



MINDFORGE INTELLIGENCE

MARKET STATE DETECTOR

# THE STRATEGY INTEGRATION BRIEF

[ HOW MSD PLUGS INTO YOUR BOOK ]

## WHAT MSD IS

**Market State Detector (MSD)** classifies each U.S. trading day into one of five regime states (Calm, Turning, Stress, Volatility Spike, Systemic Stress), delivered before the open. The differentiating input is exogenous environmental data — signals not in anyone else's stack and orthogonal to the regime models in the rest of yours.

The classifier also incorporates SPX and VIX as inputs alongside the environmental signals. Walk-forward validated 2012–2024. This brief covers how five strategy archetypes use the daily state as a position-sizing input.

## THE PROMISE

**Your strategy doesn't change.  
Your sizing does.**

Page 2: the five states. Page 3: find your strategy. Pages 4–8: one archetype each. Backtest: 2012–2024 walk-forward. [mindforge.tech/terms](https://mindforge.tech/terms)

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## MSD reports one of these every morning.

Every archetype rule in this brief references these five names. Each state has its own classification logic, precision, and historical frequency. There is no mapping between any one strategy and any one state — every archetype uses all five.

### CALM

# 71%

OF TRADING DAYS

Default state. Markets quiet, VIX median 14. Hedges decay; vol carry earns.

### TURNING

# 24%

OF TRADING DAYS

Regime inflection. 95% precision, 2-day median lead before stress shows in price.

### STRESS

# 2%

OF TRADING DAYS

Selective heads-up. ~5 days/year (2%), 60% precision. A confirmation tier — pair with other evidence before sizing.

### VOLATILITY SPIKE

# <1%

OF TRADING DAYS

Rapid vol dislocation. 92.86% precision (13 of 14). VIX already elevated at firing.

### SYSTEMIC STRESS

# 2%

OF TRADING DAYS

Crisis classifier. 100% precision (9 of 9), 2012–2024. Includes COVID and Aug 2024.

DISTRIBUTION: 2012–2024 WALK-FORWARD. PRECISION FIGURES FROM MSD CANONICAL MANIFESTS.

Each line is one archetype: the claim, the historical effect, and the strategies it covers. Pick the one that fits what your desk runs and flip to its page. Every archetype uses all five states from the previous page.

ARCHETYPE 1  
OF 5

## Stop bleeding premium during Calm.

~21% OF HEDGE BUDGET SAVED · ROLLING PUTS · VAR SWAPS · VOL OVERLAYS

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ARCHETYPE 2  
OF 5

## Cut peak drawdown in half.

-52% PEAK DRAWDOWN (COVID) · TREND · SYSTEMATIC MACRO · CTA

→ P. 5

ARCHETYPE 3  
OF 5

## Close before the regime breaks.

83% OF CRISES END WITH TURNING WITHIN 10 DAYS · SHORT STRADDLES · SHORT VARIANCE · DISPERSION  
· VOL CARRY

→ P. 6

ARCHETYPE 4  
OF 5

## Reallocate the premium budget.

~0.5X AVERAGE NOTIONAL HELD · TAIL FUNDS · LONG VOL · CRASH PROTECTION

→ P. 7

ARCHETYPE 5  
OF 5

## Tilt factor weights by regime.

METHODOLOGY FRAMEWORK · MOMENTUM · VALUE · QUALITY · LOW-VOL FACTOR SLEEVES

→ P. 8

ROLLING PUTS · VAR SWAPS · VOL OVERLAYS

# Stop bleeding premium during Calm.

Programs that buy protection pay premium every day whether or not the protection is doing work. MSD tells you which days are Calm, the regime where that premium has historically decayed without paying for itself. Size the protection book down on Calm days; ramp it back up the moment MSD flags any non-Calm state. Same protection during stress. Less premium spent during quiet.

## THE ONE RULE

DURING CALM	<b>Hedge notional = 50% of baseline</b>
OTHERWISE	<b>Hedge notional = 150% of baseline</b>
RE-ENTER CALM	<b>Only when MSD reclassifies Calm</b>

## HISTORICAL EFFECT, 2012–2024

# ~21%

**of hedge budget saved**

\$1,035K/YR AT \$500M / 100 BPS. 12.9X GROSS ROI VS \$80K SUBSCRIPTION. 2012–2024 WALK-FORWARD.

HALF-SIZE DURING CALM. FULL-SIZE EVERYWHERE ELSE.

- Calm covers ~71% of trading days. Half-sizing the hedge on those days cuts premium spend on the regime where the protection has historically done the least incremental work.
- Calm runs are long. Median Calm stretch in the 2012–2024 backtest lasted 35 trading days; the longest ran 432 days.
- Turning fires before stress shows in price (95% precision, 2-day median lead). That is the trigger to restore full hedge size.
- Crisis-class days were 2.7% of the 2012–2024 window. Systemic Stress hit 9 of 9 events (100% precision); Vol Spike hit 13 of 14 (92.86%).

TREND · SYSTEMATIC MACRO · CTA

# Cut peak drawdown in half.

Trend strategies make money when regimes hold and lose money when regimes break. The pain concentrates in a small number of regime-change days. MSD flags those days as Turning, Stress, Vol Spike, or Systemic Stress before the break shows up in price. Hold full size during Calm (where trends actually work). Scale down or go flat the moment MSD flags a regime change. Same trend signal. Same execution. Smaller worst-case path.

## THE ONE RULE

CALM	<b>Position size = 1.0x baseline</b>
TURNING	<b>0.5x</b>
STRESS	<b>0.5x</b>
VOL SPIKE	<b>0.25x</b>
SYSTEMIC STRESS	<b>0.0x (flat)</b>

## HISTORICAL EFFECT, 2012–2024

# -52%

### peak-drawdown reduction

COVID: -33.92% TO -16.33%. SPX 50/200 SMA, 2012–2024 WALK-FORWARD.

SUSTAINED TRENDS REQUIRE SUSTAINED REGIMES. THE OVERLAY SCALES TO THE REGIME.

- > Episode-by-episode drawdowns shrunk: COVID -33.92% → -16.33%. Q4 2018 -10.01% → -7.09%. Aug 2024 -8.49% → -6.87%. Aug 2015 -11.24% → -7.57%.
- > Annualized return: 8.82% static vs 6.17% with the overlay over 2012–2024 walk-forward. Sharpe 0.63 → 0.62.
- > Calm covers ~71% of days, so the overlay holds full size where trend P&L is generated. The overlay is a scaling factor on the position size you were already going to take.
- > Vol-targeting, multi-asset risk balance, and signal selection stay exactly as they are today.

SHORT STRADDLES · SHORT VARIANCE · DISPERSION · VOL CARRY

# Close before the regime breaks.

Selling vol earns carry when markets are quiet and breaks expensively when the regime shifts. Turning flags the regime shift before VIX moves materially. Close the short-vol book the morning Turning fires; re-enter only on the next Calm. The historical re-entry signal is consistent: 83% of crisis episodes ended with a Turning classification within 10 trading days, which is when carry conditions historically returned.

## THE ONE RULE

CALM	Full short-vol carry on
TURNING	Close short vol; go flat
CRISIS CLASS	Stay flat or long convexity
RE-ENTRY	First Calm after crisis ends

## HISTORICAL EFFECT, 2012–2024

# 83%

of crises end with Turning within 10 days

24 OF 29 CRISIS ENDINGS, 2012–2024. THE HISTORICAL RE-ENTRY SIGNAL.

CARRY ON DURING CALM. FLAT THROUGH TURNING. RE-ENTER ON THE NEXT CALM.

- › Calm-day VIX distribution: median 14.32. Forward 5-day VIX change essentially zero in median. The carry environment short-vol books are designed for.
- › On Turning days, the median forward 5-day VIX move is -3.3%, but the tails widen sharply (10th percentile -16.4%, 90th percentile +19.8%) compared to Calm. Closing on Turning compresses exposure to the painful tail.
- › Late short-vol entry on Vol Spike has historically traded into mean reversion. Vol Spike classifications happen at already-elevated VIX (median 27.6); median forward 5-day VIX move is -19.6%. Wait for the Calm or Turning that follows.
- › Re-entry trigger: 24 of 29 crisis episodes (83%) ended with a Turning classification within 10 trading days.

TAIL FUNDS · LONG VOL · CRASH PROTECTION

# Reallocate the premium budget.

Long-volatility books bleed premium during Calm and earn convexity during crises. The same annual budget gets a much better payoff if you spend less during Calm and more during MSD-flagged crisis states. Systemic Stress flagged 9 of 9 events in the canonical backtest, so the scaled-up notional has historically landed where the convexity actually lives. Same dollar budget. Deeper protection where it matters.

## THE ONE RULE

CALM	Notional = 0.25x baseline
TURNING	1.0x
STRESS	1.0x
VOL SPIKE	1.5x
SYSTEMIC STRESS	2.0x

## HISTORICAL EFFECT, 2012–2024

# ~0.5x

### average notional held

VS CONSTANT 1.0X STATIC BASELINE. CARRY DRAG HALVED ON THE SAME DOLLAR BUDGET.

PREMIUM REALLOCATED, NOT ADDED. SAME BUDGET, DEEPER PROTECTION WHERE IT MATTERS.

- > Average notional held in the 2012–2024 daily stream was 0.49 versus a constant 1.0 under the static policy. Carry drag (stylized proxy) was cut roughly in half.
- > Convexity scales up on Vol Spike (1.5x) and Systemic Stress (2.0x). MSD's Systemic Stress classifications are 9 of 9 (100% precision); Vol Spike is 13 of 14 (92.86%).
- > Median VIX at the moment of Systemic Stress classification was 24.59 across the 9 episodes. SSS classifications historically arrived with VIX still well below crisis peaks. The scaled-up notional was purchased before the convexity got expensive.
- > COVID dominates expected payoff. 1 of 9 SSS episodes produced a -30.64% SPX drawdown to trough; the other 8 ranged from -0.15% to -6.23%. The modal SSS event is much smaller than COVID. Size accordingly.

MOMENTUM · VALUE · QUALITY · LOW-VOL FACTOR SLEEVES

# Tilt factor weights by regime.

Different factors win in different regimes. Momentum crashes hardest during regime breaks; quality and low-vol earn during stress; value rotates with macro. MSD provides an exogenous regime input to drive factor tilts, instead of inferring regime from the same prices the factors already use (which is circular). The framework here is a methodology spec; the historical backtest is reproducible on your firm's own factor return series.

## THE ONE RULE

CALM	<b>Overweight momentum; underweight low-vol</b>
TURNING	<b>Reduce momentum; lift quality + low-vol</b>
STRESS	<b>Quality + low-vol overweight</b>
VOL SPIKE	<b>Maximum defensive</b>
SYSTEMIC STRESS	<b>Defensive; momentum at floor</b>

## HISTORICAL EFFECT, 2012–2024

# Spec

## methodology framework

REPRODUCIBLE ON YOUR FACTOR DATA. 60-DAY PILOT DELIVERS THE DAILY STATE SERIES BACK TO 2012.

EXOGENOUS REGIME INPUT. NOT INFERRED FROM THE PRICES THE FACTORS ALREADY USE.

- > Factor returns are regime-dependent. The standard quant portfolio infers regime from the same price data the factors themselves use, which is a circular dependency. MSD provides a regime signal that does not come from the same price stream.
- > The momentum-crash episodes in 2012–2024 (Aug 2015, Q4 2018, COVID) all coincided with MSD classifying non-Calm. The underweight-momentum tilt would have been active across each of those windows.
- > No published quant backtest in this brief because factor-return series are firm-specific. The framework is documented for reader-side reproduction on Kenneth French Data Library factors or proprietary series.
- > The 60-day pilot delivers daily MSD classifications going back to 2012 so your team can merge them with internal factor backtests directly.

## The signal sits upstream of your stack.

# 1

### YOUR ALPHA STAYS YOURS.

The regime signal scales the trades you already make. Vol-targeting, signal selection, instrument choice, and risk framework all stay exactly as they are today.

# 2

### ONE SIGNAL AT 07:30 AM ET.

Delivered before the U.S. open via API or webhook. No intraday updates. Your risk system reads it once, looks up the sizing rule, applies it before you trade.

# 3

### QUANTS REPRODUCE EVERY NUMBER.

The 60-day pilot delivers daily classifications back to 2012. Your team merges them with internal backtest infrastructure and reproduces every figure on these pages on your own book.

## THE SIZING RULE

What does the hedge overlay change?

Calm days	Hedge notional = 50% baseline
Non-Calm days	Hedge notional = 150% baseline
Re-enter trigger	<b>MSD reclassifies Calm</b>
Calm share	<b>70.7% of trading days</b>

## THE WINDOW DISCIPLINE

Where do the numbers come from?

Backtest window	2012–2024, walk-forward
Production tenure	Live since Jan 2025
Hedge budget assumption	<b>100 bps / yr</b>
Source	<b>Canonical manifest v2.1.0</b>

## ILLUSTRATIVE ROI

# 12.9x

## GROSS ROI VS SUBSCRIPTION

Illustrative arithmetic only. Not a performance guarantee.

Hedge budget saved **\$1,035,000/yr**

(21% of budget at \$500M / 100 bps)

Annual subscription **\$80,000**

**HEDGE OVERLAY IS THE ONE ARCHETYPE WITH  
A CANONICAL DOLLAR ILLUSTRATION.  
THE OTHER FOUR REPRODUCE ON YOUR BOOK.**

2025 OOS savings rate: 35.6%. Window labels apply to every figure.

# RUN IT ON YOUR BOOK

## 60-DAY INSTITUTIONAL PILOT

### INCLUDES

- Daily classification via email or API
- 12 years of historical backfill (2012–2024)
- Methodology and integration specs
- Weekly research briefs

### QUALIFICATION

Institutional 60-day pilot for qualified research teams. Reproduce every figure in this brief on your own factor data, hedge book, or strategy series.

RESTRICTED TO INSTITUTIONAL USE

### OVERLAY + CRISIS

**This brief: how MSD plugs into five strategy archetypes as a sizing overlay.**

For the regime-classification accuracy that powers the overlay, see [The Crisis Classification Brief](#).

PILOT PORTAL

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