MEKETA

San Jose Federerated City Employees' Retirement System

Asset Allocation Review and Risk Analysis

Sequence of Returns

Current Allocation with 2% Moved from Investment Grade Bonds to Long-Term Government Bonds

Asset Allocation Policy Options[1]

	Current Policy (%)	2 Percent IBG to LTGB (%)
Growth/Equity	61	61
US Equity	25	25
Developed Market Equity (non-US)	12	12
Emerging Market Equity	12	12
Buyouts	8	8
Venture Capital	4	4
Credit	8	8
High Yield Bonds	2	2
Private Debt	3	3
Emerging Market Bonds	3	3
Rate Sensitive	17	17
Cash Equivalents	5	5
Investment Grade Bonds	8	6
Long-term Government Bonds	2	4
TIPS	2	2
Real Assets	11	11
Core Private Real Estate	5	5
VA/Opp Private Real Estate	3	3
Private Real Assets	3	3

[1] Expected return and standard deviation are based upon Meketa Investment Group's Annual Capital Markets Expectations. Throughout this document, returns for periods longer than one year are annualized.

Asset Allocation Policy Options[1] (continued)

	Current Policy (%)	2 Percent IBG to LTGB (%)
Other	3	3
Hedge Funds	3	3
Expected Return (20 years)	8.52	8.53
Standard Deviation	13.4	13.4
Probability of Achieving 6.62% over 20 Years	73.5	73.8

[1] Expected return and standard deviation are based upon Meketa Investment Group's Annual Capital Markets Expectations. Throughout this document, returns for periods longer than one year are annualized.

Risk Analysis

Scenario	Current Policy (%)	2 Percent IBG to LTGB (%)
Worst Case Returns		
One Year (annualized)	-18.4	-18.3
Three Years (annualized)	-8.0	-7.9
Five Years (annualized)	-4.5	-4.4
Ten Years (annualized)	-0.9	-0.8
Twenty Years (annualized)	1.8	1.8
Probability of Experiencing Negative Returns		
One Year	25.3	25.2
Three Years	12.5	12.4
Five Years	6.9	6.8
Ten Years	1.8	1.7
Twenty Years	0.1	0.1
Probability of Achieving at least a 6.62% Return		
One Year	55.6	55.7
Three Years	59.6	59.7
Five Years	62.3	62.5
Ten Years	67.2	67.4
Twenty Years	73.5	73.8

Value at Risk[1]

Scenario	Current Policy	2 Percent IBG to LTGB
VaR (%):		
1 month	-8.3	-8.3
3 months	-13.4	-13.4
6 months	-17.6	-17.5
VaR ($M):		
1 month	-8	-8
3 months	-13	-13
6 months	-18	-18

Conditional Value at Risk[1]

Scenario	Current Policy	2 Percent IBG to LTGB
CVaR (%):		
1 month	-9.6	-9.5
3 months	-15.6	-15.5
6 months	-20.7	-20.6
CVaR ($M):		
1 month	-10	-10
3 months	-16	-16
6 months	-21	-21

[1] Calculated with a 99% confidence level and based upon Meketa Investment Group's Annual Capital Markets Expectations. cVaR represents the average loss past the 99th percentile.

Historical Negative Scenario Analysis[1] (Cumulative Return)

Scenario	Current Policy (%)	2 Percent IBG to LTGB (%)
Post-COVID Rate Hikes(Jan 2022-Oct 2023)	-9.5	-10.0
COVID-19 Market Shock (Feb 2020-Mar 2020)	-19.0	-18.7
Taper Tantrum (May - Aug 2013)	-0.5	-0.6
Global Financial Crisis (Oct 2007 - Mar 2009)	-28.9	-28.6
Popping of the TMT Bubble (Apr 2000 - Sep 2002)	-19.5	-19.4
LTCM (Jul - Aug 1998)	-9.9	-9.8
Asian Financial Crisis (Aug 97 - Jan 98)	0.4	0.4
Rate spike (1994 Calendar Year)	2.2	2.1
Early 1990s Recession (Jun - Oct 1990)	-6.6	-6.6
Crash of 1987 (Sep - Nov 1987)	-12.4	-12.4
Strong dollar (Jan 1981 - Sep 1982)	2.6	2.6
Volcker Recession (Jan - Mar 1980)	-3.7	-3.8
Stagflation (Jan 1973 - Sep 1974)	-23.3	-23.5

→ Moving 2% to Long-Term Government Bonds would be slightly protective during most negative market scenarios, except during highly inflationary/rate hike scenarios.

[1] See the Appendix for our scenario inputs. In periods where the ideal benchmark was not yet available we used the next closest benchmark(s) as a proxy.

Historical Positive Scenario Analysis[1]
(*Cumulative* Return)

Scenario	Current Policy (%)	2 Percent IBG to LTGB (%)
Covid Recovery (Apr 2020-Dec 2021)	55.0	54.8
Global Financial Crisis Recovery (Mar 2009 - Nov 2009)	37.1	37.0
Best of Great Moderation (Apr 2003 - Feb 2004)	32.1	32.1
Peak of the TMT Bubble (Oct 1998 - Mar 2000)	61.4	61.4
Plummeting Dollar (Jan 1986 - Aug 1987)	57.8	57.8
Volcker Recovery (Aug 1982 - Apr 1983)	32.4	32.6
Bretton Wood Recovery (Oct 1974 - Jun 1975)	30.4	30.5

[1] See the Appendix for our scenario inputs. In periods where the ideal benchmark was not yet available we used the next closest benchmark(s) as a proxy.

Stress Testing: Impact of Market Movements (Expected Return under Stressed Conditions)[1]

Scenario	Current Policy (%)	2 Percent IBG to LTGB (%)
10-year Treasury Bond rates rise 100 bps	4.6	4.5
10-year Treasury Bond rates rise 200 bps	-1.3	-1.5
10-year Treasury Bond rates rise 300 bps	-2.2	-2.4
Baa Spreads widen by 50 bps, High Yield by 200 bps	0.4	0.5
Baa Spreads widen by 300 bps, High Yield by 1000 bps	-22.8	-22.7
Trade Weighted Dollar gains 10%	-4.2	-4.2
Trade Weighted Dollar gains 20%	-1.9	-1.7
U.S. Equities decline 10%	-6.2	-6.2
U.S. Equities decline 25%	-17.6	-17.5
U.S. Equities decline 40%	-26.9	-26.8

→ Each policy portfolio has a different sensitivity to four major risk factors: interest rates, credit spreads, currency fluctuations, and equity values.

→ The Fund's primary risk factors would continue to be an equity market decline and a widening of credit spreads, no matter the policy.

[1] Assumes that assets not directly exposed to the factor are affected nonetheless. See the Appendix for further details.

Stress Testing: Impact of Positive Market Movements (Expected Return under Positive Conditions)[1]

Scenario	Current Policy (%)	2 Percent IBG to LTGB (%)
10-year Treasury Bond rates drop 100 bps	2.0	2.2
10-year Treasury Bond rates drop 200 bps	10.7	11.1
10-year Treasury Bond rates drop 300 bps	13.5	14.0
Baa Spreads narrow by 30bps, High Yield by 100 bps	7.5	7.5
Baa Spreads narrow by 100bps, High Yield by 300 bps	14.0	14.0
Trade Weighted Dollar drops 10%	8.2	8.2
Trade Weighted Dollar drops 20%	23.0	23.3
U.S. Equities rise 10%	7.0	7.0
U.S. Equities rise 30%	16.9	16.9

[1] Assumes that assets not directly exposed to the factor are affected nonetheless. See the Appendix for further details.

Economic Regime Management®

Economic Regime Management

→ The Economic Regime Management (ERM) approach focuses on understanding the dynamics of the most important macro level forces that drive returns across asset classes.

→ We find the most important factors to be:

- Interest Rate Surprise – Unexpected changes in the 10 year interest rate (related to Duration).
- Inflation Surprise – Unexpected changes in the CPI growth rate.
- Growth Surprise – Unexpected changes in the Real GDP growth rate.
- Systemic Risk – "System-wide" risk that propagates through all asset classes (e.g., 2008).

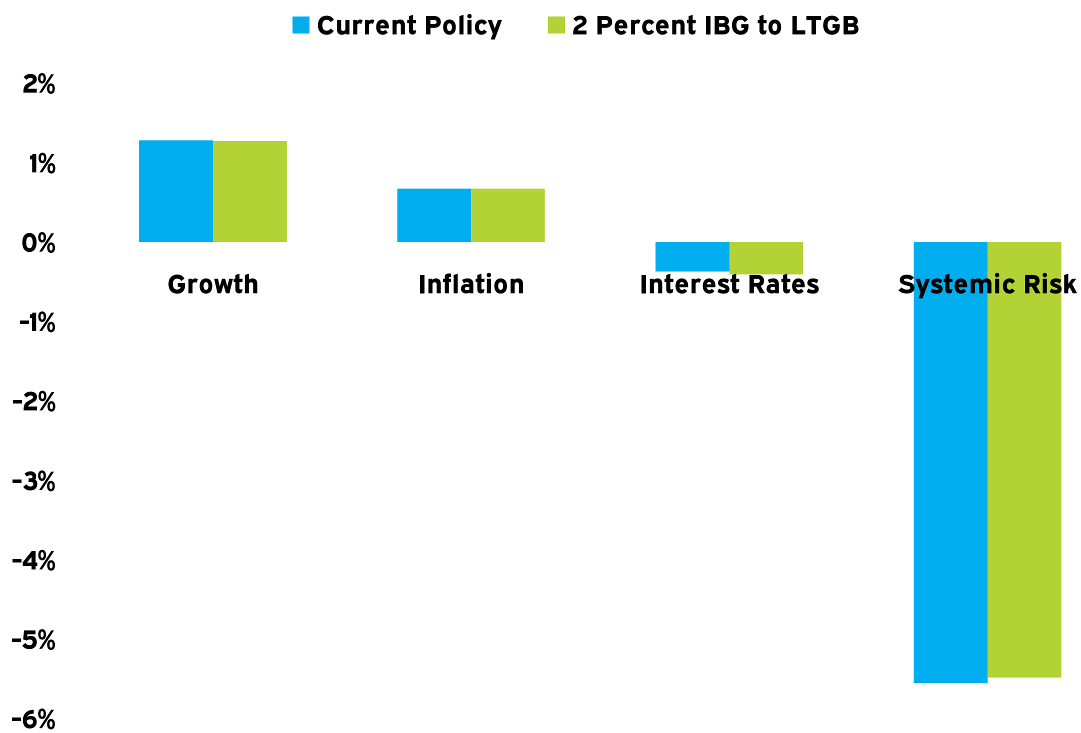
→ We focus on surprises because expectations matter.

- What was considered "low" inflation in the 1970s would be considered "high" today.

→ These factors explain the majority of volatility across asset classes.

- Understanding these dynamics explain the "why" not just the "what."

Portfolio Sensitivity Comparison



→ The chart above shows the resulting change in portfolio return given a one standard deviation event in the respective risk factor.

→ There is more concentration in Growth and Systematic Risk because these sources of risk tend to pay better (have higher expected returns) than the other risk factors.

Summary and Recommendations

Recommendations

→ Based on our analysis, shifting 2% of the current Investment Grade Bond assets to Long-Term Government Bonds seems to be reasonable to consider. The projections indicate that the move would be unlikely to hurt long-term returns, but would possibly protect some assets in negative market environments.

Appendices

Scenario Return Inputs

Asset Class	Benchmark Used
Investment Grade Bonds	Bloomberg US Aggregate
TIPS	Bloomberg Global Inflation Linked: US TIPS
Intermediate-term Government Bonds	Bloomberg US Treasury: Intermediate
Long-term Government Bonds	Bloomberg US Treasury: Long
EM Bonds (Local)	Bloomberg Emerging Markets Hard Currency Aggregate
Bank Loans	Credit Suisse Leveraged Loan
High Yield Bonds	Bloomberg US Corporate High Yield
Direct Lending	Cliffwater Direct Lending Index
Special Situations	Cambridge Associates Proxy IRR Returns
Real Estate	NCREIF Property Index
Core Private Real Estate	Cambridge Associates Proxy IRR Returns
Value-Added Real Estate	Cambridge Associates Proxy IRR Returns
Opportunistic Real Estate	Cambridge Associates Proxy IRR Returns
REITs	FTSE NAREIT All Equity REITS
Infrastructure (Private)	Cambridge Associates Proxy IRR Returns
Natural Resources (Private)	Cambridge Associates Proxy IRR Returns
Timber	NCREIF Timberland
Commodities	Bloomberg Commodity Index
US Equity	Russell 3000
Public Foreign Equity (Developed)	MSCI EAFE
Public Foreign Equity (Emerging)	MSCI Emerging Markets
Private Equity	Cambridge Associates Proxy IRR Returns
Long-short Equity	HFRI Equity Hedge
Global Macro	HFRI Macro
Hedge Funds	HFRI Fund Weighted Composite
Private Debt	Cambridge Associates Proxy IRR Returns

Negative Historical Scenario Returns - Sample Inputs

	Covid-19 Market Shock (Feb 2020-Mar 2020)	Taper Tantrum (May - Aug 2013)	Global Financial Crisis (Oct 2007 - Mar 2009)	Popping of the TMT Bubble (Apr 2000 - Sep 2002)	LTCM (Jul - Aug 1998)
Cash Equivalents	0.4	0.0	2.6	9.9	0.8
Short-term Investment Grade Bonds	0.4	-0.1	7.9	21.9	1.6
Investment Grade Bonds	-0.9	-3.7	8.5	28.6	1.8
Long-term Corporate Bonds	-18.4	-9.3	-10.3	26.9	-0.6
Long-term Government Bonds	12.7	-11.6	24.2	35.5	4.1
TIPS	-0.4	-8.5	8.2	37.4	0.7
Global ILBs	-6.5	-7.4	-3.9	39.7	0.7
High Yield Bonds	-20.8	-2.0	-22.8	-6.3	-5.0
Bank Loans	-20.3	0.8	-23.7	6.3	0.7
Direct Lending	-4.8	2.6	-3.3	-2.0	-2.6
Foreign Bonds	-4.5	-3.2	2.1	8.5	3.5
Asset Based Lending	-4.8	2.6	-3.3	-2.0	-2.6
Special Situations	-12.2	4.6	-26.4	-2.0	-2.6
Emerging Market Bonds (major)	-15.3	-11.5	-5.0	6.3	-28.2
Emerging Market Bonds (local)	-13.9	-14.3	-7.9	7.2	-34.1
US Equity	-35.0	3.0	-45.8	-43.8	-15.4
Developed Market Equity (non-US)	-32.7	-2.2	-52.1	-46.7	-11.5
Emerging Market Equity	-31.2	-9.4	-51.2	-43.9	-26.7
Global Equity	-33.6	-0.7	-49.3	-46.7	-14.0
Private Equity/Debt	-7.8	5.7	-27.7	-23.6	-3.2
Private Equity	-7.4	5.8	-28.2	-26.2	-3.3
Private Debt Composite	-10.1	4.6	-22.3	-1.8	-2.3
REITs	-41.0	-13.3	-63.0	45.4	-15.3
Core Private Real Estate	0.7	3.6	-10.6	23.6	2.3
Value-Added Real Estate	-3.5	3.0	-32.2	25.4	0.0
Opportunistic Real Estate	-8.6	4.0	-25.7	21.4	1.5
Natural Resources (Private)	-22.1	2.5	-31.2	-3.9	-16.9
Timberland	0.1	1.3	20.7	-1.5	0.5
Farmland	-0.1	3.3	26.7	11.4	0.8
Commodities (naïve)	-18.9	-2.4	-36.9	18.5	-12.0
Core Private Infrastructure	-1.3	3.7	-0.8	24.8	-0.3
Hedge Funds	-9.1	-0.4	-17.8	-2.1	-9.4
Long-Short	-10.9	-1.0	-26.4	-8.8	-8.3
Hedge Fund of Funds	-7.6	-0.5	-19.5	-0.4	-7.7

Negative Historical Scenario Returns - Sample Inputs (continued)

	Rate spike (1994 Calendar Year)	Crash of 1987 (Sep - Nov 1987)	Strong dollar (Jan 1981 - Sep 1982)	Volcker Recession (Jan - Mar 1980)	Stagflation (Jan 1973 - Sep 1974)
Cash Equivalents	3.9	1.4	24.4	2.9	13.5
Short-term Investment Grade Bonds	0.5	2.3	29.9	-2.6	4.3
Investment Grade Bonds	-2.9	2.2	29.9	-8.7	7.9
Long-term Corporate Bonds	-5.8	1.5	29.6	-14.1	-12.0
Long-term Government Bonds	-7.6	2.6	28.4	-13.6	-1.8
TIPS	-7.5	2.8	15.6	-7.8	4.3
Global ILBs	-7.9	2.9	16.5	-8.3	4.5
High Yield Bonds	-1.0	-3.6	6.9	-2.3	-15.5
Bank Loans	10.3	-1.7	3.3	-1.1	-7.5
Direct Lending	7.6	-2.3	3.2	-1.0	-7.2
Foreign Bonds	5.3	-0.3	34.8	-6.5	-1.4
Asset Based Lending	7.6	-2.3	3.2	-1.0	-7.2
Special Situations	7.6	-2.3	3.2	-1.0	-7.2
Emerging Market Bonds (major)	-18.9	-9.2	-1.6	-2.6	-20.2
Emerging Market Bonds (local)	-22.8	-11.0	-2.0	-3.2	-23.9
US Equity	1.3	-29.5	-2.3	-4.1	-42.6
Developed Market Equity (non-US)	7.8	-14.5	-18.0	-7.0	-36.3
Emerging Market Equity	-7.3	-25.3	-12.1	-6.6	-44.2
Global Equity	5.0	-20.5	-11.1	-5.4	-40.4
Private Equity/Debt	13.2	-0.7	-2.7	-2.5	-18.2
Private Equity	14.2	-0.5	-3.9	-2.7	-20.1
Private Debt Composite	6.2	-1.8	3.0	-1.0	-6.9
REITs	-3.5	-19.5	2.5	-3.6	-33.9
Core Private Real Estate	6.4	2.5	23.9	5.5	-4.4
Value-Added Real Estate	6.5	4.3	44.2	9.6	-7.6
Opportunistic Real Estate	18.8	3.1	30.7	7.0	-5.6
Natural Resources (Private)	12.6	-9.9	-9.5	-9.1	19.3
Timberland	15.4	9.2	23.6	-7.4	5.5
Farmland	9.4	5.3	13.3	-4.2	3.1
Commodities (naïve)	16.6	1.8	-16.0	-9.6	139.5
Core Private Infrastructure	-11.5	-0.1	-0.2	-0.1	-0.5
Hedge Funds	4.1	-7.8	-3.8	-1.9	-15.7
Long-Short	2.6	-10.0	-4.9	-2.5	-19.8
Hedge Fund of Funds	-3.5	-5.7	-2.7	-1.4	-11.5

Positive Historical Scenario Returns - Sample Inputs

	Covid-19 Recovery (Apr 2020 – Dec 2021)	Global Financial Crisis Recover (Mar 2009 - Nov 2009)	Best of Great Moderation (Apr 2003 - Feb 2004)	Peak of the TMT Bubble (Oct 1998 - Mar 2000)	Plummeting Dollar (Jan 1986 - Aug 1987)	Volcker Recovery (Aug 1982 - Apr 1983)	Bretton Wood Recovery (Oct 1974 - Jun 1975)
Cash Equivalents	0.1	0.1	0.9	6.7	10.0	6.0	4.5
Short-term Investment Grade Bonds	1.1	4.3	2.8	5.3	13.2	15.4	5.0
Investment Grade Bonds	2.6	9.0	4.6	1.7	14.4	26.4	9.2
Long-term Corporate Bonds	18.0	28.8	11.3	-3.1	15.9	42.1	17.5
Long-term Government Bonds	-7.2	2.0	4.9	-2.3	15.4	33.6	11.8
TIPS	15.6	14.3	9.1	6.3	10.2	11.5	4.1
Global ILBs	18.9	24.7	9.6	6.6	10.8	12.1	4.3
High Yield Bonds	29.1	49.1	21.8	2.1	24.9	23.3	19.3
Bank Loans	24.8	32.9	10.1	6.1	11.1	10.4	8.7
Direct Lending	25.0	9.4	23.7	26.8	5.4	8.2	8.3
Foreign Bonds	5.2	23.4	15.2	-7.0	44.5	32.3	17.9
Asset Based Lending	25.0	9.4	23.7	26.8	5.4	8.2	8.3
Special Situations	85.8	33.2	23.7	26.8	5.4	8.2	8.3
Emerging Market Bonds (major)	15.7	27.0	20.6	49.0	38.9	21.6	21.0
Emerging Market Bonds (local)	7.0	37.5	25.2	61.0	48.4	26.5	25.7
US Equity	92.0	51.6	37.2	50.2	64.8	59.3	55.1
Developed Market Equity (non-US)	55.4	60.5	56.7	53.0	140.0	29.6	34.6
Emerging Market Equity	50.9	94.6	79.4	101.3	126.5	52.1	53.4
Global Equity	75.2	59.9	46.2	54.8	98.7	46.3	43.8
Private Equity/Debt	97.8	18.8	23.3	82.4	19.0	13.7	18.4
Private Equity	101.5	16.7	23.7	90.0	21.6	14.8	20.2
Private Debt Composite	41.2	28.7	20.4	21.3	5.9	7.9	8.0
REITs	75.1	82.5	44.6	-5.2	51.8	47.4	42.5
Core Private Real Estate	21.4	-12.1	9.0	18.1	13.1	6.8	4.5
Value-Added Real Estate	36.6	-22.4	10.9	22.0	23.6	11.9	7.8
Opportunistic Real Estate	41.1	-14.8	13.6	27.9	16.7	8.6	5.7
Natural Resources (Private)	45.4	57.6	36.1	22.2	78.3	30.2	14.8
Timberland	9.9	-3.7	8.5	20.5	28.6	20.0	8.7
Farmland	11.3	4.5	9.6	10.4	15.9	11.3	5.0
Commodities (naïve)	60.5	28.9	30.6	17.1	27.6	6.2	-20.2
Core Private Infrastructure	32.7	6.9	8.5	33.0	1.4	0.6	0.6
Hedge Funds	39.3	20.1	22.4	52.8	30.6	13.8	14.5
Long-Short	54.1	25.9	25.3	81.4	40.8	18.0	18.9
Hedge Fund of Funds	29.1	10.3	13.3	36.8	21.3	9.7	10.3

Stress Test Return Assumptions - Sample Inputs[1]

	10-year Treasury Bond rates rise 100 bps	10-year Treasury Bond rates rise 200 bps	10-year Treasury Bond rates rise 300 bps	Baa Spreads widen by 50 bps, High Yield by 200 bps	Baa Spreads widen by 300 bps, High Yield by 1000 bps	Trade Weighted Dollar gains 10%	Trade Weighted Dollar gains 20%	US Equities decline 10%	US Equities decline 25%	US Equities decline 40%
Cash Equivalents	-0.2	-0.4	-0.5	2.8	1.1	3.6	1.3	2.9	2.3	0.4
Short-term Investment Grade Bonds	-1.2	-2.5	-3.7	2.2	1.5	0.8	1.4	0.9	0.7	0.8
Investment Grade Bonds	-4.3	-8.4	-11.9	3.9	-0.4	0.8	4.2	1.5	0.7	-1.0
Long-term Corporate Bonds	-8.9	-16.3	-20.9	2.6	-13.4	-1.0	8.1	-1.0	-8.3	-12.3
Long-term Government Bonds	-10.6	-18.9	-23.6	7.8	7.3	1.8	12.8	1.4	2.6	2.4
TIPS	-4.9	-9.8	-13.7	2.8	-6.1	-2.4	-0.2	1.8	-2.3	-8.7
Global ILBs	-1.6	-8.6	-11.9	2.4	-11.1	-4.0	-4.8	1.4	-5.4	-16.3
High Yield Bonds	2.6	-4.3	-3.6	-1.8	-23.0	-4.1	-0.6	-5.3	-15.5	-21.2
Bank Loans	1.4	-1.0	-5.1	-2.8	-20.8	-2.9	-0.6	-3.6	-13.2	-17.4
Direct Lending	0.1	-2.7	-6.3	-1.8	-9.1	-3.2	-0.6	-3.4	-7.6	-5.7
Foreign Bonds	-4.6	-9.9	-15.7	6.6	-2.9	-4.5	-8.8	0.4	-4.6	-9.2
Asset-Based Lending	-0.2	-2.5	-4.5	-1.4	-11.5	-3.4	-3.1	-3.3	-8.2	-6.0
Special Situations	4.6	0.0	-6.4	-2.2	-21.4	-1.6	-9.0	-4.3	-17.3	-21.8
Emerging Market Bonds (major)	0.8	-6.1	-3.6	-0.1	-14.7	-2.6	-4.2	-4.2	-12.5	-15.4
Emerging Market Bonds (local)	1.6	-6.4	-3.0	0.1	-12.8	-3.0	-12.2	-3.8	-13.3	-20.5
US Equity	7.1	-1.0	2.8	-1.2	-32.0	-3.5	1.6	-10.6	-26.5	-42.4
Developed Market Equity (non-US)	8.9	0.7	-5.6	0.3	-35.1	-13.2	-9.0	-8.8	-23.4	-41.4
Emerging Market Equity	10.0	2.3	0.1	-1.1	-42.8	-15.7	-15.7	-11.7	-30.8	-46.9
Global Equity	7.6	-0.1	-0.5	-0.7	-33.6	-9.1	-5.9	-9.8	-25.3	-41.5
Private Equity/Debt	6.5	0.9	-5.5	-0.2	-22.5	-2.9	-7.2	-9.2	-22.5	-25.3
Private Equity	6.8	0.9	-5.3	0.0	-22.8	-2.8	-6.4	-10.0	-23.3	-25.7
Private Debt Composite	2.6	-1.3	-6.2	-1.8	-15.8	-2.4	-4.3	-4.0	-12.8	-15.0
REITs	4.1	-4.4	1.2	-3.8	-37.3	-1.6	12.4	-7.1	-32.8	-55.7
Core Private Real Estate	2.6	4.2	5.0	2.0	-7.1	2.7	9.7	1.0	-8.5	-14.0
Value-Added Real Estate	4.9	7.5	14.1	7.2	-13.5	13.7	6.4	1.9	-13.6	-23.1
Opportunistic Real Estate	4.2	6.9	9.9	1.1	-20.6	2.3	15.6	-0.6	-17.1	-26.3
Natural Resources (Private)	13.3	6.9	-3.5	-0.9	-27.5	-4.3	-21.5	-2.1	-17.0	-29.1
Timberland	1.5	2.3	-9.9	5.0	6.9	2.9	8.6	0.6	2.7	3.9
Farmland	2.5	0.7	-9.2	3.9	10.1	1.3	8.0	1.0	4.9	10.3
Commodities (naïve)	9.9	6.0	-6.6	-4.3	-25.0	-3.4	-24.0	5.1	-11.1	-37.8
Core Private Infrastructure	0.5	-4.6	-6.1	1.2	0.1	-0.7	3.6	-0.4	-5.0	-7.8
Hedge Funds	2.9	-1.8	-5.1	-0.6	-14.5	-2.2	-1.7	-4.3	-12.2	-15.7
Long-Short	5.2	-1.8	-4.2	-0.1	-21.0	-3.7	-4.3	-7.5	-17.7	-23.5
Hedge Fund of Funds	2.1	-2.4	-5.7	-1.3	-14.8	-2.9	-2.4	-4.9	-12.5	-16.0

[1] Assumptions are based on performance for each asset class during historical periods that resembled these situations.

'Anti' Stress Test Return Assumptions - Sample Inputs[1]

	10-year Treasury Bond rates drop 100 bps	10-year Treasury Bond rates drop 200 bps	Baa Spreads narrow by 30bps, High Yield by 100 bps	Baa Spreads narrow by 100bps, High Yield by 300 bps	Trade Weighted Dollar drops 10%	Trade Weighted Dollar drops 20%	US Equities rise 10%	US Equities rise 30%
Cash Equivalents	0.2	0.4	0.6	0.2	2.0	4.5	2.3	3.1
Short-term Investment Grade Bonds	1.3	2.6	0.5	2.0	1.5	3.3	0.8	1.6
Investment Grade Bonds	4.5	9.3	1.3	3.9	2.5	9.4	1.8	3.8
Long-term Corporate Bonds	10.5	23.4	3.9	14.5	5.6	15.8	3.6	7.7
Long-term Government Bonds	13.3	28.8	0.6	-0.6	1.8	22.2	3.6	5.7
TIPS	5.2	10.9	1.2	5.9	3.8	7.8	1.5	2.2
Global ILBs	3.0	6.4	2.1	7.4	5.9	8.4	1.7	3.2
High Yield Bonds	2.8	8.9	7.0	25.7	7.7	8.6	4.8	10.6
Bank Loans	-0.2	2.2	4.0	16.4	4.3	0.6	2.2	4.5
Direct Lending	-0.5	0.2	4.9	5.6	1.5	3.8	1.8	3.5
Foreign Bonds	5.7	11.3	1.6	7.4	9.9	21.3	2.3	6.8
Asset Based Lending	-0.6	1.5	3.4	4.8	1.0	5.9	1.8	5.0
Special Situations	1.2	2.9	9.5	17.1	6.8	7.8	6.2	10.0
Emerging Market Bonds (major)	3.1	7.4	5.5	15.5	7.4	15.4	5.5	11.1
Emerging Market Bonds (local)	3.7	9.9	5.5	17.6	10.5	19.4	6.1	13.2
US Equity	3.4	15.3	11.4	18.8	8.0	24.9	10.6	31.7
Developed Market Equity (non-US)	-2.4	16.4	9.4	18.3	13.4	47.6	6.4	18.8
Emerging Market Equity	0.5	17.8	9.5	34.3	20.1	47.9	9.3	28.9
Global Equity	0.7	15.2	9.6	19.6	11.3	35.9	8.6	25.7
Private Equity/Debt	2.4	4.4	10.5	9.5	7.4	16.7	10.5	13.6
Private Equity	2.5	4.3	10.6	8.3	7.3	17.3	11.1	14.3
Private Debt Composite	0.8	1.8	7.7	12.8	4.8	5.9	4.6	6.5
REITs	2.6	14.5	9.7	27.1	6.5	25.5	10.0	24.1
Core Private Real Estate	1.0	1.6	4.6	-3.5	1.2	5.5	3.0	3.6
Value-Added Real Estate	2.7	6.4	5.6	-9.4	0.9	12.6	6.0	7.4
Opportunistic Real Estate	0.1	3.9	5.9	-5.5	-0.4	11.4	4.7	6.2
Natural Resources (Private)	-1.1	11.3	10.2	31.0	16.9	27.2	7.6	15.0
Timberland	6.4	9.2	4.9	-0.6	3.8	12.9	6.4	5.5
Farmland	3.2	4.2	6.6	3.8	3.4	7.8	5.3	4.1
Commodities (naïve)	-2.6	-3.2	3.1	9.8	13.6	-2.5	3.1	4.0
Core Private Infrastructure	0.8	-4.3	7.0	4.8	3.5	-2.3	2.0	2.9
Hedge Funds	3.3	4.8	5.8	11.3	6.0	9.3	5.6	9.8
Long-Short	3.3	5.8	6.9	12.3	7.8	15.2	7.0	13.3
Hedge Fund of Funds	2.5	3.9	4.9	10.2	5.1	8.3	4.7	8.8

[1] Assumptions are based on performance for each asset class during historical periods that resembled these situations.

Disclosure

You understand and agree that this document is partly based on analysis conducted using Meketa's the Asset Allocation Tool ("AAT"), an interactive tool created by Meketa Investment Group, Inc. ("Meketa") for informational purposes only and is not intended to provide, and should not be relied on for, accounting, legal, tax, or investment advice. The tool generates outcomes that are hypothetical in nature and should not be considered as providing advice on which investments to buy or sell. Results may vary with each use and over time. Specifically, the results may vary if the user modifies the inputs or there are changes to the capital markets assumptions. Information contained herein is subject to change at any time without notice.

The majority of the underlying data is updated annually, with a significant portion based on our capital markets expectations (CMEs). The CME include forecasts for each asset class over a 10-year and 20-year horizon for expected return, standard deviation, and covariance. These forecasts do not represent predictions for any fund or strategy. These forecasts are forward-looking projections based upon the reasonable beliefs of Meketa and are not a guarantee of future performance. Forward-looking projections relate only to the date they are made, and Meketa assumes no duty to and does not generally undertake to update forward-looking statements outside of our standard annual CME update. Further, forward-looking projections are subject to numerous assumptions, risks, and uncertainties, which change over time. Actual results may differ materially from those anticipated in forward-looking projections.

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The return characteristics and behavior of asset classes are represented by broad-based indices that have been selected because they are well known and are easily recognizable by investors. The AAT does not favor certain asset classes. The AAT is intended to illustrate the possible trade-offs between portfolios composed of various assets. The behavior modeled for an asset class may differ from an actual portfolio. For example, investments made for a portfolio may differ significantly in terms of security holdings, industry weightings, and asset allocation, from those of the asset class. Further, other asset classes not considered may have characteristics similar or superior to those being analyzed by the AAT.

No investment process is risk free and there is no guarantee of profitability; investors may lose some or all of their investments. No investment strategy or risk management technique can guarantee returns or eliminate risk in any market environment. Diversification does not guarantee a profit or protect against loss. Asset classes vary significantly in projected returns and volatility.

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Notes and Disclaimers

[1] The returns shown in the Policy Options and Risk Analysis sections rely on estimates of expected return, standard deviation, and correlation developed by Meketa Investment Group. To the extent that actual return patterns to the asset classes differ from our expectations, the results in the table will be incorrect. However, our inputs represent our best unbiased estimates of these simple parameters.

[2] The returns shown in the Policy Options and Risk Analysis sections use a lognormal distribution, which may or may not be an accurate representation of each asset classes' future return distribution. To the extent that it is not accurate in whole or in part, the probabilities listed in the table will be incorrect. As an example, if some asset classes' actual distributions are even more right-skewed than the lognormal distribution (i.e., more frequent low returns and less frequent high returns), then the probability of the portfolio hitting a given annual return will be lower than that stated in the table.

[3] The standard deviation bars in the chart in the Risk Analysis section do not indicate the likelihood of a 1, 2, or 3 standard deviation event—they simply indicate the return we expect if such an event occurs. Since the likelihood of such an event is the same across allocations regardless of the underlying distribution, a relative comparison across policy choices remains valid.