

A Descriptive Cross-Asset Performance Comparison

2000–2026

USD returns | monthly primary metrics | daily drawdown diagnostics | weekly correlation

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Research Note

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This document is a descriptive, ex-post comparison of realized historical performance under stated data, return-basis, currency, and sample-window assumptions. It is **not** a forecast, a trading-strategy backtest, a factor model, or investment advice. All figures are evidence-bound to the generated tables and exhibits.

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Abstract

This note presents a disciplined, ex-post comparison of realized cross-asset performance over 2000–2026 across equity indices, selected US stocks, commodities, currencies, cash, and bonds. Returns are evaluated in USD, with monthly returns as the primary basis, daily NAV for drawdown diagnostics, and weekly returns for rolling correlation. We make the comparison honest by labelling every return basis, separating ETF proxies from formal indices, unifying the risk-free window so risk-adjusted metrics span the same period as raw returns, and attaching statistical significance to conditional ‘defensive’ claims. Three results stand out: (i) full-sample rankings are an artefact of unequal histories — on an equal window the CAGR leader changes; (ii) a single risk-free-consistent window materially lowers headline Sharpe ratios; and (iii) classic crisis hedges are directionally helpful but mostly **not** statistically significant. The study is descriptive only.

Key Findings

Three things a careful reader should take away

1. **The window trap.** Tesla tops full-available CAGR only because its history begins in 2010; on a common window Nvidia leads. Never compare full-available rows without equal windows.
2. **Risk-free consistency matters.** Extending the risk-free series back to 2000 so Sharpe spans the same window as CAGR and drawdown moves the common-window Sharpe leader to Nvidia and lowers headline ratios.
3. **‘Defensive’ is mostly not significant.** Gold has the highest average return in S&P 500 down months (+0.9%) but is not significant ($p = 0.09$); Treasuries are the only reliably positive hedge ($p = 0.04$).

The full evidence-bound finding set, with evidence traceability and statistical significance, is:

- **KF01.** In FULL_AVAILABLE, Tesla has the highest observed CAGR (CAGR 40.89%) among standard comparable rankable assets, but full-available windows are not equal length. On an equal-window comparison from 2012-05-18 (the latest inception among the top CAGR assets), Nvidia has the highest CAGR instead, so this ranking is an artifact of unequal start dates. (*evidence: high; significance: n/a - ranking reverses under an equal-length window (see equal-window CAGR table)*)
- **KF02.** In COMMON_2000_CORE, Nvidia has the highest Sharpe (Sharpe 0.77) among standard comparable rankable assets. (*evidence: high; significance: n/a (descriptive point-estimate ranking; no significance test)*)
- **KF03.** In COMMON_2000_CORE, Cash (3M T-bill) has the least severe max drawdown among standard comparable rankable assets. (*evidence: high; significance: n/a (descriptive point-estimate ranking; no significance test)*)
- **KF04.** In COMMON_2013_MAG7, Nvidia has the highest CAGR among the selected Mag 7 comparison assets and benchmarks. (*evidence: high; significance: n/a (descriptive point-estimate ranking; no significance test)*)
- **KF05.** In COMMON_2000_CORE monthly USD returns, the strongest pairwise correlation is S&P 500 (TR) / Dow Jones (0.95). (*evidence: high; significance: n/a (descriptive point-estimate ranking; no significance test)*)
- **KF06.** In COMMON_2000_CORE monthly USD returns, the weakest pairwise correlation (closest to zero, i.e. least linearly related) is S&P 500 (TR) / JPY (0.00). The strongest inverse relationship is JPY / US Dollar (DXY) (-0.46); a large negative correlation is strong, not weak. (*evidence: high; significance: n/a (descriptive point-estimate ranking; no significance test)*)
- **KF07.** The highest latest rolling correlation versus formal S&P 500 is ACWI (proxy) for the 156-week window. (*evidence: high; significance: n/a (descriptive point-estimate ranking; no significance test)*)
- **KF08.** Configured regime best full-window performers vary across regimes rather than being a single asset throughout history. (*evidence: high; significance: n/a (descriptive point-estimate ranking; no significance test)*)
- **KF09.** In COVID_CRASH, Nvidia is the best full-window performer by configured-window total return (+11.6% total return). Over the same window its intra-window daily peak-to-trough drawdown was -37.6%, because the monthly 2020-02-01 to 2020-03-31 window includes the early-February pre-crash rally. (*evidence: high; significance: n/a - total-return ranking; the monthly window includes the pre-crash February rally (see intra-window drawdown)*)
- **KF10.** During S&P 500 down months, Gold has the highest average conditional return among standard comparable assets. Mean +0.88% over n=106 months ($t=1.71$, $p=0.09$), not statistically significant at

5%. This is a point-estimate ranking, not evidence of a reliable edge. (*evidence: high; significance: not significant* ($t=1.71, p=0.09, n=106$))

- **KF11.** During S&P 500 $\leq -5\%$ months, Gold has the highest average conditional return among standard comparable assets. Mean +1.58% over $n=35$ months ($t=1.49, p=0.15$), not statistically significant at 5%. This is a point-estimate ranking, not evidence of a reliable edge. (*evidence: high; significance: not significant* ($t=1.49, p=0.15, n=35$))
- **KF12.** WTI crude is excluded from standard NAV-based rankings because CL=F negative prices create invalid standard long-only NAV behavior. (*evidence: high; significance: n/a (descriptive point-estimate ranking; no significance test)*)

1. Introduction

Cross-asset comparison is deceptively hard. Return series differ by construction — total return, price return, ETF-proxy return, spot-FX return, cash accumulation, and front-futures proxy return are not the same economic claim — and assets have different inception dates, so a naive ranking can reward an accident of history rather than performance. This note adopts the USD investor’s lens and a small set of guardrails so that each comparison is apples-to-apples or is explicitly labelled when it is not. We do not forecast, optimise a portfolio, or recommend any asset; we describe what realized 2000–2026 outcomes were under stated assumptions.

2. Data and Methodology

The configured universe contains 29 assets (26 Core, plus three Extended controls). Return bases are labelled per series. Crucially, index return basis is **mixed and not interchangeable**: the S&P~500 uses a formal total-return series (dividends reinvested), whereas the Dow, Nasdaq~100, FTSE, Nikkei, Hang Seng, and China indices are price return. Because the S&P~500 is also the conditioning and correlation benchmark, level and CAGR comparisons against price-return indices carry an implicit dividend advantage of roughly 1.5–2% per year.

Return-basis and frequency rules.

- Stocks and ETF proxies use adjusted close (total return). Formal index series are used where available.
- Commodities (gold, WTI, copper) are Yahoo front-futures price proxies, not futures total-return indices.
- Monthly returns are primary; daily NAV drives drawdown/recovery; weekly returns drive rolling correlation.
- FX is converted to USD with explicit multiply/divide rules and forward-fill only (no look-ahead).
- WTI is excluded from standard NAV rankings because negative 2020 prices invalidate long-only NAV.

Risk-free treatment (corrected). The risk-free series (FRED DGS3MO) now begins in 2000, so Sharpe and Sortino span the same window as CAGR and drawdown for assets that start in 2000. This removes a prior inconsistency in which risk-adjusted metrics silently excluded the 2000–2002 dot-com decline.

Sample windows. FULL_AVAILABLE (each asset’s own history), COMMON_2000_CORE, COMMON_2013_MAG7, and COMMON_PROXY_AVAILABLE. Full-available rows are never equal length.

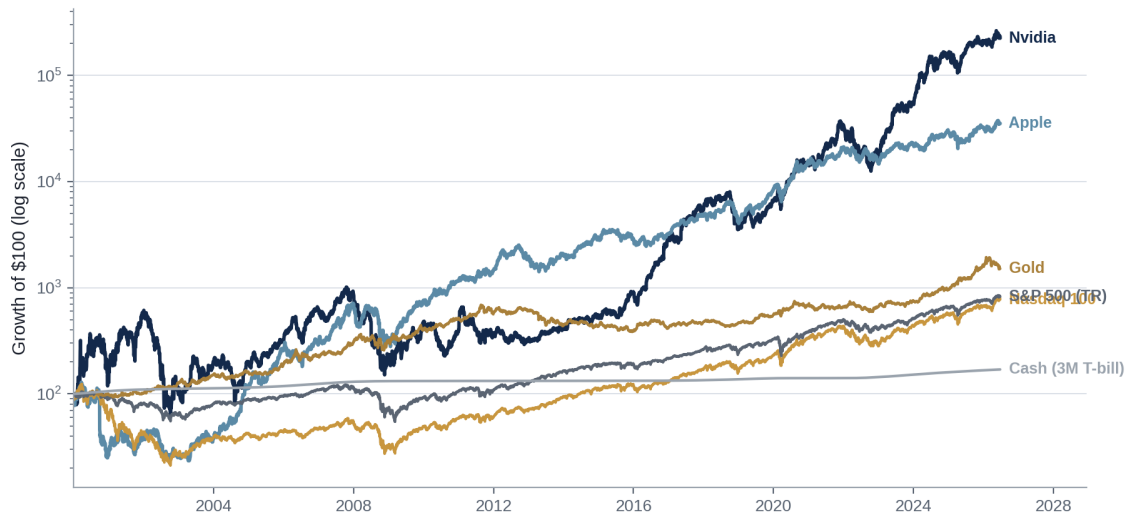
3. Results

3.1 Long-run performance and the window trap

Over the common 2000 window, US mega-cap equities compounded far above broad indices, gold, and cash (Exhibit 1). But the full-available CAGR ranking is misleading: it mixes long and short histories. Recomputing CAGR on a single equal window (Exhibit 2 and Table 1) flips the leader from Tesla to Nvidia.

Growth of \$100, USD total/price return

Common 2000 window. Mega-cap equities compounded far above broad indices and cash.

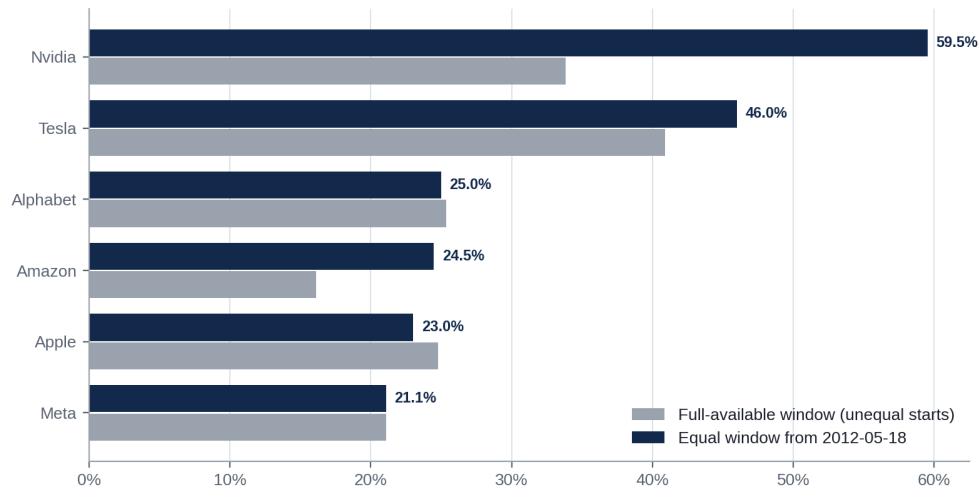


Source: Cross-Asset Research Lab. nav_usd_daily; S&P 500 total return, others as labeled. | Descriptive ex-post study — not a forecast, strategy, or investment advice.

Exhibit 1. Growth of \$100 in USD, common 2000 window, log scale.

The window trap: CAGR rankings flip on equal windows

Tesla leads full-available CAGR only because its history starts later; on a common 2012-05-18 window Nvidia leads.



Source: Cross-Asset Research Lab. equal_window_cagr_full_available.csv. | Descriptive ex-post study — not a forecast, strategy, or investment advice.

Exhibit 2. Full-available versus equal-window CAGR for the top compounders.

Table 1. Highest full-available CAGR (windows differ by asset).

Asset	CAGR	Sharpe	Max DD	Start
Tesla	40.9%	0.82	-74%	2010-06-29

Asset	CAGR	Sharpe	Max DD	Start
Nvidia	33.8%	0.77	-90%	2000-01-03
Alphabet	25.3%	0.84	-65%	2004-08-19
Apple	24.8%	0.76	-82%	2000-01-03
Meta	21.1%	0.73	-77%	2012-05-18
Amazon	16.1%	0.56	-93%	2000-01-03

Table 2. The same assets on one equal window.

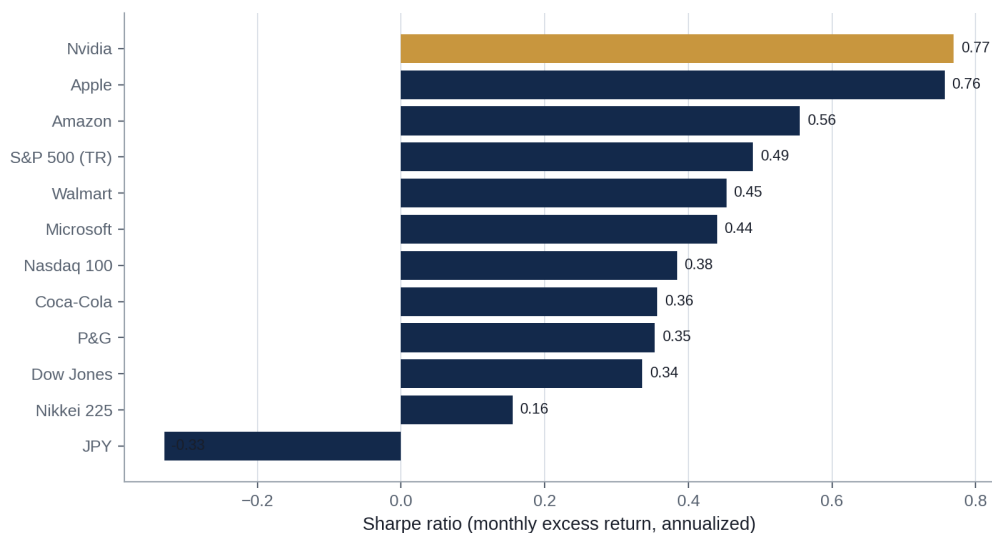
Asset	Full-available CAGR	Equal-window CAGR (from 2012-05-18)
Nvidia	33.8%	59.5%
Tesla	40.9%	46.0%
Alphabet	25.3%	25.0%
Amazon	16.1%	24.5%
Apple	24.8%	23.0%
Meta	21.1%	21.1%

3.2 Risk-adjusted performance

On the risk-free-consistent window, Nvidia — not Apple — has the highest common-window Sharpe (Exhibit 3, Table 3). The previous Apple result reflected a 2003 risk-free start that excluded Apple’s -72% 2000–2002 drawdown from its Sharpe but not from its CAGR. Higher realized returns came with higher volatility (Exhibit 4).

Risk-adjusted leader: Nvidia, over a unified 2000 window

Common 2000 window. Risk-free now starts in 2000, so Sharpe spans the same period as CAGR and drawdown.

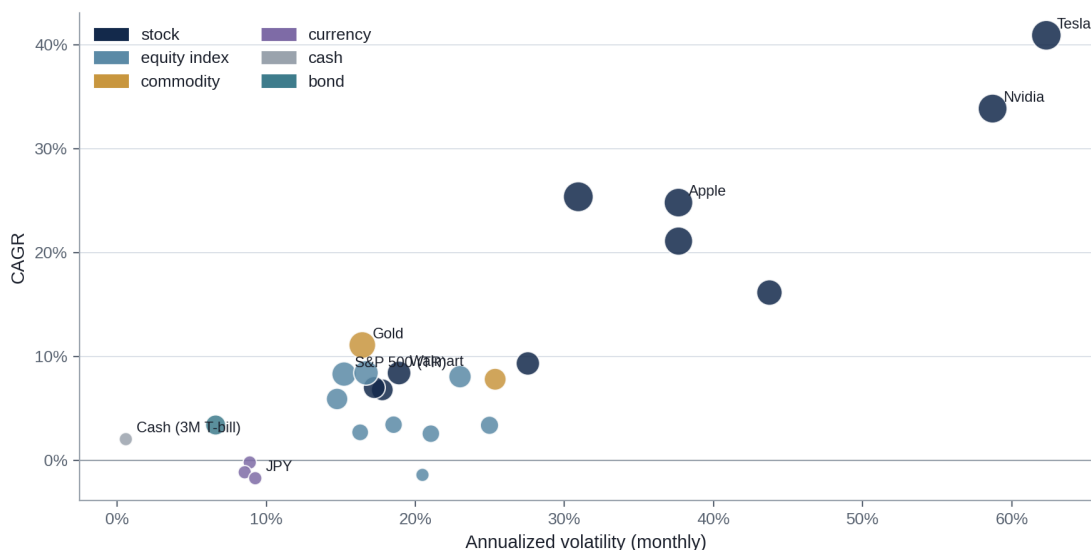


Source: Cross-Asset Research Lab. ranking_summary.csv. Excludes cash from the highlight. | Descriptive ex-post study — not a forecast, strategy, or investment advice.

Exhibit 3. Sharpe ratios, common 2000 window (risk-free now starts in 2000).

Risk and return are not free lunches

Full-available window; marker size scales with Sharpe. Higher returns came with higher volatility.



Source: Cross-Asset Research Lab. ranking_summary.csv. Windows differ by asset. | Descriptive ex-post study — not a forecast, strategy, or investment advice.

Exhibit 4. Risk and return, full-available window; marker size scales with Sharpe.

Table 3. Highest common-window Sharpe (cash excluded from the highlight).

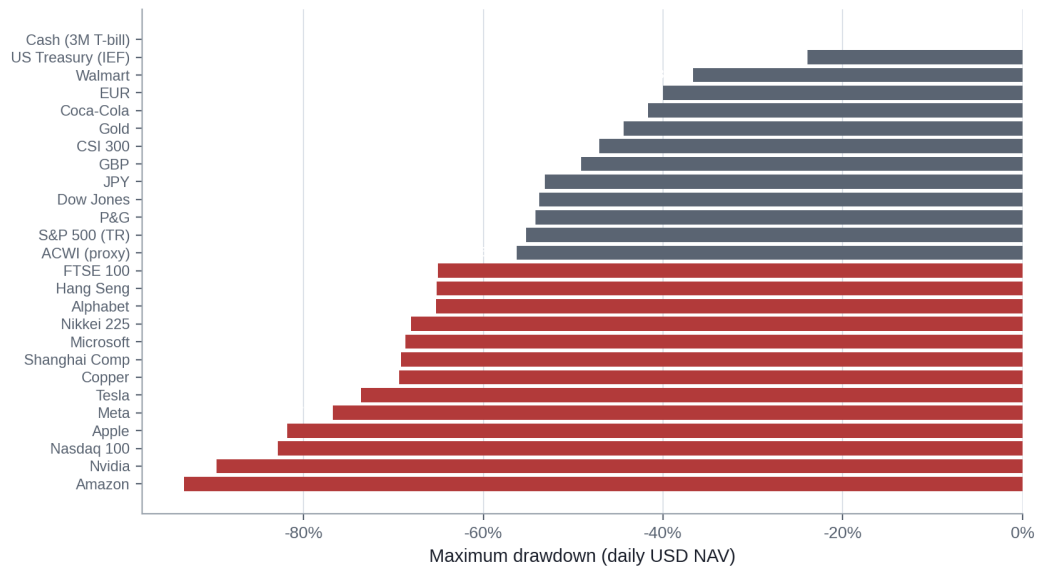
Asset	Sharpe	CAGR	Max DD
Nvidia	0.77	33.8%	-90%
Apple	0.76	24.8%	-82%
Amazon	0.56	16.1%	-93%
S&P 500 (TR)	0.49	8.3%	-55%
Walmart	0.45	8.4%	-37%
Microsoft	0.44	9.3%	-69%

3.3 Drawdowns and tail risk

Deep drawdowns are the price of compounding: the strongest compounders also suffered the largest peak-to-trough losses (Exhibit 5). Monthly tail risk (95% CVaR) is deepest for single commodities and stocks (Exhibit 6). Excluding cash (zero drawdown by construction), Walmart is the least-drawdown investable risk asset in the common 2000 window.

Maximum drawdown: the price of compounding

Full-available window. WTI excluded (negative-price NAV); cash near zero by construction.

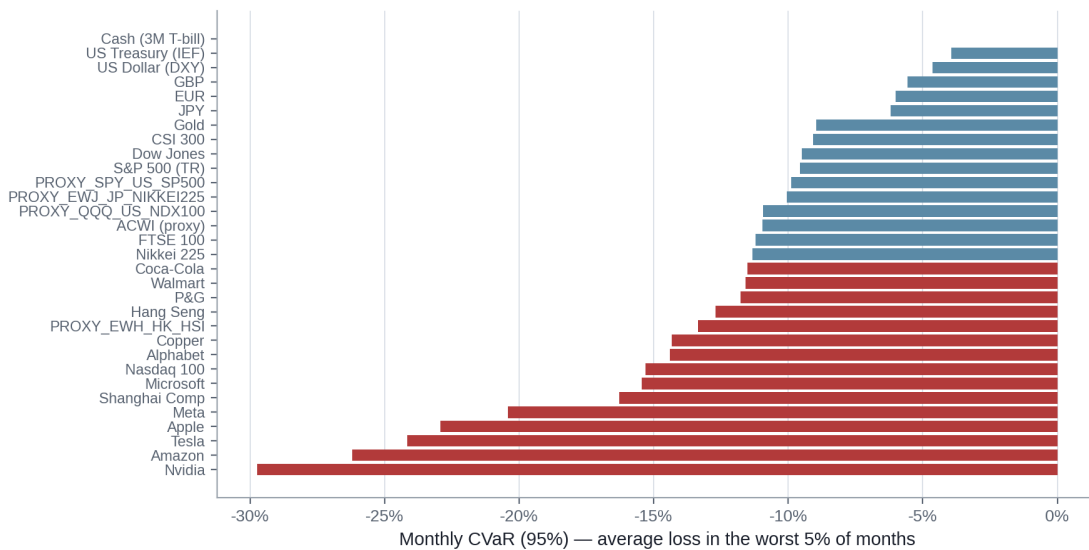


Source: Cross-Asset Research Lab. ranking_summary.csv. | Descriptive ex-post study — not a forecast, strategy, or investment advice.

Exhibit 5. Maximum drawdown on daily USD NAV, full-available window (WTI excluded).

Tail risk: average loss in the worst months

Full-available window. Commodities and single stocks carry the deepest monthly tails.



Source: Cross-Asset Research Lab. tail_risk_summary.csv. | Descriptive ex-post study — not a forecast, strategy, or investment advice.

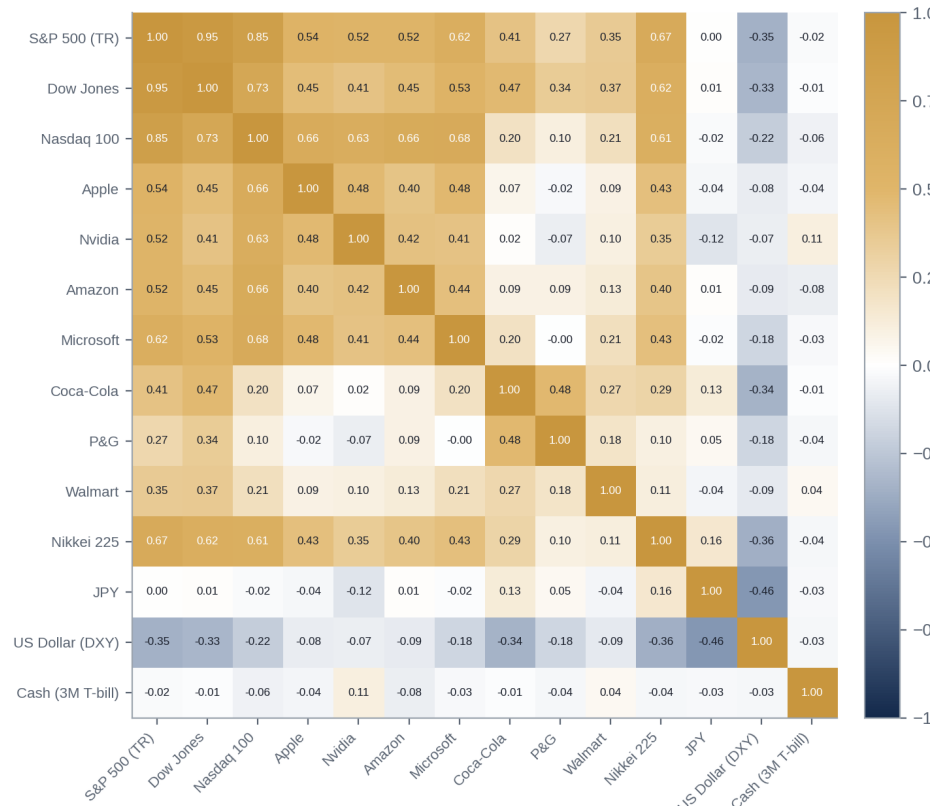
Exhibit 6. Monthly CVaR (95%): average loss in the worst 5% of months.

3.4 Correlation and diversification

US large-cap indices are nearly redundant (S&P~500 / Dow = 0.95). The strongest *inverse* relationship is the yen versus the US dollar index (-0.46) — a strong negative correlation, which is distinct from the *weakest* (closest-to-zero) pair, the S&P~500 and the yen (≈ 0.00). Exhibit 7 shows the full matrix.

Monthly return correlations, common 2000 window

S&P 500 / Dow are nearly identical (0.95); the dollar moves inversely to equities and the yen.



Source: Cross-Asset Research Lab. correlation_monthly_usd_common_2000_core.csv. | Descriptive ex-post study — not a forecast, strategy, or investment advice.

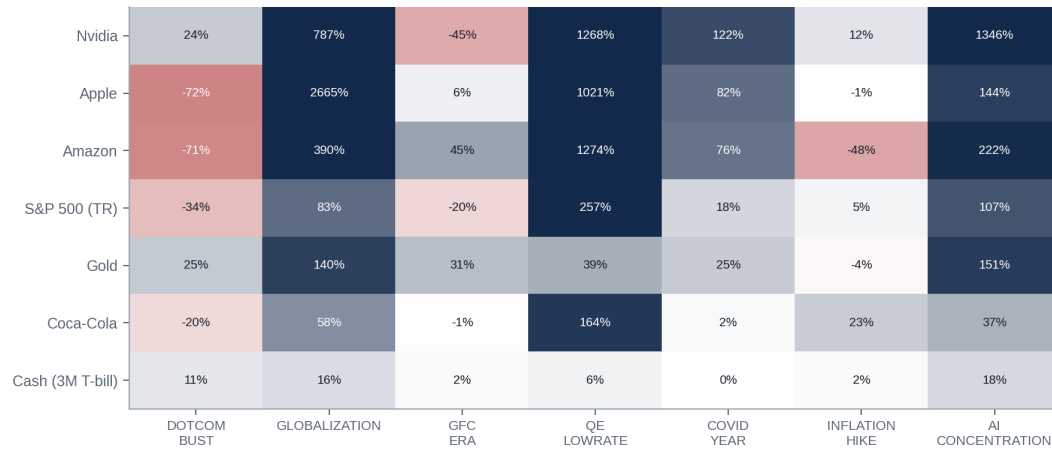
Exhibit 7. Monthly USD-return correlations, common 2000 window.

3.5 Regimes: leaders rotate

Across configured macro regimes, the best performer rotates — there is no single all-weather winner (Exhibit 8). Regime windows are fixed ex ante; the labels are descriptive, not predictive.

Regime leaders rotate — no single all-weather winner

Total return by configured macro regime. Different assets lead each period.



Source: Cross-Asset Research Lab. regime_rankings.csv. Colour compresses extremes (tanh). | Descriptive ex-post study — not a forecast, strategy, or investment advice.

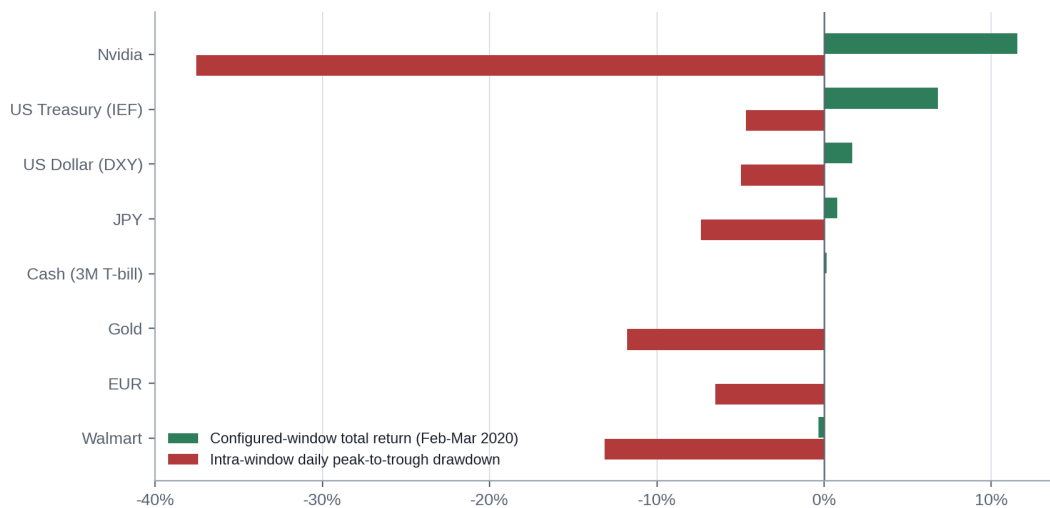
Exhibit 8. Total return by configured macro regime (colour compresses extremes).

3.6 Crisis lens and conditional defensiveness

Monthly crisis windows can mislead. Nvidia tops COVID total return (11.6%) only because the monthly 2020-02-01 to 2020-03-31 window includes the early-February pre-crash rally; its intra-window daily peak-to-trough drawdown was -38% (Exhibit 9). The defensive picture is more honest still when we attach significance: gold has the highest average return in down months, yet that mean is not statistically distinguishable from zero, while Treasuries are (Exhibit 10, Table 4).

Crisis lens: a monthly 'winner' that still crashed

Nvidia tops COVID total return (+11.6%) only because the monthly window includes the early-Feb rally — it fell 38% intra-crisis.

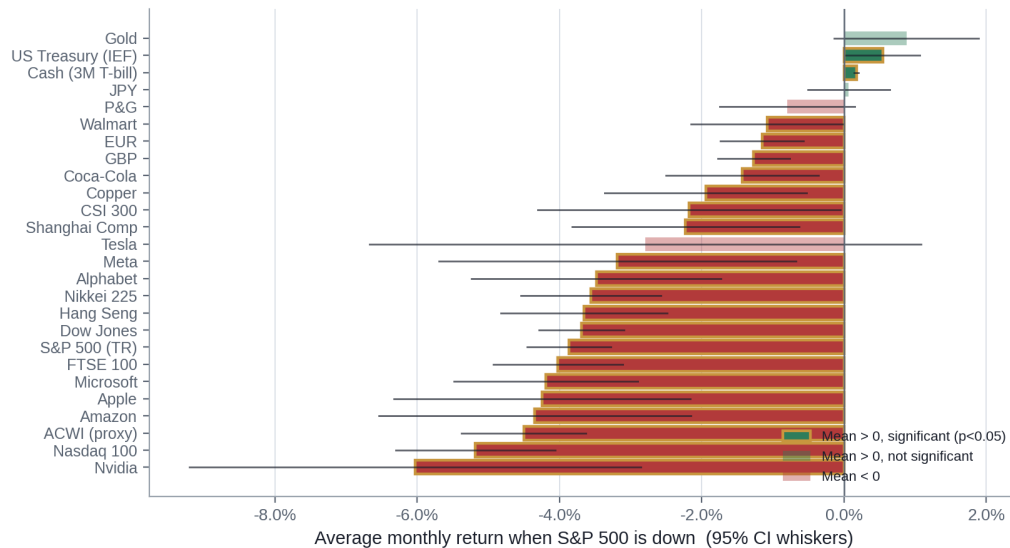


Source: Cross-Asset Research Lab. crisis_performance_summary.csv. Window 2020-02-01 to 2020-03-31. | Descriptive ex-post study — not a forecast, strategy, or investment advice.

Exhibit 9. COVID crash: monthly total return versus intra-window daily drawdown.

Defensive in down months — but mostly not significant

Gold has the highest mean (+0.9%) yet is not significant (p=0.09); Treasuries are the only reliably positive hedge (p=0.04).



Source: Cross-Asset Research Lab. sp500_down_months_conditional_returns.csv. n shown in source table. | Descriptive ex-post study — not a forecast, strategy, or investment advice.

Exhibit 10. Average return in S&P-500 down months, with 95% CIs; gold-edged bars are significant.

Table 4. Conditional returns in S&P~500 down months, with significance.

Asset	Mean	Hit rate	n	t	p	Sig 5%
Gold	0.9%	53%	106	1.71	0.09	no
US Treasury (IEF)	0.5%	56%	88	2.10	0.04	yes
Cash (3M T-bill)	0.2%	100%	110	10.86	0.00	yes
JPY	0.1%	51%	110	0.23	0.81	no
P&G	-0.8%	45%	110	-1.67	0.10	no
Walmart	-1.1%	41%	110	-2.00	0.05	yes

4. Discussion

The realized 2000–2026 sample is dominated by a handful of ex-post successful US firms. That dominance is descriptive evidence, not a predictive claim, and it is sensitive to four choices a reader can verify: the sample window, the return basis, the currency lens, and the crisis/regime definition. The corrections in this note — unifying the risk-free window, surfacing intra-window crisis drawdowns, separating weakest from most-negative correlation, and testing conditional means — each move a headline claim toward a more defensible statement without changing the underlying data.

5. Limitations

All results must be read with the caveat set below. High-severity caveats are not summarised away.

ID	Sev.	Category	Caveat
C01	high	scope	Descriptive ex-post study only; not a forecast, trading strategy backtest, or investment advice.
C02	high	return basis	Price-return and total-return series are not directly equivalent.
C03	high	proxy	ETF proxies are not formal index replacements.
C04	high	commodity proxy	Yahoo front futures are front-futures price proxies, not futures total-return indices.
C05	high	invalid nav	CL=F negative prices in 2020 make CMD_WTI invalid for standard non-negative long-only NAV interpretation.
C06	medium	extended control	CSI300 / 000300.SS is a price series, not a total-return series.
C07	medium	extended control	ACWI is an ETF proxy, not a formal world equity total-return index.
C08	high	risk free	DGS3MO-derived monthly risk-free returns start 2000-02-29; risk-free metrics begin no earlier than that date. Sharpe/Sortino therefore share the same window as CAGR/drawdown for assets whose history begins on or after it.
C09	high	date policy	Monthly primary analysis excludes partial June 2026 and ends 2026-05-31.
C10	medium	sample window	Full-available sample windows differ by asset.
C11	medium	selection bias	Selected US stock universe includes ex-post known winners and defensive names.
C12	medium	currency	USD conversion uses configured FX rules and can materially change local-currency results.
C13	medium	implementation	No transaction costs, taxes, withholding taxes, slippage, borrowing costs, or implementation frictions are modeled.
C14	low	risk free stale fill	Short FRED publication lag is forward-filled only for risk-free rates within configured stale-fill limits.
C15	high	numeraire	FX_USD_FLAT is a numeraire reference, not a ranked investment asset.

6. Conclusion

Under the stated assumptions, realized cross-asset performance depends strongly on sample window, return basis, currency lens, and crisis/regime definition. Disciplined labelling and basic inference turn an attractive but fragile set of rankings into honest descriptive evidence. No result here is a forecast, a strategy, or a recommendation.

Data Sources and Reproducibility

Prices and FX: Yahoo Finance (adjusted close, formal indices where available, front-futures proxies, ETF proxies). Risk-free: FRED DGS3MO (3-month T-bill), 2000 onward. All exhibits and tables are regenerated by the pipeline (`scripts/02-06`, `scripts/10`) from the processed datasets; every figure cites its source table. Transaction costs, taxes, withholding, and slippage are not modelled.