

Wealth Strategies Analysis

Prepared on November 14th, 2024
for CSU FOUNDATION LONG TERM

Assumptions

Summary

Portfolios

	Value	Tax Status
CSU Foundation	\$44,600,000	Tax Exempt

Cash Flows

	Value	Time Period	Distributing Portfolio	Receiving Portfolio	Comments
Outflows					
Annual spend	Yale/Stanford rule	2024-2043	CSU Foundation	-	0% at previous year outflow, 100.00% at 4% of portfolio value averaged over 3 years.
Admin Fee	Yale/Stanford rule	2024-2043	CSU Foundation	-	0% at previous year outflow, 100.00% at 1.25% of portfolio value averaged over 1 year.

Goals

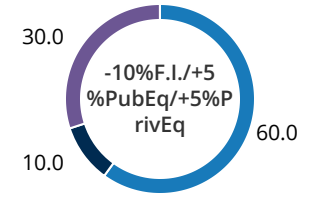
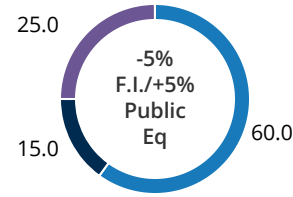
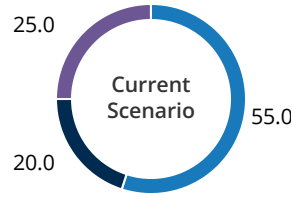
	Dollar Value	Growth Rate
Maintain Corpus	\$44,600,000	2.50%

The portfolios above are constructed using indices as proxies. Indices are unmanaged. It is not possible to invest directly in an index. Asset allocation does not assure a profit or protect against loss. Annual returns are shown gross of cash inflows, cash outflows, taxes and advisory fees. For use only in one-on-one presentations.

Executive Summary

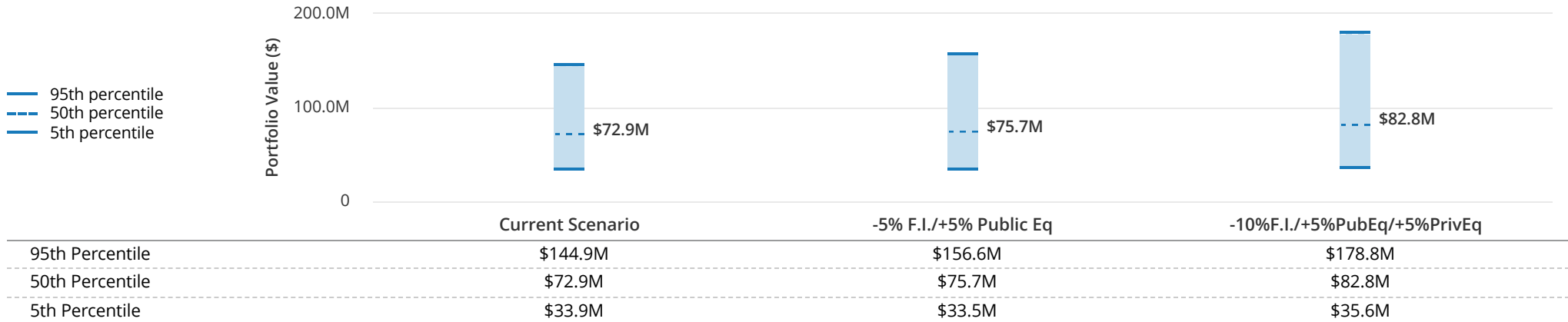
Asset Allocations (%)

- Equities
- Fixed Income & Preferreds
- Alternatives



Assumptions	Current Scenario	-5% F.I./+5% Public Eq	-10% F.I./+5% PubEq/+5% PrivEq
	Secular	Secular	Secular
Annual Return	8.0 %	8.3 %	8.8 %
Standard Deviation	9.5 %	10.1 %	10.6 %
Sharpe Ratio	0.52	0.52	0.54
Annual Yield	2.2 %	2.1 %	1.9 %
Probability of Positive Return	80.3 %	79.8 %	79.9 %

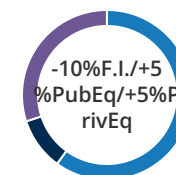
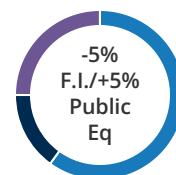
Performance Results: Year 2043



Important: The projections or other information generated by the Wealth Strategies Analysis Tool regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Results generated by a Monte Carlo analysis will vary with each use and over time because each portfolio simulation is randomly generated. See Appendix for assumptions, asset class inputs, a glossary of terms, a description of the risks and disclosures. For use only in one-on-one presentations.

Summary

- Equities
- Fixed Income & Preferreds
- Alternatives



Asset class	%	\$	%	\$	%	\$
TOTAL	100.0	44,600,000	100.0	44,600,000	100.0	44,600,000
■ Equities	55.0	24,530,000	60.0	26,760,000	60.0	26,760,000
Global Equities	55.0	24,530,000	60.0	26,760,000	60.0	26,760,000
■ Fixed Income & Preferreds	20.0	8,920,000	15.0	6,690,000	10.0	4,460,000
US Fixed Income Taxable	20.0	8,920,000	15.0	6,690,000	10.0	4,460,000
■ Alternatives	25.0	11,150,000	25.0	11,150,000	30.0	13,380,000
Absolute Return Assets	5.0	2,230,000	5.0	2,230,000	5.0	2,230,000
Equity Hedge Assets	5.0	2,230,000	5.0	2,230,000	5.0	2,230,000
Private Investments	15.0	6,690,000	15.0	6,690,000	20.0	8,920,000
Private Real Estate	5.0	2,230,000	5.0	2,230,000	5.0	2,230,000
Private Equity	10.0	4,460,000	10.0	4,460,000	15.0	6,690,000

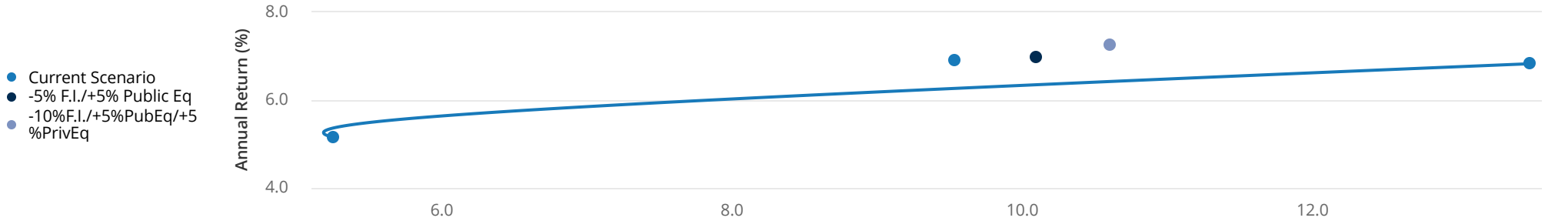
Assumptions	Current Scenario	-5% F.I./+5% Public Eq	-10%F.I./+5%PubEq/+5%PrivEq
	Secular	Secular	Secular
Annual Return	8.0%	8.3%	8.8%
Standard Deviation	9.5%	10.1%	10.6%
Sharpe Ratio	0.52	0.52	0.54
Annual Yield	2.2%	2.1%	1.9%
Probability of Positive Return	80.3%	79.8%	79.9%

The portfolios above are constructed using indices as proxies. Indices are unmanaged. It is not possible to invest directly in an index. Asset allocation does not assure a profit or protect against loss. This analysis assumes that the Secular Assumptions apply for all years. Annual returns are shown gross of cash inflows, cash outflows, taxes and advisory fees. Please refer to the Return Assumptions page of the appendix to view an important and relevant disclosure regarding return rates and fees. For use only in one-on-one presentations.

Efficient Frontier

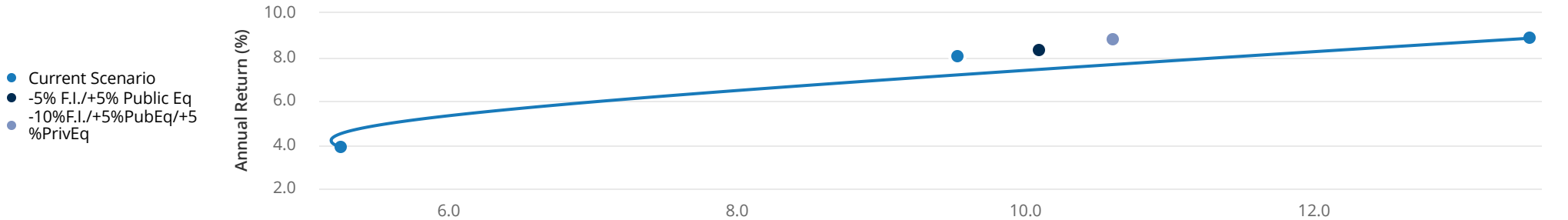
Summary

Strategic Assumptions



	Current Scenario	-5% F.I./+5% Public Eq	-10%F.I./+5%PubEq/+5%PrivEq
Annual Return	6.9%	7.0%	7.3%
Standard Deviation	9.5%	10.1%	10.6%
Sharpe Ratio	0.32	0.31	0.32
Annual Yield	2.4%	2.3%	2.0%

Secular Assumptions



	Current Scenario	-5% F.I./+5% Public Eq	-10%F.I./+5%PubEq/+5%PrivEq
Annual Return	8.0%	8.3%	8.8%
Standard Deviation	9.5%	10.1%	10.6%
Sharpe Ratio	0.52	0.52	0.54
Annual Yield	2.2%	2.1%	1.9%

This analysis assumes that the Strategic Assumptions apply for the first 7 years and Secular Assumptions apply thereafter. Please refer to the Return Assumptions page of the appendix to view an important and relevant disclosure regarding return rates and fees. For use only in one-on-one presentations.

Expected Performance Over Time

Summary: 2024 - 2033

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
■ Current Scenario										
Beginning Assets	44,600,000	45,978,636	47,366,713	48,746,366	50,164,491	51,623,177	53,124,239	54,668,937	56,258,551	57,894,385
Interest and Dividends	974,138	1,004,250	1,034,568	1,064,702	1,095,676	1,127,536	1,160,322	1,194,060	1,228,780	1,264,510
Capital Appreciation	2,614,267	2,695,077	2,776,440	2,857,309	2,940,434	3,025,936	3,113,922	3,204,466	3,297,642	3,393,528
Cash Outflows	(2,209,769)	(2,311,249)	(2,431,355)	(2,503,886)	(2,577,424)	(2,652,410)	(2,729,545)	(2,808,913)	(2,890,588)	(2,974,638)
Annual spend	(1,652,269)	(1,736,516)	(1,839,271)	(1,894,556)	(1,950,368)	(2,007,120)	(2,065,492)	(2,125,551)	(2,187,356)	(2,250,958)
Admin Fee	(557,500)	(574,733)	(592,084)	(609,330)	(627,056)	(645,290)	(664,053)	(683,362)	(703,232)	(723,680)
Ending Assets	45,978,636	47,366,713	48,746,366	50,164,491	51,623,177	53,124,239	54,668,937	56,258,551	57,894,385	59,577,785
■ -5% F.I./+5% Public Eq										
Beginning Assets	44,600,000	46,089,668	47,598,551	49,107,884	50,663,440	52,267,597	53,922,508	55,629,807	57,391,162	59,208,285
Interest and Dividends	931,520	962,633	994,148	1,025,672	1,058,162	1,091,666	1,126,231	1,161,890	1,198,678	1,236,630
Capital Appreciation	2,767,917	2,860,367	2,954,010	3,047,680	3,144,220	3,243,775	3,346,480	3,452,437	3,561,748	3,674,520
Cash Outflows	(2,209,769)	(2,314,117)	(2,438,825)	(2,517,797)	(2,598,225)	(2,680,531)	(2,765,412)	(2,852,971)	(2,943,303)	(3,036,494)
Annual spend	(1,652,269)	(1,737,997)	(1,843,843)	(1,903,948)	(1,964,932)	(2,027,186)	(2,091,381)	(2,157,599)	(2,225,913)	(2,296,390)
Admin Fee	(557,500)	(576,121)	(594,982)	(613,849)	(633,293)	(653,345)	(674,031)	(695,373)	(717,390)	(740,104)
Ending Assets	46,089,668	47,598,551	49,107,884	50,663,440	52,267,597	53,922,508	55,629,807	57,391,162	59,208,285	61,082,942
■ -10%F.I./+5%PubEq/+5%PrivEq										
Beginning Assets	44,600,000	46,317,727	48,076,477	49,855,901	51,699,700	53,611,058	55,593,044	57,648,295	59,779,527	61,989,549
Interest and Dividends	845,127	877,676	911,003	944,721	979,659	1,015,878	1,053,435	1,092,380	1,132,764	1,174,642
Capital Appreciation	3,082,369	3,201,083	3,322,633	3,445,611	3,573,039	3,705,136	3,842,113	3,984,155	4,131,447	4,284,185
Cash Outflows	(2,209,769)	(2,320,009)	(2,454,212)	(2,546,534)	(2,641,341)	(2,739,027)	(2,840,297)	(2,945,302)	(3,054,189)	(3,167,101)
Annual spend	(1,652,269)	(1,741,037)	(1,853,256)	(1,923,335)	(1,995,094)	(2,068,889)	(2,145,384)	(2,224,699)	(2,306,945)	(2,392,232)
Admin Fee	(557,500)	(578,972)	(600,956)	(623,199)	(646,246)	(670,138)	(694,913)	(720,604)	(747,244)	(774,869)
Ending Assets	46,317,727	48,076,477	49,855,901	51,699,700	53,611,058	55,593,044	57,648,295	59,779,527	61,989,549	64,281,275

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This analysis assumes that the Secular Assumptions apply for all years. Please refer to the Return Assumptions page of the appendix to view an important and relevant disclosure regarding return rates and fees. For use only in one-on-one presentations.

Expected Performance Over Time (Continued)

Summary: 2034 - 2043

	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
■ Current Scenario										
Beginning Assets	59,577,785	61,310,133	63,092,852	64,927,408	66,815,308	68,758,102	70,757,386	72,814,805	74,932,046	77,110,852
Interest and Dividends	1,301,278	1,339,115	1,378,053	1,418,122	1,459,357	1,501,791	1,545,459	1,590,396	1,636,640	1,684,229
Capital Appreciation	3,492,202	3,593,745	3,698,241	3,805,775	3,916,436	4,030,314	4,147,504	4,268,101	4,392,205	4,519,918
Cash Outflows	(3,061,132)	(3,150,141)	(3,241,738)	(3,335,998)	(3,432,999)	(3,532,820)	(3,635,545)	(3,741,256)	(3,850,040)	(3,961,988)
Annual spend	(2,316,410)	(2,383,764)	(2,453,077)	(2,524,405)	(2,597,808)	(2,673,344)	(2,751,077)	(2,831,071)	(2,913,390)	(2,998,103)
Admin Fee	(744,722)	(766,377)	(788,661)	(811,593)	(835,191)	(859,476)	(884,467)	(910,185)	(936,651)	(963,886)
Ending Assets	61,310,133	63,092,852	64,927,408	66,815,308	68,758,102	70,757,386	72,814,805	74,932,046	77,110,852	79,353,010
■ -5% F.I./+5% Public Eq										
Beginning Assets	61,082,942	63,016,955	65,012,202	67,070,623	69,194,218	71,385,051	73,645,249	75,977,011	78,382,600	80,864,356
Interest and Dividends	1,275,785	1,316,178	1,357,851	1,400,844	1,445,197	1,490,955	1,538,162	1,586,864	1,637,107	1,688,941
Capital Appreciation	3,790,863	3,910,890	4,034,717	4,162,464	4,294,257	4,430,222	4,570,492	4,715,203	4,864,496	5,018,516
Cash Outflows	(3,132,635)	(3,231,821)	(3,334,147)	(3,439,713)	(3,548,622)	(3,660,978)	(3,776,893)	(3,896,477)	(4,019,847)	(4,147,124)
Annual spend	(2,369,099)	(2,444,109)	(2,521,495)	(2,601,330)	(2,683,694)	(2,768,665)	(2,856,327)	(2,946,764)	(3,040,065)	(3,136,320)
Admin Fee	(763,537)	(787,712)	(812,653)	(838,383)	(864,928)	(892,313)	(920,566)	(949,713)	(979,783)	(1,010,804)
Ending Assets	63,016,955	65,012,202	67,070,623	69,194,218	71,385,051	73,645,249	75,977,011	78,382,600	80,864,356	83,424,689
■ -10%F.I./+5%PubEq/+5%PrivEq										
Beginning Assets	64,281,275	66,657,726	69,122,032	71,677,443	74,327,326	77,075,174	79,924,609	82,879,386	85,943,400	89,120,689
Interest and Dividends	1,218,068	1,263,100	1,309,796	1,358,218	1,408,431	1,460,500	1,514,494	1,570,484	1,628,544	1,688,751
Capital Appreciation	4,442,569	4,606,809	4,777,121	4,953,729	5,136,866	5,326,774	5,523,702	5,727,911	5,939,669	6,159,256
Cash Outflows	(3,284,187)	(3,405,602)	(3,531,506)	(3,662,064)	(3,797,449)	(3,937,839)	(4,083,419)	(4,234,381)	(4,390,924)	(4,553,255)
Annual spend	(2,480,671)	(2,572,381)	(2,667,480)	(2,766,096)	(2,868,357)	(2,974,399)	(3,084,361)	(3,198,389)	(3,316,632)	(3,439,246)
Admin Fee	(803,516)	(833,222)	(864,025)	(895,968)	(929,092)	(963,440)	(999,058)	(1,035,992)	(1,074,292)	(1,114,009)
Ending Assets	66,657,726	69,122,032	71,677,443	74,327,326	77,075,174	79,924,609	82,879,386	85,943,400	89,120,689	92,415,441

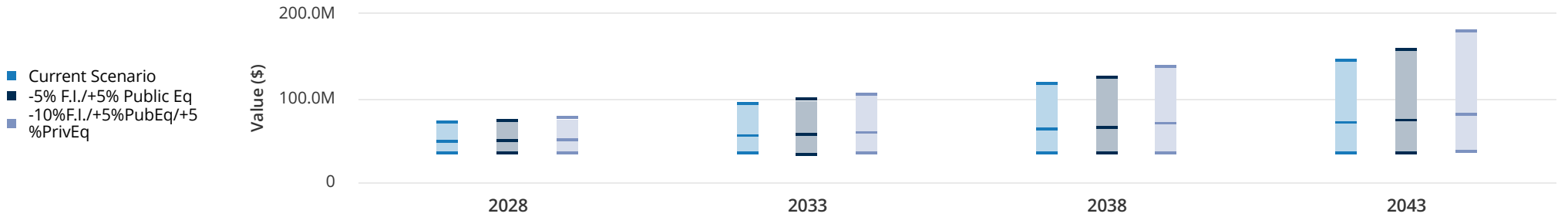
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Hypothetical Performance Over Time

Summary: 2024-2043

Portfolio Value



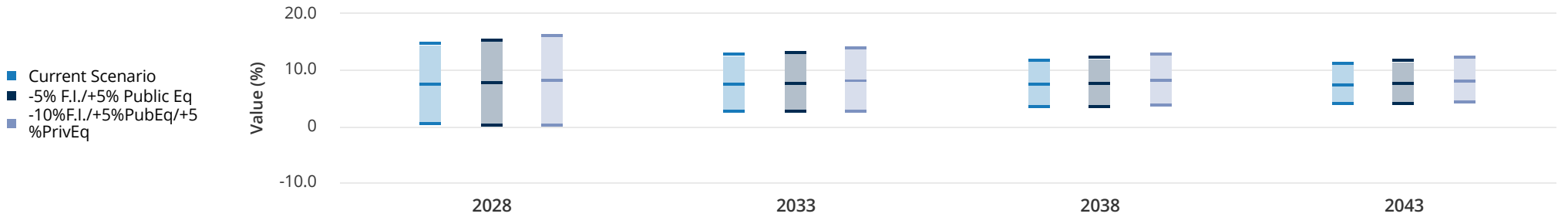
■ Current Scenario				
95th Percentile	\$70.6M	\$93.0M	\$116.5M	\$144.9M
50th Percentile	\$50.9M	\$57.4M	\$65.2M	\$72.9M
5th Percentile	\$34.3M	\$33.4M	\$33.4M	\$33.9M
■ -5% F.I./+5% Public Eq				
95th Percentile	\$72.6M	\$97.7M	\$123.8M	\$156.6M
50th Percentile	\$51.5M	\$58.6M	\$67.1M	\$75.7M
5th Percentile	\$33.8M	\$33.0M	\$33.1M	\$33.5M
■ -10%F.I./+5%PubEq/+5%PrivEq				
95th Percentile	\$75.6M	\$104.6M	\$136.9M	\$178.8M
50th Percentile	\$52.7M	\$61.3M	\$72.0M	\$82.8M
5th Percentile	\$34.0M	\$33.8M	\$34.4M	\$35.6M

Portfolio value is shown net of cash inflows, cash outflows, taxes and advisory fees. Annualized return is shown gross of cash inflows, cash outflows, taxes and advisory fees. Portfolio values reflect the future value of the portfolios. Annualized return reflects nominal growth of the portfolios. This analysis assumes that the Secular Assumptions apply for all years. For use only in one-on-one presentations. For important information regarding the impact of expenses on performance please refer to the disclosures at the end of this material.

Hypothetical Performance Over Time

Summary: 2024-2043

Annualized Return

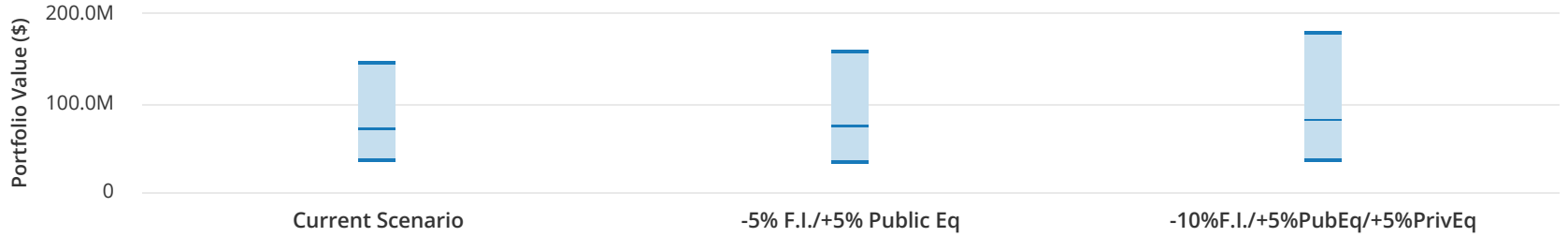


Scenario	2028	2033	2038	2043
Current Scenario				
95th Percentile	14.5%	12.6%	11.6%	11.1%
50th Percentile	7.8%	7.7%	7.7%	7.7%
5th Percentile	0.2%	2.5%	3.4%	4.0%
-5% F.I./+5% Public Eq				
95th Percentile	15.1%	13.1%	12.0%	11.5%
50th Percentile	8.0%	7.9%	7.9%	7.8%
5th Percentile	> -0.1%	2.4%	3.4%	3.9%
-10%F.I./+5%PubEq/+5%PrivEq				
95th Percentile	16.0%	13.8%	12.8%	12.2%
50th Percentile	8.5%	8.4%	8.4%	8.3%
5th Percentile	< 0.1%	2.6%	3.6%	4.2%

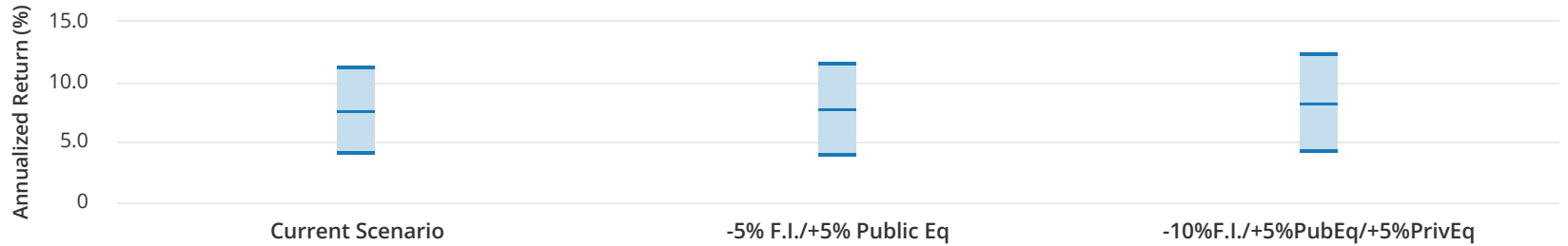
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Summary Performance Statistics

Summary: Year 2043



Portfolio Value			
95th Percentile	\$144.9M	\$156.6M	\$178.8M
50th Percentile	\$72.9M	\$75.7M	\$82.8M
5th Percentile	\$33.9M	\$33.5M	\$35.6M



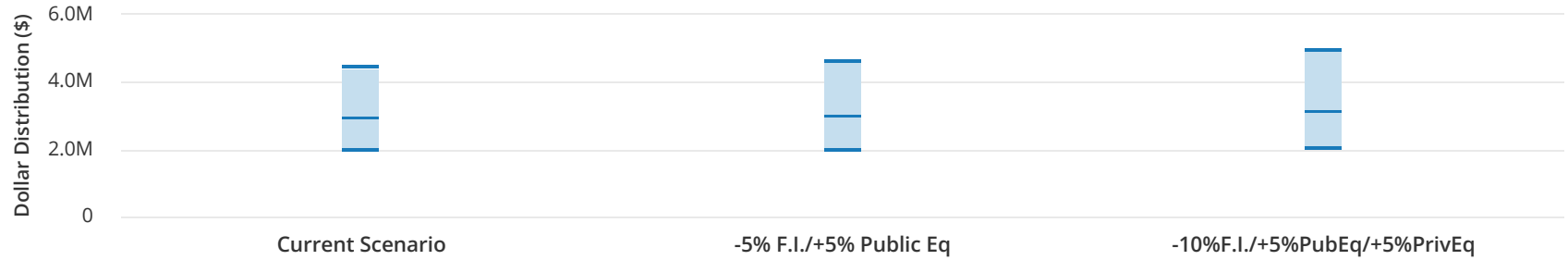
Annualized Return			
95th Percentile	11.1%	11.5%	12.2%
50th Percentile	7.7%	7.8%	8.3%
5th Percentile	4.0%	3.9%	4.2%

Portfolio value is shown net of cash inflows, cash outflows, taxes and advisory fees. Annualized return is shown gross of cash inflows, cash outflows and advisory fees. Portfolio values reflect the future value of the portfolios. Annualized growth rates reflect nominal growth of the portfolios. This analysis assumes that the Secular Assumptions apply for all years. For use only in one-on-one presentations. Please refer to the Return Assumptions page of the appendix to view an important and relevant disclosure regarding return rates and fees. For important information regarding the impact of expenses on performance please refer to the disclosures at the end of this material.

Annual Distributions

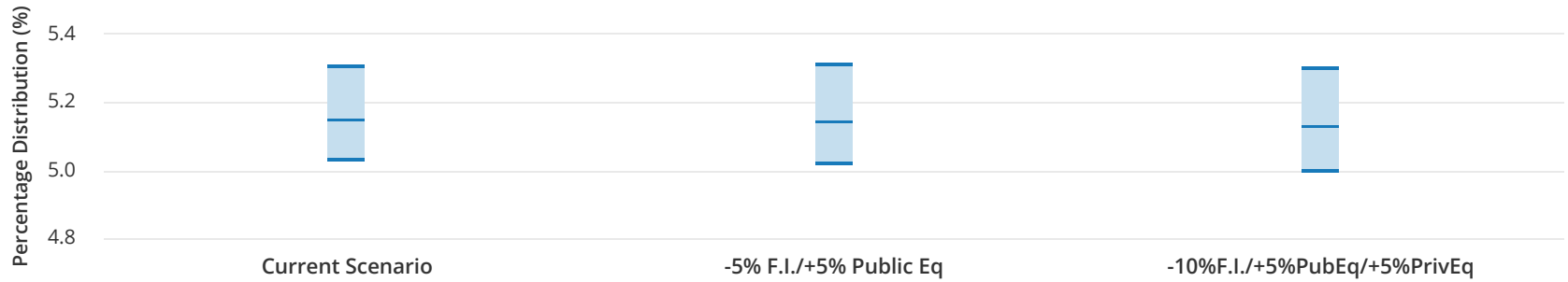
Summary

Average Annual Distribution



Dollar Distribution

	Current Scenario	-5% F.I./+5% Public Eq	-10%F.I./+5%PubEq/+5%PrivEq
95th Percentile	\$4,416.3K	\$4,617.5K	\$4,953.1K
50th Percentile	\$2,963.9K	\$3,029.1K	\$3,171.5K
5th Percentile	\$1,968.2K	\$1,954.2K	\$1,995.8K



Percentage Distribution

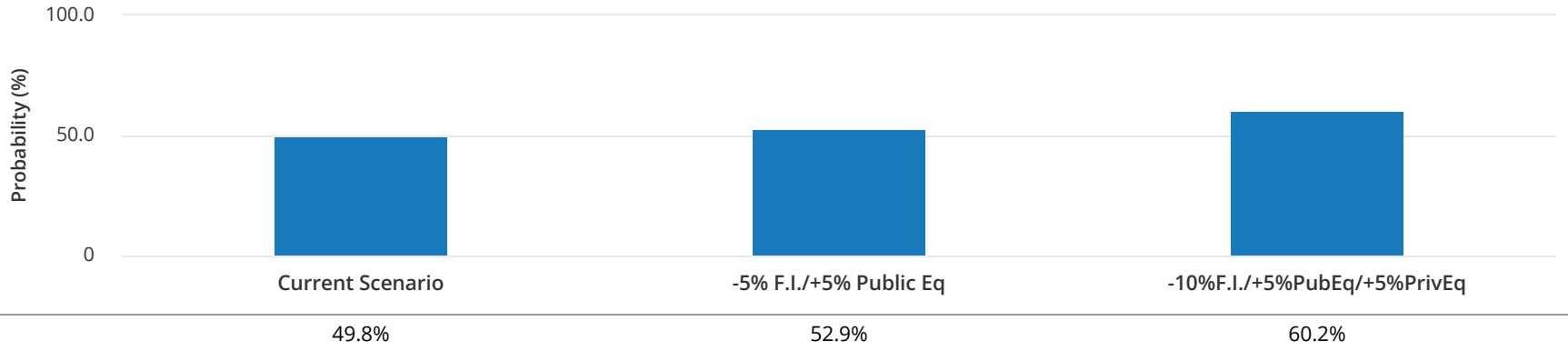
	Current Scenario	-5% F.I./+5% Public Eq	-10%F.I./+5%PubEq/+5%PrivEq
95th Percentile	5.3%	5.3%	5.3%
50th Percentile	5.2%	5.1%	5.1%
5th Percentile	5.0%	5.0%	5.0%

Portfolio values reflect the future value of the portfolios. Annualized growth rates reflect nominal growth of the portfolios. This analysis assumes that the Secular Assumptions apply for all years. For use only in one-on-one presentations.

Probability Analysis

Summary: Year 2043

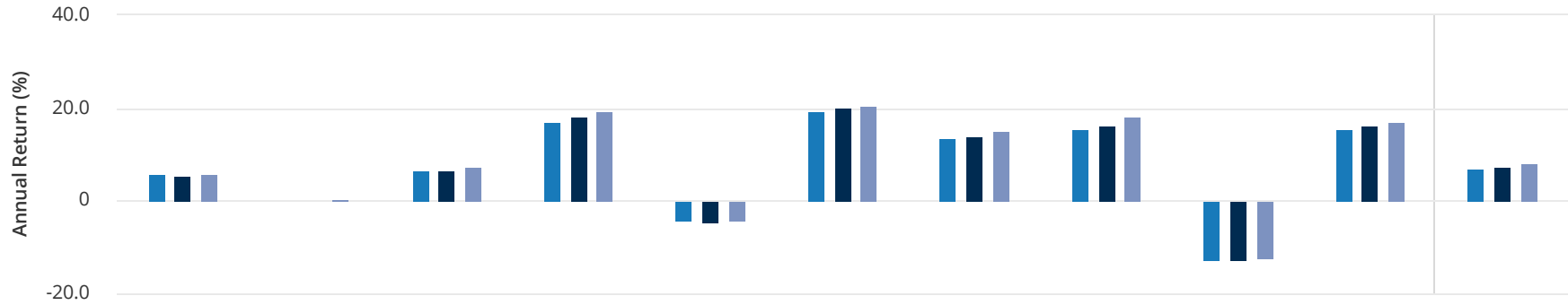
Probability of Achieving Goals



The probability of Maintain Corpus is based upon the net Monte Carlo results. This analysis assumes that the Secular Assumptions apply for all years. For use only in one-on-one presentations.

Historical Performance (Last 10 Years)

Summary

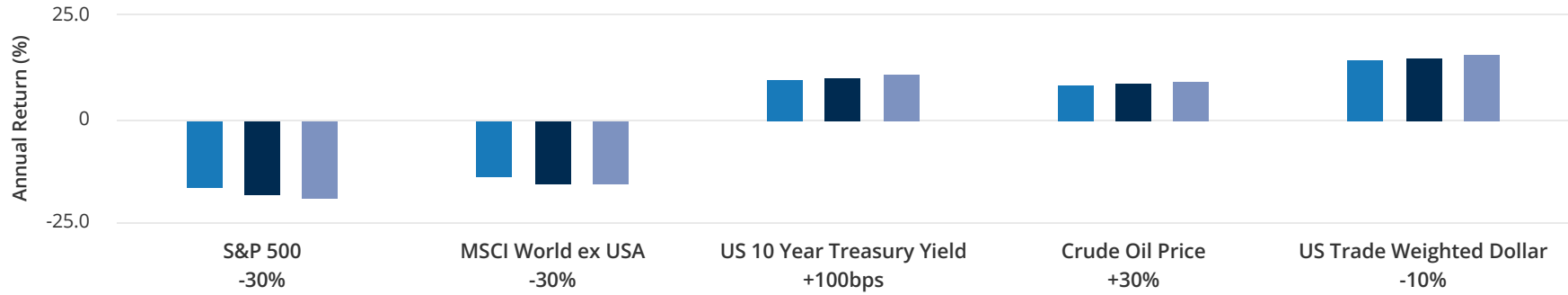


	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Last 10 Yrs. Annualized
■ Current Scenario	5.8%	0.2%	6.6%	17.3%	-4.1%	19.4%	13.8%	15.5%	-12.5%	15.7%	7.3%
■ -5% F.I./+5% Public Eq	5.7%	0.1%	6.9%	18.4%	-4.6%	20.3%	14.2%	16.5%	-12.8%	16.5%	7.6%
■ -10%F.I./+5%PubEq/+5%PrivEq	5.9%	0.5%	7.3%	19.3%	-4.1%	20.7%	15.3%	18.3%	-12.4%	17.2%	8.3%

This section reflects the performance of the portfolio on an asset class basis in each of the last 10 years. Historical returns are shown gross of cash inflows, cash outflows, taxes and advisory fees. Past performance is no guarantee of future results. Please refer to the Return Assumptions page of the appendix to view an important and relevant disclosure regarding return rates and fees. For use only in one-on-one presentations.

Market Scenarios

Summary

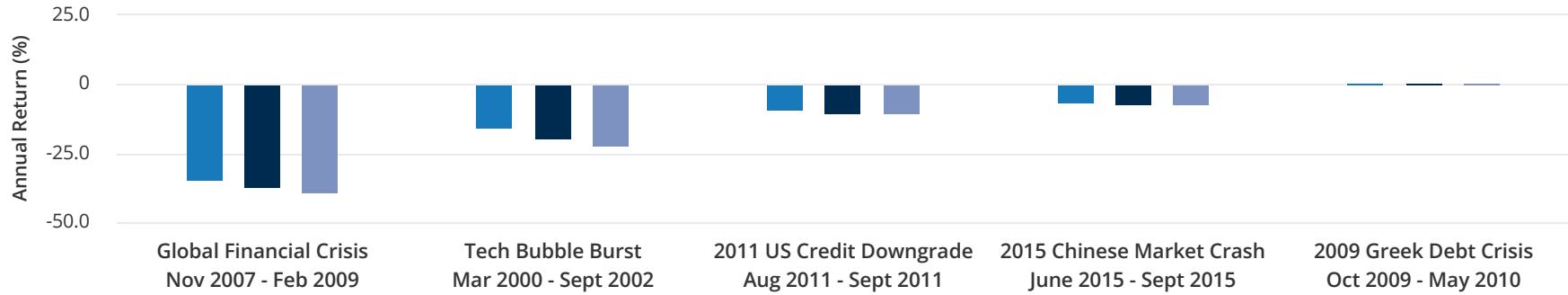


	S&P 500 -30%	MSCI World ex USA -30%	US 10 Year Treasury Yield +100bps	Crude Oil Price +30%	US Trade Weighted Dollar -10%
■ Current Scenario	-16.5%	-13.8%	9.8%	8.6%	14.5%
■ -5% F.I./+5% Public Eq	-18.2%	-15.2%	10.4%	8.9%	15.2%
■ -10%F.I./+5%PubEq/+5%PrivEq	-18.8%	-15.6%	11.2%	9.5%	15.8%

Annual returns are shown gross of cash inflows, cash outflows, taxes and advisory fees. The market scenarios are changed independently of one another and tested one at a time. Concurrent market scenarios are not tested in this analysis. For use only in one-on-one presentations. For important information regarding the impact of expenses on performance please refer to the disclosures at the end of this material.

Historical Scenarios

Summary

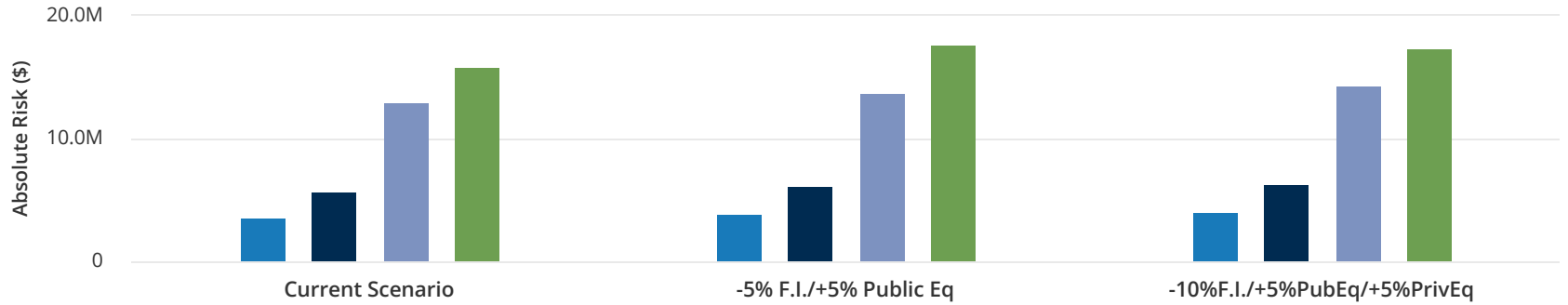


■ Current Scenario	-34.2%	-15.6%	-9.0%	-6.4%	0.9%
■ -5% F.I./+5% Public Eq	-37.3%	-19.2%	-10.0%	-7.0%	0.6%
■ -10%F.I./+5%PubEq/+5%PrivEq	-39.0%	-21.7%	-10.3%	-6.9%	0.9%

Annual returns are shown gross of cash inflows, cash outflows, taxes and advisory fees. The historical scenarios are changed independently of one another and tested one at a time. Concurrent historical scenarios are not tested in this analysis. For use only in one-on-one presentations. For important information regarding the impact of expenses on performance please refer to the disclosures at the end of this material.

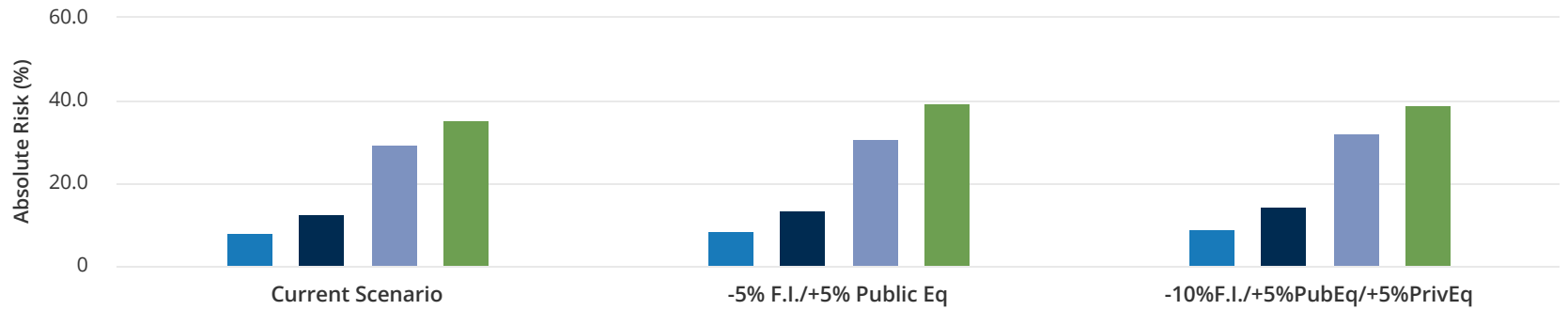
Portfolio Risk

Summary



Dollar Risk

Value at Risk	\$3.6M	\$3.9M	\$4.1M
Expected Tail Loss	\$5.7M	\$6.2M	\$6.4M
Worst Trial	\$13.1M	\$13.8M	\$14.4M
Max Drawdown	\$15.8M	\$17.7M	\$17.4M



Percentage Risk

Value at Risk	8.1%	8.8%	9.1%
Expected Tail Loss	12.9%	13.8%	14.4%
Worst Trial	29.4%	30.9%	32.2%
Max Drawdown	35.5%	39.6%	38.9%

Portfolio risk is shown gross of cash inflows, cash outflows, taxes and advisory fees. This analysis assumes that the Secular Assumptions apply for all years. For use only in one-on-one presentations. For important information regarding the impact of expenses on performance please refer to the disclosures at the end of this material.

Contribution to Risk and Return

Summary

	Current Scenario			-5% F.I./+5% Public Eq			-10%F.I./+5%PubEq/+5%PrivEq		
	Asset Allocation	Return Contribution	Risk Contribution	Asset Allocation	Return Contribution	Risk Contribution	Asset Allocation	Return Contribution	Risk Contribution
■ Equities	55.0%	56.0%	87.0%	60.0%	59.7%	88.1%	60.0%	55.9%	84.5%
Global Equities	55.0%	56.0%	87.0%	60.0%	59.7%	88.1%	60.0%	55.9%	84.5%
■ Fixed Income & Preferreds	20.0%	10.8%	0.1%	15.0%	7.9%	-0.1%	10.0%	4.9%	-0.1%
US Fixed Income Taxable	20.0%	10.8%	0.1%	15.0%	7.9%	-0.1%	10.0%	4.9%	-0.1%
■ Alternatives	25.0%	33.2%	12.9%	25.0%	32.4%	11.9%	30.0%	39.2%	15.6%
Absolute Return Assets	5.0%	3.4%	1.7%	5.0%	3.3%	1.6%	5.0%	3.1%	1.5%
Equity Hedge Assets	5.0%	4.1%	0.3%	5.0%	4.0%	0.2%	5.0%	3.7%	0.2%
Private Investments	15.0%	25.7%	11.0%	15.0%	25.1%	10.1%	20.0%	32.3%	13.9%
Private Real Estate	5.0%	6.4%	2.1%	5.0%	6.2%	1.9%	5.0%	5.8%	1.9%
Private Equity	10.0%	19.3%	8.9%	10.0%	18.9%	8.2%	15.0%	26.5%	12.0%

1) The Contribution to Risk and Return returns for Equity Hedge Assets and Private Investments have been adjusted to account for infrequent pricing.

	Secular Assumptions			
	Annual Return	Standard Deviation	Sharpe Ratio	Yield
Equities	8.9%	13.5%	0.43	2.0%
Global Equities	8.9%	13.5%	0.43	2.0%
Fixed Income & Preferreds	3.9%	5.3%	0.15	3.9%
US Fixed Income Taxable	3.9%	5.3%	0.15	3.9%
Alternatives	6.4%	8.0%	0.42	0.0%
Absolute Return Assets	5.3%	5.0%	0.44	0.0%
Equity Hedge Assets	6.3%	9.2%	0.35	0.0%
Private Investments	11.0%	15.4%	0.52	3.3%
Private Real Estate	8.2%	16.7%	0.31	6.6%
Private Equity	14.1%	16.2%	0.68	0.0%

In the Linear Growth and Monte Carlo analyses the Secular Assumptions apply for all years. These assumptions are used for modeling purposes only. They are not guarantees of future returns.

1) The returns for Equity Hedge Assets and Private Investments have been adjusted to account for infrequent pricing.

The assumed return rates in the Wealth Strategies Analysis are not reflective of any specific investment, do not include any fees or expenses that may be incurred by investing in specific products, nor all costs that you will incur when you implement your investment strategy. The return assumptions and hypothetical illustrations herein may be impacted after applying such costs, which may include investment advisory program fees up to a maximum of 2.0%, sub-manager fees, brokerage commissions, sales load or other expenses, which will depend on whether you choose a brokerage or an advisory relationship. The actual returns of a specific investment may be more or less than the asset class return assumptions used in the Wealth Strategies Analysis. It is not possible to invest directly in an index. The index performance shown does not reflect the impact of any taxes, transaction costs, management fees or other expenses that may be associated with certain investments. Indices are unmanaged. The Capital Market Assumptions applied in this analysis were defined by the firm's Global Investment Committee and were published in the "Inputs for GIC Asset Allocation: Annual Update of GIC Capital Market Assumptions" on March 27th, 2024. For use only in one-on-one presentations.

Correlation Assumptions

	Global Equities	US Fixed Income Taxable	Absolute Return Assets	Equity Hedge Assets	Private Investments
Global Equities	1.00	0.23	0.65	0.36	0.49
US Fixed Income Taxable		1.00	0.30	0.31	0.16
Absolute Return Assets			1.00	0.49	0.56
Equity Hedge Assets				1.00	0.40
Private Investments					1.00

The strategic and secular assumptions have the same correlations.

It is not possible to invest directly in an index. The index performance shown does not reflect the impact of any taxes, transaction costs, management fees or other expenses that may be associated with certain investments. Indices are unmanaged. For use only in one-on-one presentations.

Asset Class Assumptions

	Benchmark	Data History
Equities	MSCI All-Country World (USD, Net)	1979 - 2023
Global Equities	MSCI All-Country World (USD, Net)	1994 - 2023
Fixed Income & Preferreds	Bloomberg US Aggregate	1970 - 2023
US Fixed Income Taxable	Bloomberg US Aggregate	1970 - 2023
Alternatives	HFRI Fund-Weighted Composite	1970 - 2023
Absolute Return Assets	Equal-Weighted Blend: HFRI Equity Market Neutral; HFRI Relative-Value: Total; HFRI Relative-Value: Fixed Income: Corporate	1999 - 2023
Equity Hedge Assets	Equal-Weighted Blend: Credit Suisse Global Macro; Credit Suisse Managed Futures	1990 - 2023
Private Investments	Equal-Weighted Blend: NCREIF Property; Cambridge Associates Private Equity	1990 - 2023
Private Real Estate	Cambridge Associates Real Estate	1970 - 2023
Private Equity	Cambridge Associates Private Equity	1970 - 2023

It is not possible to invest directly in an index. The index performance shown does not reflect the impact of any taxes, transaction costs, management fees or other expenses that may be associated with certain investments. Indices are unmanaged. Past performance is no guarantee of future results. For use only in one-on-one presentations.

Methodology

Morgan Stanley Wealth Management, in conjunction with your Financial Advisor as well as other resources across Morgan Stanley, has prepared this presentation. The presentation was designed to illustrate the risk and return characteristics of various portfolios when taking into account cash considerations. Each analysis is unique and although no individual analysis can completely describe the risk and return characteristics of a portfolio, the combination of these analyses can assist clients in arriving at an appropriate wealth strategy.

Expected Returns, Standard Deviations and Correlations: Return assumptions are established by the Morgan Stanley Global Investment Committee. The Global Investment Committee utilizes an equilibrium approach to generate expected returns, standard deviations and correlations for each asset class. We believe that by analyzing current and historical economic conditions and market trends, and then making projections of future economic growth, inflation, real yields for each country, we can estimate the equilibrium performance for an asset class. The equilibrium return is simply the central tendency around which market returns tend to fluctuate over a very long period of time. It is possible that actual returns will vary considerably from this equilibrium, even for a number of years, but we believe that market returns will eventually return to their equilibrium trend.

Monte Carlo Analysis: Monte Carlo simulation is an analytical technique which uses several iterations of hypothetical events. Statistics on the distribution of results can help infer which simulated variables are more likely. When simulating hypothetical asset class performance, we utilize Morgan Stanley's expected returns, standard deviations and correlations for each asset class. Small changes in these assumptions may have a sizable impact on the results. As such, the analysis is provided only for general guidance about asset allocation. There can be no assurances that the Monte Carlo-simulated results will be achieved or sustained. Your actual results will surely vary. For example, our simulations don't account for fees or transaction costs, which may be charged when you invest in an actual portfolio of securities. However, the goal of the Monte Carlo analysis is not 100% accurate forecasting, but rather to allow investors to make better, more informed decisions.

Asset Allocations: Unless otherwise stated, this analysis assumes that asset allocations remain constants and achieve the return and standard deviation assumptions over the period in which they are invested.

Important: The projections or other information generated by the Wealth Strategies Analysis Tool regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of futures results. Results generated by a Monte Carlo analysis will vary with each use and over time because each portfolio simulation is randomly generated. For use only in one-on-one presentations.

Glossary

Annual Return: The arithmetic average return that is expected to be achieved in a given year.

Expected Performance: Performance assuming that portfolios achieve their annual return assumption each year in which they are invested.

Expected Tail Loss: The average expected 1-year portfolio loss, at a 95% confidence level, if an extraordinarily bad event does occur.

Sharpe Ratio: This calculation measures a ratio of return above the risk free rate to volatility.

Standard Deviation: A statistical measure of the degree to which an individual value in a probability distribution tends to vary from the mean of the distribution.

Value at Risk: The maximum expected 1-year portfolio loss, at a 95% confidence level, if an extraordinarily bad event does not occur.

Worst Trial: This is defined as the worst hypothetical performance of the portfolio in a given year. While it's always possible, albeit with an infinitely small chance, that a portfolio could lose all its money in a year, this is the most the portfolio lost in all the iterations of the first year of the Monte Carlo simulation.

Max Drawdown: Similar to the worst trial, this is the worst hypothetical performance of the portfolio, but not limited to a single year - it's a potential total loss over the course of the plan.

Risk of Different Investments

Different security types and asset classes carry different risks of investment.

Small/Mid Caps U.S. Equity: Investing in smaller companies involves greater risks not associated with investing in more established companies, such as business risk, significant stock price fluctuations and illiquidity.

International/Emerging Markets: International investing entails greater risk, as well as greater potential rewards compared to U.S. investing. These risks include potential and economic uncertainties of foreign countries as well as the risk of currency fluctuations. These risks are magnified in countries with emerging markets, since these countries may have relatively unstable governments and less established markets and economics.

Fixed Income: Fixed Income Securities are subject to interest rate risk, credit risk, prepayment risk, market risk, and reinvestment risk. Fixed Income Securities, if held to maturity, may provide a fixed rate of return and a fixed principal value. Fixed Income Securities prices fluctuate and when redeemed, may be worth more or less than their original cost.

High Yield Bonds: High Yield Fixed Income Investments, also known as junk bonds, are considered speculative, involve greater risk of default and tend to be more volatile than investment grade fixed income securities.

Hedge Funds: Hedge funds are appropriate only for long-term, qualified investors. They are generally illiquid, not tax efficient, and have higher fees than many traditional investments. They may also be highly leveraged and engage in speculative investment techniques which can magnify the potential for investment loss or gain.

REITS: REITs investing risks are similar to these associated with direct investments in real estate; lack of liquidity, limited diversification, and sensitivity to economic factors such as interest rate charges and market recessions.

Private Equity: Private equity interests may be highly illiquid, involve a high degree of risk and be subject to transfer restrictions.

TIPS: Because the return of TIPS is linked to inflation, TIPS may significantly underperform vs. fixed return treasuries in times of low inflation.

Managed Futures: Managed futures investments are speculative, involve a high degree of risk, use significant leverage, are generally illiquid, have substantial charges, subject investors to conflicts of interest, and are appropriate only for the risk capital portion of an investor's portfolio. Before investing in any partnership and in order to make an informed decision, investors should read the applicable prospectus and/or offering documents carefully for additional information, including charges, expenses and risks. Investors should read the prospectus and/or offering documents carefully for additional information, including charges, expenses and risks. Managed futures investments do not replace equities or bonds but rather may act as a complement in a well diversified portfolio.

Commodities: Investing in commodities entails significant risks. Commodity prices may be affected by a variety of factors at any time, including but not limited to, changes in supply and demand relationships, (ii) governmental programs and policies, (iii) national and international political and economic events, war and terrorist events, (iv) changes in interest and exchange rates, (v) trading activities in commodities and related contracts, (vi) pestilence, technological change and weather, and (vii) the price volatility of a commodity. In addition, the commodities markets are subject to temporary distortions or other disruptions due to various factors, including lack of liquidity, participation of speculators and government intervention.

MLPs: Investment in MLPs entails different risks, including tax risks, than is the case for other types of investments. Currently, most MLPs operate in the energy, natural resources or real estate sectors. Investments in MLP interests are subject to the risks generally applicable to companies in these sectors (including commodity pricing risk, supply and demand risk, depletion risk and exploration risk).

Alternative Investments: Any allocation containing alternative investments should note that they are highly illiquid and are only appropriate for investors willing to put capital at risk for an indefinite period of time. Alternative investments often engage in leverage and other speculative investment practices, may involve complex tax structures, typically have higher fees, and generally are not subject to the same regulatory requirements as traditional asset classes.

Historical Scenario Definitions

Global Financial Crisis (11/2007 - 02/2009): The U.S. subprime mortgage crisis was a set of events and conditions that led to a financial crisis and subsequent recession that began in 2008. It was characterized by a rise in subprime mortgage delinquencies and foreclosures, and the resulting decline of securities backed by said mortgages. While elements of the crisis first became more visible during 2007, several major financial institutions collapsed in September 2008, with significant disruption in the flow of credit to businesses and consumers and the onset of a severe global recession.

Tech Bubble Burst (03/2000 - 09/2002): The dot-com bubble was a historic speculative bubble covering roughly 1997-2000 (with a climax on March 10, 2000, with the NASDAQ peaking at 5,408.60 in intraday trading before closing at 5,048.62) during which stock markets in industrialized nations saw their equity value rise rapidly from growth in the Internet sector and related fields.

2011 US Credit Downgrade (08/2011 - 09/2011): The 2011 US Credit Rating Downgrade by Standard and Poor was the first time in history the United States was downgraded. S&P cited mounting budget deficits and the lack of planning done to address the government's debt dynamics as the catalyst for the downgrade.

2015 Chinese Market Crash (06/2015 - 09/2015): Between June 2014 and June 2015, China's Shanghai Composite index rose by 150 percent. A large portion of this acceleration in stock prices was due to retail investors' ability to invest on margin. Given this sensitivity to asset prices, when investors were met with margin calls in June of 2015, many were forced to sell. This wave of selling snowballed, leading to a ~30% decrease in the value of A-shares on the Shanghai Stock Exchange.

2009 Greek Debt Crisis (10/2009 - 05/2010): In 2009, the Greek government revealed it had underreported its budget deficit. As a result, borrowing costs skyrocketed and the country's credit rating was downgraded, leading to a loss of confidence in the Greek economy. The economic crisis in Greece exposed problems with the institutional architecture of the Eurozone and led to increased uncertainty throughout financial markets.

These materials are provided for general informational and educational purposes based in part upon publicly available information from sources believed to be reliable. While we have taken great care in the preparation of these materials, we cannot be responsible for clerical, computational, or other errors. While we have relied on sources we believe to be reliable, the values reflected in this request may differ from their reported values due to varying reporting methods and valuation methods used by custodians other than those affiliated with us. We cannot assure the accuracy of these reports, nor of the information provided to us and reflected in this report.

Important: The projections or other information generated by the Wealth Strategies Analysis Tool regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Results generated by a Monte Carlo analysis will vary with each use and over time because each portfolio simulation is randomly generated.

Any samples included in this analysis are not recommendations to pursue any estate planning or asset allocation strategy. They are shown for illustration purposes only. Since the future cannot be forecast, actual results will vary from the information shown for the future, including estimates and assumptions. The results may vary with each use and over time. It is possible that these variations may be material. The degree of uncertainty normally increases with the length of the future period covered. As a result, Morgan Stanley Wealth Management cannot give any assurances that any estimates, assumptions or other aspects of the following analyses will prove correct. They are subject to actual known and unknown risks, uncertainties and other factors that could cause actual results to differ materially from those shown.

Investing in financial instruments carries with it the possibility of losses and that a focus on above-market returns exposes the portfolio to above-average risk. Hypothetical performance illustrations are not guaranteed and are subject to market conditions. High volatility investments may be subject to sudden and large falls in value, and there could be a large loss on realization which could be equal to the amount invested.

Asset allocation does not assure profit or protect against loss in declining financial markets. Certain assumptions may have been made in the analyses that have resulted in the estimated return contained herein. Any change in these assumptions may have a material impact on any estimated returns.

Many of the views and opinions contained herein regarding asset allocation were prepared by Morgan Stanley Wealth Management and may differ materially from that of others at the Company. Nothing in this allocation is designed to constitute an individual investment plan which should only be devised after discussion with your Financial Advisor.

This Wealth Strategies Analysis Tool may contain historical asset class return data and statistically generated data from 1990-2017 which are not used to forecast potential return but rather to identify relative patterns of behavior among asset classes which when put in different combinations assume various levels of risk.

Blended index portfolio performance is shown for illustration purposes only. Hypothetical performance has inherent limitations and does not reflect actual performance, trading or decision making. The results vary and reflect material economic or market factors such as liquidity constraints or volatility, which have an important impact on decision making and actual performance.

Annualized return performance shown in this presentation does not reflect deduction of investment advisory fees; had they and other fees incurred in the management of the account been reflected the performance would have been lower; the investment advisory fees are described in Part II of the Morgan Stanley Form ADV; For example, for an account with an annual advisory fee of 2% deducted monthly, if the annual gross performance is 10%, the compounding effect of the fee will result in a net annual compound rate of return of approximately 7.93%. After a three-year period with an initial investment of \$100,000, the total value of the client's account would be approximately \$133,100 without the fee and \$125,716 with the fee.

Past performance is no guarantee of future results. These materials do not constitute an offer to either buy or sell securities or to participate in any trading strategy.

Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustration purposes only and do not show the performance of any specific investment. Reference to an index does not imply that the portfolio will achieve return, volatility or other results similar to the index. The composition of an index may not reflect the manner in which a portfolio is constructed in relation to expected or achieved returns, portfolio guidelines, restrictions, sectors, correlations, concentrations, volatility, or tracking error target, all of which are subject to change over time.

Disclosures (Continued)

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If your account is invested in mutual funds or exchange traded funds (collectively "funds"), you will pay the fees and expenses of any funds in which your account is invested. Fees and expenses are charged directly to the pool of assets the fund invests in and are reflected in each fund's share price. These fees and expenses are an additional cost to you and would not be included in the Fee amount in your account statements. The advisory program you choose is described in the applicable Morgan Stanley Smith Barney LLC ADV Brochure, available at www.morganstanley.com/ADV.

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