AI Valuation Compression: Market Correction Stress Test Scenario

Two-tier scenario set (Moderate 10 trading days; Severe 60 trading days). Reference date: 2026-01-12 close (or nearest).

Executive summary

This package designs a research-grounded stress testing scenario in which an AI-led valuation reset drives a rapid equity drawdown, a volatility regime shift, and credit spread widening. Two severities are defined and calibrated to historical risk-off regimes while respecting the binding shocks for AI single names and AI-exposed utilities.

Metric	Current	Moderate (10d)	Severe (60d)
S&P 500 (SPX)	6,977	-26.8% → 5,109	-47.0% → 3,699
QQQ	627.17	-34.3% → 412	-50.2% → 312
Custom AI Exposure ETF (base=100)	100.00	-39.7% → 60.3	-50.5% → 49.5
AI single names (NVDA/AMD/AVGO)		-40%	-50%
AI-exposed Utilities (VST/CEG)		-15%	-30%
VIX (spot)	15.12	38	58
VVIX	93.13	130	170
IG OAS (bp)	78.00	178	298
HY OAS (bp)	274.00	524	774
Intra-SPX corr (1M, model)	0.35	0.65	0.85
UST 10Y yield	4.19	3.79	3.39

Key risk drivers (ranked)

- **AI multiple compression** (valuation reset from elevated starting multiples).
- **Earnings revision cycle** (guidance cuts, scrutiny on AI CapEx ROI, slower enterprise spend).
- **Credit spread contagion** (tech-heavy sectors reprice; financing costs rise).
- **Systematic/passive deleveraging** (CTA/vol-control; crowding unwind).
- **Correlation spike** (diversification declines; index-level tail hedging demand).

1. Starting conditions and market context

- S&P; 500 trailing P/E ≈ **27.84x** (elevated vs long-run history).

- Shiller CAPE ≈ **40.66x** (historically extreme valuation regime).

- Concentration: SPY top 3 holdings ≈ **20.0%** of index; top 10 ≈ **38.6%**.

- Vol regime: VIX spot ≈ **15.12** with contango term structure (M1 16.1 < M2 17.9 < M3 18.9); VVIX ≈ **93.13** (low vol-of-vol).

- Credit: IG OAS ≈ **78 bp**; HY OAS ≈ **274 bp** (near cyclical tights).

Selected current market levels

Metric	Current	Source/Note
S&P 500 (SPX)	6,977	Investing.com Major World Indices close 2026-01-12
NASDAQ Composite	23,734	Investing.com Major World Indices close 2026-01-12
S&P 500 trailing P/E	27.84	worldperatio.com computed 2026-01-12
Shiller CAPE (Cyclically Adjusted P/E)	40.66	multpl.com as of 2026-01-08
VIX (spot)	15.12	Cboe VIX futures quotes page
VVIX	93.13	MarketChameleon close 2026-01-12
VIX Futures (M1)	16.10	Cboe VIX futures quotes (Jan 2026)
VIX Futures (M2)	17.90	Cboe VIX futures quotes (Feb 2026)
VIX Futures (M3)	18.89	Cboe VIX futures quotes (Mar 2026)

AI theme concentration and implied volatility

The AI equity complex combines (i) elevated multiples, (ii) high concentration in a small number of mega-cap constituents, and (iii) substantial implied volatility premia in several high-growth names. These features amplify drawdowns under de-risking (gamma effects, forced selling, and correlation spikes).

Ticker	Category	Current 30d IV
NVDA	AI Infrastructure	36.5%
AMD	AI Infrastructure	54.9%
AVGO	AI Infrastructure	43.3%
MSFT	Mega-cap diversified	29.9%
GOOGL	Mega-cap diversified	37.6%
AMZN	Mega-cap diversified	38.2%
META	Mega-cap diversified	40.8%
CRM	AI Software	28.0%
PLTR	AI Software	59.9%
NOW	AI Software	43.3%
VST	AI Enablers/Utilities	44.4%
CEG	AI Enablers/Utilities	35.0%

2. Scenario thesis and macro path

Thesis: A correction driven by AI valuation compression, catalyzed by a cluster of earnings disappointments in AI-exposed names and a rapid repricing of recession probability. Credit markets reprice tech-heavy sectors, and investors rotate into duration and quality.

Trigger set (illustrative)

- AI revenue/guidance disappointment: weaker-than-expected accelerator demand and lengthening cloud procurement cycles.
- CapEx ROI scrutiny: slower monetization of GenAI features; margin pressure from higher compute costs.
- Macro repricing: recession probability rises; ISM/PMI and employment soften; rate cuts priced in.
- Credit: initial widening led by tech/semi and lower-quality software; primary issuance slows.
- Flows: volatility-control and trend strategies delever as realized vol rises; dealer gamma turns short.

Severity calibration

- **Moderate (10 trading days):** fast selloff and de-risking similar in speed to sharp modern risk-off episodes; no confirmed recession yet, but earnings expectations reset and vol spikes into the high-30s.
- **Severe (60 trading days):** extended drawdown with broader earnings deterioration; credit stress becomes a binding constraint; volatility remains elevated and the curve inverts (persistent backwardation).

3. Custom AI Exposure ETF construction

To quantify AI-specific equity risk, we define a hypothetical **AI Exposure ETF**. The universe is anchored to the holdings of AI/robotics and semiconductor thematic ETFs (e.g., BOTZ, AIQ, ROBO, SMH) and then filtered for high AI revenue exposure or AI infrastructure criticality (accelerators, foundry, lithography, AI networking, AI software platforms).

AI ETF bucket weights and factor exposure (illustrative betas)

Bucket	Weight	Beta_SPX	Beta_QQQ	Shock_Mod	Shock_Sev
Enabler	10%	1.10	0.87	-19.0%	-36.0%
Infrastructure	55%	1.50	1.15	-42.5%	-52.7%
Software	35%	1.24	0.97	-41.1%	-51.1%

Top constituents (excerpt)

Ticker	Company	Category	Weight
NVDA	NVIDIA	Infrastructure	12.0%
MSFT	Microsoft	Software	8.0%
AVGO	Broadcom	Infrastructure	8.0%
TSM	Taiwan Semiconductor	Infrastructure	6.0%
AMD	Advanced Micro Devices	Infrastructure	6.0%
ASML	ASML	Infrastructure	5.0%
META	Meta Platforms	Software	4.0%
AMZN	Amazon	Software	4.0%
GOOGL	Alphabet	Software	4.0%
LRCX	Lam Research	Infrastructure	4.0%
AMAT	Applied Materials	Infrastructure	4.0%
MRVL	Marvell	Infrastructure	3.0%

Weighting approach: capped market-cap style weights (largest AI infrastructure names receive the highest weights), with a small enabler sleeve (power/data center real assets). This matches the observed concentration in real AI-themed products while maintaining diversification across the AI stack.

4. Single-name equity shocks and index derivation

Binding shocks are applied to AI single names (−40% / −50%) and AI-exposed utilities (−15% / −30%). All other shocks are derived to reflect thematic multiple compression, earnings revisions, and cross-asset contagion, while ensuring internal consistency across SPX, QQQ, and the custom AI ETF.

Tiered shock structure (audit grid)

Tier	Category	Names	Moderate	Severe	Rationale
Tier 1	AI Infrastructure (pure-play)	NVDA, AMD, AVGO	-40%	-50%	Binding shocks; thematic unwind
Tier 2	AI Infrastructure (other)	TSM, ASML, AMAT, LRCX, MU, MRVL, ANET, ORCL	-40% to -50%	-30% to -60%	CapEx/AI cycle beta
Tier 3	AI Software/Platforms	MSFT, CRM, NOW, PLTR, SNOW, ADBE, NET	-35% to -55%	-45% to -65%	SaaS multiple compression
Tier 4	AI Enablers (utilities/power)	VST, CEG	-15%	-30%	Binding shocks; regulated/defensive offset
Tier 5	Mag-7 & growth contagion	AAPL, GOOGL/GOOG, AMZN, META, TSLA	-35% to -40%	-45% to -55%	Concentration + de-risking
Tier 6	Broader QQQ (ex top10)	Remaining Nasdaq-100	-30%	-52%	Systematic deleveraging
Tier 7	Non-Nasdaq SPX remainder	Balance of SPX	-18%	-45%	Correlation spike; recession risk

S&P; 500 (SPX) derivation (weights × shocks)

Component	Weight	Shock_Mod	Contribution_Mod	Shock_Sev	Contribution_Sev
NVDA	7.55%	-40.0%	-3.02%	-50.0%	-3.77%
AAPL	6.44%	-35.0%	-2.25%	-45.0%	-2.90%
MSFT	5.99%	-40.0%	-2.40%	-50.0%	-3.00%
AMZN	4.05%	-35.0%	-1.42%	-45.0%	-1.82%
GOOGL	3.21%	-35.0%	-1.12%	-45.0%	-1.44%
AVGO	2.74%	-40.0%	-1.10%	-50.0%	-1.37%
GOOG	2.57%	-35.0%	-0.90%	-45.0%	-1.16%
META	2.39%	-40.0%	-0.96%	-50.0%	-1.20%
TSLA	2.10%	-40.0%	-0.84%	-55.0%	-1.16%
BRK.B	1.54%	-18.0%	-0.28%	-45.0%	-0.69%
Other Nasdaq-100 overlap (ex top10)	12.00%	-30.0%	-3.60%	-52.0%	-6.24%
Non-Nasdaq remainder	49.42%	-18.0%	-8.90%	-45.0%	-22.24%

Total SPX return = Σ(w■×shock■) = **-26.8%** (Moderate) and **-47.0%** (Severe).

NASDAQ-100 (QQQ proxy) derivation

Component	Weight	Shock_Mod	Contribution_Mod	Shock_Sev	Contribution_Sev
NVDA	9.09%	-40.0%	-3.64%	-50.0%	-4.54%
AAPL	8.75%	-35.0%	-3.06%	-45.0%	-3.94%
MSFT	7.73%	-40.0%	-3.09%	-50.0%	-3.86%
AVGO	6.63%	-40.0%	-2.65%	-50.0%	-3.31%
AMZN	5.26%	-35.0%	-1.84%	-45.0%	-2.37%

Next 5 in Top10 (avg)	16.28%	-38.0%	-6.19%	-50.0%	-8.14%
Remainder of QQQ	46.26%	-30.0%	-13.88%	-52.0%	-24.06%

Total QQQ return (using top-10 concentration bucket) = **-34.3%** (Moderate) and **-50.2%** (Severe).

5. Volatility impacts: index, single-name, and surface

Volatility is shocked consistently with the equity path: a rapid jump in spot VIX, inversion of the term structure, and steepening of downside skew. Single-name implied vol moves are larger for AI infrastructure and high-beta software.

Index implied volatility term structure (SPX proxy)

Tenor	Current	Moderate	Severe
1W	12.0%	55.0%	90.0%
1M	15.1%	38.0%	58.0%
3M	17.9%	33.0%	45.0%
6M	19.0%	28.0%	35.0%
1Y	20.0%	24.0%	28.0%

Skew and tail risk pricing (illustrative)

Metric	Current	Moderate	Severe
25-delta put skew (1M, vol pts)	5.10	9.00	13.00
10-delta put skew (1M, vol pts)	12.00	20.00	27.00
Put/Call IV ratio (ATM)	0.98	1.20	1.35

Single-name 30d IV shocks (selected)

Ticker	Category	Current	Moderate	Severe
NVDA	AI Infrastructure	36.5%	71.5%	96.5%
AMD	AI Infrastructure	54.9%	89.9%	114.9%
AVGO	AI Infrastructure	43.3%	78.3%	103.3%
MSFT	Mega-cap diversified	29.9%	44.9%	59.9%
GOOGL	Mega-cap diversified	37.6%	52.6%	67.7%
AMZN	Mega-cap diversified	38.2%	53.2%	68.2%
META	Mega-cap diversified	40.8%	55.8%	70.8%
CRM	AI Software	28.0%	53.0%	78.0%
PLTR	AI Software	59.9%	84.9%	109.9%
NOW	AI Software	43.3%	68.3%	93.3%
VST	AI Enablers/Utilities	44.4%	64.4%	84.4%
CEG	AI Enablers/Utilities	35.0%	55.0%	75.0%

Correlation regime shift (model)

Metric	Current	Moderate	Severe
SPX implied correlation (1M, model)	0.35	0.65	0.85
QQQ implied correlation (1M, model)	0.40	0.70	0.88
Intra-AI cohort correlation (model)	0.60	0.88	0.94

6. Credit spreads, rates and safe-haven flows

Credit spreads widen as both default risk premia and liquidity premia rise. In Moderate, spreads move toward late-cycle levels; in Severe, they reprice toward crisis-like conditions (still below 2008 extremes). Rates rally and curves steepen as investors price policy easing and seek duration.

Sector spread overlays (OAS, bp)

Sector	Current	Moderate	Severe
IG Overall	78	178	298
HY Overall	274	524	774
Tech/Semis IG (model)	95	225	375
Tech/Semis HY (model)	330	630	980
Software IG (model)	90	210	340
Utilities IG (model)	68	138	238

Credit index spreads (bp)

Index	Current	Moderate	Severe
CDX IG 5Y	49	139	249
CDX HY 5Y	312	532	792
iTraxx Europe (Main) 3Y (proxy)	26	106	206
iTraxx Xover 5Y (LCH settle)	275	525	825

Rates and safe-haven moves (illustrative)

Metric	Current	Moderate	Severe
UST 10Y Yield (%)	4.19%	3.79%	3.39%
UST 2Y Yield (%)	3.54%	2.94%	2.34%
2s10s (bp)	65	85	105
Fed Funds implied Dec (%) (model)	3.45%	2.70%	1.95%
DXY	98.88	101.85	104.81
Gold (USD/oz)	$4,600	$4,968	$5,290

7. Historical analog validation (high-level)

The scenario is designed to be *historically grounded*: equity drawdowns and volatility responses fall between milder corrections (e.g., late-2018, 2022 duration shock) and crisis tails (2020, 2008). For example, VIX closed at 82.69 on 16-Mar-2020, and HY spreads exceeded 1,000 bp during COVID and ~2,100 bp during the GFC. Our Severe case widens HY OAS to ~774 bp, representing significant stress without exceeding those historical extremes.

Episode	Date Window	SPX	QQQ/Nasdaq	VIX	IG OAS	HY OAS	Notes
COVID Panic	2020-02-19 to 2020-03-23	-34%	-28%	VIX close 82.69 (Mar 16 2020)	IG OAS peak ~370bp (approx)	HY OAS > 1,000bp	Policy shock; liquidity
GFC	2008-09 to 2009-03	-49%	-52%	VIX intraday record 89.53 (Oct 2008)	IG OAS ~600bp (approx)	HY OAS > 2,100bp	Systemic credit crisis

Event	Period	S&P Drawdown	Other Drawdown	VIX	IG	HY	Cause
Q4 2018	2018-10 to 2018-12	-20% (peak-trough)	-23% (peak-trough)	VIX ~36 peak	IG +~50bp	HY +~200bp	Fed overtightening fe...
2022 Tech/Duration	2022-01 to 2022-10	-25%	-33%	VIX ~35 peak	IG +~60bp	HY +~250bp	Rates shock; multipl...
2025 Tariffs (risk-off)	2025-04 (Reuters snapshot)	N/A	N/A	N/A	IG ~106bp (Apr 4 2025)	HY ~401bp (Apr 4 2025)	Trade policy uncerta...
Dot-com	2000-03 to 2002-10	-49%	-78% (NASDAQ)	VIX ~45 avg	N/A	N/A	Tech bubble burst

References and data sources (non-exhaustive)

- Valuation: worldperatio.com (S&P; 500 trailing P/E); multpl.com (Shiller CAPE).
- Equity levels & vol: Cboe VIX futures quotes; FRED (VIX/VXV where used).
- Credit spreads & rates: FRED ICE BofA OAS series; Treasury/FRED yield series.
- Index weights: State Street SPDR SPY holdings (top constituents); Yahoo holdings for QQQ concentration.
- Single-name implied vol: alphaquery.com (30-day IV statistics).
- Cross-asset: Investing.com (MOVE); MarketWatch (DXY); Reuters reporting via The Guardian (gold).
- CDX / iTraxx: CBonds (CDX spreads); LSEG/LCH settlement reporting (iTraxx Xover).