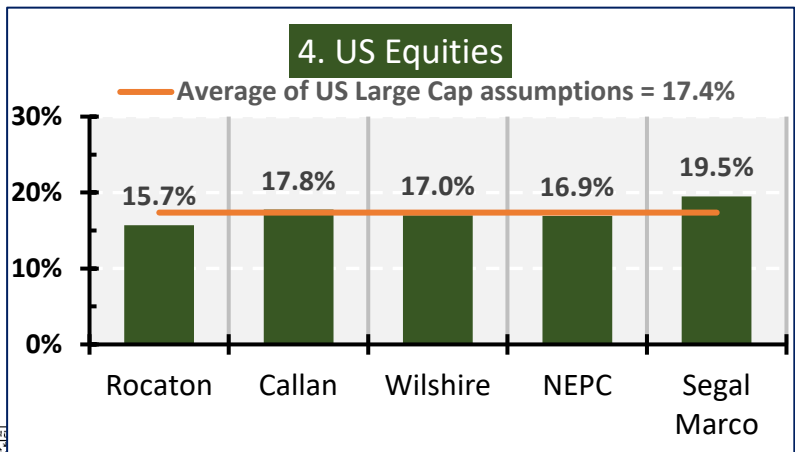


# 3. 2023 CAPITAL MARKET ASSUMPTIONS

## Public Equity Return Assumptions

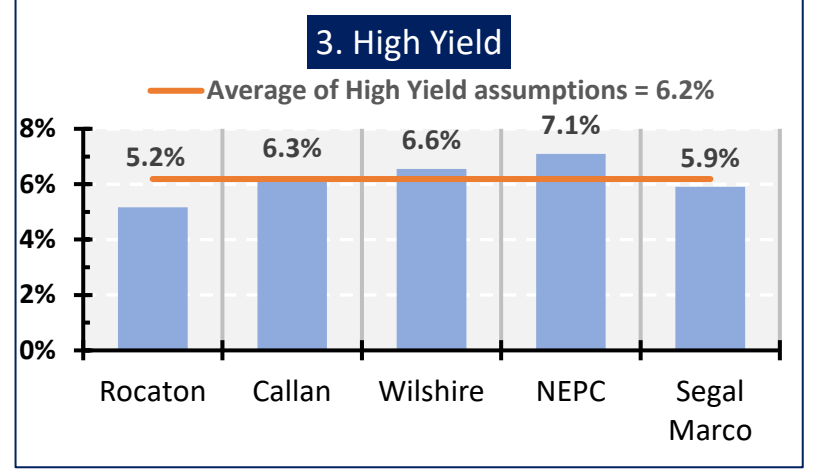
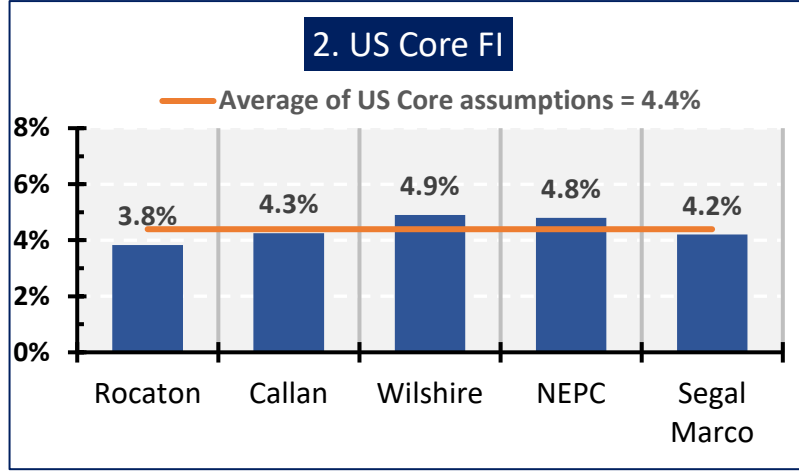
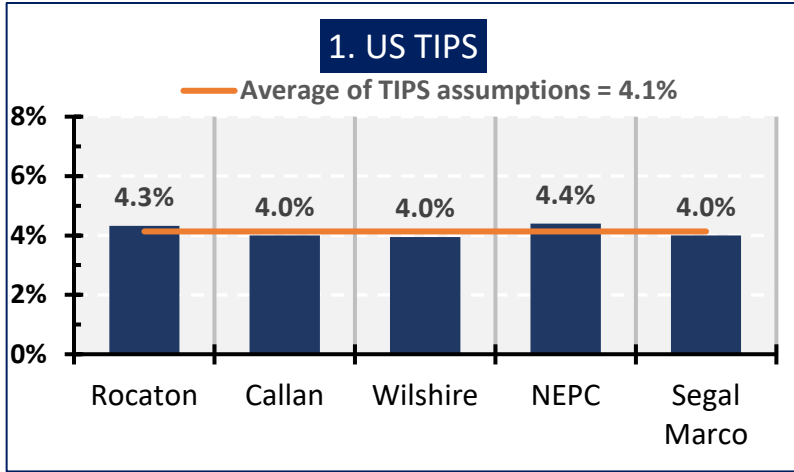


## Public Equity Volatility Assumptions

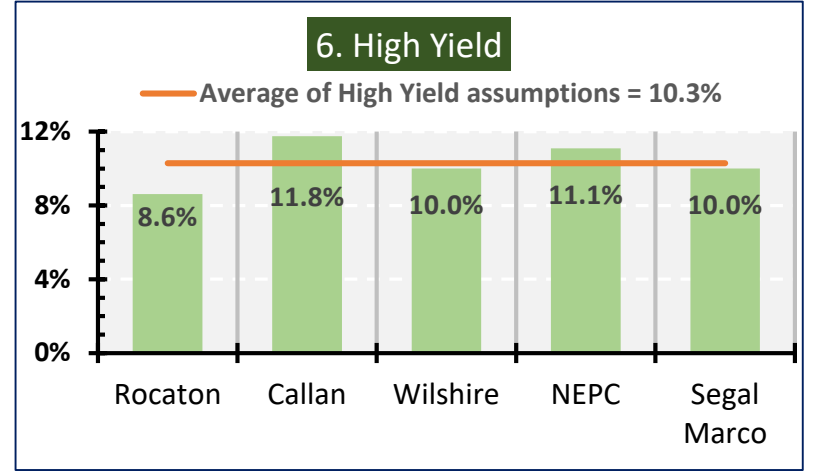
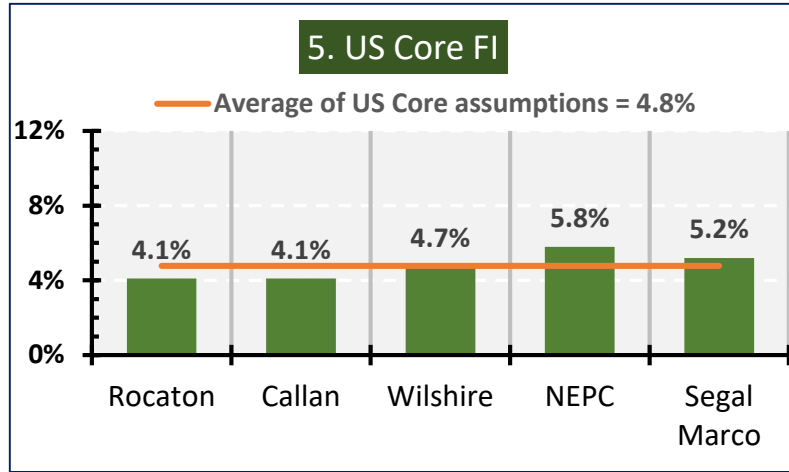
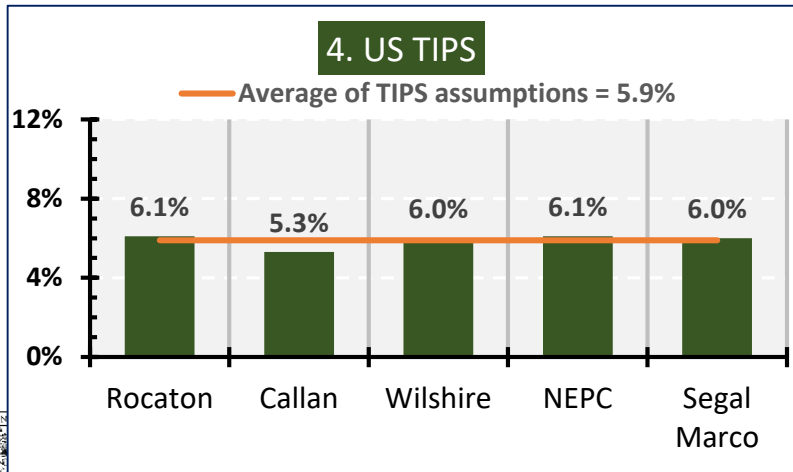


# 3. 2023 CAPITAL MARKET ASSUMPTIONS

## Public Fixed Income Return Assumptions

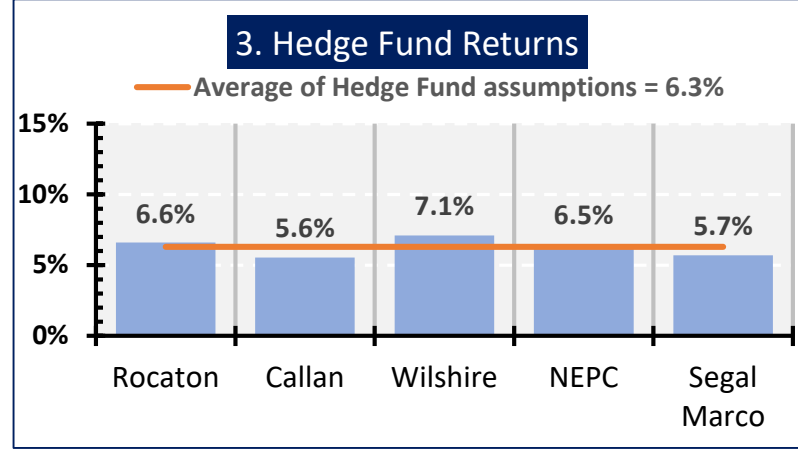
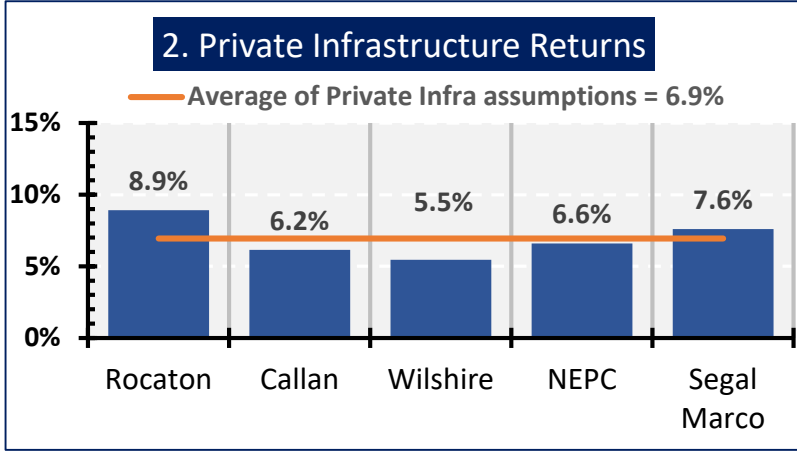
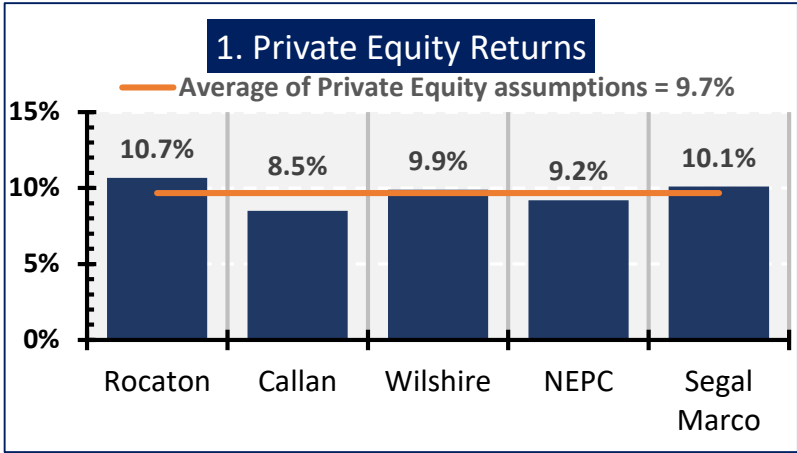


## Public Fixed Income Volatility Assumptions

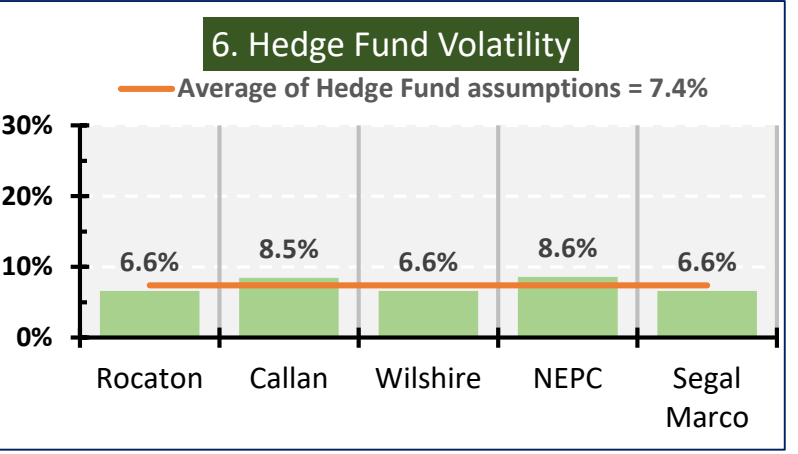
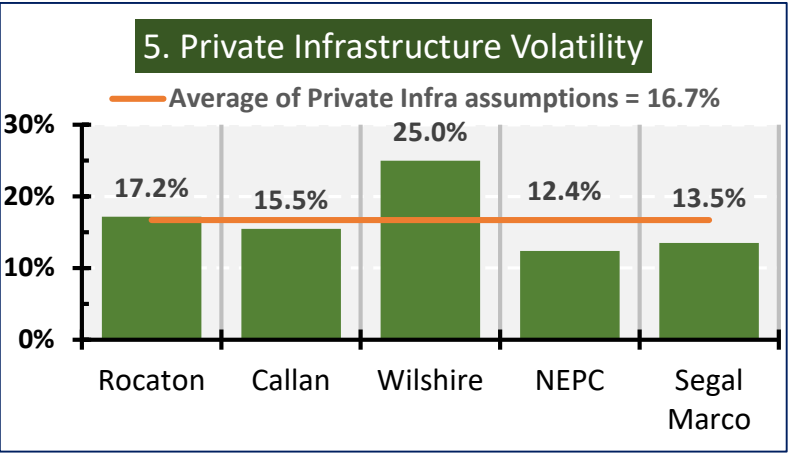
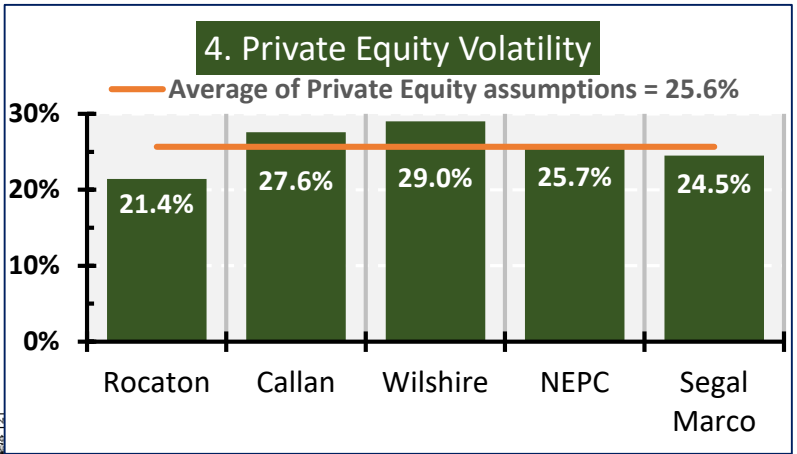


# 3. 2023 CAPITAL MARKET ASSUMPTIONS

## Alternatives Return Assumptions

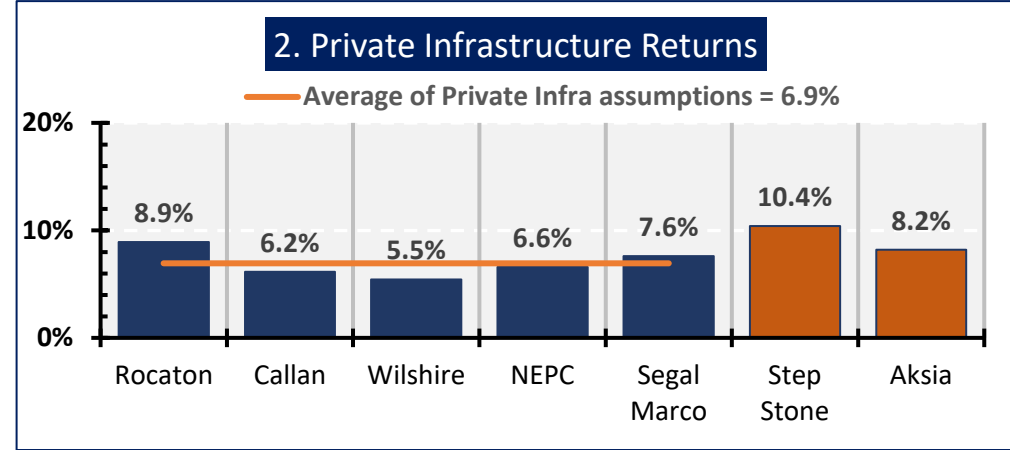
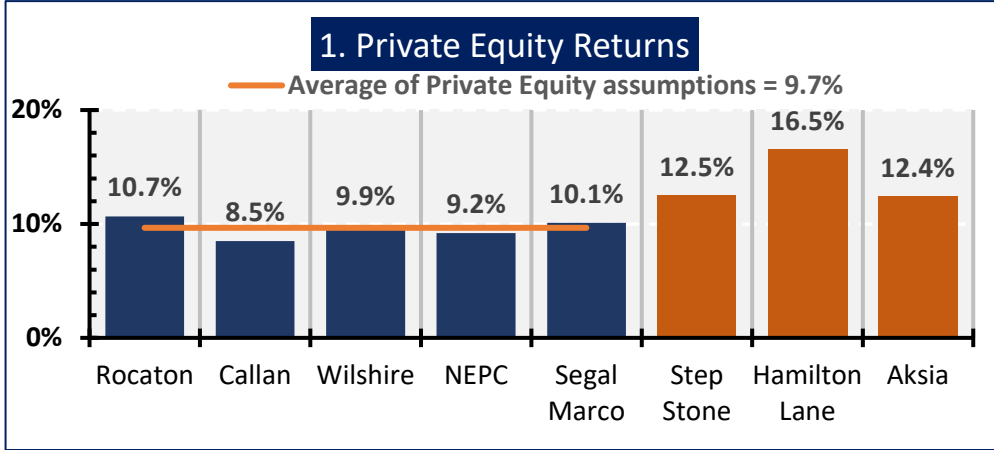


## Alternative Volatility Assumptions

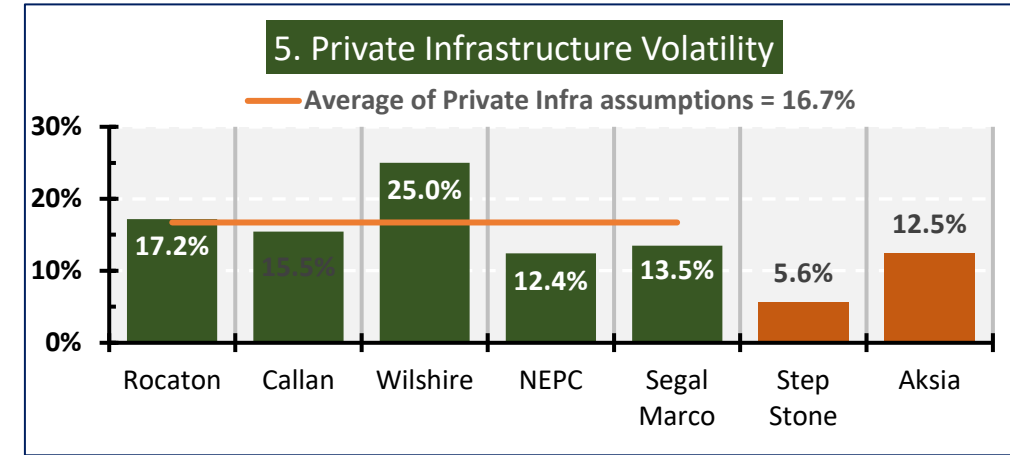
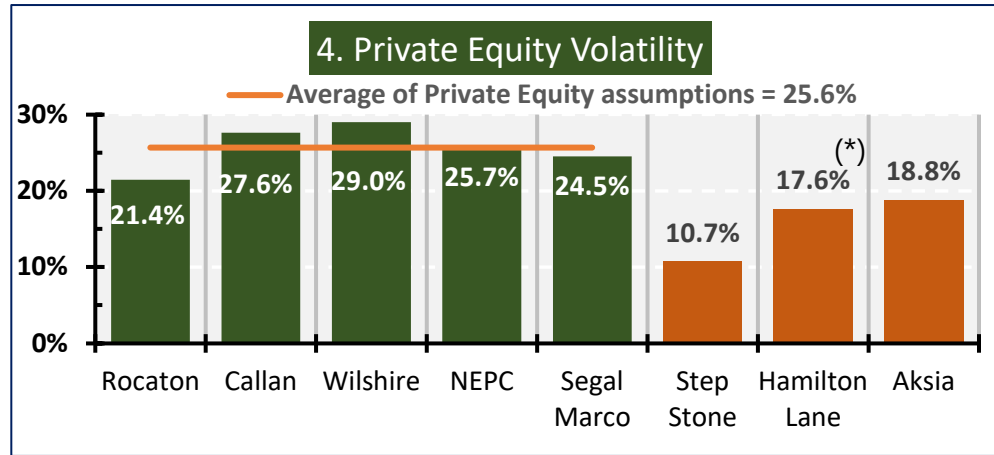


# 3. 2023 ASSUMPTIONS OF SPECIALIST CONSULTANTS

## Alternatives Return Assumptions



## Alternatives Volatility Assumptions

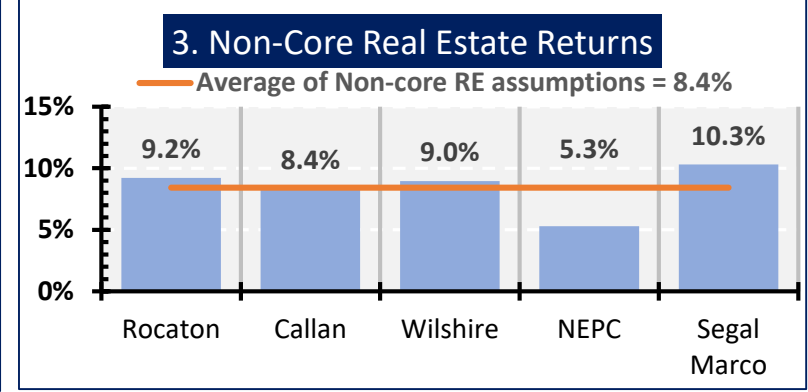
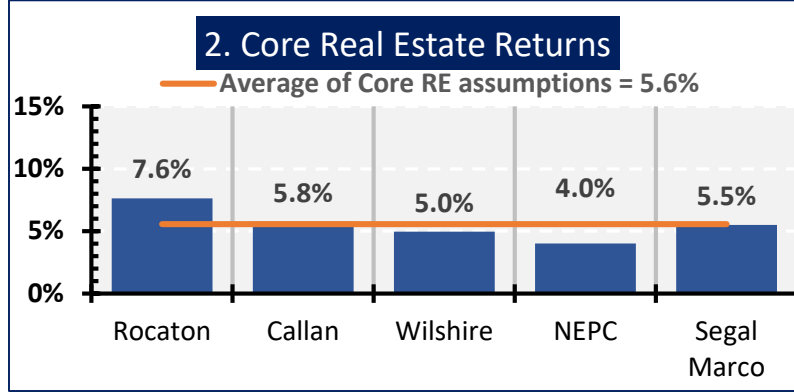
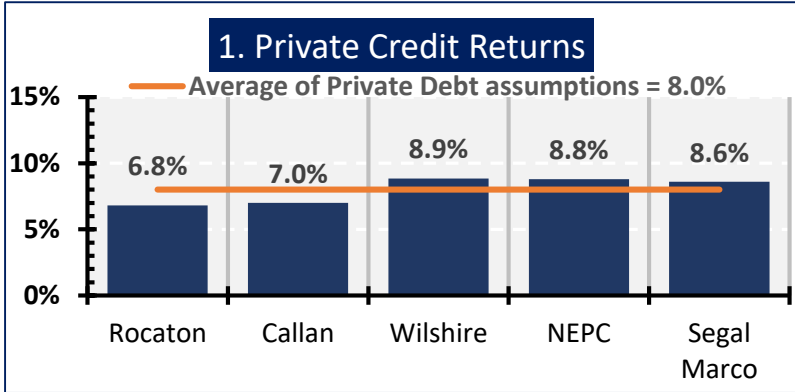


(\*) Hamilton Lane reported the de-smoothed 20yr volatility

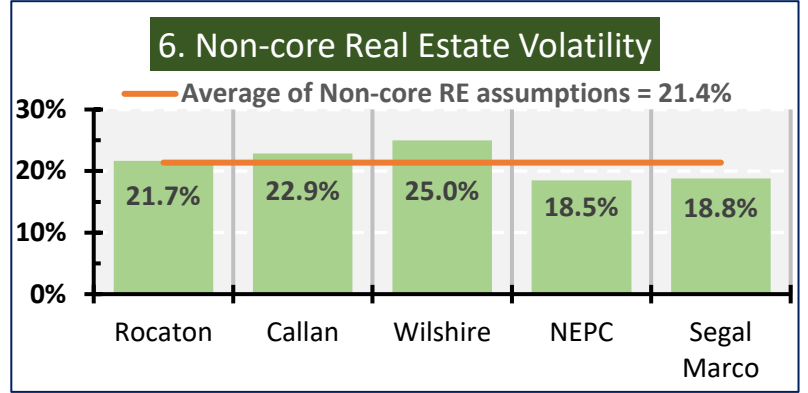
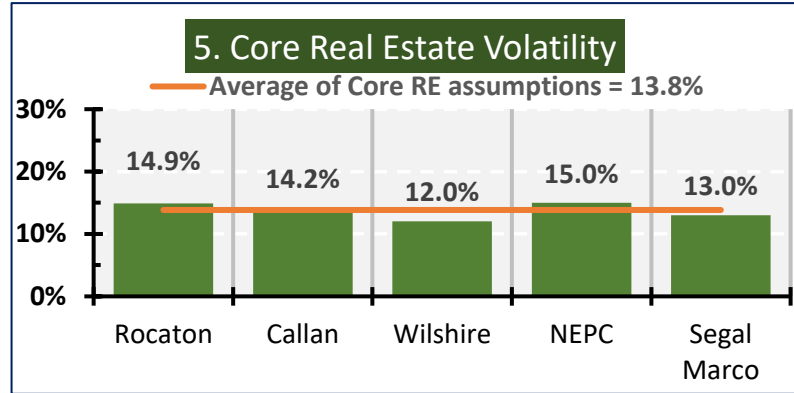
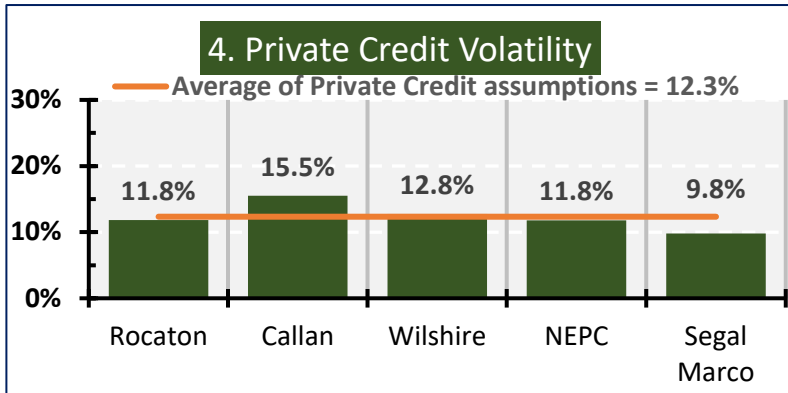


# 3. 2023 CAPITAL MARKET ASSUMPTIONS

## Alternatives Return Assumptions

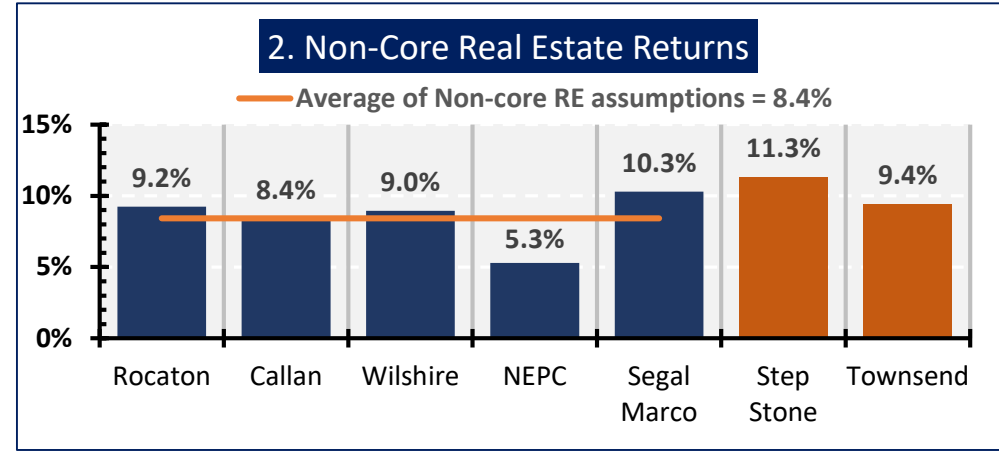
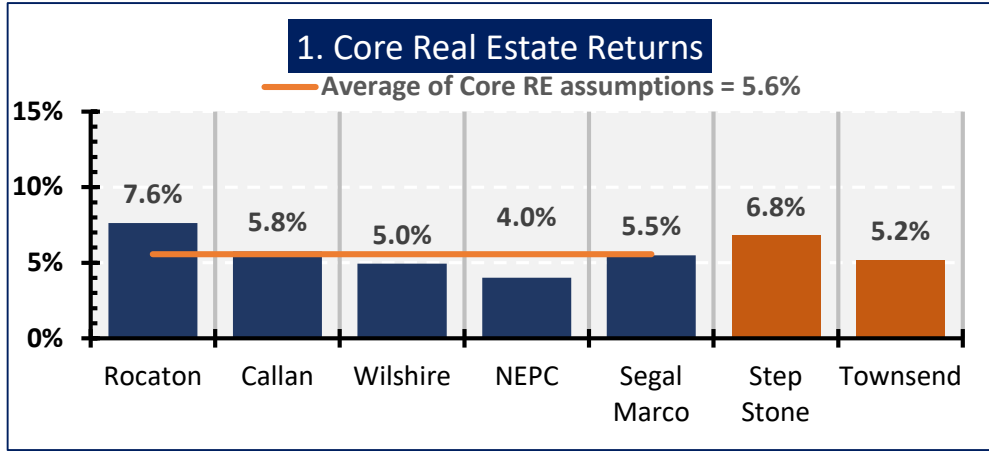


## Alternatives Volatility Assumptions

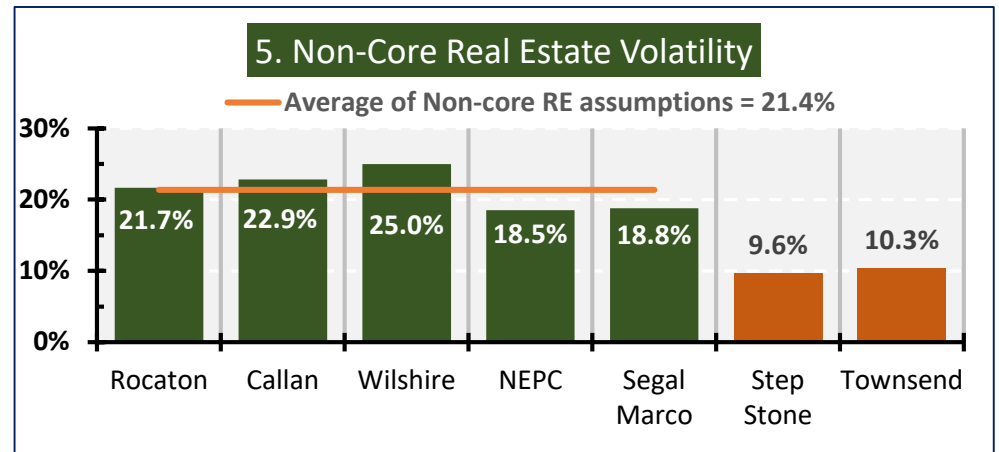
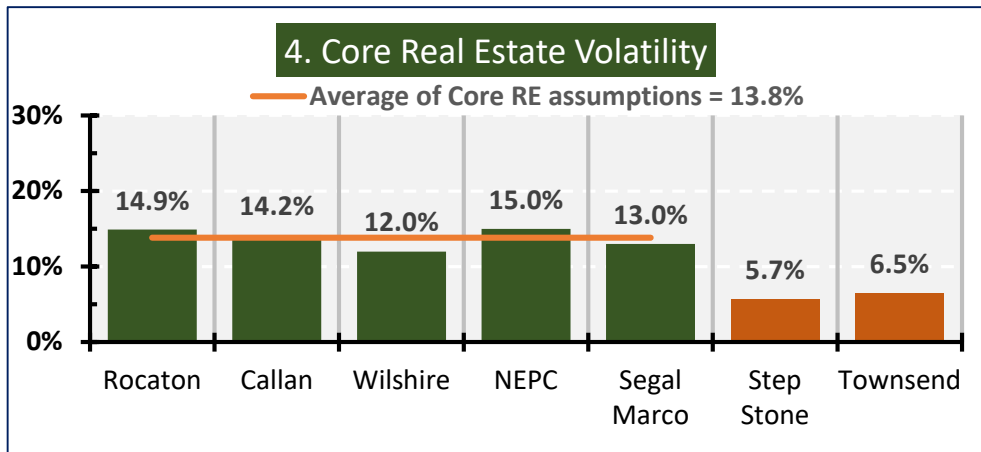


# 3. 2023 ASSUMPTIONS OF SPECIALIST CONSULTANTS

## Alternatives Return Assumptions

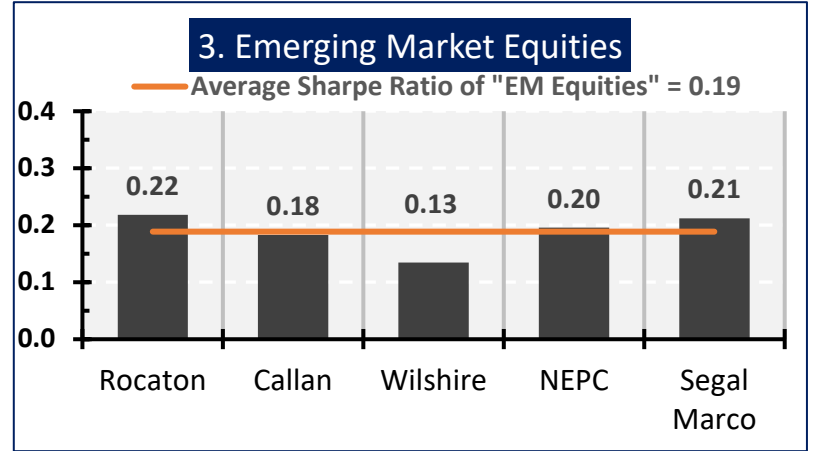
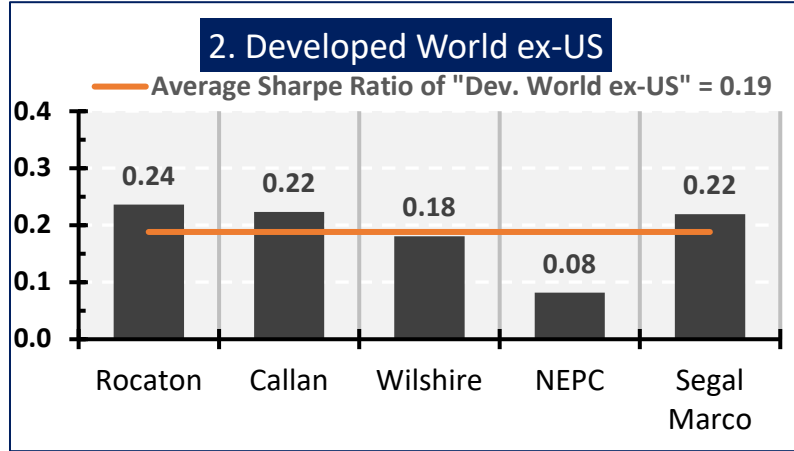
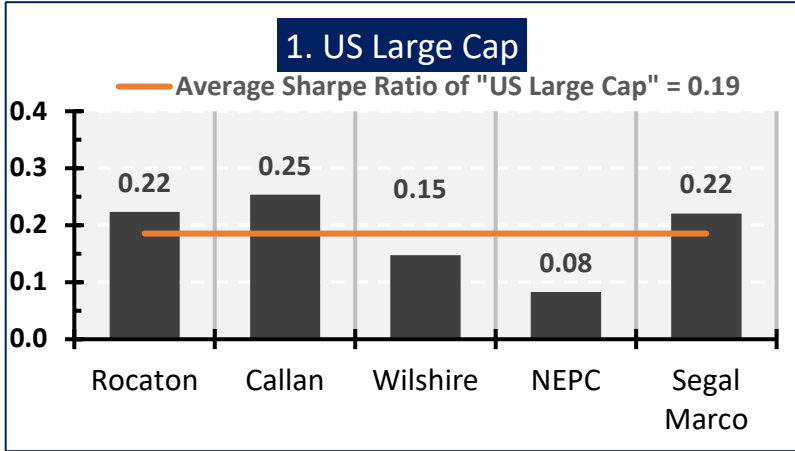


## Alternatives Volatility Assumptions

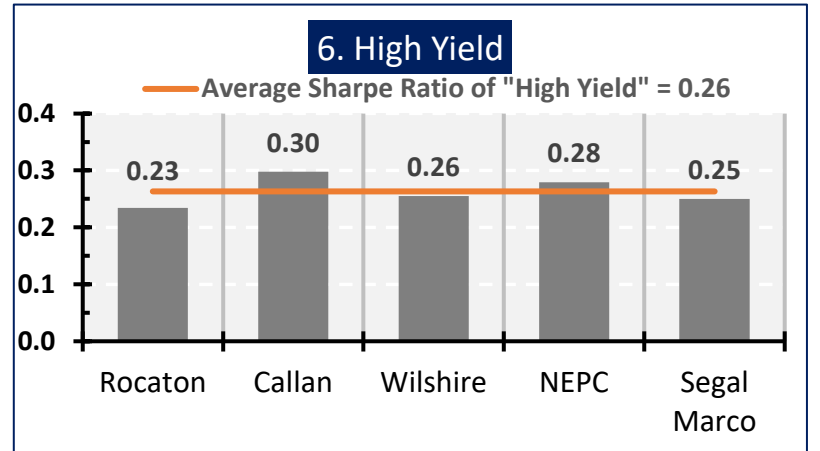
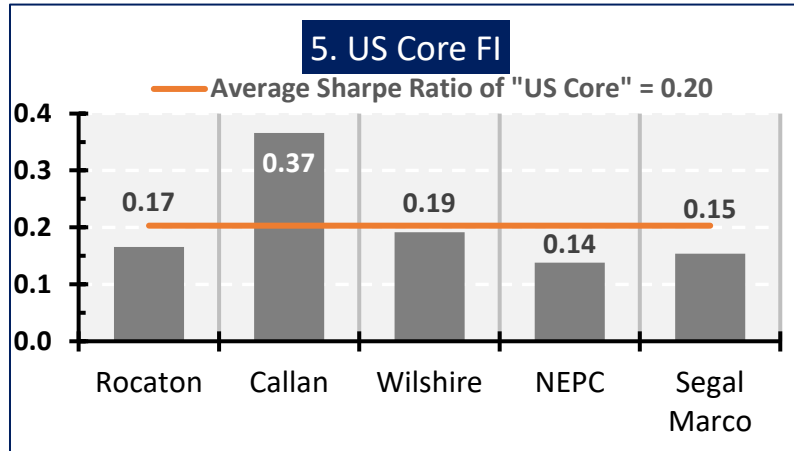
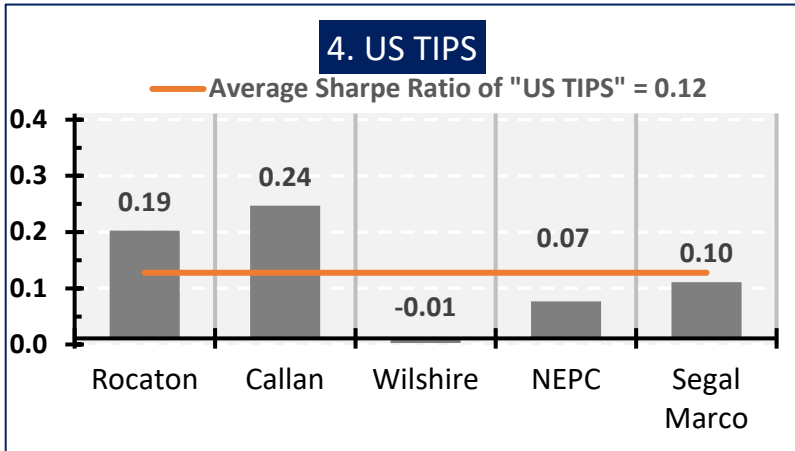


# 4. SHARPE RATIO

## Assumed Sharpe for Public Equities

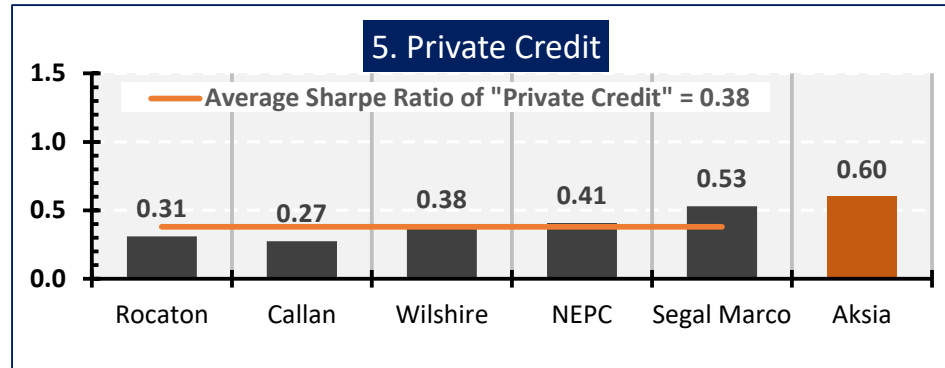
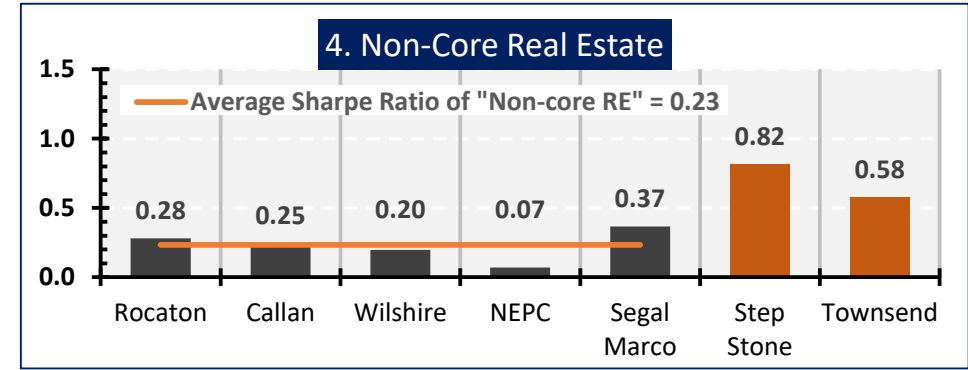
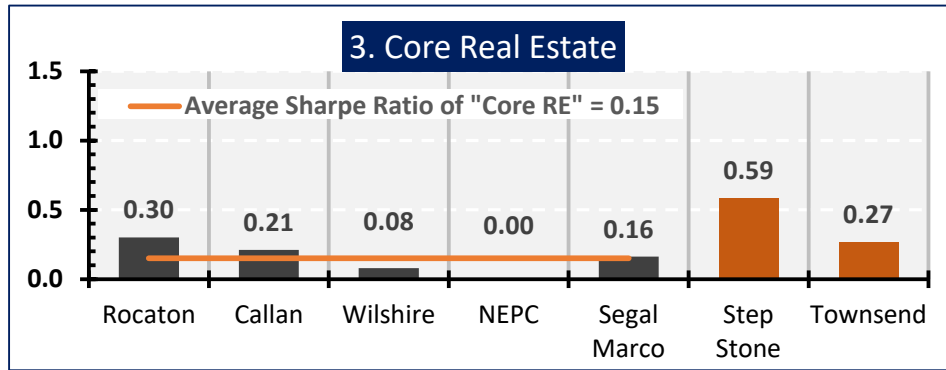
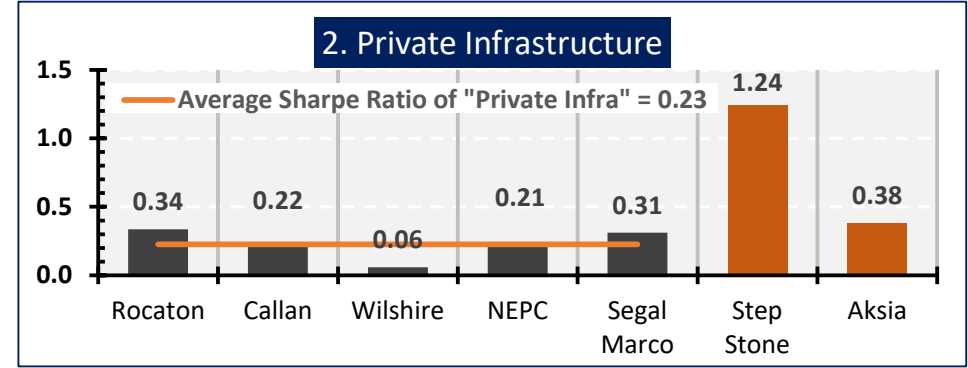
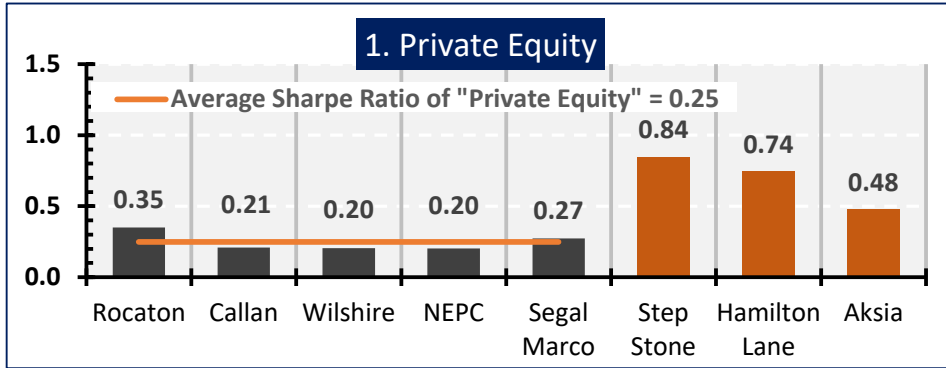


## Assumed Sharpe for Public Fixed Income



# 4. SHARPE RATIO

## Assumed Sharpe for Alternatives



# APPENDIX

# SUMMARY OF 2023 CAPITAL MARKET ASSUMPTIONS



# 4. MATRIX OF 2023 ASSUMPTIONS:

# CORRELATION

## Correlation with US Large Cap Equity

		Correlation with US Large Cap Equity							
		General Consultants							
		Rocaton	Callan	Wilshire	NEPC	Segal Marco	Average	Min	Max
Macro	Inflation	n/a	-0.02	-0.10	n/a	n/a	-0.06	-0.10	-0.02
	Cash	n/a	-0.06	-0.05	0.00	-0.23	-0.08	-0.23	0.00
Public Equity	US Large Cap	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Dev. World ex-US	0.83	0.73	0.81	0.82	0.87	0.81	0.73	0.87
	EM	0.72	0.79	0.74	0.71	0.71	0.73	0.71	0.79
Public Fixed Income	US Treasury	-0.04	-0.05	n/a	-0.13	n/a	-0.07	-0.13	-0.04
	TIPS	0.26	-0.07	-0.05	-0.13	0.39	0.08	-0.13	0.39
	US Core	0.22	0.02	0.28	0.11	0.28	0.18	0.02	0.28
	EM Debt	0.58	0.65	n/a	0.67	0.56	0.62	0.56	0.67
	High Yield	0.67	0.75	0.54	0.66	0.78	0.68	0.54	0.78
Alts	Private Equity	0.86	0.79	0.72	0.91	0.75	0.81	0.72	0.91
	Private Infra	0.63	0.48	0.62	0.50	0.74	0.59	0.48	0.74
	Private Credit	0.58	0.69	0.68	0.63	0.44	0.60	0.44	0.69
	Core RE	0.66	0.44	0.55	0.46	0.09	0.44	0.09	0.66
	Non-core RE	0.65		n/a	0.55	0.58	0.59	0.55	0.65
	Hedge Fund	0.53	0.67	n/a	0.85	0.78	0.71	0.53	0.85



# 4. MATRIX OF 2023 ASSUMPTIONS:

# CORRELATION

## Correlation with US Core Fixed Income

		Correlation with US Core FI					Average	Min	Max
		General Consultants							
		Rocaton	Callan	Wilshire	NEPC	Segal Marco			
Macro	Inflation	n/a	-0.23	-0.12	n/a	n/a	-0.18	-0.23	-0.12
	Cash	n/a	0.15	0.18	0.16	0.00	0.12	0.00	0.18
Public Equity	US Large Cap	0.22	0.02	0.28	0.11	0.28	0.18	0.02	0.28
	Dev. World ex-US	0.26	0.00	0.13	0.10	0.27	0.15	0.00	0.27
	EM	0.21	-0.04	0.00	0.06	0.28	0.10	-0.04	0.28
Public Fixed Income	US Treasury	0.90	0.83	n/a	0.92	n/a	0.88	0.83	0.92
	TIPS	0.81	0.70	0.60	0.90	0.85	0.77	0.60	0.90
	US Core	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	EM Debt	0.58	0.19	n/a	0.55	0.51	0.46	0.19	0.58
	High Yield	0.27	0.09	0.24	0.27	0.43	0.26	0.09	0.43
Alts	Private Equity	0.20	-0.09	0.30	0.08	0.10	0.12	-0.09	0.30
	Private Infra	0.24	0.15	0.22	0.13	0.39	0.23	0.13	0.39
	Private Credit	0.06	0.00	0.24	0.14	0.08	0.10	0.00	0.24
	Core RE	0.41	0.14	0.19	0.17	-0.07	0.17	-0.07	0.41
	Non-core RE	0.39		n/a	0.21	0.02	0.21	0.02	0.39
	Hedge Fund	0.17	0.29	n/a	0.23	0.14	0.21	0.14	0.29



# 4. MATRIX OF 2023 ASSUMPTIONS:

# RETURNS

## Returns: 10yr Geometric Return Assumptions

		General Consultants				
		Rocaton	Callan	Wilshire	NEPC	Segal Marco
Macro	Inflation	2.5%	2.5%	2.3%	2.5%	2.4%
	Cash	3.2%	2.8%	4.0%	4.0%	3.4%
Public Equity	US Large Cap	6.7%	7.3%	6.5%	5.4%	7.7%
	Dev. World ex-US	6.9%	7.3%	7.3%	5.6%	8.0%
	EM	7.4%	7.5%	7.5%	9.6%	8.7%
Public Fixed Income	US Treasury	3.7%	3.7%	4.3%	4.2%	3.7%
	TIPS	4.3%	4.0%	4.0%	4.4%	4.0%
	US Core	3.8%	4.3%	4.9%	4.8%	4.2%
	EM Debt	6.2%	5.9%	n/a	7.1%	5.7%
	High Yield	5.2%	6.3%	6.6%	7.1%	5.9%
Alts	Private Equity	10.7%	8.5%	9.9%	9.2%	10.1%
	Private Infra	8.9%	6.2%	5.5%	6.6%	7.6%
	Private Credit	6.8%	7.0%	8.9%	8.8%	8.6%
	Core RE	7.6%	5.8%	5.0%	4.0%	5.5%
	Non-core RE	9.2%	8.4%	9.0%	5.3%	10.3%
	Hedge Fund	6.6%	5.6%	7.1%	6.5%	5.7%

General Consultants		
Average	Min	Max
2.4%	2.3%	2.5%
3.5%	2.8%	4.0%
6.7%	5.4%	7.7%
7.0%	5.6%	8.0%
8.1%	7.4%	9.6%
3.9%	3.7%	4.3%
4.1%	4.0%	4.4%
4.4%	3.8%	4.9%
6.2%	5.7%	7.1%
6.2%	5.2%	7.1%
9.7%	8.5%	10.7%
6.9%	5.5%	8.9%
8.0%	6.8%	8.9%
5.6%	4.0%	7.6%
8.4%	5.3%	10.3%
6.3%	5.6%	7.1%

Specialty Consultants			
Step Stone	Townsend	Hamilton Lane	Aksia
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
12.5%	-	16.5%	12.4%
10.4%	-	-	8.2% (*)
-	-	-	9.1%
6.8%	5.2%	-	-
11.3%	9.4%	-	-
-	-	-	-

(\*) Aksa assumptions for Private Infra are based on Real Assets



# 4. MATRIX OF 2023 ASSUMPTIONS:

# RISK

## Risk: Volatility Assumptions

		General Consultants				
		Rocaton	Callan	Wilshire	NEPC	Segal Marco
Macro	Inflation	n/a	1.6%	1.8%	n/a	n/a
	Cash	n/a	0.9%	0.8%	0.6%	2.0%
Public Equity	US Large Cap	15.7%	17.8%	17.0%	16.9%	19.5%
	Dev. World ex-US	15.8%	20.2%	18.0%	19.6%	21.0%
	EM	19.4%	25.7%	26.0%	28.6%	25.0%
Public Fixed Income	US Treasury	7.8%	13.5%	5.0%	5.4%	5.0%
	TIPS	6.1%	5.3%	6.0%	6.1%	6.0%
	US Core	4.1%	4.1%	4.7%	5.8%	5.2%
	EM Debt	8.6%	10.7%	n/a	13.0%	12.0%
	High Yield	8.6%	11.8%	10.0%	11.1%	10.0%
Alts	Private Equity	21.4%	27.6%	29.0%	25.7%	24.5%
	Private Infra	17.2%	15.5%	25.0%	12.4%	13.5%
	Private Credit	11.8%	15.5%	12.8%	11.8%	9.8%
	Core RE	14.9%	14.2%	12.0%	15.0%	13.0%
	Non-core RE	21.7%	22.9%	25.0%	18.5%	18.8%
	Hedge Fund	6.6%	8.5%	6.6%	8.6%	6.6%

General Consultants		
Average	Min	Max
1.7%	1.6%	1.8%
1.1%	0.6%	2.0%
17.4%	15.7%	19.5%
18.9%	15.8%	21.0%
24.9%	19.4%	28.6%
7.3%	5.0%	13.5%
5.9%	5.3%	6.1%
4.8%	4.1%	5.8%
11.1%	8.6%	13.0%
10.3%	8.6%	11.8%
25.6%	21.4%	29.0%
16.7%	12.4%	25.0%
12.3%	9.8%	15.5%
13.8%	12.0%	15.0%
21.4%	18.5%	25.0%
7.4%	6.6%	8.6%

Specialty Consultants			
Step Stone	Townsend	Hamilton Lane	Aksia
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
10.7%	-	17.6% (*)	18.8%
5.6%	-	-	12.5% (**)
-	-	-	9.4%
5.7%	6.5%	-	-
9.6%	10.3%	-	-
-	-	-	-

(\*) Desmoothed 20yr Volatility

(\*\*) Aksia assumptions for Private Infra are based on Real Assets



# 4. MATRIX OF 2023 ASSUMPTIONS:

# SHARPE RATIOS

**Ranking: Assumed 10-year Sharpe Ratio**

		General Consultants				
		Rocaton	Callan	Wilshire	NEPC	Segal Marco
Public Equity	US Large Cap	0.22	0.25	0.15	0.08	0.22
	Dev. World ex-US	0.24	0.22	0.18	0.08	0.22
	EM Equities	0.22	0.18	0.13	0.20	0.21
Public Fixed Income	US Treasury	0.08	0.07	0.06	0.04	0.06
	US TIPS	0.19	0.24	-0.01	0.07	0.10
	US Core	0.17	0.37	0.19	0.14	0.15
	EM Debt	0.35	0.29	n/a	0.24	0.19
	High Yield	0.23	0.30	0.26	0.28	0.25
Alts	Private Equity	0.35	0.21	0.20	0.20	0.27
	Private Infra	0.34	0.22	0.06	0.21	0.31
	Private Credit	0.31	0.27	0.38	0.41	0.53
	Core RE	0.30	0.21	0.08	0.00	0.16
	Non-core RE	0.28	0.25	0.20	0.07	0.37
	Hedge Fund	0.52	0.33	0.47	0.29	0.35

General Consultants		
Average	Min	Max
0.19	0.08	0.25
0.19	0.08	0.24
0.19	0.13	0.22
0.06	0.04	0.08
0.12	-0.01	0.24
0.20	0.14	0.37
0.27	0.19	0.35
0.26	0.23	0.30
0.25	0.20	0.35
0.23	0.06	0.34
0.38	0.27	0.53
0.15	0.00	0.30
0.23	0.07	0.37
0.39	0.29	0.52

Specialty Consultants			
Step Stone	Townsend	Hamilton Lane	Aksia
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
0.84	-	0.74	0.48
1.24	-	-	0.38
-	-	-	0.60
0.59	0.27	-	-
0.82	0.58	-	-
-	-	-	-

