



Asset Allocation

JUNE 5, 2025

The Council's Role in Asset Allocation

- The primary investment objective for SDRS assets is to achieve and exceed the return of the Council's Capital Markets Benchmark over the long term
- The key investment policy decision relates to asset allocation
- The Council establishes:
 - Benchmark asset allocation which considers expected long-term returns and risk
 - Minimum and maximum for each asset category

Discussion Topics

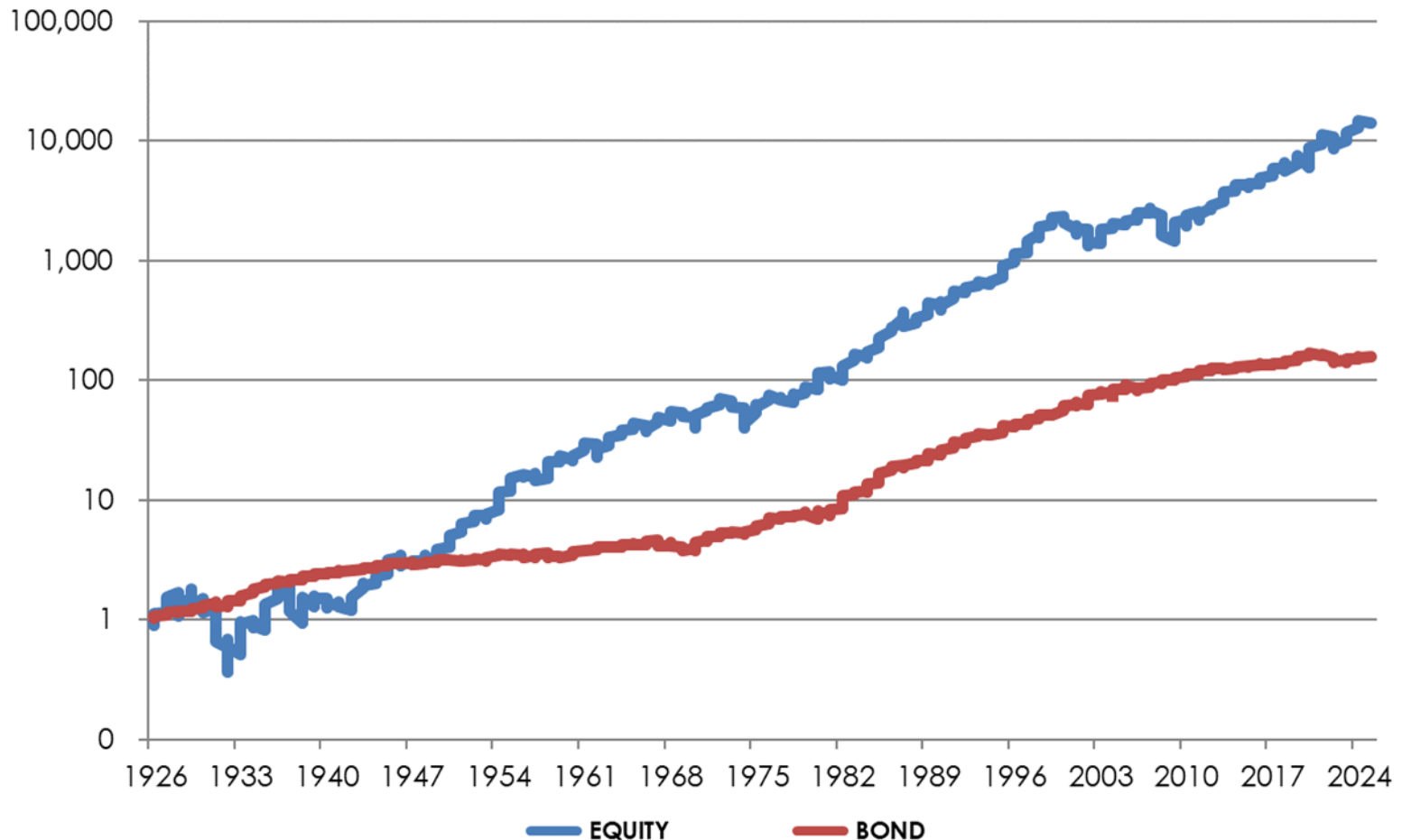
- Return and Risk Assessment
- Benchmark Recommendation
- Expected Return
- Valuation Analysis
- Asset Allocation Implementation

Return and Risk Assessment

Equity and Bonds

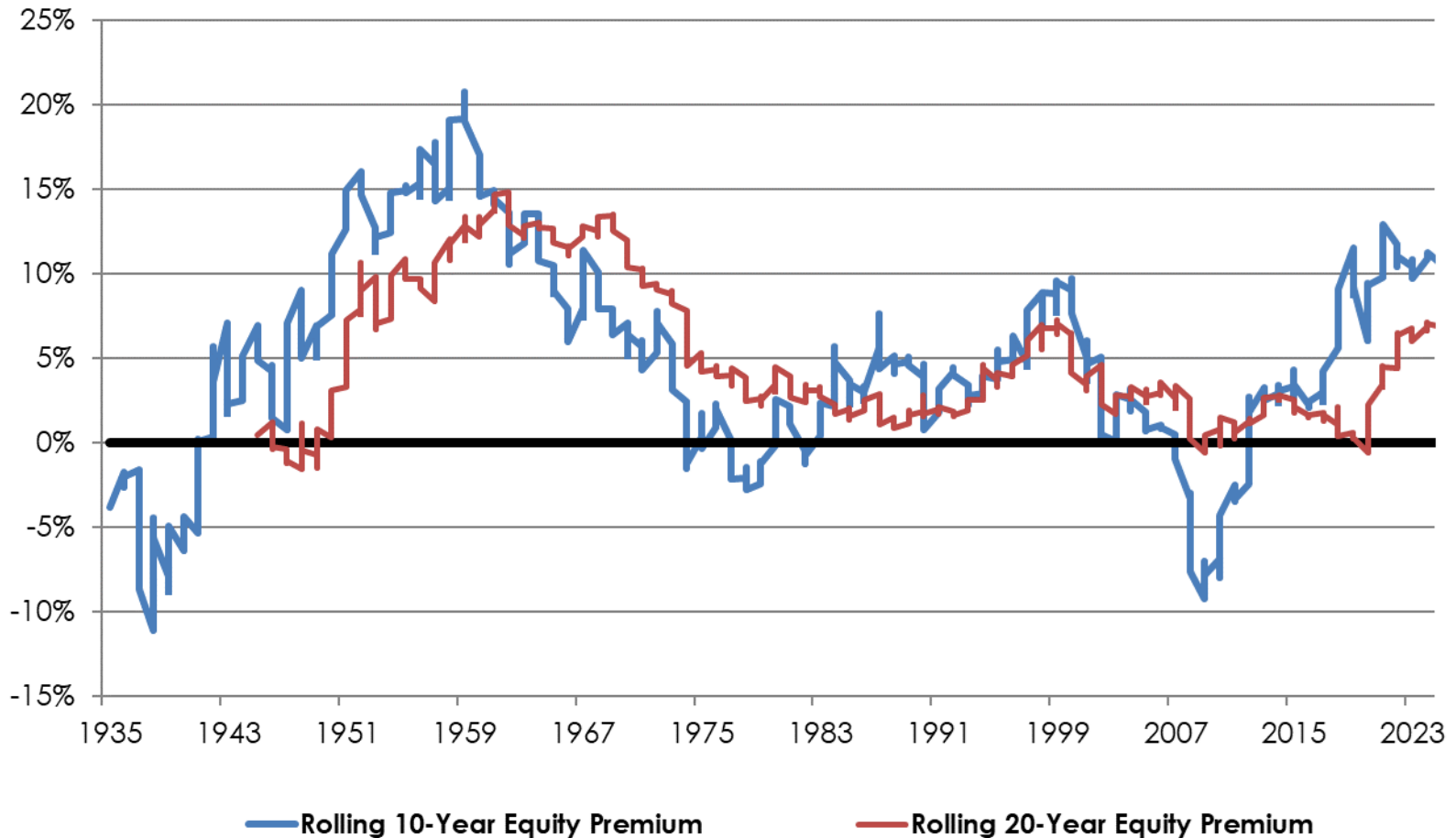
- Long-term return history is available only for equity, bonds, and cash
- Equity returns
 - Best over the very long term, but are volatile
- Bond returns
 - Lower over the long term compared to equities
 - Provide diversification
- Return/risk tradeoff depends on willingness to endure volatility

Long-Term Equity Returns Exceed Bond Returns



Equity Less Bond Return

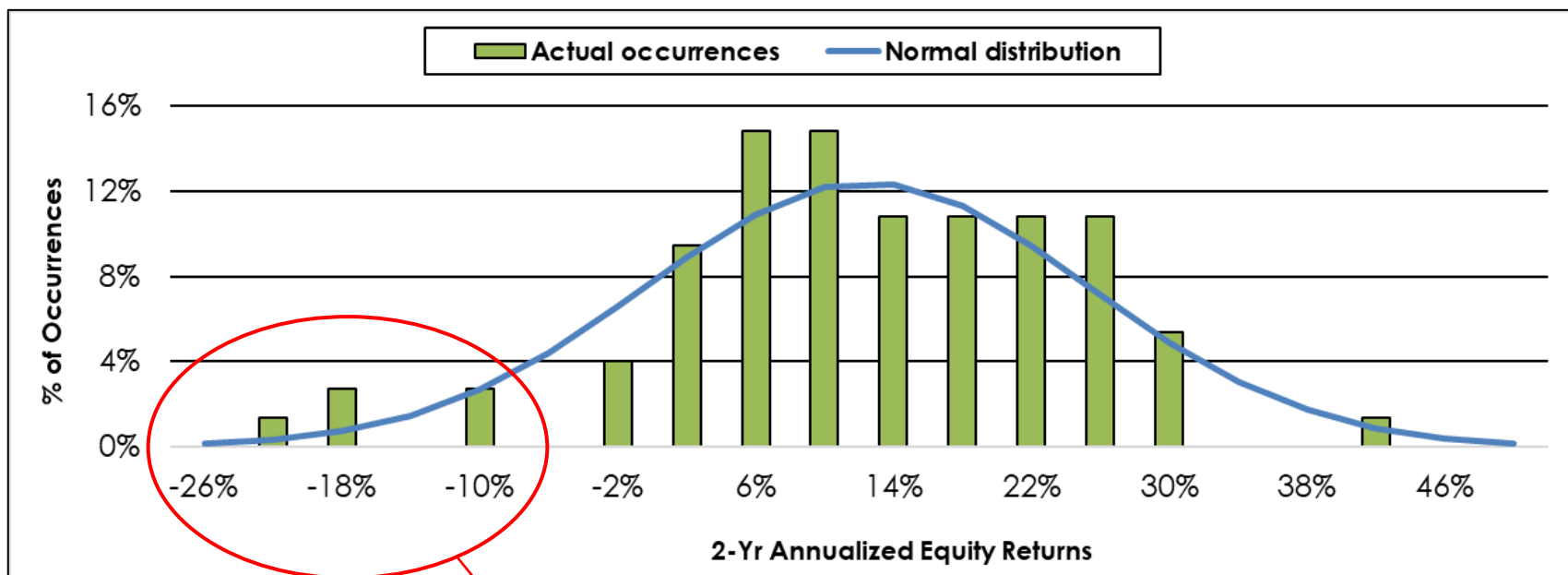
Historical Rolling Periods



Risk Measurement

Example: Actual vs Expected Equity Returns

- Conventional statistical measures of risk
 - Standard deviation and correlations are calculated

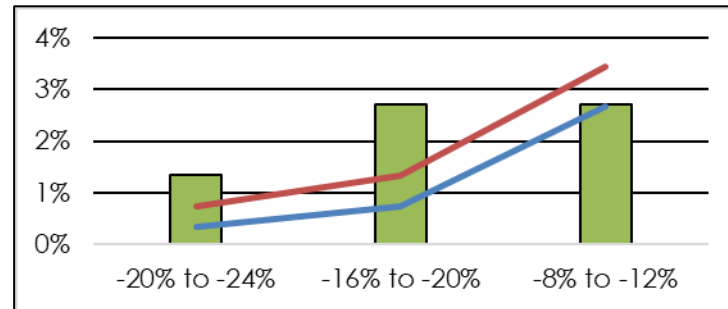
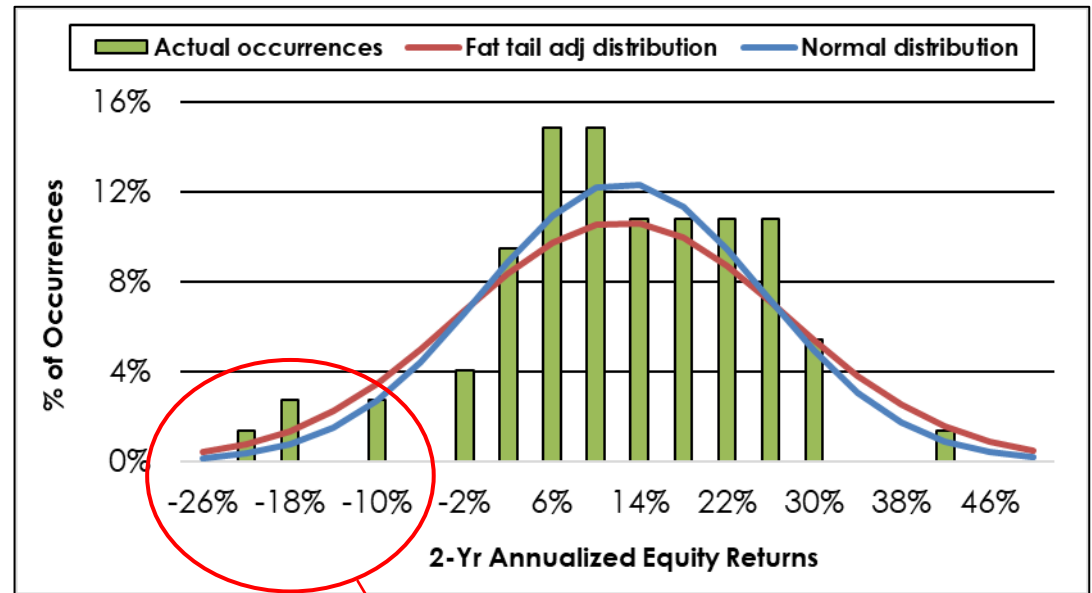


Risk is focused on severe adverse outcomes which are not represented well by conventional statistics

Risk Measurement

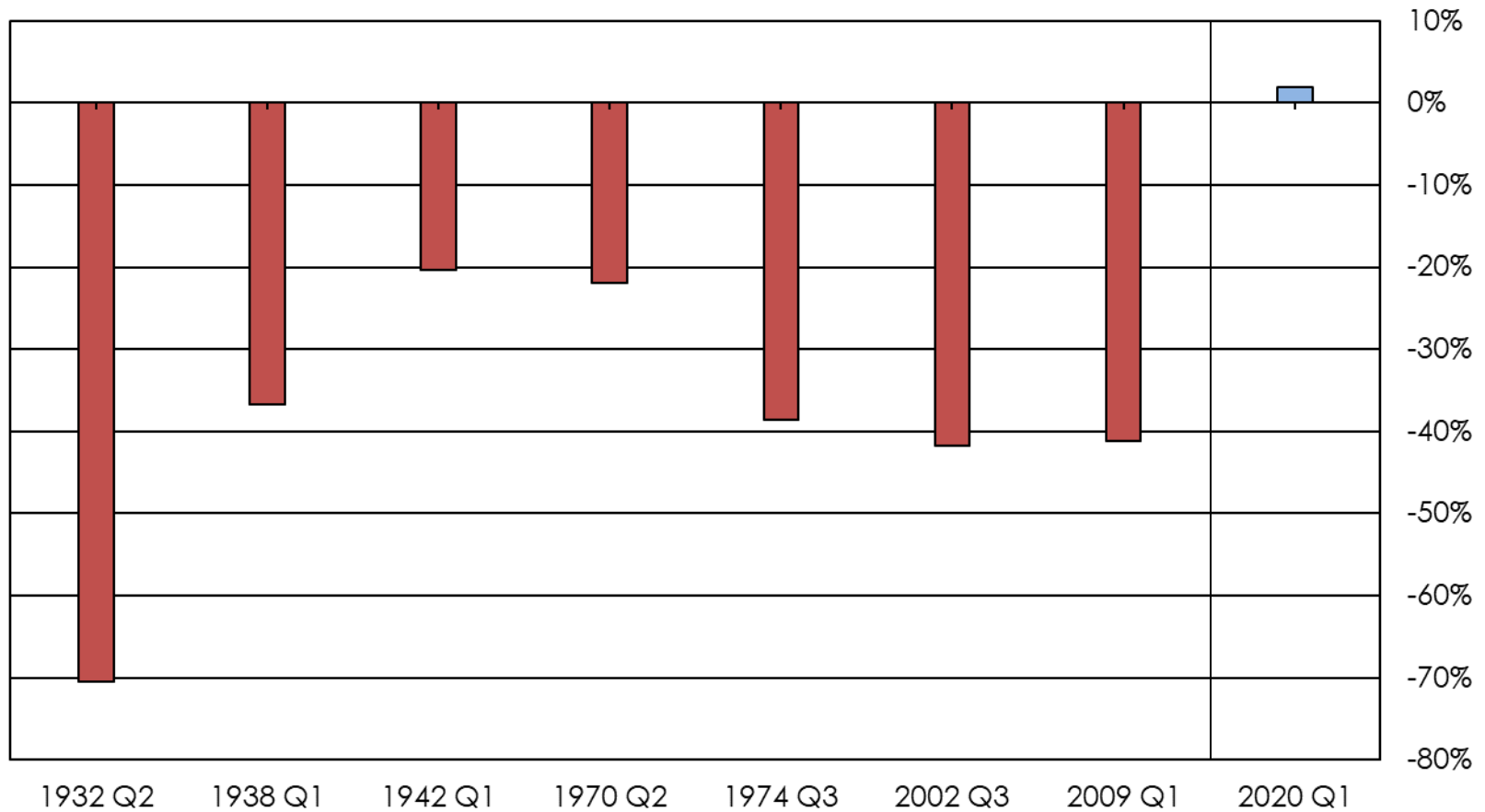
Example: Actual vs Expected Equity Returns

- SDIC adjustment to conventional risk measures
 - SDIC volatility
 - SDIC correlations
- Focus on equity-like and bond-like risk
 - Withstanding a two-year adverse outlier event



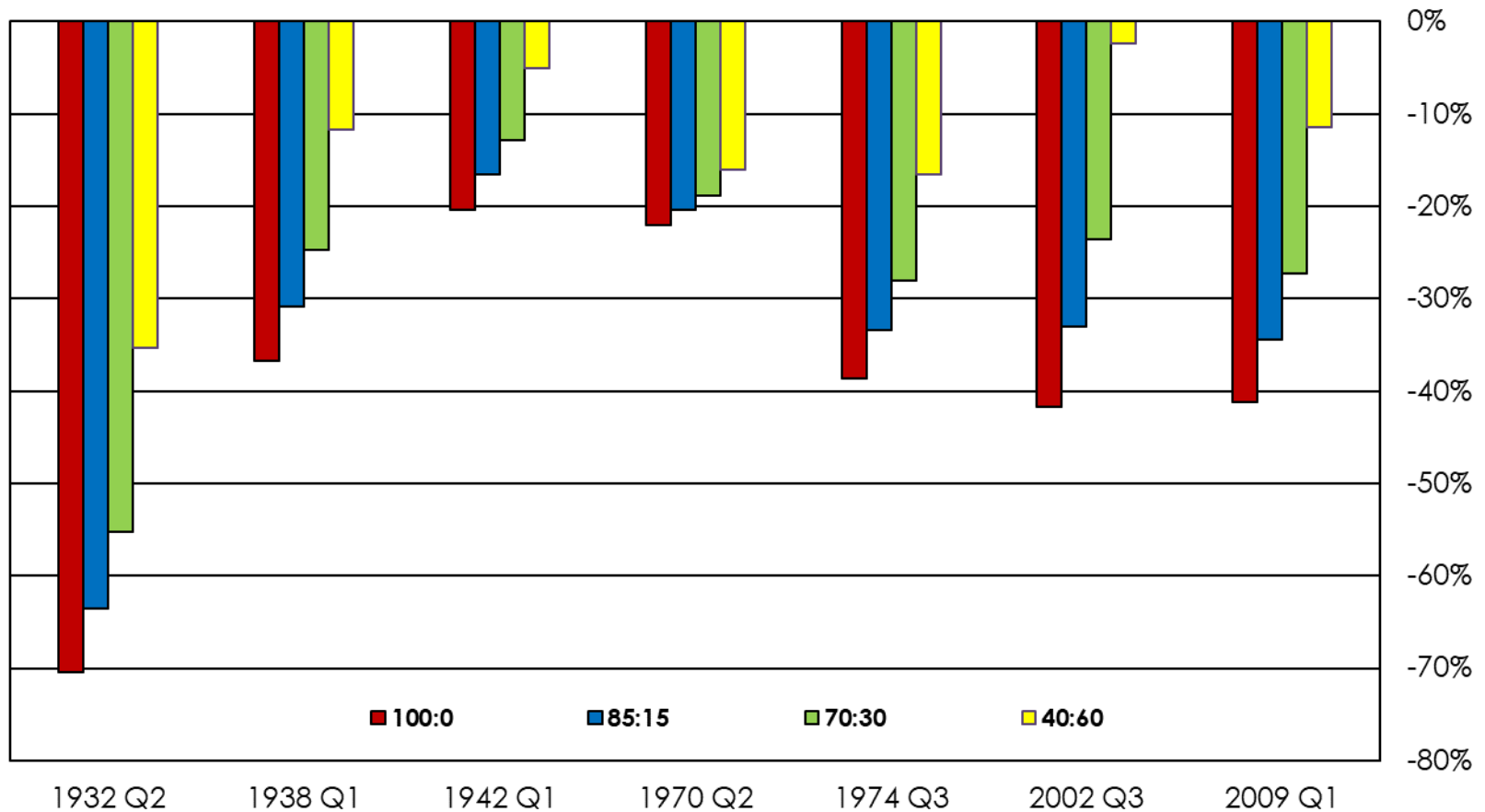
Equity Downturns Can Be Severe

Two-year periods with equity returns below negative 20%



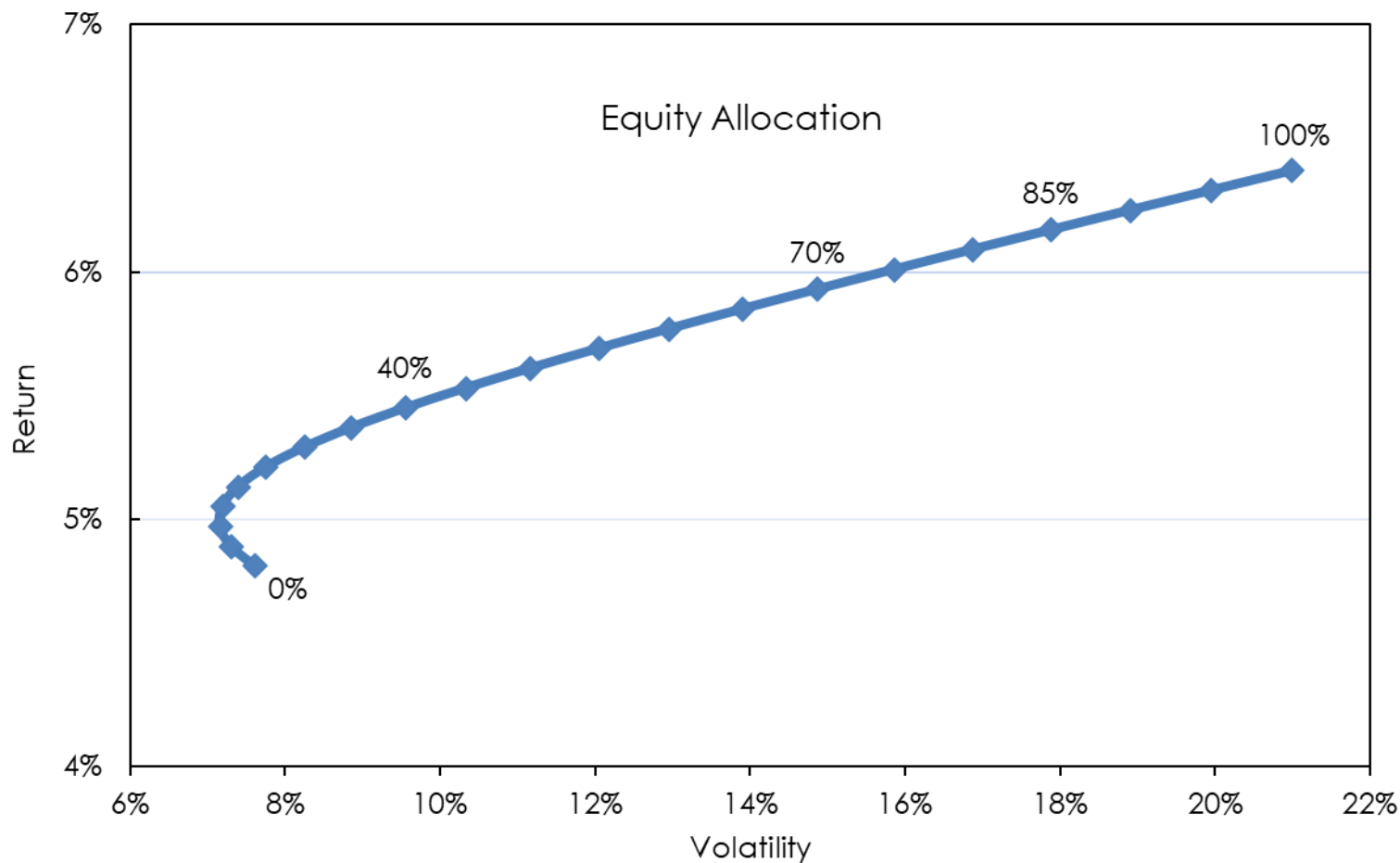
Risk of Various Equity Allocations

Two-year periods with equity returns below negative 20%

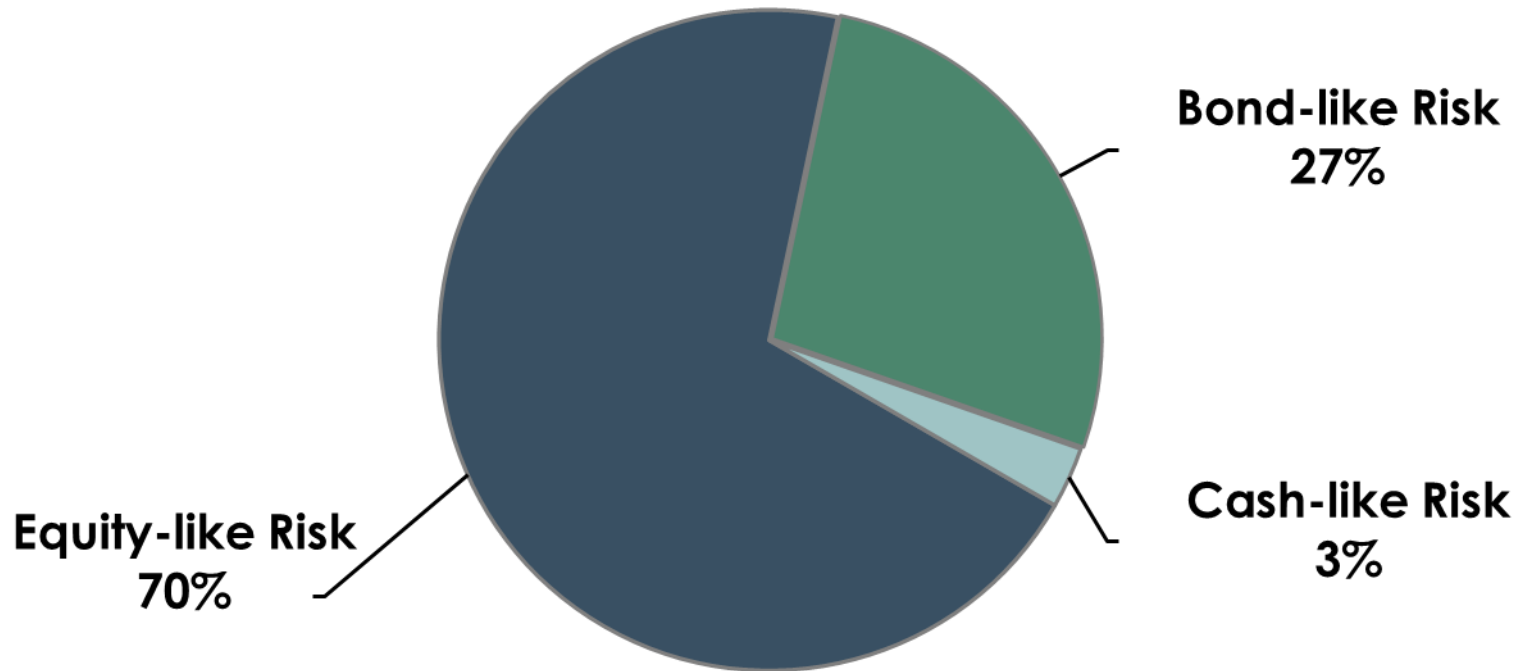


Return and Risk for Stock/Bond Allocations

Using SDIC long-term expected returns and fat tail adjusted volatility



Benchmark Recommendation

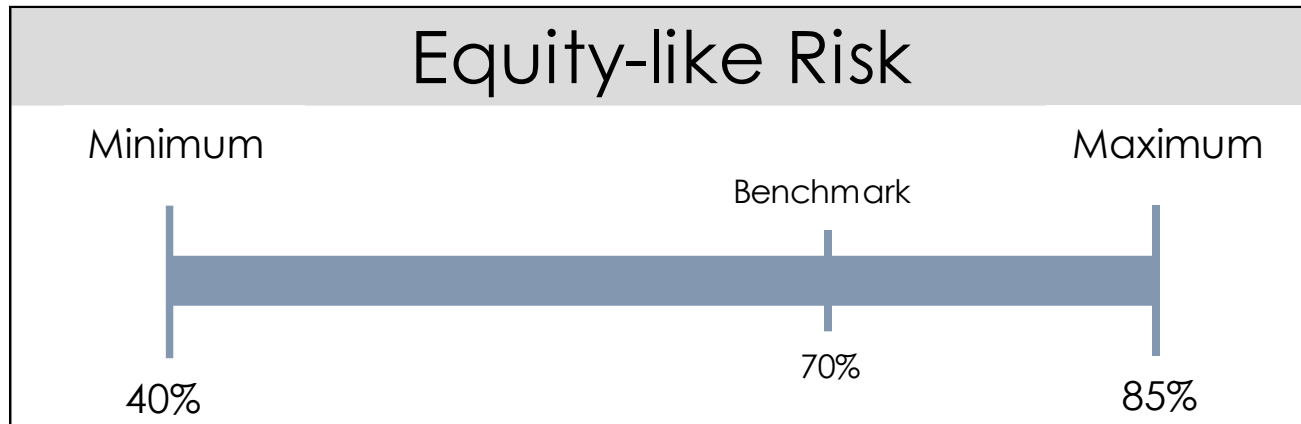


- Balances long-term returns and drawdown risk

Benchmark Ranges

- Goal
 - Enter market downturns with near minimum equity-like risk
 - Increase equity-like risk toward maximum during equity downturns to benefit from an eventual rebound
- The Importance of Patience
 - Markets typically continue to rise or fall further after reaching minimum or maximum risk thresholds
 - Essential to be patient for 5 years or more

Benchmark Range Recommendation



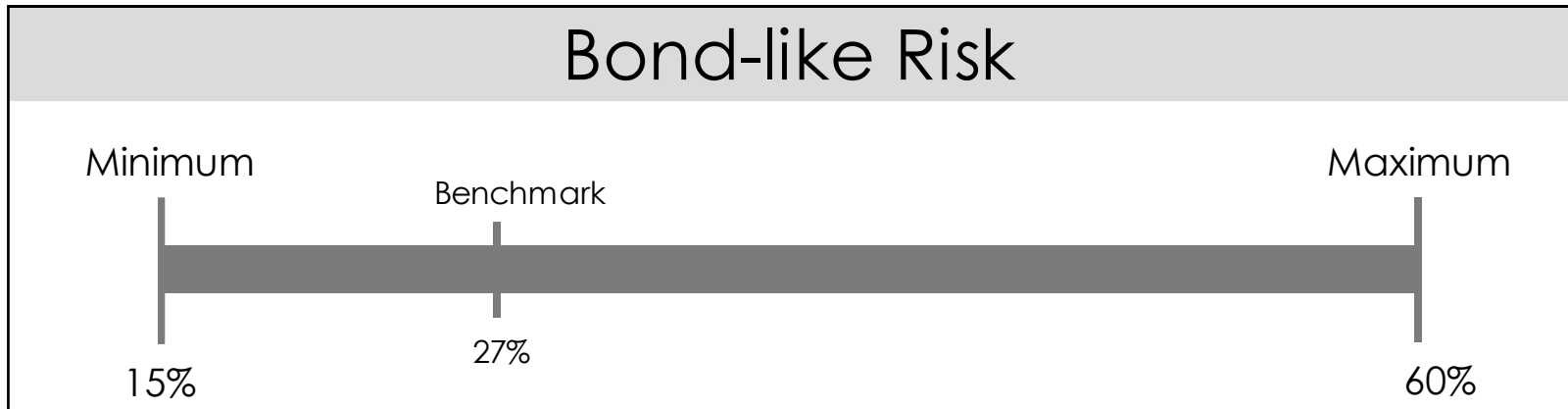
Minimum

- Increases underperformance risk but also reduces absolute risk when markets are extremely expensive
- Still provides meaningful exposure if wrong or early

Maximum

- For when markets are very cheap (on our valuation measures)
- Cheapness would suggest much of a potential decline had already occurred
- Weathered this maximum during the financial crisis

Benchmark Range Recommendation



Minimum

- Provides diversification

Maximum

- For when bonds are very cheap (on our valuation measures)

Risk of Other Asset Categories

- Other categories are mapped to equivalent equity-like / bond-like / cash-like risk
 - REITS mapped primarily to equity with remainder mapped to short duration bonds
 - High Yield Debt mapped to equity and short duration bonds depending on credit quality
 - Private Equity treated as leveraged equity
 - Opportunistic Real Estate treated as leveraged REITs
- Exposures embedded in other categories are accounted for when targeting overall equity-like / bond-like / cash-like risk

Benchmark Construction

- Categories in the benchmark are significant and passively implementable
 - Public Equity, Investment Grade Debt, Cash, High Yield Debt, REITs
- Secondary categories are excluded from the benchmark, but have permitted ranges
 - Private Equity, Opportunistic Real Estate, Aggressive Absolute Return Strategies, High Yield Real Estate Debt
- Equivalent stock/bond/cash risk is accounted for and offset when investing in other asset categories
- Benchmark constructed to achieve 70% equity-like, 27% bond-like, and 3% cash-like risk exposures

SDRS Capital Markets Benchmark

Proposed FY 26

		Primary Asset Categories					Secondary Asset Categories ⁴				Other Categories ⁵
	<u>Equity-Like Risk</u>	<u>Public Equity</u> ¹	<u>Real Estate REIT/Core</u> ²	<u>HY Corp Debt</u>	<u>Investment Grade Debt</u> ¹	<u>Cash</u> ³	<u>Private Equity</u>	<u>Opportunistic Real Estate</u> ²	<u>HY Real Estate Debt</u>	<u>Aggressive Absolute Return</u>	
Minimum	40%	20%	0%	0%	13%	0%	0%	0%	0%	0%	0%
Maximum	85%	75%	20%	15%	60%	45%	12%	15%	10%	5%	5%
Proposed 2026 BM	70%	56.3%	12%	7%	22.8%	1.9%					
Benchmark Index		(3/4) custom MSCI ACWI IMI ex Real Estate + (1/4) custom MSCI USA IMI ex Real Estate	MSCI US REIT	FTSE US High Yield Market	FTSE US BIG Bond	FTSE US 3-mo. Treasury Bill					
Benchmark History											
	2023-2025	56.3%	12%	7%	22.8%	1.9%					
	2016-2022	58%	10%	7%	23%	2%					

1. Buffer for market drift of 1% for public equity and 1/2% for debt (example: Investment Grade debt minimum of 13% can drift to 12.5%)

2. Real Estate(RE) min/max applies to REITS/Core RE and Opportunistic combined. Opportunistic RE counts 1.3x against RE max. Projected base case allocation used for partnerships

3. Cash to provide liquidity for benefits payments and rebalancing

4. Since 2015, secondary asset categories have not been included in the BM. This change allowed the BM to consist solely of well fitting, investable indexes.

These categories continue to have a permitted range to invest in opportunistically.

5. Other categories, such as TIPS, commodities, and arbitrage have been considered or used in the past. They are not in the BM. Future use would be limited to 5% or less.

SDRS Return and Volatility Analysis

Using JP Morgan inputs

	Expected Return	Standard Deviation*	Correlation Matrix							
			Public Equity	Hedge Funds	IG Debt	Cash	HY Debt	REITs	Private Equity	RE Opp
Public Equity	6.7%	17%	100%							
Hedge Funds	3.8%	7%	16%	100%						
Investment Grade Debt	4.6%	5%	26%	-8%	100%					
Cash	3.1%	1%	0%	5%	8%	100%				
High Yield Debt	6.1%	9%	74%	10%	38%	-5%	100%			
REITs	8.0%	17%	77%	10%	39%	-6%	67%	100%		
Private Equity	9.9%	20%	78%	26%	0%	0%	72%	53%	100%	
Real Estate Opportunistic	10.1%	19%	35%	1%	-13%	-18%	35%	46%	34%	100%

	Public Equity	Hedge Funds	IG Debt	Cash	HY Debt	REITs	Private Equity	RE Opp	Expected Return	Standard Deviation (1yr)*
100:0 Equity/Debt	100%								6.70%	16.94%
70:27:3 Equity/Debt/Cash	70%		27%	3%					6.03%	12.23%
add REITs						12%			6.22%	12.18%
add High Yield Debt					7%				6.27%	12.01%
Proposed Benchmark FY26**	56.3%	0.0%	22.8%	1.9%	7.0%	12.0%	0.0%	0.0%	6.27%	12.01%
Actual Asset Allocation**	21.5%	0.9%	13.5%	36.7%	4.8%	0.0%	10.0%	12.6%	5.79%	7.01%

* Standard deviation is a measure of volatility. There is a 68% chance of being within +/-1 standard deviation and a 95% chance of being within +/-2 standard deviations.

** As of 3/31/25

SDRS Return and Volatility Analysis

Using South Dakota Inputs

	Expected Return	Est. Volatility*
Public Equity	6.4%	21%
Hedge Funds	4.1%	11%
Investment Grade Debt	4.8%	8%
Cash	3.3%	2%
High Yield Debt	5.5%	12%
REITs	6.5%	25%
Private Equity	7.0%	30%
Real Estate Opportunistic	8.0%	33%

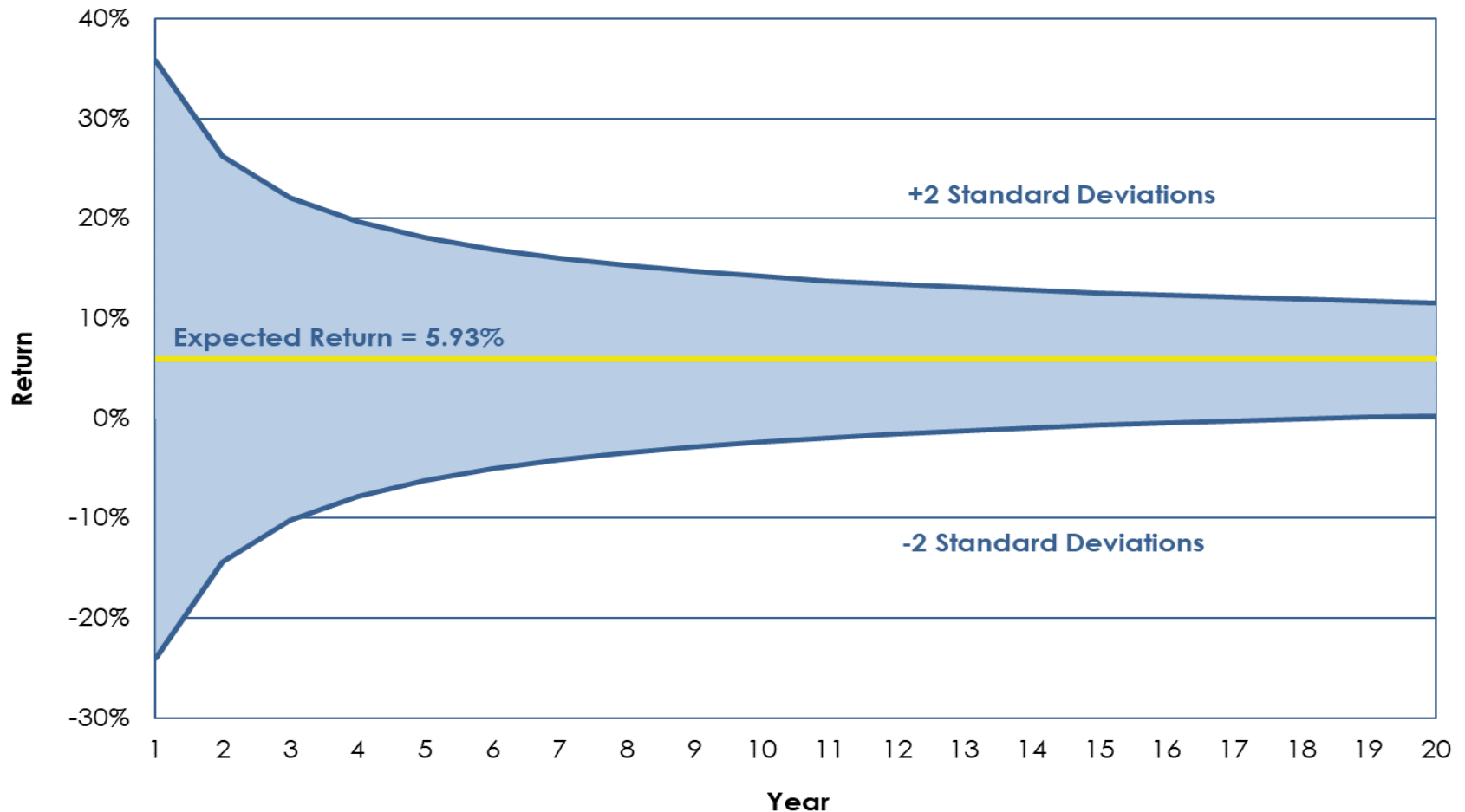
	Public Equity	Hedge Funds	IG Debt	Cash	HY Debt	REITs	Private Equity	RE Opp	Expected Return	Est. Volatility (1yr)*
100:0 Equity/Debt	100%								6.41%	21.00%
70:27:3 Equity/Debt/Cash	70%		27%	3%					5.89%	14.84%
add REITs						12%			5.93%	14.97%
add High Yield Debt					7%				5.93%	14.95%
Proposed Benchmark FY26**	56.3%	0.0%	22.8%	1.9%	7.0%	12.0%	0.0%	0.0%	5.93%	14.95%
Actual Asset Allocation**	21.5%	0.9%	13.5%	36.7%	4.8%	0.0%	10.0%	12.6%	5.25%	11.08%

* Standard deviation is a measure of volatility. There is a 68% chance of being within +/-1 standard deviation and a 95% chance of being within +/-2 standard deviations. This measure has been adjusted to better reflect frequency and magnitude of adverse events.

** As of 3/31/25

SDRS Return and Volatility Analysis

Using South Dakota Inputs



SDRS Expected Long-Term Return Recap

- Benchmark asset allocation expected return is 5.93%
 - Uses SDRS inflation assumption which can vary from SDIC inflation assumption
 - Does not incorporate any negative dollar cost averaging effect nor added value from the long-term contrarian investment approach
- Expected returns are the midpoint of a wide distribution with a 50% chance of being higher and a 50% chance of being lower
- Standard deviation is 15.0% and is adjusted to reflect real-world frequency of severe negative returns and correlations during severe periods
 - Conventionally measured standard deviation is 12%

Risk Control Summary

- Risk control
 - Risk managed by broad diversification and reducing amounts in expensive assets
 - Adequate liquidity maintained to avoid liquidations of depressed assets and to allow rebalancing
- Strength and determination to handle tough markets
 - Participation in the free enterprise economic system provides highest long-term rewards but must endure short-term bumps in the road
- Strong funding and benefit design help manage downside volatility
 - In very difficult circumstances, benefits may require further adjustment to maintain funding

Asset Category Valuation

- Equity-like and bond-like risk
 - Equity and bond valuation processes
- Real estate (REITS)
 - REIT valuation versus underlying equity and bond components
- High yield debt
 - High yield valuation versus underlying equity and bond components
- Private equity
 - Subjective and data assessment of risk-adjusted added value versus equity
- Opportunistic real estate
 - Subjective and data assessment of risk-adjusted added value versus REITS
- Arbitrage and other strategies
 - Monitor for signs of distress and bottom-up underwriting of proxy transactions

Equity Valuation

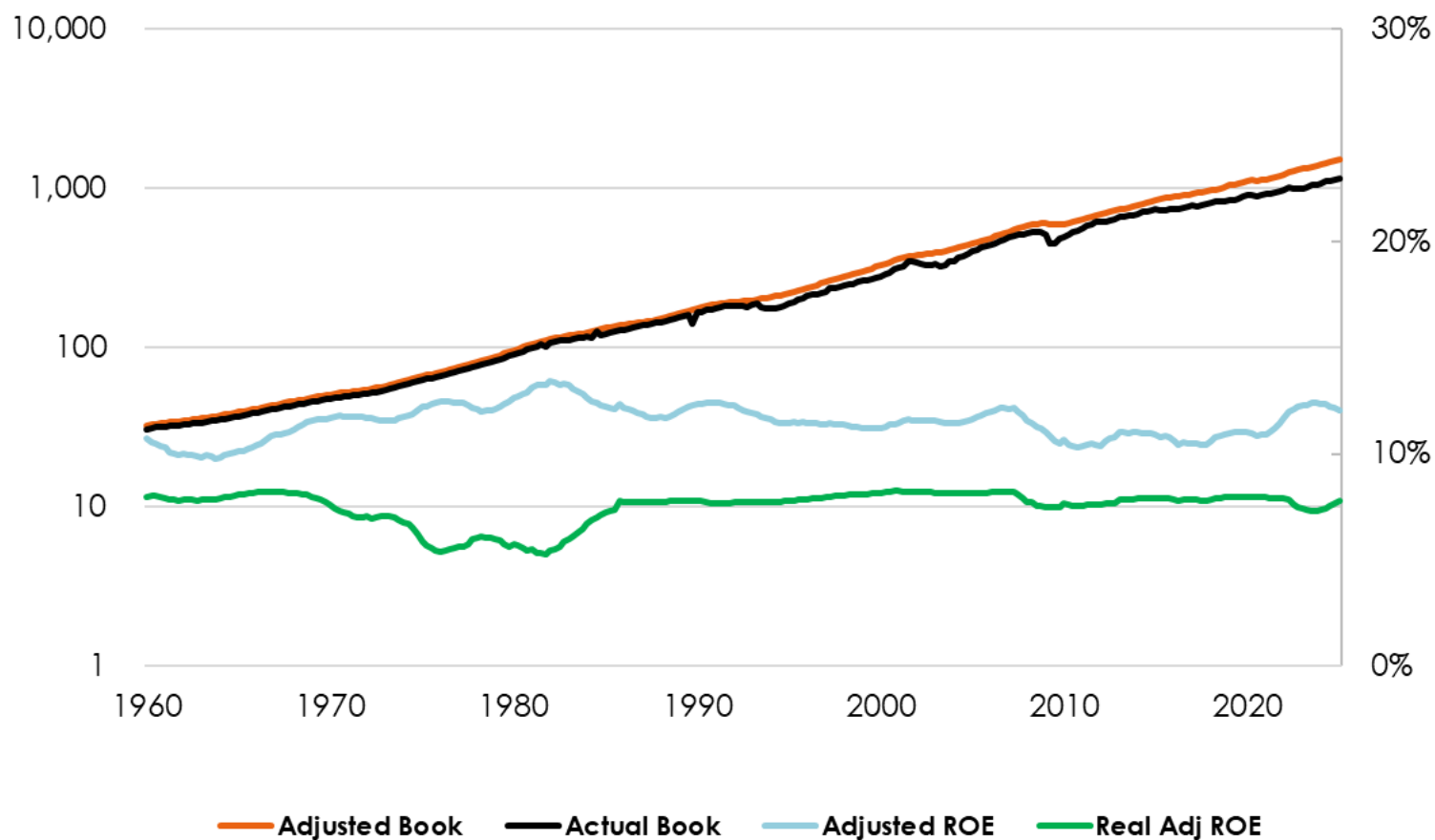
- Estimated future cash flows
 - Normal earnings
 - Growth rate
- Discount rate comprised of
 - Inflation + real cash yield + term premium + risk premium
- Value is discounted value of future cash flows
- Adjustments to value
 - Monetary stimulus/restraint
 - Earnings strength

Normal Earnings

- Normal earnings
 - Adjusted book value multiplied by normal return on equity
- Adjusted book value
 - Book value is balance sheet reported value of assets net of liabilities
 - Book value may not track retained earnings due to index changes, mergers, and buybacks. These leakages must be addressed.
 - Book value write-downs are smoothed
- Normal return on equity = Historic Real ROE + Expected Inflation + ROE Adjustments
 - Return on equity is earnings divided by adjusted book value
 - Real ROE is return on equity less inflation
 - Historic Real ROE is the historic average Real ROE
 - Expected inflation is drawn from long term and recent history
- ROE Adjustments
 - Inflation can impact the level of real ROE
 - Governance can also impact real ROE

Book Value and Return on Equity

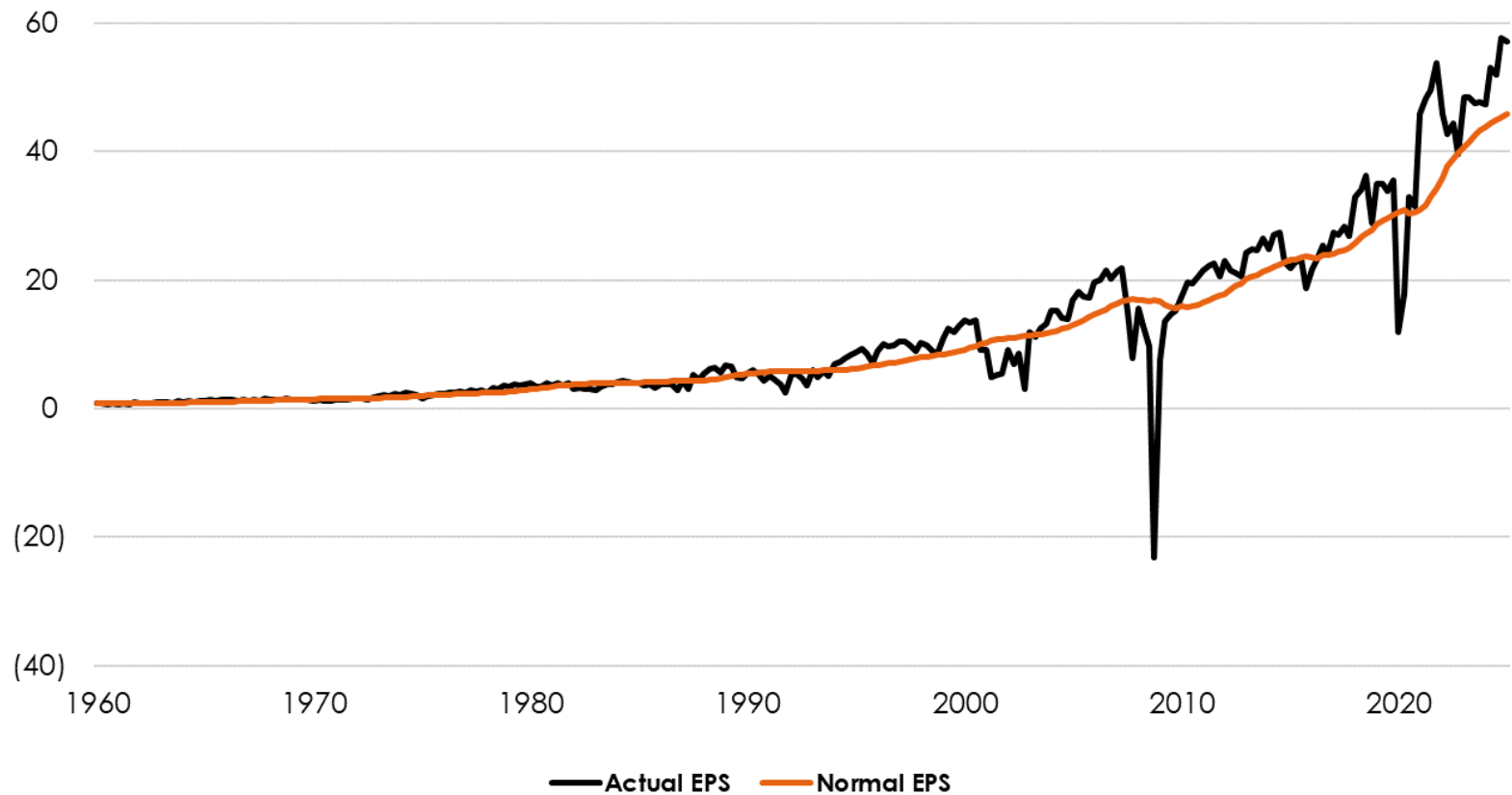
Incorporates book value adjustments



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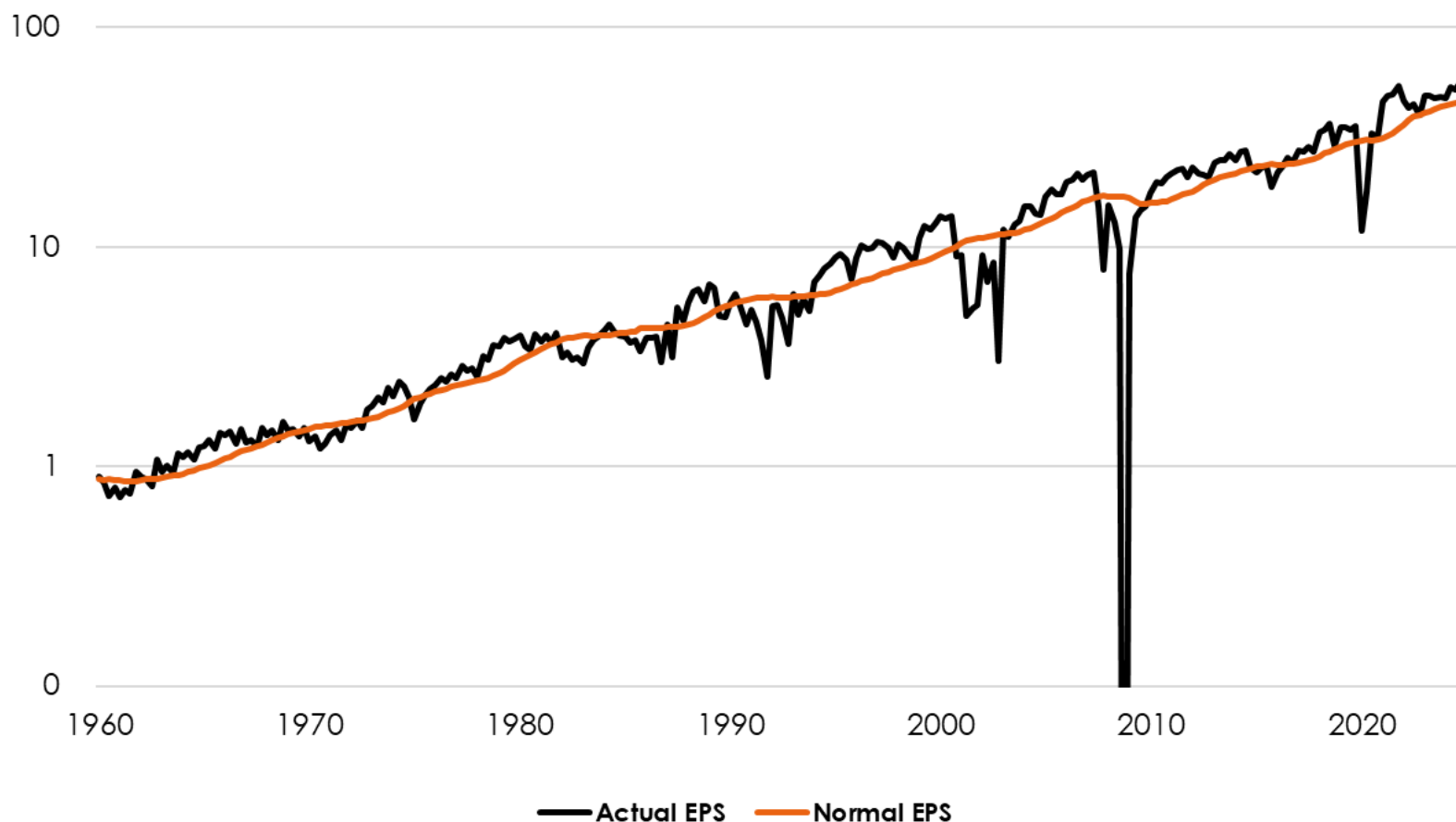
Normal EPS

Book value multiplied by adjusted ROE



Normal EPS

Book value multiplied by adjusted ROE (log scale)

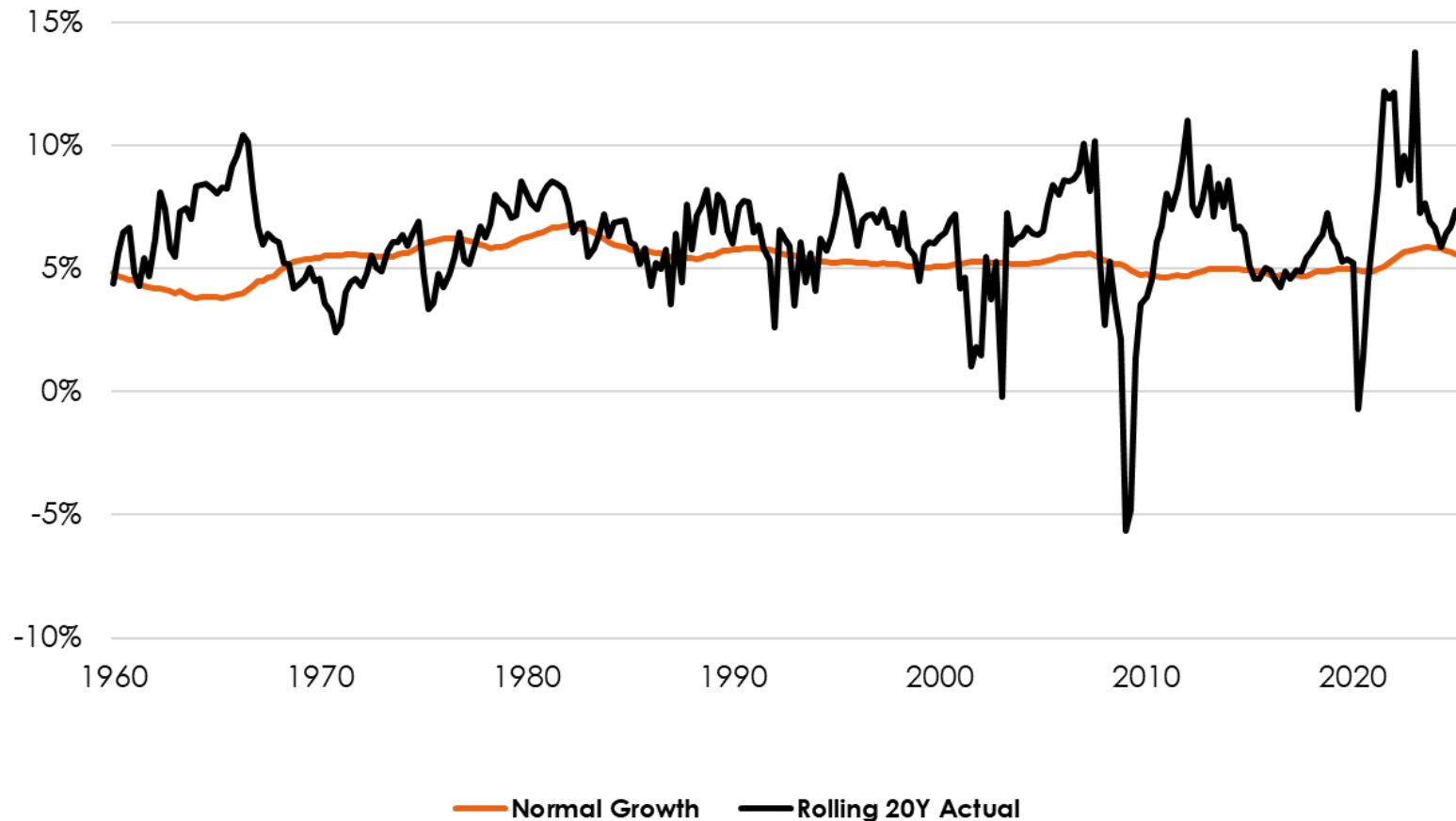


Normal Growth

- Normal Growth = organic + acquisition + inflation pass-through – attrition
 - Organic growth = organic reinvestment times normal ROE
 - ▶ Organic reinvestment = portion of earnings reinvested excluding acquisitions
 - ▶ Normal ROE adjusted to avoid double counting of inflation pass-through effect
 - Acquisition growth = acquisition investment times cost of capital
 - ▶ Acquisition investment = portion of earnings invested in acquisitions
 - ▶ Return of acquisitions based on cost of capital
 - Inflation pass-through = expected inflation × pass-through percentage
 - ▶ Expected Inflation = same as used for Normal ROE
 - ▶ Pass-through percentage = percent of expected inflation estimated to pass through as an increase in normal earnings
 - Attrition = estimated mortality rate of normal earnings
 - ▶ Adjust for bias of earnings power (absent further investment) to be at risk of erosion
 - ▶ Attrition rate helps reconcile historic actual growth with the growth otherwise expected

EPS Growth

Normal versus 20-year actual



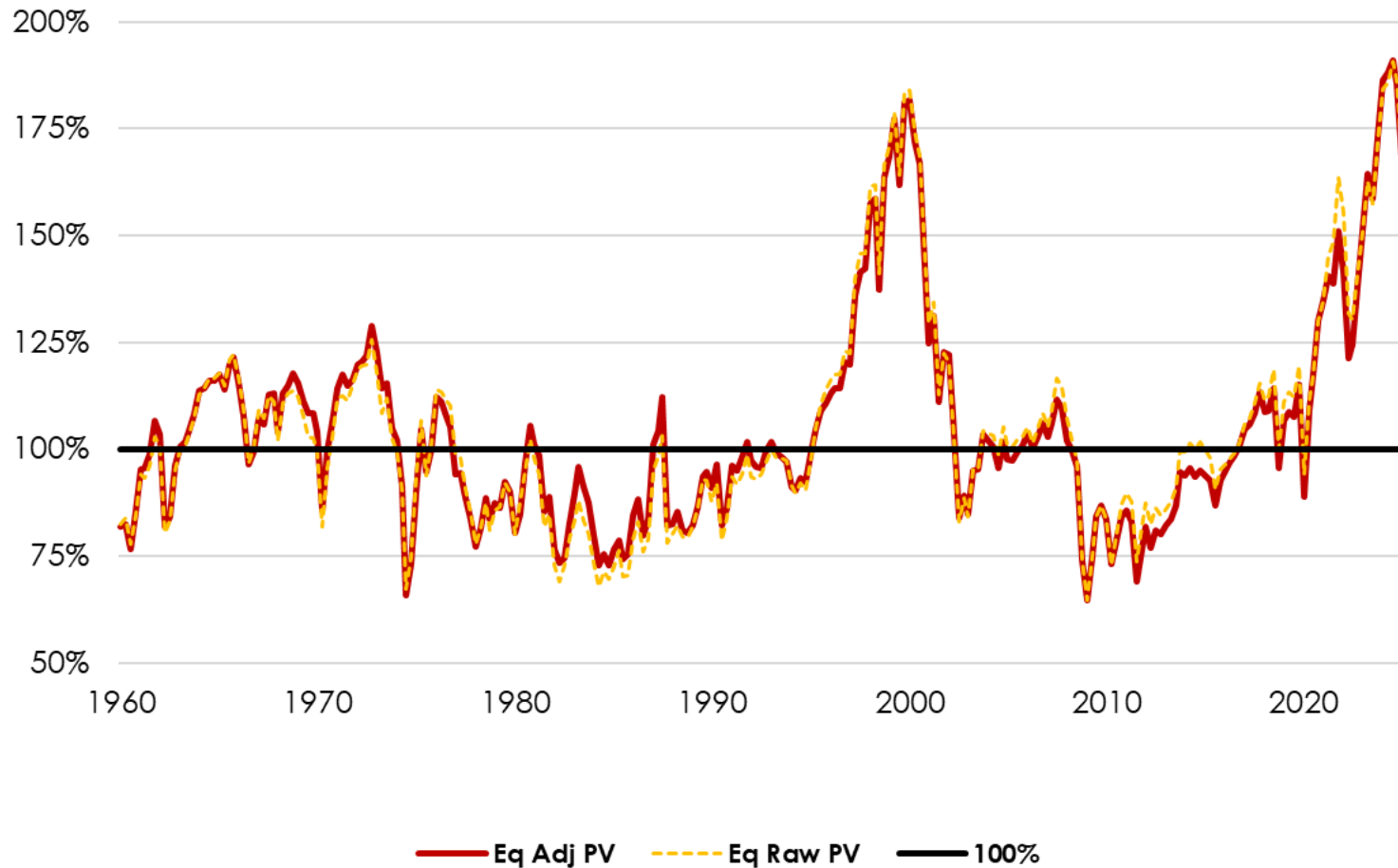
Discount Rate

Discount rate used for valuation is comprised of the following normalized components:

- Real T-bill yield based on real GDP growth and inflation tax adjustment
- Expected inflation
- T-bill to 10-year term premium
- 10-year to 30-year term premium
- Equity risk premium

Equity Price to Value

Raw and with monetary and earnings adjustments

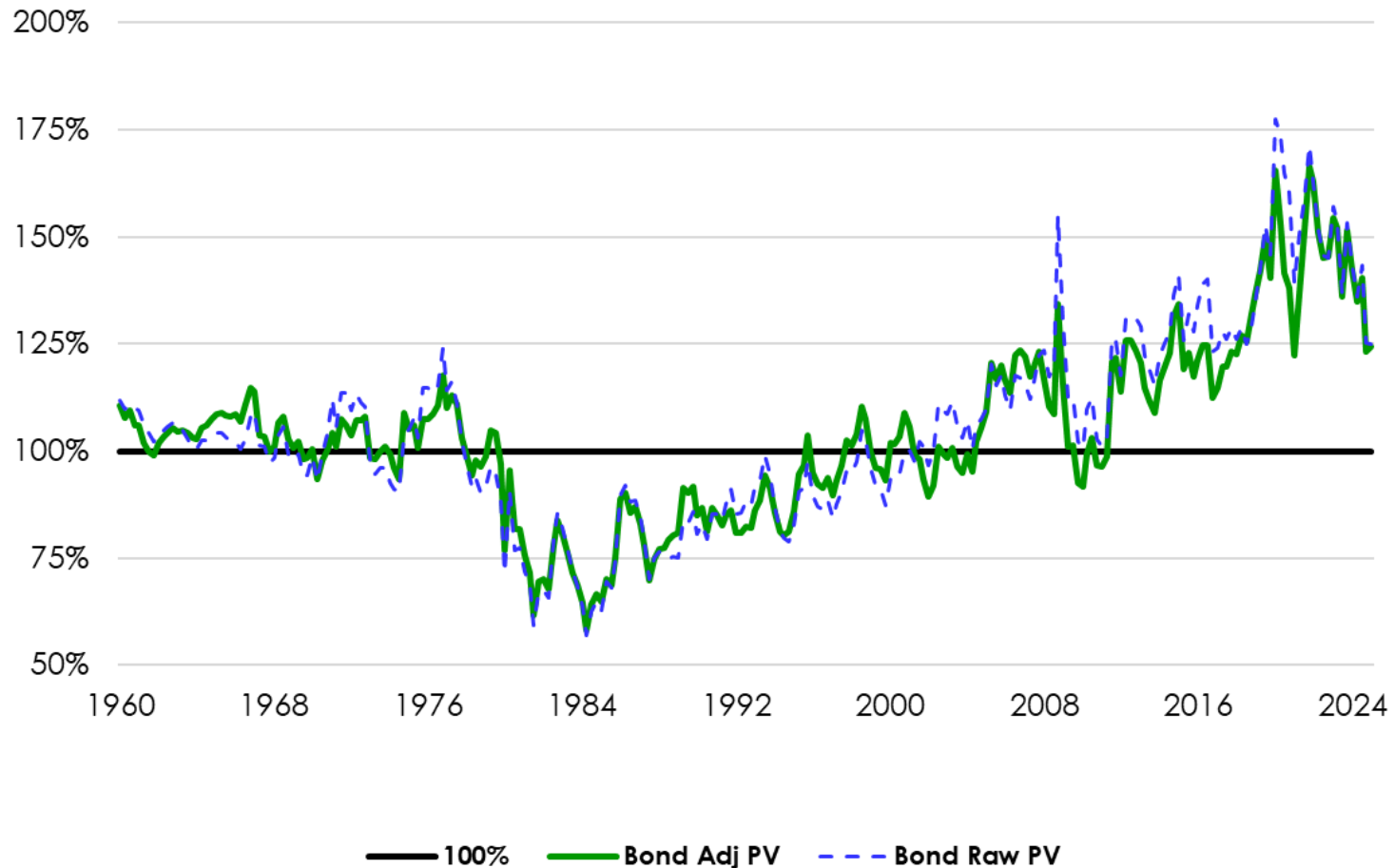


Bond Valuation

- Equilibrium yield components include
 - Inflation
 - Real cash yield
 - Term premium
- Bond value based on equilibrium yield
- Adjustments to value
 - Monetary stimulus/restraint
 - Earnings strength

Bond Price to Value

Raw and with monetary and earnings adjustments



Real Estate Valuation

- Real estate capitalization rate is adjusted to a typical equity/debt structure
- Discount rate is linked to the equity discount rate
- Difference between leverage-adjusted cap rate and discount rate is converted into price to value

High Yield Spread Model

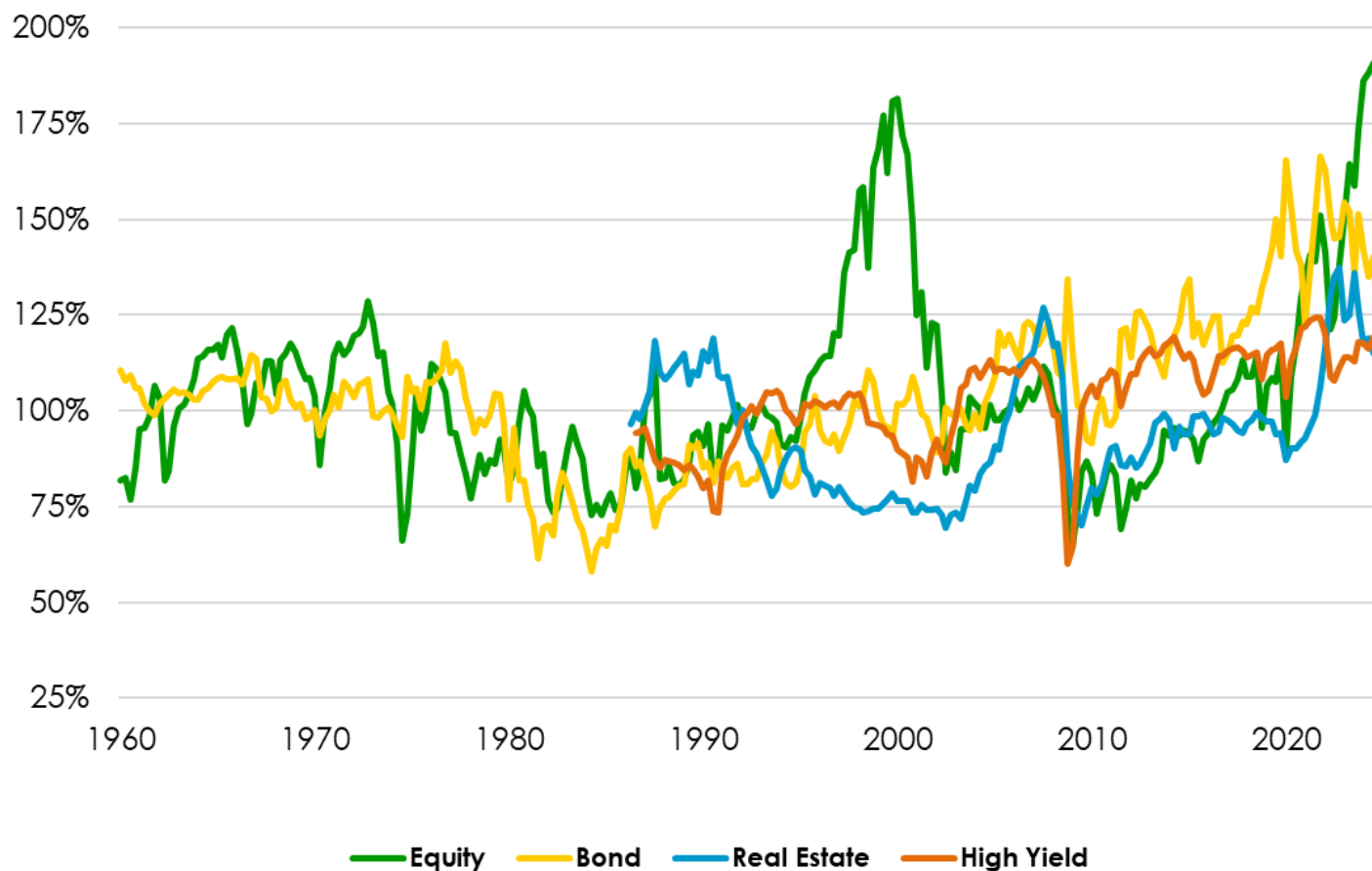
- Fair spread to treasuries based on long-term average spread and internal credit modeling research
- Difference between current spread and fair spread is converted into price to value

High Yield Valuation Model

- Fair yield
 - Fair yield of similar duration treasuries plus
 - Fair yield spread to treasuries
- Current yield is compared to fair yield
- Yield difference is converted to price to value

Price to Value

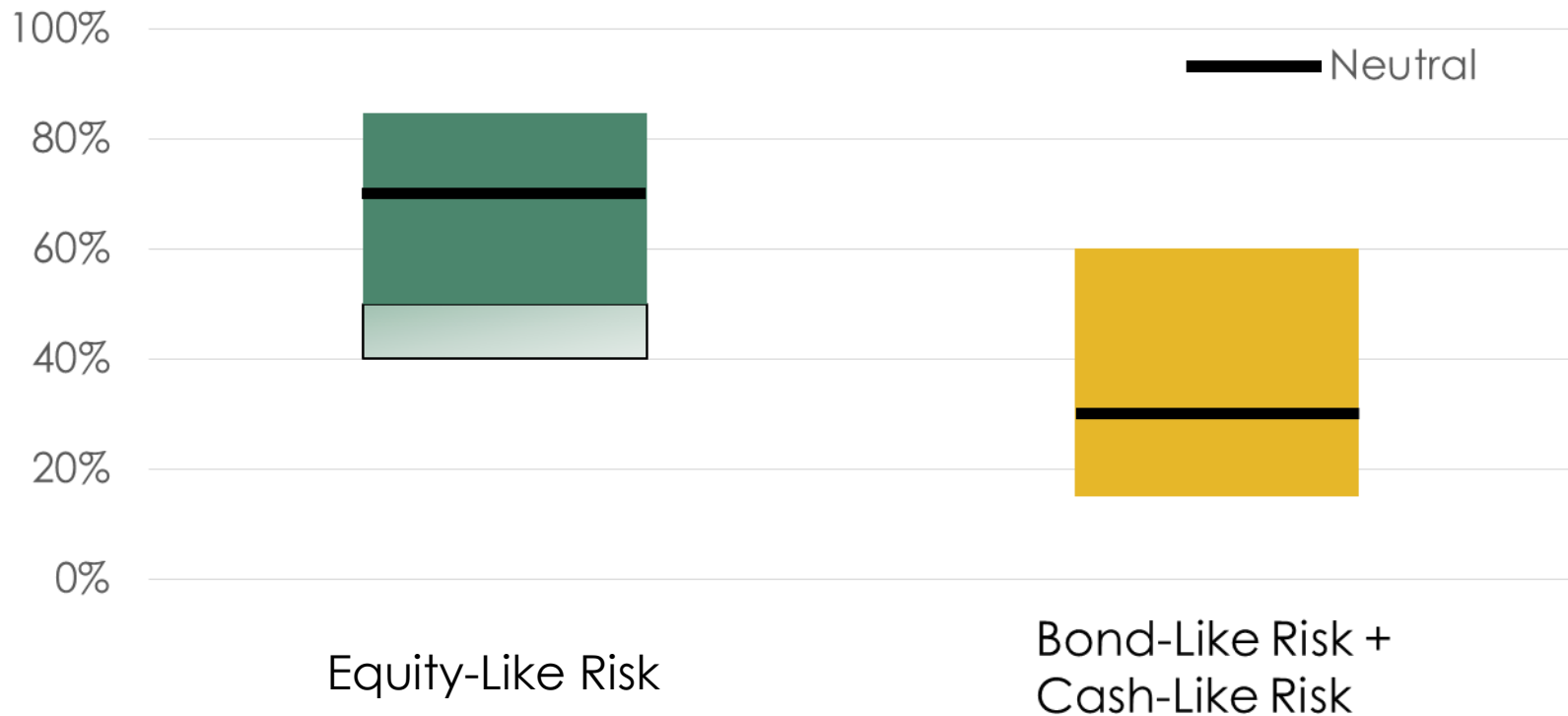
Equity, Bond, Real Estate, High Yield



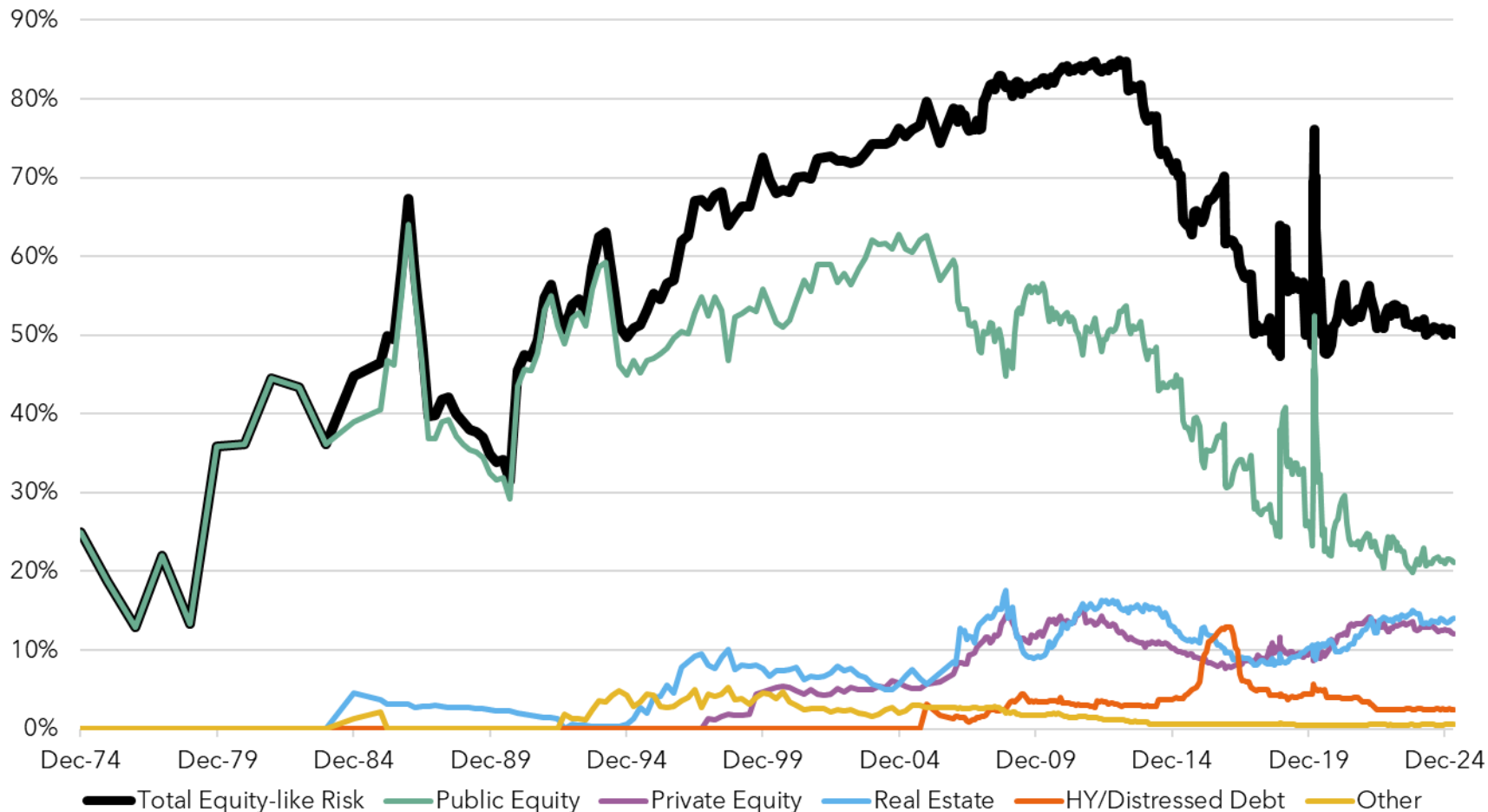
Asset Allocation Implementation

- Equity-like and bond-like risk
 - Meaningfully cheap or expensive to initiate over- or under-weight
 - Move back toward fair value to remove over- or under-weight
 - Several steps between the benchmark and minimum and maximum levels
- Other category over- and under-weights depend on valuation relative to risk mapping
 - Equity-like, bond-like, and cash-like risk is offset by adjusting weight of stocks, bonds, or cash

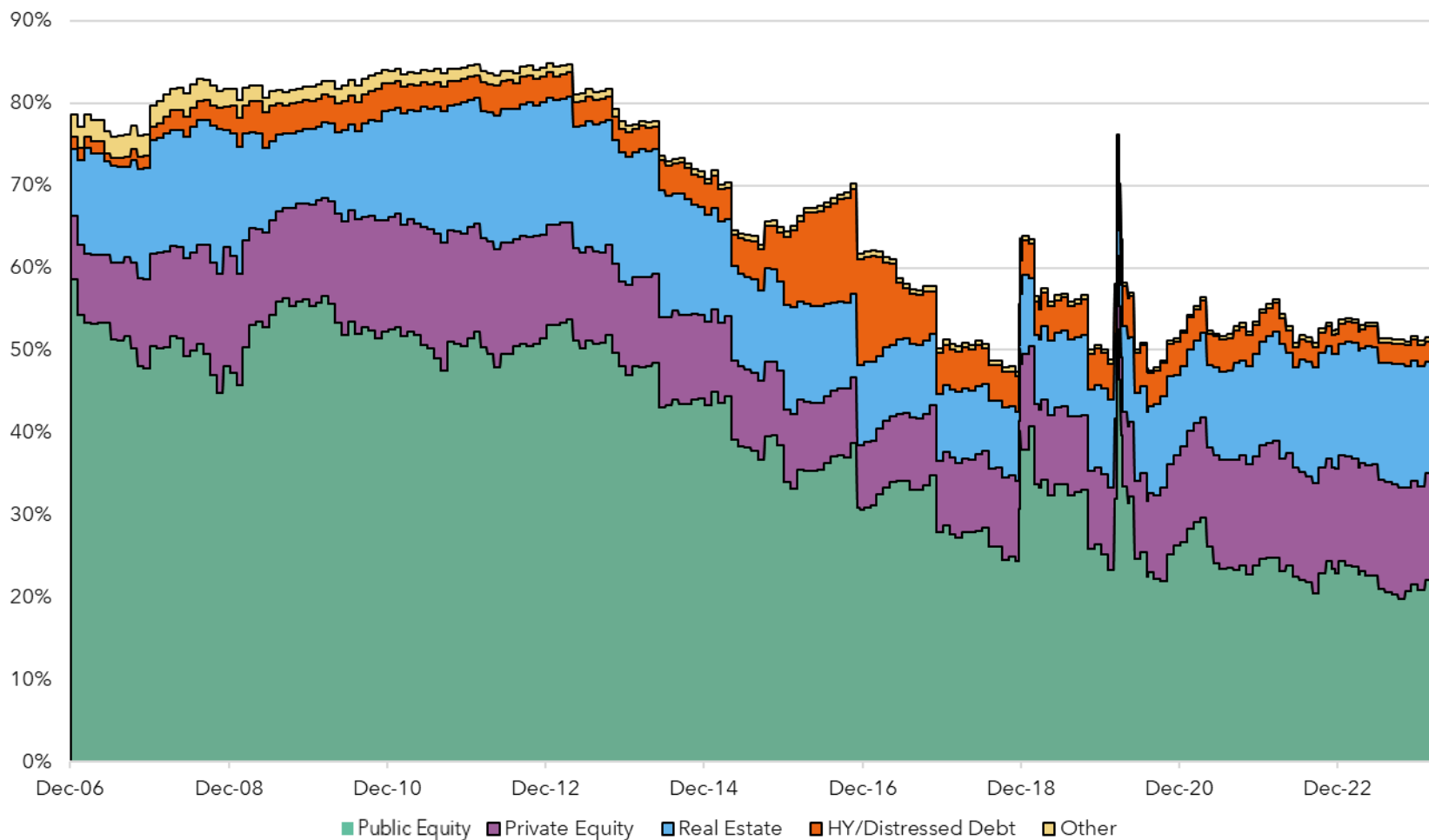
Risk Allocation Ranges



Equity-Like Risk Contribution



Equity-Like Risk Contribution



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Asset Allocation Exposure Monitor

Risk Category						Risk Category					
Policy Details						Policy Details					
Current Estimated Vgts						Current Estimated Vgts					
Compliance Check						Compliance Check					
Rebalance Trigger						Rebalance Trigger					
Rebalance Suggested?						Rebalance Suggested?					
Asset Category						Asset Category					
Benchmark Index						Benchmark Index					
Absolute Policy Minimum						Absolute Policy Minimum					
Absolute Policy Maximum						Absolute Policy Maximum					
FY25 Benchmark						FY25 Benchmark					
4/30/25 Estimate Port Vgt						4/30/25 Estimate Port Vgt					
When Below Min. Above Max						When Below Min. Above Max					
All Other Targets						All Other Targets					
Increase Position at						Increase Position at					
Decrease Position at						Decrease Position at					
Rebalance?						Rebalance?					
Equity Like Risk (ELR)						Equity Like Risk (ELR)					
Bond Like Risk (BLR)						Bond Like Risk (BLR)					
Cash Like Risk (CLR)						Cash Like Risk (CLR)					
Public Equity ¹						Public Equity ¹					
REITs/CORE Real Estate						REITs/CORE Real Estate					
Opportunistic Real Estate						Opportunistic Real Estate					
Implied CORE Real Estate Exposure ⁵						Implied CORE Real Estate Exposure ⁵					
HY Corp Debt						HY Corp Debt					
Investment Grade Debt						Investment Grade Debt					
Cash						Cash					
Private Equity						Private Equity					
HY Real Estate Debt Aggressive						HY Real Estate Debt Aggressive					
Aggressive Absolute Return						Aggressive Absolute Return					
1. Public Equity Minimum will be the lower of 25% or 50% of model suggested target for ELR (if achievable, if not, 50% of the achievable target), which can be as low as 40%.											
2. Achievable Minimum reflects subjective assumptions on asset category weight preferences, liquidity issues, and / or acceptable levels of disruption to overall investment process which may cause policy minimum to not be reached											
3. Target @ Minimum and Target @ Maximum are used to go further out of bounds in the buffer. Otherwise use All Other Targets (for example if at 20% Public Equity, only allow drift to 19.0%; but allow drift to 22.0%)											
4. ELR and BLR rebalance depends on room available in the primary asset categories, first driven by Public Equity for ELR and Investment Grade Debt for BLR, and then by considering room available, relative cheapness/expensiveness, and diversification benefits in secondary asset categories.											
5. ELR impact from combined Opp RE and Core RE exposures. Opp RE is 130% the ELR of CORE RE											
Private Partnership Clauses are only used at times when new investments are being considered. Confirm here each time.											
Projected 5 yr Base Case Allocation (provided by LPs)						Curr FY - All Uncalled Commitments					
Private Real Estate Risk Check						Private Real Estate Risk Check					
Opportunistic Real Estate Partnerships						Opportunistic Real Estate Partnerships					
Uncalled Commitments						Uncalled Commitments					
Opp RE Wgt - Uncalled Commitments						Opp RE Wgt - Uncalled Commitments					
Private Equity Risk Check						Private Equity Risk Check					
Private Eq Wgt						Private Eq Wgt					
Uncalled Commitments						Uncalled Commitments					
Total PE Wgt - Uncalled Commitments						Total PE Wgt - Uncalled Commitments					
6. Partnership FV are as of date shown. No estimates to FV are used for these calculations. Uncalled Comm is from Qtr LP summary. #s use current month FV for denominator											
Equity Like Risk (ELR) Details						Equity Like Risk (ELR) Details					
Bond-Like Risk (BLR) Details						Bond-Like Risk (BLR) Details					
Model Suggested ELR						Model Suggested ELR					
Public Equity						Public Equity					
Current HY						Current HY					
Current Hedge Fund Wgts						Current Hedge Fund Wgts					
Current Partnership Wgts						Current Partnership Wgts					
ELR Total						ELR Total					
ELR Buildup (Curr Wgt * ELR of each cat)						ELR Buildup (Curr Wgt * ELR of each cat)					
Public Equities						Public Equities					
Other (HY/RE/HS/HF)						Other (HY/RE/HS/HF)					
Private Equity (100%)						Private Equity (100%)					
Real Estate Partnerships (100%)						Real Estate Partnerships (100%)					
Total Equity Like Risk						Total Equity Like Risk					
Equity Like Risk Mix (as % of total ELR)						Equity Like Risk Mix (as % of total ELR)					
Public Equities						Public Equities					
Other (HY/RE/HS/HF)						Other (HY/RE/HS/HF)					
Private Equity						Private Equity					
Real Estate Partnerships						Real Estate Partnerships					
% of ELR by Asset Category						% of ELR by Asset Category					
Public Equities						Public Equities					
Other (HY/RE/HS/HF)						Other (HY/RE/HS/HF)					
Private Equity						Private Equity					
Real Estate Partnerships						Real Estate Partnerships					

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Asset Allocation Exposure Monitor

Policy Details & Compliance Check

Risk Category		Policy Details			Current Estimated Wgts	Compliance Check
		<u>Absolute Policy Minimum</u>	<u>Absolute Policy Maximum</u>	<u>FY25 Benchmark</u>	<u>4/30/25 Estimate Risk Wgt</u>	
Equity Like Risk (ELR)		40%	85%	70%		Pass
Bond Like Risk (BLR)		15%	60%	27%		Pass
Cash Like Risk (CLR)		0%	45%	3%		Pass
Asset Category	<u>Benchmark Index</u>	<u>Absolute Policy Minimum</u>	<u>Absolute Policy Maximum</u>	<u>FY25 Benchmark</u>	<u>4/30/25 Estimate Port. Wgt</u>	
Public Equity¹	MSCI ACWI IMI exEM exRE (3/4) + MSCI USA IMI exEM exRE (1/4)	20%	75%	56.3%		Pass
REITs/CORE Real Estate	MSCI US REIT	0%	20%	12%		Pass
Opportunistic Real Estate	-	0%	15%	0%		Pass
<i>Implied CORE Real Estate Exposure⁵</i>	MSCI US REIT	0%	20%	12%		Pass
HY Corp Debt	FTSE High Yield	0%	15%	7%		Pass
Investment Grade Debt	FTSE US BIG	13%	60%	22.8%		Pass
Cash	FTSE 3mo TSY Bill	0%	45%	1.9%		Pass
Private Equity	-	0%	12%	0%		Pass
HY Real Estate Debt Aggressive	-	0%	10%	0%		Pass
Aggressive Absolute Return	-	0%	5%	0%		Pass

1. Public Equity Minimum will be the lower of 25% or 50% of model suggested target for ELR (if achievable, if not, 50% of the achievable target), which can be as low as 40%

2. Achievable Minimum reflects subjective assumptions on asset category weight preferences, liquidity issues, and / or acceptable levels of disruption to overall investment process which may cause policy minimum to not be reached

3. Target @ Minimum and Target @ Maximum are used to go further out of bounds/in the buffer. Otherwise use All Other Targets (for example if at 20% Public Equity, only allow drift to 19.0%; but allow drift to 22.0%)

4. ELR and BLR rebalance depends on room available in the primary asset categories, first driven by Public Equity for ELR and Investment Grade Debt for BLR; and then by considering room available, relative cheapness/expensiveness, and diversification benefits in secondary

5. ELR impact from combined Opp RE and Core RE exposures. Opp RE is 130% the ELR of CORE RE

Asset Allocation Exposure Monitor

Rebalance Threshold Monitor

Risk Category	Current Estimated Wgts	Target Ex Buffer		Drift Rebalance Thresholds ³		Rebalance Trigger		Rebalance Suggested? ⁴
	<u>4/30/25</u> <u>Estimate Risk</u> <u>Wgt</u>	<u>4/30/25</u> <u>Estimate Risk</u> <u>Wgt</u>	<u>Model</u> <u>Suggested</u> <u>Risk Wgt</u>	<u>When Below</u> <u>Min / Above</u> <u>Max</u>	<u>All Other</u> <u>Targets</u>	<u>Increase</u> <u>Position at</u>	<u>Decrease</u> <u>Position at</u>	
Equity Like Risk (ELR)				1%	2%			No
Bond Like Risk (BLR)				0.5%	1%			No
Cash Like Risk (CLR)								
Asset Category	<u>4/30/25</u> <u>Estimate Port.</u> <u>Wgt</u>	<u>Target Ex</u> <u>Buffer</u>	<u>Achievable</u> <u>Minimum²</u>	<u>When Below</u> <u>Min / Above</u> <u>Max</u>	<u>All Other</u> <u>Targets</u>	<u>Increase</u> <u>Position at</u>	<u>Decrease</u> <u>Position at</u>	<u>Rebalance?</u>
Public Equity ¹				1%	2%			No
REITs/CORE Real Estate								
Opportunistic Real Estate <i>Implied CORE</i> <i>Real Estate Exposure⁵</i>								
HY Corp Debt								
Investment Grade Debt				0.5%	1%			No
Cash								
Private Equity								
HY Real Estate Debt								
Aggressive								
Aggressive Absolute Return								

1. Public Equity Minimum will be the lower of 25% or 50% of model suggested target for ELR (if achievable, if not, 50% of the achievable target), which can be as low as 40%

2. Achievable Minimum reflects subjective assumptions on asset category weight preferences, liquidity issues, and / or acceptable levels of disruption to overall investment process which may cause policy minimum to not be reached

3. Target @ Minimum and Target @ Maximum are used to go further out of bounds/in the buffer. Otherwise use All Other Targets (for example if at 20% Public Equity, only allow drift to 19.0%; but allow drift to 22.0%)

4. ELR and BLR rebalance depends on room available in the primary asset categories, first driven by Public Equity for ELR and Investment Grade Debt for BLR; and then by considering room available, relative cheapness/expensiveness, and diversification benefits in secondary asset categories.

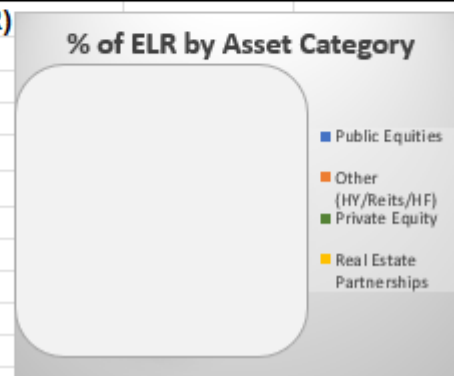
5. ELR impact from combined Opp RE and Core RE exposures. Opp RE is 130% the ELR of CORE RE

The information presented is to be used solely for management of State of South Dakota financial assets.
Any others should conduct their own research and consider their own circumstances.

Asset Allocation Exposure Monitor

Rebalance Threshold Monitor (cont'd)

Equity Like Risk (ELR) Details				Bond-Like Risk (BLR) Details			
	ELR Impact Using Pub Eq Target	ELR Impact if Pub Eq Hits Buy Trigger	ELR Impact if Pub Eq Hits Sell Trigger		Using Model Suggested ELR	Adj for Achievable ELR	IG Rebalance Range
Model Suggested ELR				Model Suggested BLR			
Public Equity				IG Debt			
Current HY				HY Debt			
Current Hedge Fund Wgts				Core RE + Opp RE			
Current Partnership Wgts				HY RE Debt Aggr			
ELR Total				BLR Total			
ELR Buildup (Curr Wgt * ELR of each cate				Equity Like Risk Mix (as % of total ELR)			
Public Equities				Public Equities			
Other (HY/Reits/HF)				Other (HY/Reits/HF)			
Private Equity (120%)				Private Equity			
Real Estate Partnerships (110%)				Real Estate Partnerships			
Total Equity Like Risk							



Asset Allocation Exposure Monitor

Private Partnerships

	<u>Projected 5 yr Base Case Allocation (provided by LPs)</u>			<u>Curr FV + All Uncalled Commitments</u>		
Private Real Estate Risk Check	<u>03/31/2025⁶</u>	<u>Limit</u>	<u>Risk Check</u>	<u>03/31/2025</u>	<u>Limit</u>	<u>Risk Check</u>
Opportunistic Real Estate Partnerships	<input type="text"/>	15.00%	PASS			
Uncalled Commitments				<input type="text"/>		
Opp RE Wgt + Uncalled Commitments					22.5%	PASS
Private Equity Risk Check	<u>03/31/2025</u>	<u>Limit</u>	<u>Risk Check</u>	<u>03/31/2025</u>	<u>Limit</u>	<u>Risk Check</u>
Private Eq Wgt	<input type="text"/>	12.00%	PASS	<input type="text"/>		
Uncalled Commitments						
Total PE Wgt + Uncalled Commitments					18.00%	PASS
6. Partnership FV are as of date shown. No estimates to FV are used for these calculations. Uncalled Comm is from Qtry LP summary. #s use current month FV for denominator						

Model Suggested Positioning

Asset Allocation Weights Matrix							
Equity Position	max	steps	neutral	steps	regular min	steps	absolute min
Equity Wgt	85%	<input type="text"/>	70%	<input type="text"/>	50%	<input type="text"/>	40%
Bond Position	Bond Weights						
max							
steps							
neutral							
steps							
min							

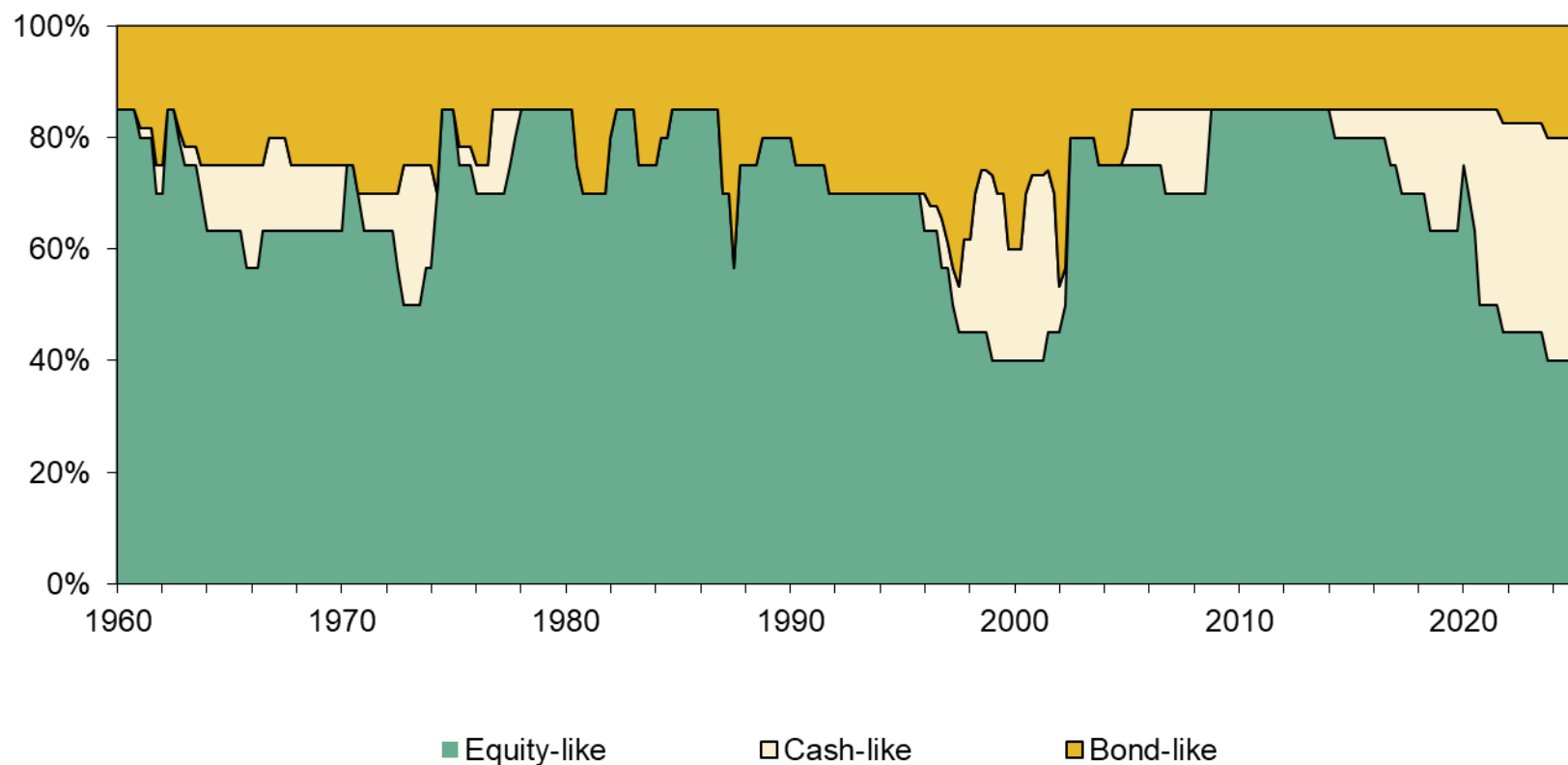
Equity Position	Equity Entry	Equity Exit	Equity Weight		Bond Position	Bond Entry	Bond Exit	Bond Weight
max	<div><div></div></div>	<div><div></div></div>	85%		max	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
steps			<input type="text"/>		steps			
neutral			70%		neutral			
steps			<input type="text"/>		steps			
regular min			50%		min			
steps			<input type="text"/>					
absolute min			40%					

Input Table		
Date:	30-Apr-25	
Equity Position	<div><div></div></div>	
Target Equity Wgt		
Bond Position		
Target Bond Wgt		
Target Cash Wgt		
Equity Fair Value		
Bond FV Yld		

Allocation Triggers Summary				
	Incr Wgt At	Target Wgt	Decr Wgt At	Target Wgt
Equity	<div><div></div></div>		<div><div></div></div>	
Bond				

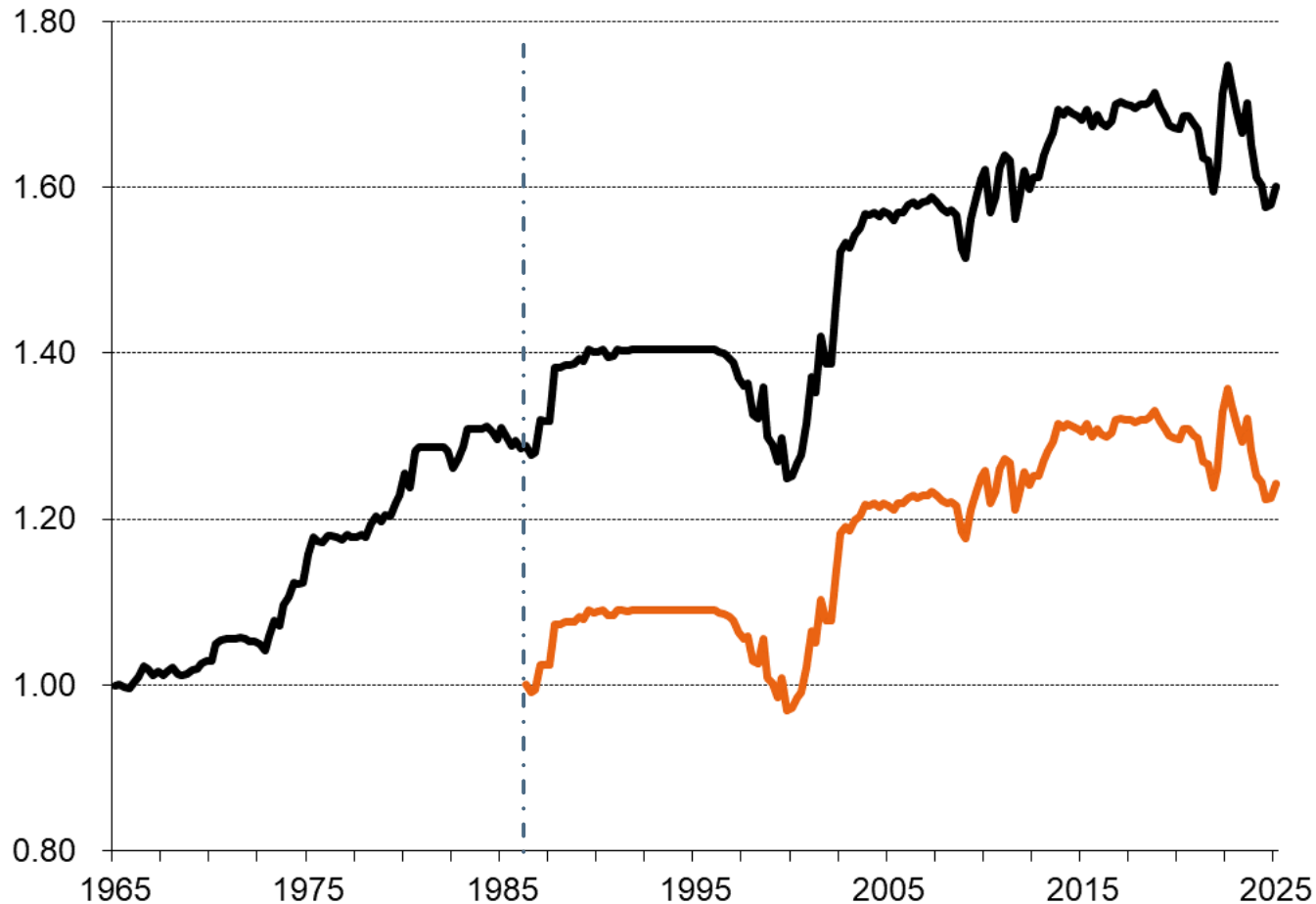
Model Suggested Allocations

Equity-like, bond-like, cash-like



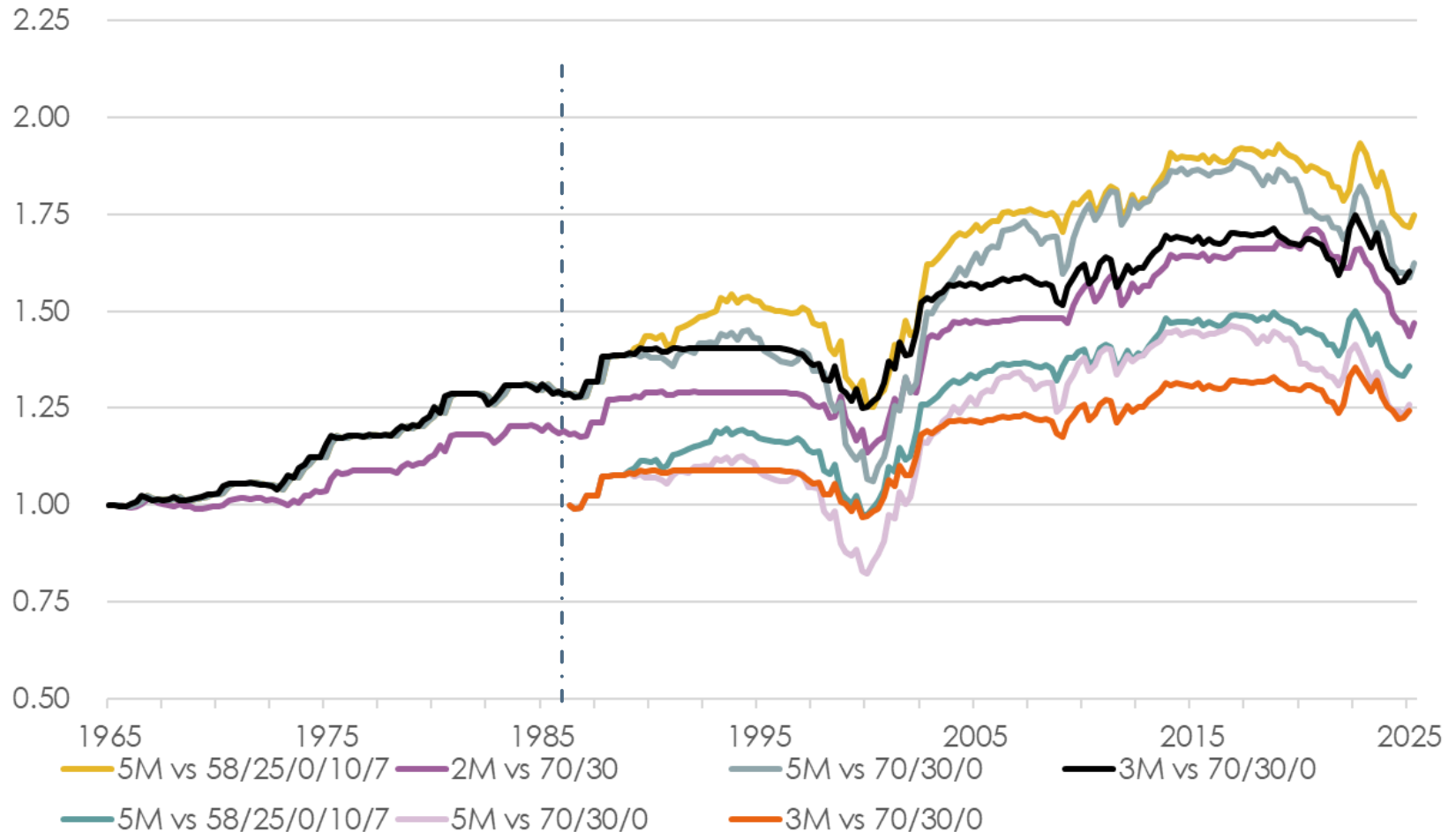
Model Return vs 70/30 Stock/Bond

From 1965 to now and from 1986 initial use



Model Return From 1965 and From 1986 Initial Use

Eq/Bd/Ca vs 70/30/0, Eq/Bd vs 70/30, and Eq/Bd/Ca/REIT/HY vs 58/25/0/10/7



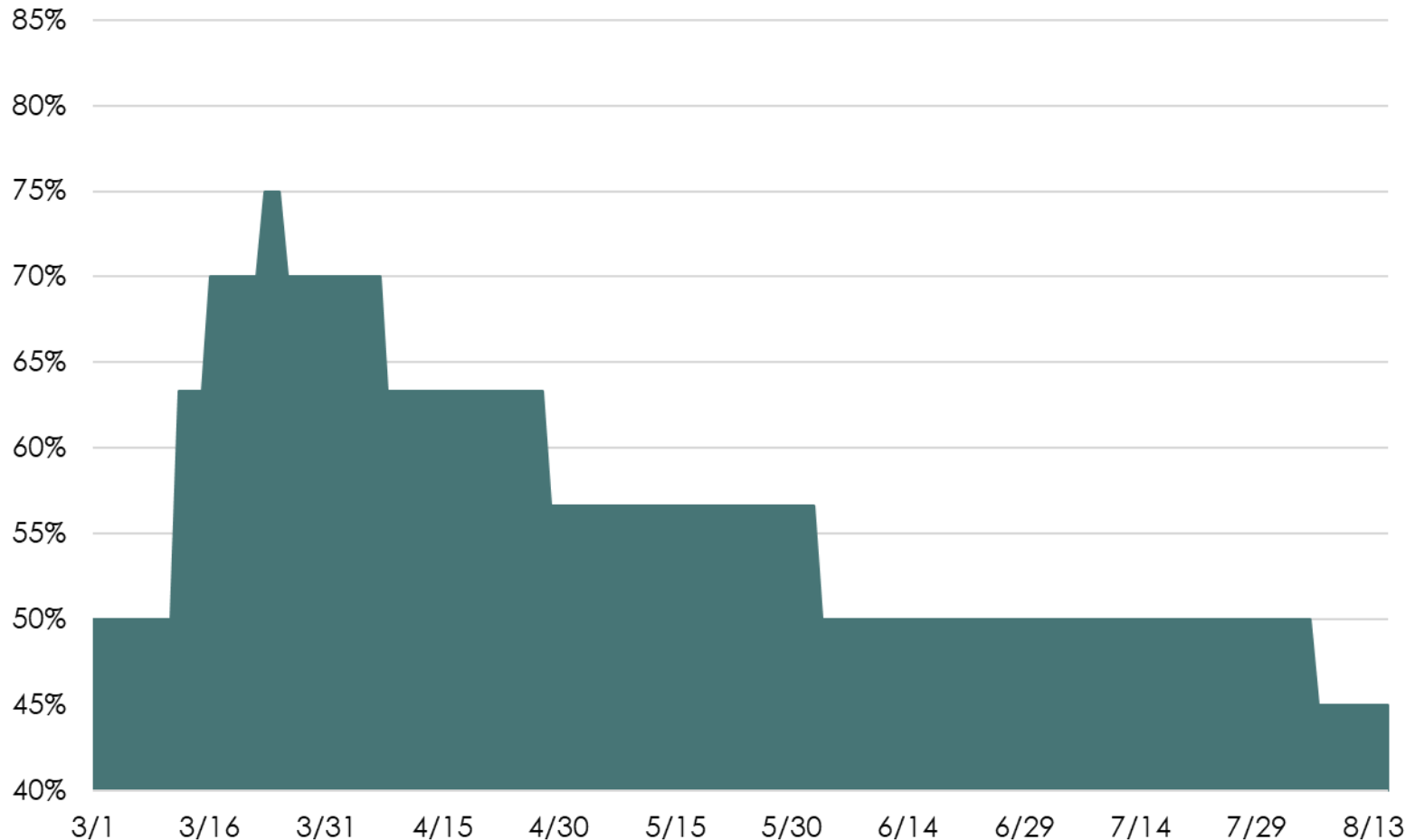
Equity Valuation and Thresholds

Daily Snapshot from March 2020

Date	S&P500 Price	Equity Position	Next Buy Price	Next Sell Price
8-Mar-20	2972.37	Min	2700	At Min
9-Mar-20	2746.56		2700	At Min
10-Mar-20	2882.23		2700	At Min
11-Mar-20	2741.38		2700	At Min
12-Mar-20	2480.64	Increased	2500	3100
13-Mar-20	2711.02		2500	3100
14-Mar-20	2711.02		2500	3100
15-Mar-20	2711.02		2500	3100
16-Mar-20	2386.13	Increased	2400	2900
17-Mar-20	2529.19		2200	2700
18-Mar-20	2398.10		2200	2700
19-Mar-20	2409.39		2200	2700
20-Mar-20	2304.92		2200	2700
21-Mar-20	2304.92		2200	2700
22-Mar-20	2304.92		2200	2700
23-Mar-20	2237.40	Increased	2100	2600
24-Mar-20	2447.33		2100	2600
25-Mar-20	2475.56		2100	2600
26-Mar-20	2630.07	Decreased	2200	2700
27-Mar-20	2541.47		2200	2700

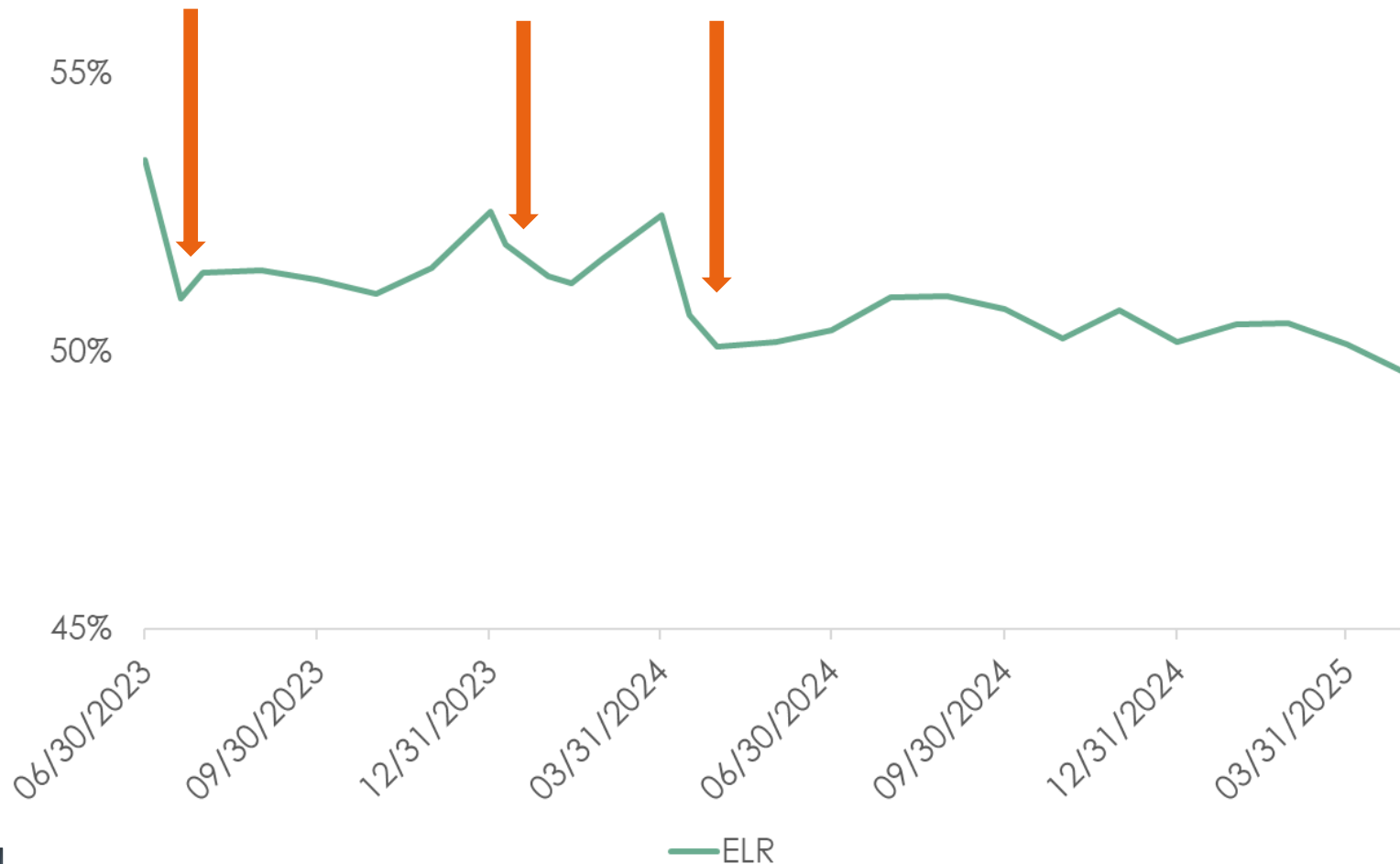
Model Suggested Equity-Like Risk

3/1/2020 through 8/15/2020



Implementation

SDRS Equity-Like Risk Adjustments



Evolution of Asset Allocation Process

- Ranges and asset categories have evolved over time
 - Initial implementation subjectively phased in
 - Highlighted importance of disciplined implementation
- Developed internal risk metrics for alternative asset categories to further quantify underlying risk of portfolio
- Good luck/ bad luck

SDRS Capital Markets Benchmark

Proposed FY 26

		Primary Asset Categories					Secondary Asset Categories ⁴				Other Categories ⁵
	<u>Equity-Like Risk</u>	<u>Public Equity</u> ¹	<u>Real Estate REIT/Core</u> ²	<u>HY Corp Debt</u>	<u>Investment Grade Debt</u> ¹	<u>Cash</u> ³	<u>Private Equity</u>	<u>Opportunistic Real Estate</u> ²	<u>HY Real Estate Debt</u>	<u>Aggressive Absolute Return</u>	
Minimum	40%	20%	0%	0%	13%	0%	0%	0%	0%	0%	0%
Maximum	85%	75%	20%	15%	60%	45%	12%	15%	10%	5%	5%
Proposed 2026 BM	70%	56.3%	12%	7%	22.8%	1.9%					
Benchmark Index		(3/4) custom MSCI ACWI IMI ex Real Estate + (1/4) custom MSCI USA IMI ex Real Estate	MSCI US REIT	FTSE US High Yield Market	FTSE US BIG Bond	FTSE US 3-mo. Treasury Bill					
Benchmark History											
	2023-2025	56.3%	12%	7%	22.8%	1.9%					
	2016-2022	58%	10%	7%	23%	2%					

1. Buffer for market drift of 1% for public equity and 1/2% for debt (example: Investment Grade debt minimum of 13% can drift to 12.5%)

2. Real Estate(RE) min/max applies to REITS/Core RE and Opportunistic combined. Opportunistic RE counts 1.3x against RE max. Projected base case allocation used for partnerships

3. Cash to provide liquidity for benefits payments and rebalancing

4. Since 2015, secondary asset categories have not been included in the BM. This change allowed the BM to consist solely of well fitting, investable indexes.

These categories continue to have a permitted range to invest in opportunistically.

5. Other categories, such as TIPS, commodities, and arbitrage have been considered or used in the past. They are not in the BM. Future use would be limited to 5% or less.