Regime-Aware
Fixed Income Allocation
for the Brave New World
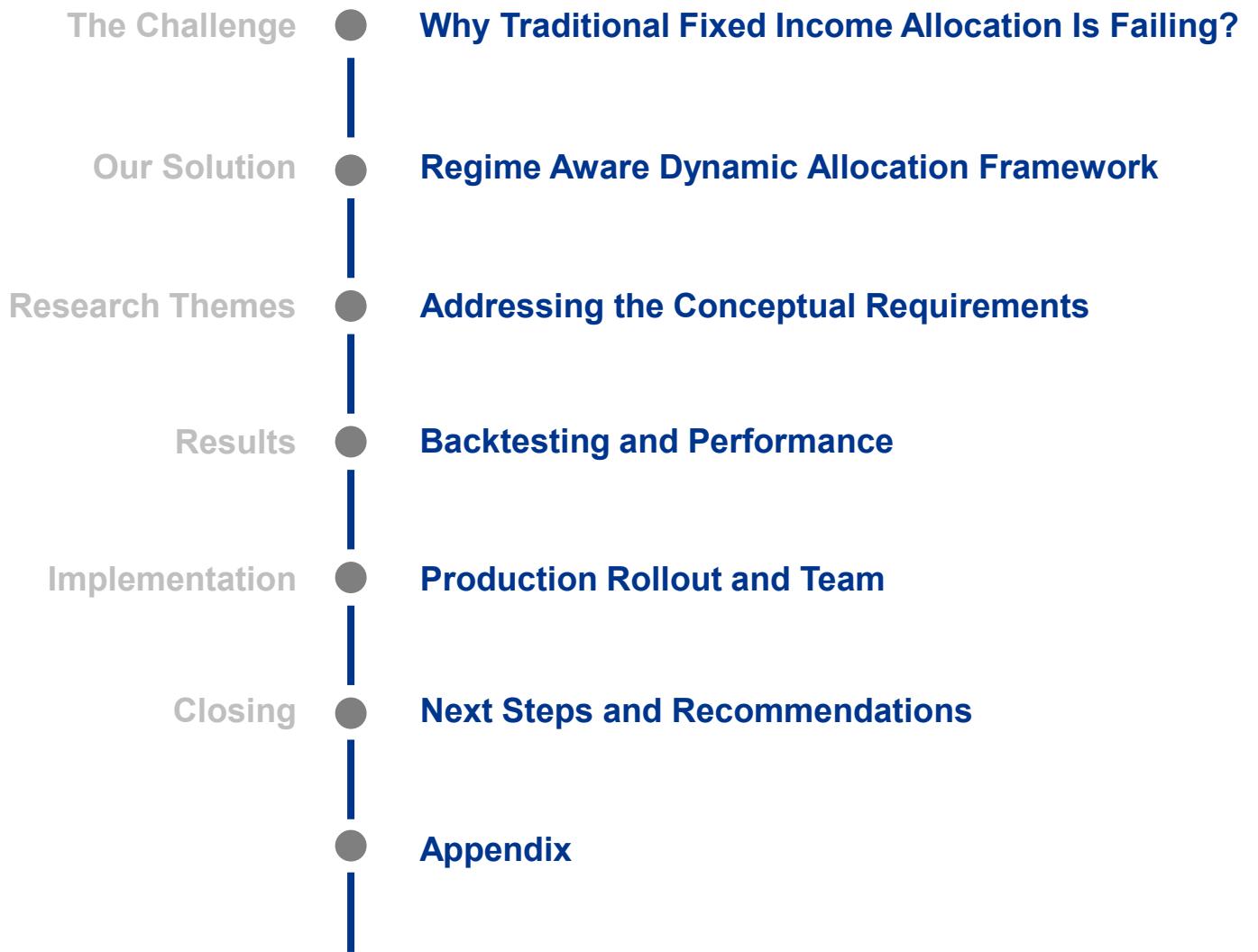
A Dynamic Framework for Capital Preservation

Request for Proposal

Frankfurt School

Presentation Roadmap

Executive Summary

1 The Problem

- Traditional Fixed-income allocation relies on stable stock-bond correlation
- 2022 proved this assumption false: both assets fell together (-16% bonds, -18% stocks)
- The Brave New World creates persistent regime uncertainty

2 The Solution

- Dynamic regime detection engine (Geopolitical – economic context translated to market regimes)
- Tactical allocation framework that adapts to each regime
- Combining quantitative optimization with institutional governance rules

3 Impact
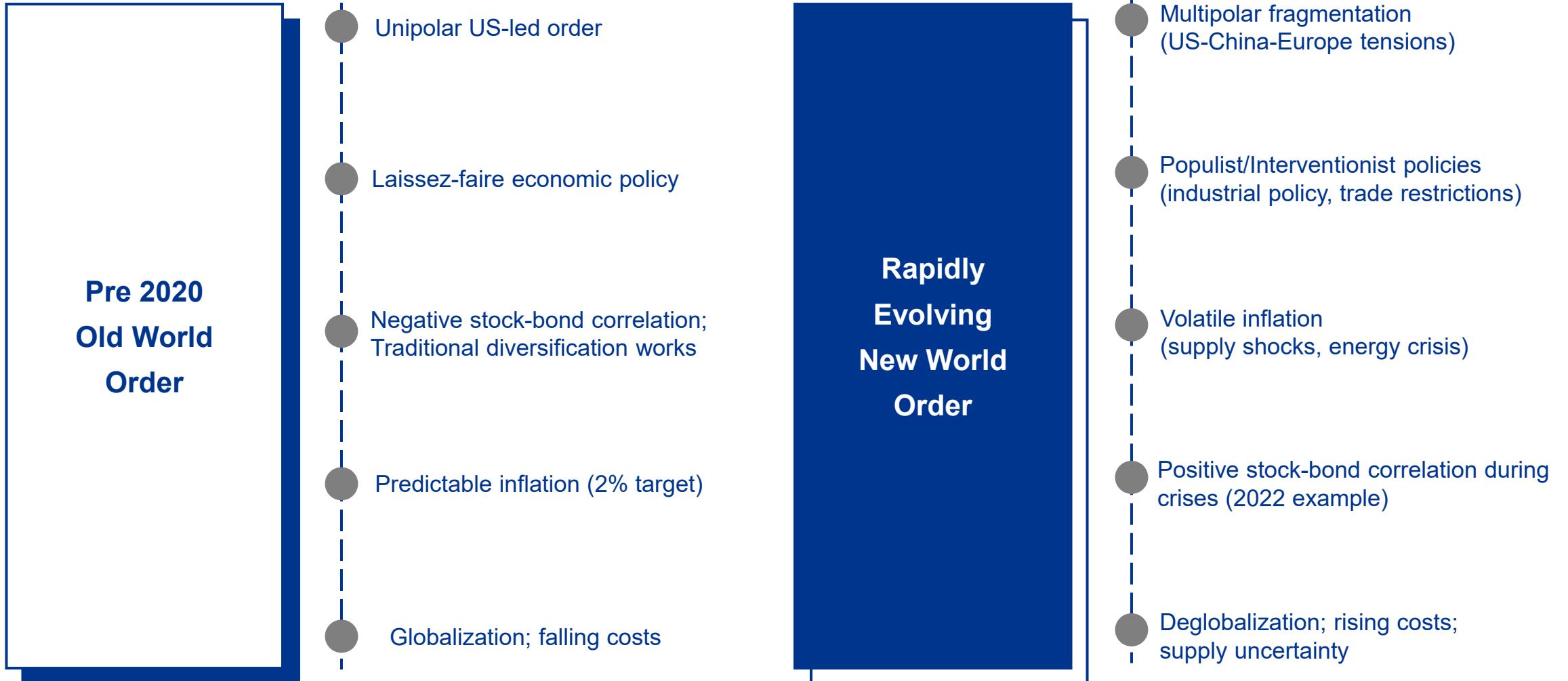
- -10% maximum drawdown vs -16% baseline approach
- Sharpe ratio 1.8 maintained across all regimes
- Early warning of regime shifts vs reactive strategies

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The Challenge
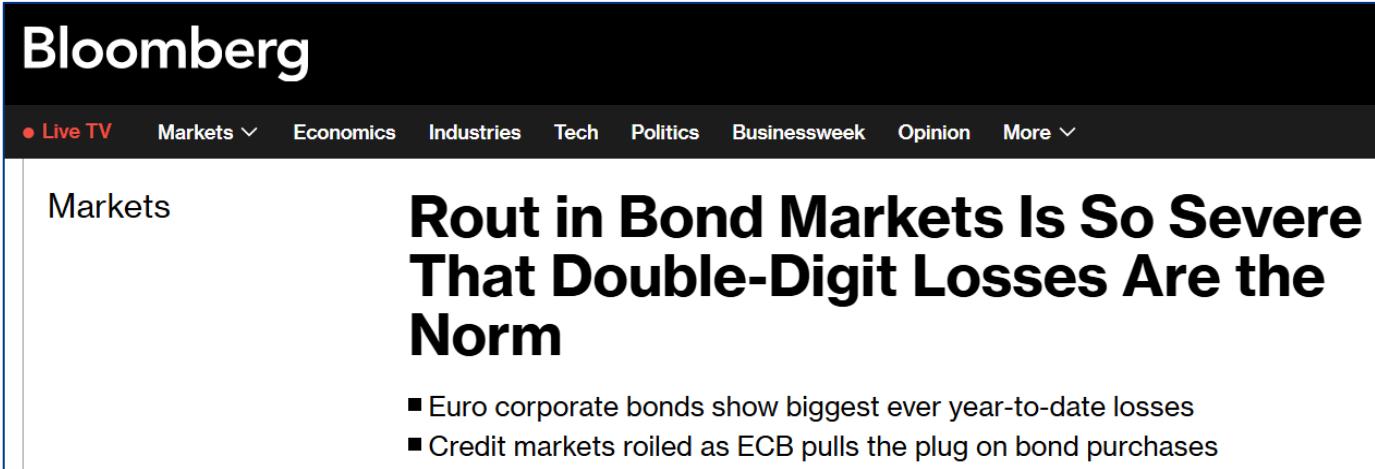
Why Is Traditional Fixed Income Allocation Failing?

The Brave New World Context

Pre 2020 Old World Order

- Unipolar US-led order
- Laissez-faire economic policy
- Negative stock-bond correlation; Traditional diversification works
- Predictable inflation (2% target)
- Globalization; falling costs

Rapidly Evolving New World Order

- Multipolar fragmentation (US-China-Europe tensions)
- Populist/Interventionist policies (industrial policy, trade restrictions)
- Volatile inflation (supply shocks, energy crisis)
- Positive stock-bond correlation during crises (2022 example)
- Deglobalization; rising costs; supply uncertainty

Fixed Income Pension & Institutional Investors During 2020 - 2022

Fixed Income portfolios globally saw 10–25% drawdowns during recent macro shocks
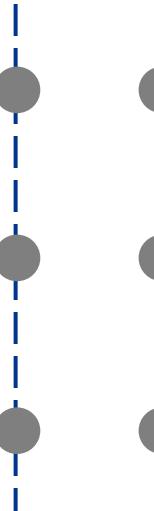
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Markets

Rout in Bond Markets Is So Severe That Double-Digit Losses Are the Norm

■ Euro corporate bonds show biggest ever year-to-date losses
■ Credit markets roiled as ECB pulls the plug on bond purchases

UK Defined-Benefit Pensions (Aggregate): £425 billion wiped out across UK DB pensions in 2022

The US Treasury bond rout led to the worst returns for a 60/40 portfolio since 1937

U.S. Public Pensions: –10.4% average return, Worst year since 2008

10-year rates spiked throughout 2022, rising well above 4.0% before ending the year at 3.9%

The Bloomberg U.S. Aggregate Bond Index lost 13.0% in 2022 — the worst year in its history

30-year U.S. Treasuries lost a whopping 39.2%; a record low for U.S. bonds

The Problem: When Diversification Fails

The Traditional Playbook

- Bonds protect when stocks fall (negative correlation)
- 60/40 Portfolio relies on this relationship
- Fixed strategic allocation works in stable regimes

What Happened in 2022

- S&P 500: -18.1%
- US Aggregate Bonds: -13.0%
- Treasury Long: -29.3%
- No safe haven - Traditional diversification failed

Why This Matters to Union Investment

- Institutional clients cannot tolerate simultaneous drawdowns
- Capital preservation mandate is at risk
- SAA assumes stable correlations that no longer exist

"How do we allocate when correlations shift unpredictably?"

Specific Challenge

Our Investment Mandate requires

1 **Capital Preservation First**

- Priority: **Return OF capital** before **Return ON capital**

- Maximum drawdown should be minimal

2 **Stable Real Returns**

- Target: Should be able to beat Inflation annually

- **Volatility** should be as **low** as possible/feasible

3 **Regime Consistent Positioning**

- Should not be caught off-guard by macro shifts

- Need proactive, not reactive, allocation

THE GAP > Traditional Asset Allocation is Static > Tactical models react to prices, not regimes > Current Approaches lack systematic regime detection
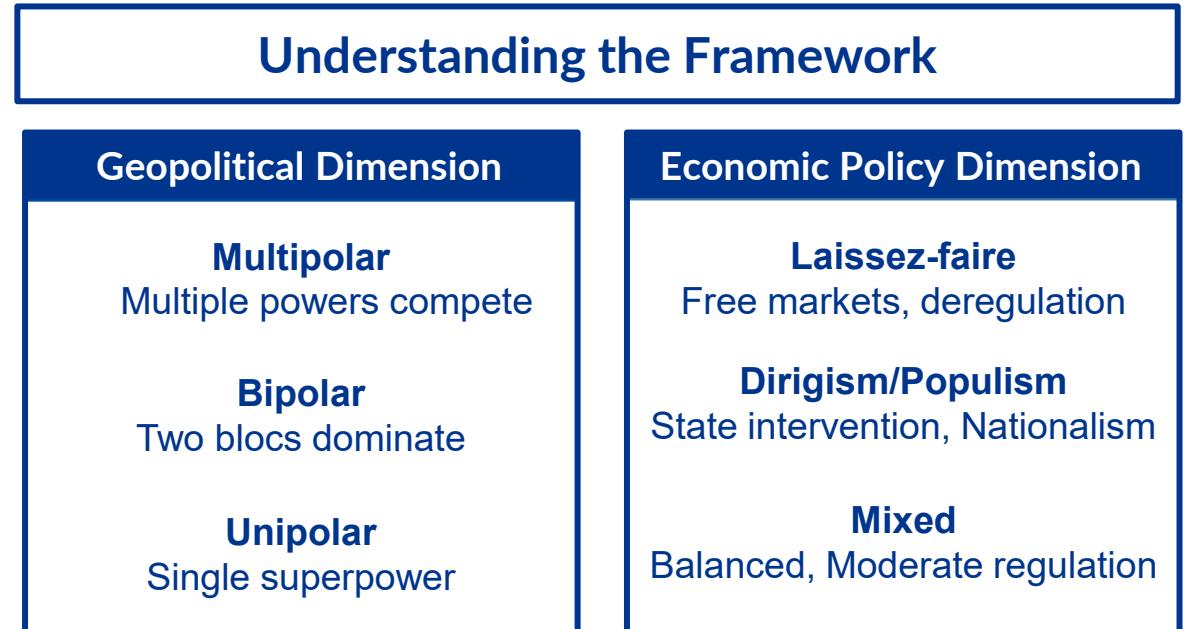
What Are Market Regimes?

A distinct macroeconomic and market environment characterized by specific risk-return dynamics, correlation structures, and policy conditions

Multipolar **–** **Laissez faire**	**Bipolar** **–** **Laissez faire**	**Unipolar** **–** **Laissez faire**
Multipolar **–** **Dirigism**	**Bipolar** **–** **Dirigism**	**Unipolar** **–** **Dirigism**
Multipolar **–** **Populism**	**Bipolar** **–** **Populism**	**Unipolar** **–** **Populism**

Understanding the Framework

Geopolitical Dimension	Economic Policy Dimension
Multipolar Multiple powers compete **Bipolar** Two blocs dominate **Unipolar** Single superpower	**Laissez-faire** Free markets, deregulation **Dirigism/Populism** State intervention, Nationalism **Mixed** Balanced, Moderate regulation
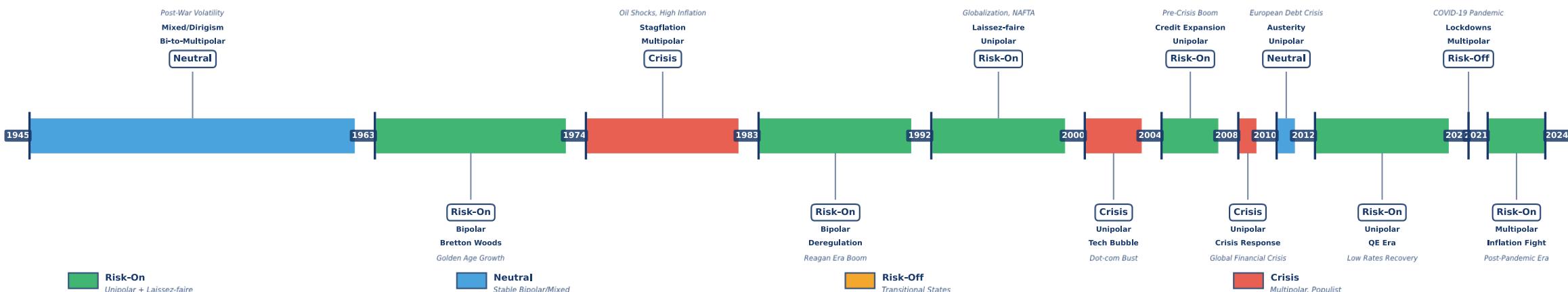
While this 9-state framework is academically robust, investors need a simpler, **more actionable classification system**. On the next slide, we show how **we aggregate these 9 states into 4 practical investment regimes based on market stress indicators**.

Our 4 Regime Investment Framework

Aggregating 9 geopolitical-economic states into 4 actionable investment regimes

Regime	Geopolitical - Economic Context	Market Behavior	Example Periods
Crisis	Multipolar, Populist (high uncertainty)	Flight to quality, spreads explode, correlations moved towards 1	2008 Great Financial Crisis, 2020 COVID, 2022 Q1
Risk-Off	Transitional states (rising populism/fragmentation)	Defensive positioning, elevated volatility	2011 Euro crisis, 2015-16 oil shock
Neutral	Stable bipolar or mixed unipolar economies	Balanced risk-return, Static Asset Allocation like behavior	2017-2019, 2024 H1
Risk-On	Unipolar + Laissez-faire (globalization)	Risk-seeking, credit outperforms, low volatility	1995-2007, 2013-2014, 2021

**Approximate Representation* of Historical Regimes based on Geopolitical – Economic Context**
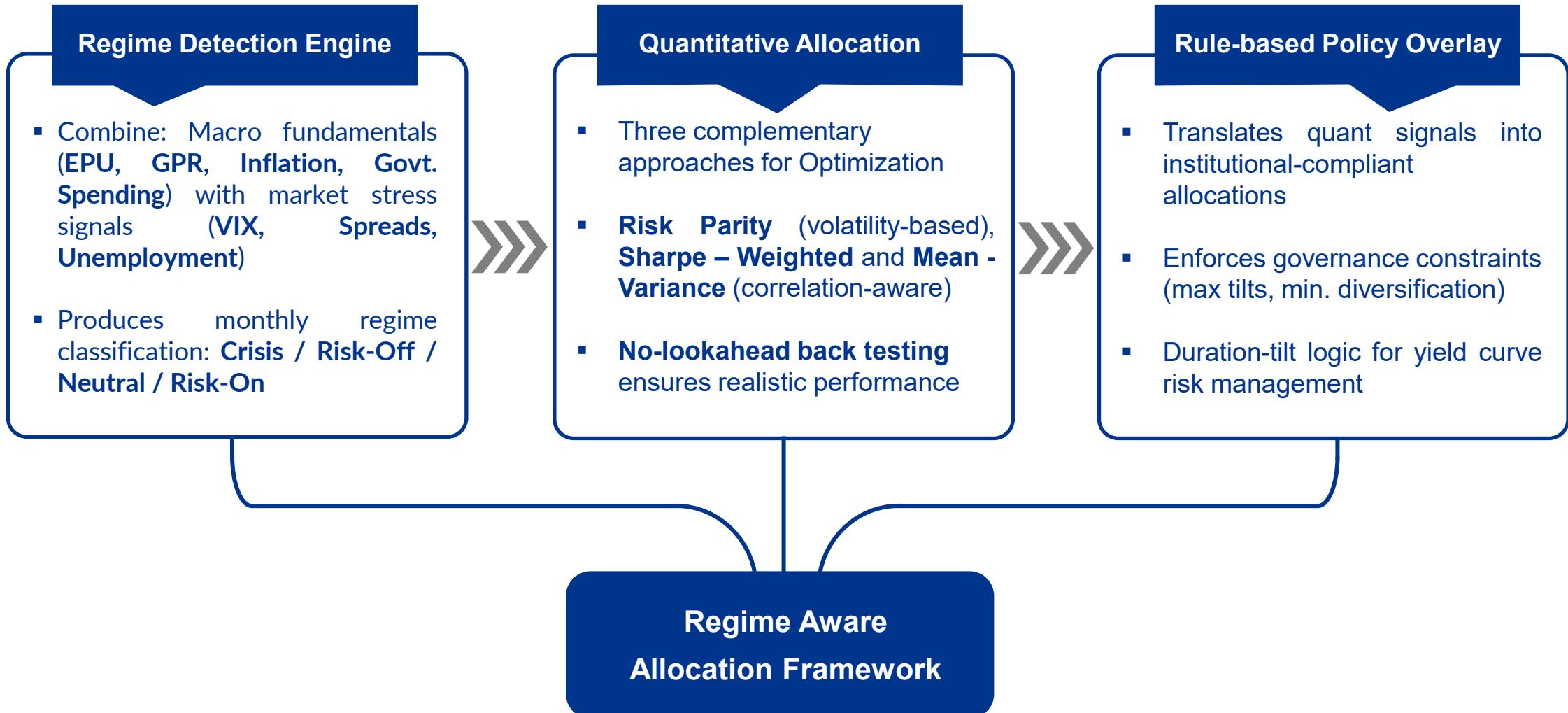
**does not represent all instances*

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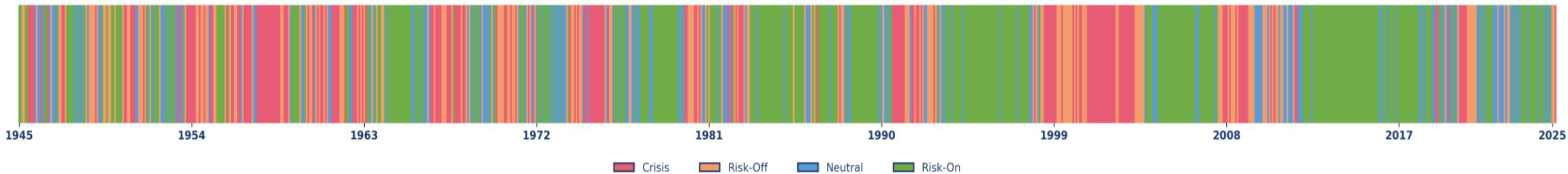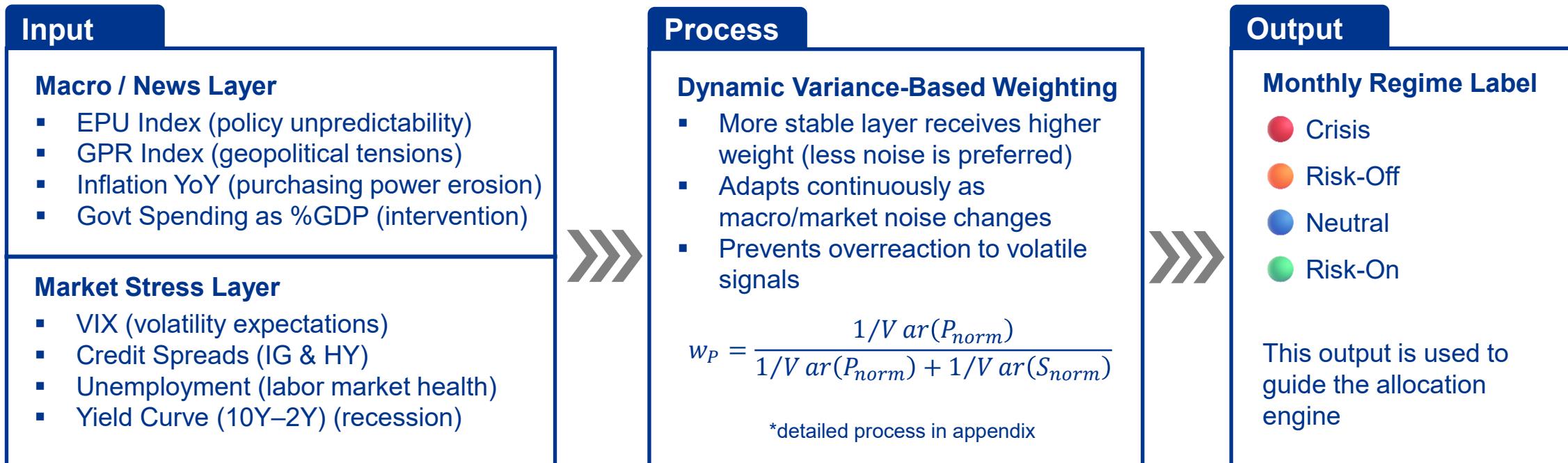
Regime-Aware Fixed Income Assets Allocation Framework

Combining Systematic Detection with Institutional Governance

Solution Overview: The Three-Layer Architecture

Regime Detection Engine

- Combine: Macro fundamentals (**EPU, GPR, Inflation, Govt. Spending**) with market stress signals (**VIX, Spreads, Unemployment**)

- Produces monthly regime classification: **Crisis / Risk-Off / Neutral / Risk-On**

Quantitative Allocation

- Three complementary approaches for Optimization

- **Risk Parity** (volatility-based), **Sharpe – Weighted** and **Mean - Variance** (correlation-aware)

- **No-lookahead back testing** ensures realistic performance

Rule-based Policy Overlay

- Translates quant signals into institutional-compliant allocations

- Enforces governance constraints (max tilts, min. diversification)

- Duration-tilt logic for yield curve risk management

Regime Aware Allocation Framework

Layer 1: Regime Detection Engine

Input

Macro / News Layer

- EPU Index (policy unpredictability)
- GPR Index (geopolitical tensions)
- Inflation YoY (purchasing power erosion)
- Govt Spending as %GDP (intervention)

Market Stress Layer

- VIX (volatility expectations)
- Credit Spreads (IG & HY)
- Unemployment (labor market health)
- Yield Curve (10Y–2Y) (recession)

Process

Dynamic Variance-Based Weighting

- More stable layer receives higher weight (less noise is preferred)
- Adapts continuously as macro/market noise changes
- Prevents overreaction to volatile signals

$$w_P = \frac{1/Var(P_{norm})}{1/Var(P_{norm}) + 1/Var(S_{norm})}$$

*detailed process in appendix

Output

Monthly Regime Label

- 🔴 Crisis
- 🟠 Risk-Off
- 🔵 Neutral
- 🟢 Risk-On

This output is used to guide the allocation engine

Crisis   Risk-Off   Neutral   Risk-On

1945   1954   1963   1972   1981   1990   1999   2008   2017   2025

Market Regime Classification (1945 - 2025)

Layer 2: Quantitative Allocation Reference Models

These models help us understand the behaviour of portfolios and asset composition across regimes.

Risk Parity

- Allocates risk equally across asset classes
- Naturally concentrates in lower-volatility assets
- Stable and defensive: structurally vulnerable in inflation regimes
- Excellent for measuring rate exposure and macro beta

Sharpe-Weighted Allocation

- Rewards assets with strong risk-adjusted returns
- Captures trend/momentum effects in fixed income
- Sensitive to recent volatility regimes
- Useful for procyclical behaviour (credit rallies, duration rallies)

Mean-Variance Optimization (with shrinkage)

- Balances expected returns with covariance structure
- Captures diversification effects (credit vs gov vs TIPS)
- Tends to overweight higher-return credit when vol is low
- Provides a view of optimality vs stability trade-offs

Role of these models in our Analysis

- Cross-validate insights across different quant philosophies
- Identify structural exposures shared across models
- Determine where models systematically fail like for example inflation crises
- Provide a strong quantitative foundation for rule construction

Layer 3: Rules-Based Allocation Policy

Policy-First Objectives

- Protect capital across inflationary and financial crises
- Limit unintended duration exposure; avoid procyclical credit risk
- Maintain diversification across core fixed-income, TIPS, cash, HY, FX, and gold

Regime-Aware Foundation

- Four macro regimes (Risk-On, Neutral, Risk-Off, Crisis) determine baseline class weights
- Crisis baseline differentiated between inflation-driven vs financial-driven environments through overlays

Macro-Reactive, Not Model-Reactive

- Indicator z-scores (Infl_z, GovSp_z, Combined_z, VIX/EPU) scale adjustments up or down
- Tilts applied proportionally to signal strength, not as binary switches

Governance-Embedded

- Tight tilt caps: ±5 percentage points per class and 15pp total tilt across the portfolio
- Quarterly rebalancing and 3-month smoothing ensure stability
- Clear fallback behaviour when asset classes are unavailable

How This Solves Our Challenge

Capital Preservation in All Crisis Types

Protects capital whether in deflationary and inflationary crises unlike traditional quant models

Transparent, Committee-Friendly Governance

Strategic allocation baseline preserved; no black-box optimisers; Clear redistribution rules if and when assets are unavailable

Stability and Low Turnover

No sudden allocation jumps; no reliance on noisy short - term signals

Model relies rely on normalized market and macro indicators, not forecasts

No reliance on unstable covariance matrices and return forecasts

Duration Control Without Complex Models

Ensures duration is kept in check always, especially so during inflation shocks like 2022

Consistency With Union Investment's Risk Philosophy

High diversification (Gov, IG, HY, TIPS, FX, Gold, Cash); First Priority resilience over return-chasing

03

Addressing the Research Themes

Conceptual and Economic Robustness

Regime-Based Modeling

Our model accurately identifies regime transitions before they appear in asset prices

Quantification Method

- **Economic Policy Uncertainty Index (EPU):** Tracks policy unpredictability (generally laissez-faire = low, populist = high)
- **Geopolitical Risk Index**: Measures geopolitical tensions (generally unipolar = low, multipolar = high)
- **Government Spending as % GDP**: Signals interventionism (laissez-faire = low, populist = high)

Model Logic (configurable)

- Primary score (EPU, GPR, Inflation, Govt Spending) weighted 60/15/15/10
- Normalized to 0-3 scale via rolling percentiles
- Combined with market stress layer via variance weighting
- Classification: <40th percentile = Risk-On, 40-60 = Neutral, 60-80 = Risk-Off, >80 = Crisis

Example Regime Transitions

- 2016 Brexit and US election: EPU spiked from 150 to 350 (Risk-Off)
- 2018–2019 trade war: sustained elevation in GPR pushed model into extended Risk-Off
- 2022 Ukraine invasion: GPR above 600 classified as Crisis
- 2024 normalization: falling EPU/GPR shifted model toward Risk-On

Capital Preservation & Fat Tails (Taleb)

Taleb Principles

Prioritize survival:
- Ultra-short treasuries as core defensive anchor
- Keep drawdowns small
- Crisis regime shifts move 35–45% into ultra-short / cash
- Tail hedges (Gold/CHF/JPY) activate only in extreme stress

Antifragility:
- Regime detection: Proactive de-risk / re-allocation

Implementation

Drawdown Defense
- Cash boost when running drawdown < −5%

Volatility targeting:
- Scale exposures down into cash when realized Vol > Target

Tail hedges:
- Gold/CHF/JPY activated only in extreme stress

Drawdown budget:
- Prevents sequential large losses

Evidence vs SAA

Evidence of Tail-Risk Protection
- Max Drawdown improves from 16% to −10%
- CVaR 95% improves from 2.6% → 1.5%
- 12M Loss Probability drops from 13% → 7%

The New Diversification

Model dynamically reallocates to true diversifiers when traditional relationships fail

Stock-Bond Correlation Over Time

- 1990-2019 Average: -0.35 (negative = diversification works)
- 2022: +0.65 (positive = both fall together)
- 2024 H1: +0.42 (still elevated)

Root Cause

- Supply shocks (not demand shocks)
- Old World: Demand-driven recessions → stocks fall, bonds rally (Fed cuts rates)
- New World: Supply shocks (energy, trade) → inflation rises, growth falls → stocks AND bonds fall (Fed can't cut)

Model Response

- Positive Correlation Periods (2022): Model overweighted safe-haven currencies (FX +3.0%, Gold +3.5%), reduced duration risk
- Performance: During 2022, our model lost -9.3% vs -16.2% benchmark vs 16.3% barbell
- New Diversifiers: CHF, JPY, Gold perform when traditional stock-bond correlation breaks

Volatility as a Driver

Volatility spikes provide early warning of regime shifts, allowing proactive repositioning

Volatility as Regime Signal

- VIX (equity volatility) is a core input to Market stress layer
- MOVE Index (bond volatility) triggers duration-tilt mechanism
- Rising volatility = earlier regime detection

VIX Level	Regime Signal	Allocation Action
<15	Risk-On	Increase credit exposure (+10-20pp)
15-25	Neutral-Risk-Off	SAA baseline, reduce risky credit
25-35	Risk-Off-Crisis	Overweight govt bonds, TIPS, gold
>35	Crisis	Maximum defensive: 60%+ safe havens

Momentum Feedback Loop:

High volatility → forced deleveraging → more selling → higher volatility

Our model anticipates this cascade by treating volatility as causal, not reactive

Example

Feb 2020:
VIX jumps from 14 → 35 in 2 weeks

Model Response: Shifted allocation
- Credit: Decreased
- Govt Long: Increased
- TIPS: Slightly Increased
- Cash: Slightly Increased
- Gold: Slightly Decreased (liquidity needs dominated)

Performance Covid Crisis 2020:

- **VaR:**
  Model: 0.5% vs Benchmark: 1.1%
- **Drawdown:**
  Model: -1.0% vs Benchmark: -2.0%
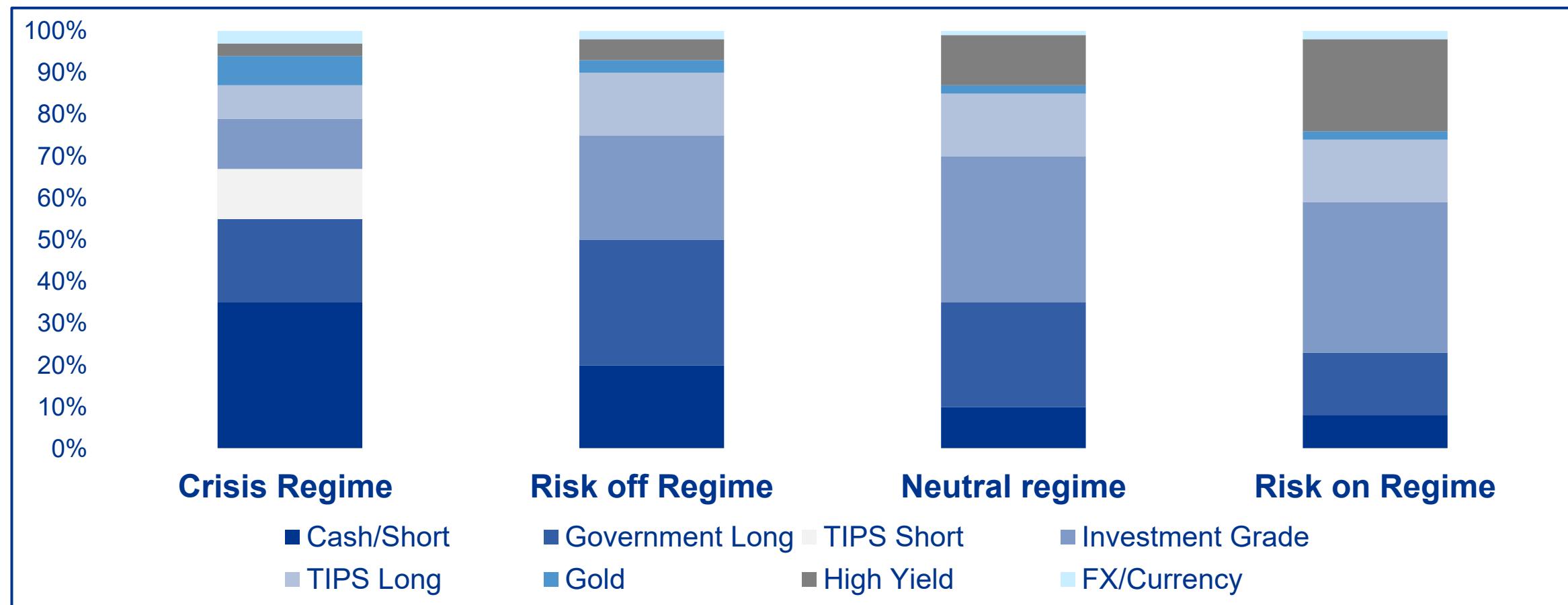
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## Backtesting and Performance
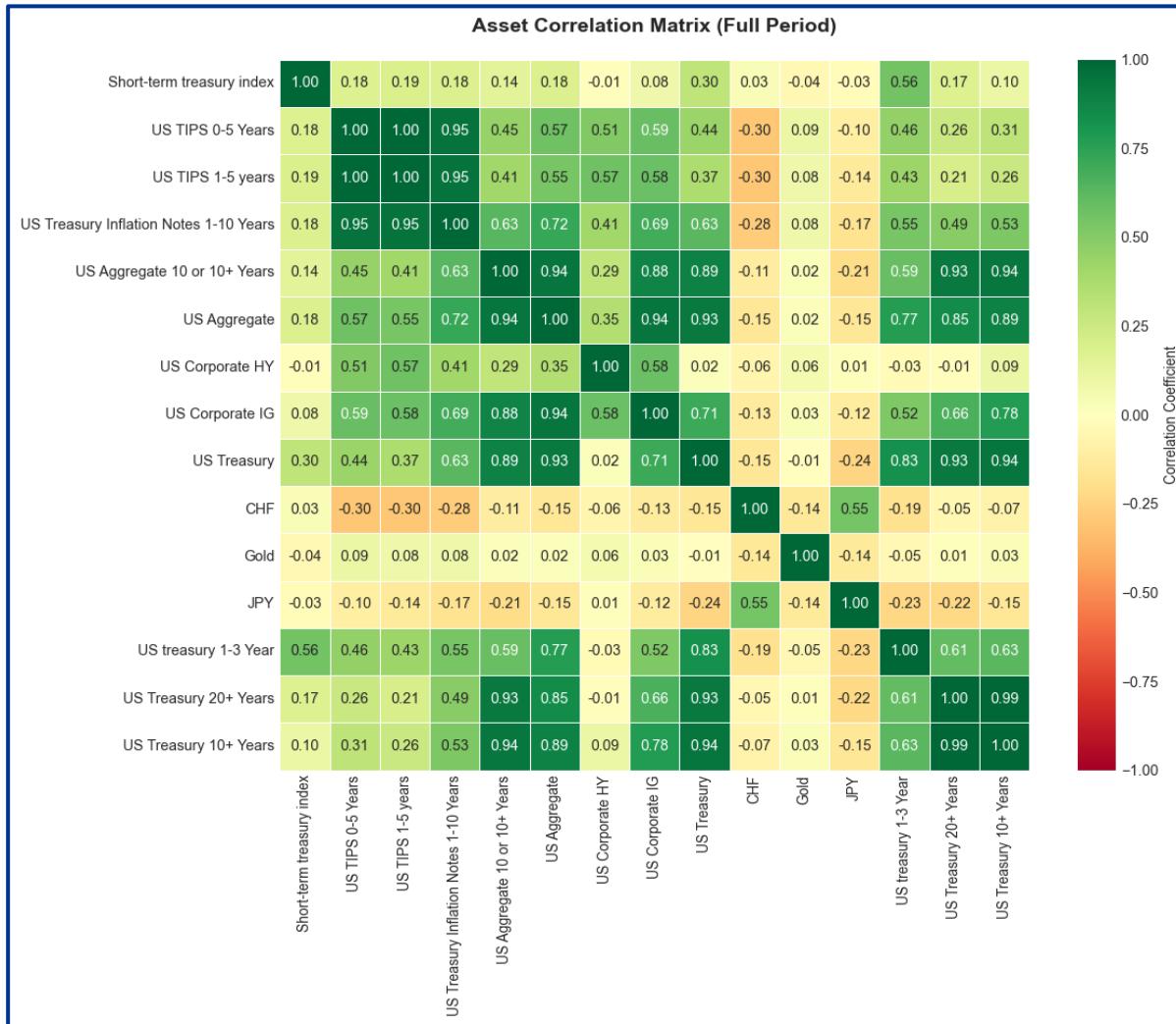
Rigorous No-Lookahead Validation

Across 80 Years

Asset Universe and Baseline Allocations

Asset Universe: U.S. Treasury 1M Bills, U.S. Treasury 6M Bills, Short-term Treasury Index, U.S. Treasury TIPS 0-5 Years, U.S. Treasury, U.S. Treasury 1-3 Year, U.S. Treasury 20+ Year, U.S. Treasury Long, U.S. Aggregate 10 Years or Higher, U.S. Aggregate, U.S. Corporate High Yield, U.S. Corporate Investment Grade, CHF, Gold, JPY

Asset Corlations

Asset Correlation Matrix (Full Period)

- Core bond sectors move together, signalling a unified interest-rate-driven profile across Treasuries, Aggregate, and IG

- Long-duration Treasuries show the tightest clustering with other high-quality assets, reinforcing their role in macro-sensitive regimes

- Short-term Treasuries stand apart with low correlation to risk assets, providing a stable anchor during volatility

- High Yield tracks more closely with equity-like risk, offering income but limited diversification

- Gold and JPY add diversification through consistently low correlation across the matrix

Backtesting Methodology

No Look-ahead Design

- All allocation decisions only use data available at decision time
- No "future peeking" in parameter estimation
- **Rebalancing:** Quarterly (institutional standard)

Walk-forward optimization

- Retrains the model as new data becomes available
- Ensures each test period is truly out-of-sample
- Prevents overfitting to specific historical periods

Multiple period testing

- Process ensures testing of the model against multiple stress periods and Regimes
- **Examples:** 1970s stagflation, 1980s Volcker, 2000 dot-com, 2008 GFC, 2020 COVID, 2022

- **Cross-Validation:** Checks if model parameters are stable across different time folds and if Regime classifications consistent with economic narratives
- **Transaction Costs:** Back test assumes frictionless trading. Realistic choice with a quarterly rebalance suggestion
- **Data Quality:** Pre-1990 VIX is used as a realized volatility proxy. For Pre-1960 fiscal data gaps we assume factor weight = 0.

Overall Performance Summary (1945 – 2024)

Portfolio	Rule Engine	SAA Baseline	Improvement
Ann. Return	5.9%	5.2%	13.6%
Ann. Vol	3.1%	4.9%	-35.9%
Sharpe	1.9	1.1	77.2%
Sortino	3.1	1.6	87.7%
Max DD	-10.1%	-16.2%	-37.8%
Calmar	0.6	0.3	82.6%
VaR 5%	-1.7%	-1.8%	-41.0%
CVaR 5%	-1.5%	-2.7%	-43.1%
Win rate (MoM)	73.2%	66.3%	10.5%

Why Rule Engine Outperforms:

- Combines quantitative efficiency with governance discipline
- Avoids concentration risk of pure optimization
- Duration-tilt mechanism protects in volatile yield environments

Tail Risk:

- Our model has better downside risk management for the period compared to the Baseline with a 38% improvement.
- Our model has better return and drawdown trade off, with a better Calmar ratio, improving by 82%

Performance By Regime

Regime	Months	Ann Return	Ann Vol	Sharpe	Max DD	Allocation Snapshot
Crisis	132 (20%)	8.0%	3.4%	2.3	-3.6%	Cash/Short 41.2%, Govt 25.0%, TIPS Short 2.0%, IG 18.0%, TIPS 3.2%, Gold 4.5%, FX 4.8% HY 1.1%
Risk-Off	165 (25%)	5.6%	3.0%	1.9	-3.6%	Govt 28.92%, IG 26.0%, Cash/Short 33.4%, TIPS 0.9%, HY 3.9%, Gold 2.7%, TIPS Short 0.6%, FX 3.5%
Neutral	198 (30%)	3.1%	4.0%	0.9	-7.8%	IG 38.1%, Govt 26.8%, TIPS 0.1%, HY 11.6%, Cash/Short 18.3%, Gold 1.7%, TIPS Short 0.2%, FX 3.5%
Risk-On	166 (25%)	6.4%	2.9%	2.2	-4.0%	IG 42.4%, HY 23.3%, Govt 18.4%, TIPS 0.0%, Cash/Short 11.0%, Gold 1.5%, TIPS Short 0.0%, FX 4.0%

Crisis Resilience:
Strong return for a defensive regime (8.0%) with very low volatility (3.4%)
Shallow drawdown at -3.6% supported by high cash and govies

Risk-Off Balance:
Moderate return (5.6%) with controlled risk (3.0%).
Drawdown contained at -3.6% thanks to heavier govies and IG tilt

Risk-On Participation:
Highest risk-adjusted outcome (Sharpe 2.2).
Credit and HY allocations drive upside with manageable drawdown (-3.9%).

Neutral Stability:
Lower return (3.1%) but still efficient risk profile (3.3%).
Max DD deeper due to steady credit exposure(-4.0%).

Benchmark Strategies Used for Performance Comparison

|	**What it is?**	**Allocations**
SAA	A traditional static Strategic Asset Allocation that keeps fixed exposures over time	30% in Gov Long; 30% in IG; 20% in TIPS; 10% in Cash/Short; 10% in HY
Barbell Diversified	A diversified barbell combining short-duration assets with long-duration government bonds plus additional credit exposure	40% in Cash/Short; 40% in Gov Long; 20% in IG
Barbell LongShort	A barbell portfolio holding long positions in both very short-duration assets (cash/short-term Treasuries) and very long-duration government bonds	50% in Cash/Short; 50% in Gov Long
Capital Preservation	A defensive allocation focused on short-duration, low-volatility fixed income	16% in Cash/Short; 37% in Gov Long; 47% in IG
Gov Long Only	A pure long-duration government bond allocation, highly sensitive to rising yields and inflation	100% in Gov Long
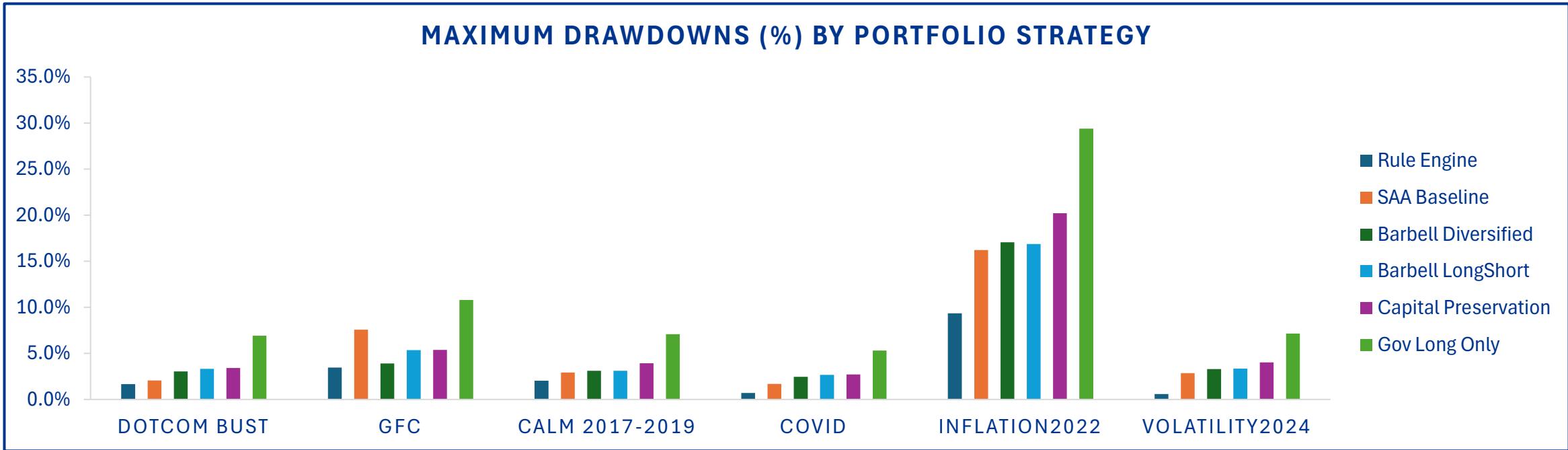
Risk-Adjusted Performance Across Historical Stress Episodes

Historical Episodes	Rule Engine	SAA Baseline	Barbell Diversified	Barbell LongShort	Capital Preservation	Gov Long Only
DotCom Bust	**2.9**	2.22	2.36	2.24	2.26	1.67
GFC	**1.67**	1.09	0.99	0.89	0.96	0.63
Calm 2017-2019	**1.61**	1.35	1.09	0.99	1.13	0.82
Covid	**3.00**	1.90	1.79	1.61	1.76	1.5
Inflation 2022	-1.56	**-1.20**	-1.35	-1.38	-1.32	-1.37
Volatility 2024	**2.08**	0.34	0.09	0.04	0.01	-0.39

Sharpe ratios comparison vs key fixed-income portfolio strategies during stress

- Rule Engine delivers the highest Sharpe ratio in 5 of 6 historical episodes

- Competing strategies show structural weaknesses

- Gov-Long only performs in flight-to-quality environments

- Inflation 2022 drives all Sharpe ratios negative, highlighting that in inflationary shocks, capital preservation becomes the dominant objective

Capital Preservation Under Stress: Maximum Drawdown Analysis

MAXIMUM DRAWDOWNS (%) BY PORTFOLIO STRATEGY

Legend:
- Rule Engine
- SAA Baseline
- Barbell Diversified
- Barbell LongShort
- Capital Preservation
- Gov Long Only
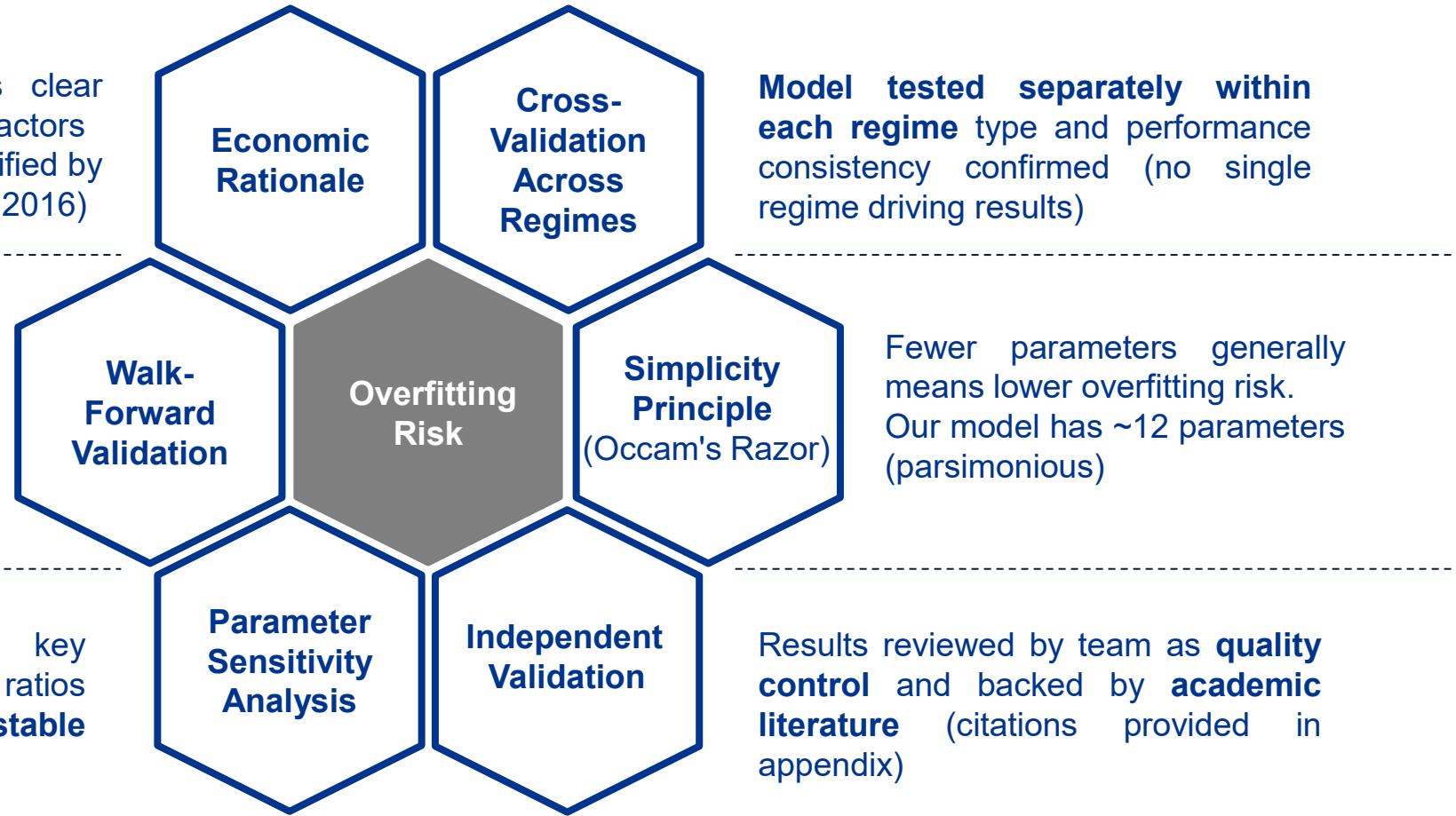
- Rule Engine shows **consistently lower drawdowns**; duration-heavy portfolios suffer most in shocks, especially during the 2022 inflation spike

- **SAA and Barbell portfolios show materially larger losses in major crises** (GFC, Inflation 2022), confirming that static or barbell tilts fail under extreme macro stress

- Long-duration exposure (Gov Long Only) suffers extreme drawdowns in Inflation 2022 (–29%), making it the weakest strategy in inflation-driven selloffs

Overfitting Prevention & Model Robustness

Quantitative models can be "data-mined" to fit historical data perfectly, but then fail in out-of-sample periods

Every model parameter has clear economic logic, no **"black box"** factors Example: EPU weight (60%) justified by academic research (Baker et al., 2016)

Economic Rationale

Cross-Validation Across Regimes

Model tested separately within each regime type and performance consistency confirmed (no single regime driving results)

We trained for a period and then tested the next periods iteratively without the future data. Sharpe stable across all folds

Walk-Forward Validation

Overfitting Risk

Simplicity Principle (Occam's Razor)

Fewer parameters generally means lower overfitting risk. Our model has ~12 parameters (parsimonious)

Sensitivity tests across key parameters show Sharpe ratios remaining within narrow, **stable ranges**.

Parameter Sensitivity Analysis

Independent Validation

Results reviewed by team as **quality control** and backed by **academic literature** (citations provided in appendix)

Data Limitations Of The Model

TIPS Proxy Pre-1997:

- TIPS didn't exist until 1997

- Used synthetic real returns: Nominal Treasury - CPI

- **Impact:** TIPS allocation pre-1997 is an approximation

Economic Policy Uncertainty Pre-1985:

- EPU index constructed retrospectively

- Historical data may have survivorship bias

- **Impact:** Regime classification pre-1985 has higher uncertainty

VIX Pre-1990:

- VIX index launched in 1990

- Used implied volatility proxies with adjustment before that

- **Impact:** Regime detection less precise pre-1990

Ultra-Short Treasury Data:

- US 1M/6M T-Bill data patchy pre-1980

- Used 3M T-Bill as proxy

- **Impact:** Minimal (highly correlated instruments)

Methodological Assumptions and Known Weaknesses Of The Model

Methodological Assumptions

No Transaction Costs:
- Backtest assumes frictionless trading
- Real-world costs: 2-5 bps for Treasuries, 10-20 bps for HY
- **Impact:** Estimated -20 to -40 bps/year drag on returns

Static Risk Control Parameters:
- Vol target (3%), DD trigger (-5%) held constant
- Optimal parameters may vary over time
- **Impact:** Potential for +0.1 to +0.3 Sharpe improvement with dynamic calibration

No Liquidity Constraints:
- Assumes ability to trade full size at month-end
- Crisis periods may have wider bid-ask spreads
- **Impact:** Estimated -10 to -20 bps/year in stress periods

No Model Risk:
- Assumes regime classification remains valid
- Market structure changes could invalidate regimes
- **Mitigation:** Regime logic based on fundamental macro factors (robust to structural change)

Known Weaknesses

Neutral Regime Underperformance:
- Ann. Return: 3.7% (Rule) vs 6.0% (SAA)
- **Reason:** 10% cash drag in balanced markets
- **Trade-off:** Accept lower return for -33% better max DD

Inflation 2022 Absolute Loss:
- -11.92% max DD (largest single period loss)
- **Reason:** Nowhere to hide (bonds + equities down)
- **Mitigation:** Still 26% better than SAA

05

Production Rollout and Implementation

Phased Rollout with Risk Controls

Implementation Approach

	Deliverables	**Objectives**
Phase 1	▪ Integrating data and Model Deployment in Union Investment Platform ▪ Building Relevant Reporting infrastructure ▪ Validating Historical Regime classifications from the model	▪ Regime Dashboards ▪ Reports from Back-testing ▪ Risk Profiling and Risk Umbrella
Phase 2	▪ Model functions parallelly with existing mechanisms ▪ Comparing allocations with decisions of Portfolio Managers ▪ Analysis of Gaps in the model and Refinements according to Company objectives	▪ Model recommendations to PM ▪ Identifying implementation gaps ▪ Governance committee go ahead
Phase 3	▪ Risk Monitoring framework based on profiles for trading ▪ Deployment in 3 Tranches, with rollout over 6 months ▪ Daily monitoring initially, will be rolled back based on model performance & track-record and anchored at monthly	▪ Portfolio manager override authority ▪ Monitor performance within expected bands (±2% of backtest expectations) ▪ Fine tune limits

Governance And Oversight Framework

Oversight

When PM CANNOT Override
- Personal "gut feel"
- Short-term trading opportunities

When PM CAN Override
- Unprecedented Market conditions decided by the Portfolio Manager
- Regulatory changes that model doesn't yet reflect
- Client-specific constraints

Tracking Overrides
- Analysing if overrides improve or hurt performance?
- How accurate were the overrides
- Refinement of the model

Level 1: Model (Automated)
Monthly Regime Classification, Generates Allocation Recommendation, No Trading Authority

Level 2: Portfolio Manager (Monthly)
Review model vs Market Intuition, Override Authority, Document Override for Audit

Level 3: Investment Committee (Monthly)
Review Performance, Approve/ Disapprove model use, Apply Constraints

Level 4: Risk Committee (Quarterly)
Deep Validation, Overfitting Review Approve Parameter Updates

Client Communication Strategy

Transparency builds trust and reduces redemption risk, in line with consumer protection. Institutional clients have fiduciary duties and they need to explain investment decisions to their trustees

Executive Summary

- Current regime classification
- Portfolio allocation snapshot
- Performance vs benchmark
- Key drivers of return

Regime Narrative

- Clear communication about the Regime
- Economic reasoning for the Classification
- Effectiveness of the Allocations

Performance Attribution

- Breakdown of returns into Asset classes
- Analysis of the source of Alpha
- Risk Analysis and Expected Drawdowns

Looking Ahead

- Potential flags for change in the future
- Positioning for next quarter and rebalancing
- Look-Ahead metrics for Risk

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Next Steps and Recommendations

Closing Remarks

Why This Solution?

Alternatives	Weakness	Advantages of Rule Engine
Static SAA	Ignores regime shifts	Dynamic adaptation to changing regimes
Pure Black-Box ML	Uninterpretable, overfitting risk	Transparent, economically grounded rules
Tactical Overlay (Price-Based)	Reacts to losses already incurred	Proactive regime detection (leading indicators)
Human PM Discretion Only	Behavioural biases, inconsistent	Systematic discipline + PM oversight option
Options/Derivatives Hedging	Expensive, complex, carry costs	Long-only, institutional-friendly allocation

Why Now?

Regime Volatility at all-time high
- EPU Index: Average 150 (1985-2010) → 250+ (2020-2024)
- Regime transitions more frequent: 2008, 2011, 2015, 2018, 2020, 2022
- Static allocation increasingly risky

Data & Technology now available
- EPU & GPR indices only became available post-2010 and improving with new studies
- Computing power advancement enables more frequent regime calculations
- Cloud infrastructure makes deployment affordable

Institutional Client Pressure
- 2022 highlighted inadequacy of 60/40 and barbell strategies
- Clients demanding "what are you doing differently?"
- Regulatory scrutiny on fiduciary duty increasing

Competitive Landscape
- Asset managers adopting quantitative overlays
- Union Investment risks falling behind if not innovative
- Early adopter advantage in client acquisition

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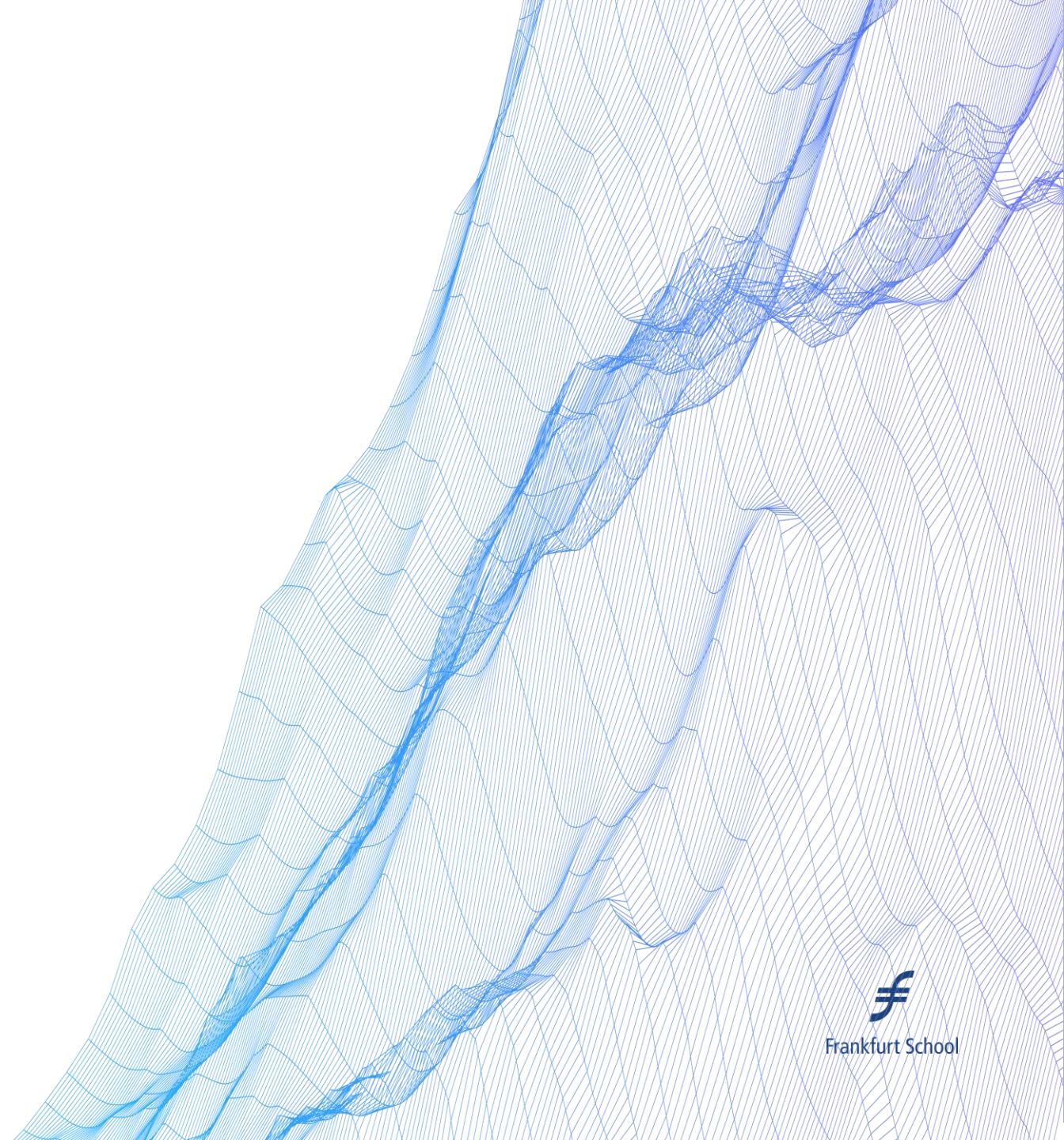
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Capital Markets

Working in Portfolio Management Credit at HAGIM GmbH

Thank You

Frankfurt School

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Appendix

Data Sources and Academic References

Asset Universe:

- Bloomberg - U.S. Treasury, Short-term Treasury, U.S. Treasury TIPS 0-5 Years, U.S. Aggregate 10 Years or Higher, U.S. Aggregate, U.S. Corporate High Yield, U.S. Corporate Investment Grade, U.S. Treasury 1-3 Year, U.S. Treasury 20+ Year, U.S. Treasury Long
- FRED - U.S. Treasury 1M Bills, U.S. Treasury 6M Bills, CHF, Gold, JPY

Macro & Market Data:

- FRED - Treasury Yield, U.S. CPI, Fed Funds Rate, US Dollar, USD_CHF, US Agg Bond Yield, US IG OAS
- matteoiacoviello.com – Geopolitical Risk Index
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- Baker et al. (2016): Economic Policy Uncertainty Index
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Capital Preservation & Fat Tails

- Taleb (2007): Black Swan & Antifragility concepts
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- Clare et al. (2016): Perfect Withdrawal in a Noisy World (barbell strategies)

Volatility and Diversification

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