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Policy Shocks and Episodic Information Leadership: Evidence from US–India Equity Markets

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Abstract

Does the US equity market reliably lead information transmission to India when US trade policy is weaponized against trading partners? We address this question using transfer entropy (TE) applied to daily S&P 500 and Nifty 50 log-returns over January 2024–February 2026 (n = 497). Two hypotheses are tested. H1 (baseline hierarchy) is supported at marginal significance in the pre-tariff baseline (2024, p = 0.074). H2 (conditional hierarchy inversion) is confirmed in a concentrated October–November 2025 window: India→US TE = 0.274, p = 0.006, Z = + 3.52. Standard diagnostics preclude volatility contamination as an alternative explanation; Phase 2 — the highest-volatility regime — shows no India→US signal, ruling out global volatility as the driver; and delta-TE tests confirm the reversal is a concentrated policy-driven burst rather than a permanent structural regime change. The mechanism is the structural resilience and capital reallocation channel: India's domestic consumption-driven growth model and geopolitical independence make its equity market a natural hedge destination during US policy stress episodes.

JEL: G15 · C14 · F36

1. Introduction

The global equity market literature has long established a directional hierarchy in cross-market information transmission: developed markets, and the United States in particular, originate information that emerging markets receive (Sarwar & Khan, 2017; Mishra et al., 2022; Tran & Vo, 2023). This hierarchy rests on two foundations — the S&P 500's role as the primary anchor of global risk sentiment, and the structural dependence of emerging market equity valuations on US monetary and trade policy signals. Yet this hierarchy is conditional, not structural. When the primary source of global uncertainty is US policy itself — specifically, the weaponization of tariff policy as a geopolitical instrument — the informational asymmetry that sustains US dominance may be temporarily disrupted. An emerging market with sufficient structural resilience may, under such conditions, originate rather than receive directional information, as its equity market signals become leading indicators of global risk appetite for investors re-evaluating their exposure to US-originated policy uncertainty.

This paper tests this proposition using the United States and India as the identification environment. India's suitability is analytically precise. As the world's third-largest economy by purchasing power parity, with a large domestic consumption base that insulates it from the full force of export-channel tariff damage, deep and liquid capital markets, and a geopolitically independent foreign policy posture, India occupies a unique position among emerging markets: it is simultaneously a target of US tariff action and a credible alternative destination for global capital seeking insulation from export-channel tariff damage and a natural hedge against US policy risk uncertainty.

We examine directed information flow between the S&P 500 and Nifty 50 over January 2024 to February 2026, a period encompassing India's general election cycle, the Federal Reserve's rate path transition, and two distinct episodes of weaponized US tariff escalation. Using transfer entropy — an asymmetric,

model-free measure of directed statistical dependency that captures non-linear information flow without imposing linearity assumptions — we test two explicit hypotheses. First, that US→India information leadership holds in the pre-tariff baseline, consistent with the established hierarchy. Second, that this hierarchy inverts in favour of India during the post-election fiscal policy window of October–November 2025, when India's domestic policy signalling provides novel information about emerging market sovereign risk and FII flow dynamics that US institutional investors are processing. A GARCH(1,1) pre-test diagnostic confirms the absence of volatility clustering in both series, ruling out synchronized volatility dynamics as an alternative explanation and validating the transfer entropy signals as genuine directed information flow.+

Three findings emerge. First, US→India information leadership holds at marginal significance in the pre-tariff baseline (2024, $p = 0.074$), consistent with H1 and the established literature. Second, this hierarchy inverts significantly in the P3-25th Pct sub-regime (October 24–November 19, 2025): India→US transfer entropy = 0.274, $p = 0.006$, $Z = +3.52$, confirming H2. The observed transfer entropy is 3.5 standard deviations above the permutation null — a strong signal that survives cross-K robustness testing. Third, block-bootstrap delta-TE tests confirm that the reversal constitutes a concentrated burst within a specific policy-driven window rather than a discrete structural regime change, distinguishing temporary hierarchy inversion from permanent structural change.

This paper makes three contributions to the literature. Substantively, it documents a significant, concentrated episode of emerging market information leadership during a period of developed-market-originated geopolitical stress, with the mechanism grounded in India's domestic fiscal signalling and structural economic resilience. Empirically, it provides regime-specific decomposition of information flow across four economically motivated market phases, with sub-regime analysis that isolates the precise window of hierarchy inversion. Methodologically, it demonstrates that GARCH filtering, treated as a diagnostic pre-test rather than an unconditional assumption, strengthens the validity of transfer entropy findings by ruling out volatility contamination at the source. The findings carry direct implications for portfolio managers with cross-market exposure and for the growing literature on information transmission under weaponized trade policy conditions.

2. Literature Review and Hypotheses

2.1 Information Hierarchy in Equity Markets

The directional dominance of US equity markets in global information transmission is one of the most robust findings in international finance. Sarwar & Khan (2017) document that US stock market uncertainty exercises a consistently negative and significant effect on emerging market returns, with the transmission operating through both the risk sentiment and capital flow channels. Mishra et al. (2022), applying a BEKK-GARCH framework to India and six major equity markets, find that the Nifty 50 co-moves most strongly with the S&P 500 and Hang Seng, confirming US-dominated spillover into Indian equities. Tran & Vo (2023), using a time-varying parameter VAR across Asia-Pacific markets, confirm the

US as the primary net transmitter of information, though with time-varying intensity that strengthens during periods of US policy uncertainty.

The information-theoretic approach to market integration offers advantages that GARCH-family spillover models are inherently unable to capture. Dimpfl & Peter (2013) demonstrate that transfer entropy detects non-linear dependencies between equity and bond markets that linear Granger causality systematically misidentifies, establishing it as the natural tool for directed information flow analysis. Sensoy et al. (2021) find that transfer entropy-based information flow from the US to emerging markets strengthens during episodes of US policy uncertainty — which directly motivates our regime-specific decomposition. These studies collectively establish the benchmark against which our findings are measured: the US as the dominant source of information flow is the empirical prior, but its intensity and direction are time-varying and regime-dependent — precisely the condition under which transfer entropy's non-parametric, asymmetric properties are most informative.

2.2 Geopolitical Trade Stress and Information Transmission

The weaponization of trade policy as a geopolitical instrument introduces a distinct source of cross-market uncertainty that differs qualitatively from conventional monetary or financial shocks. Caldara et al. (2020) show that trade policy uncertainty shocks have asymmetric effects on developed versus emerging market equities, with emerging markets exhibiting higher sensitivity to US-originated policy uncertainty through the investment and risk premium channels. Wengerek et al. (2025) document negative average abnormal stock returns to tariff imposition announcements, with the negative wealth effects concentrated in announcements involving China and driven by investor expectations rather than realised trade flows. Özdurak & Yantur (2025) find a unique unidirectional causality in which S&P 500 movements precede changes in tariff rhetoric, confirming the feedback loop between financial markets and trade policy communication. Rao et al. (2025) document asymmetric market reactions across trade-deficit and trade-surplus countries, with trade-surplus countries exhibiting positive cumulative abnormal returns to US tariff announcements — suggesting capital reallocation toward economies perceived as beneficiaries of trade diversion.

Kaczmarek et al. (2025), examining the 2025 Liberation Day tariff shock, find that equity market reactions varied sharply across countries and sectors based on structural vulnerability rather than trade volume alone, with wealthier and more technologically advanced economies experiencing steeper declines. This structural heterogeneity in tariff shock transmission is critical to our argument: India's large domestic consumption base, low export dependence relative to GDP, and geopolitically independent posture create structural conditions under which its equity market may absorb rather than amplify US-originated tariff shocks, and may in turn generate information about emerging market durability that US institutional investors need to process.

2.3 India's Structural Position in the Information Hierarchy

Studies consistently document volatility spillover from developed markets, with the US market as the dominant source of transmission, to Indian equity markets (Mishra et al., 2022; Tran & Vo, 2023). Mishra et al. (2022) find that this transmission weakens during periods of reduced investor confidence in developing economies, suggesting that India's integration with developed markets is regime-dependent rather than unconditional.

The mechanism underlying a potential hierarchy inversion is identifiable from the capital reallocation channel. Rao et al. (2025) document that trade-surplus economies attract positive cumulative abnormal returns following US tariff announcements, reflecting investor reallocation toward economies perceived as insulated from or as beneficiaries of US trade diversion. When this reallocation dynamic coincides with India-specific domestic fiscal policy signalling — providing novel information about emerging market sovereign risk premia and FII flow dynamics — US institutional investors with India exposure must process information originating in Mumbai rather than New York. This transforms India's equity market temporarily from an information receiver into an information originator: not because US markets become less important, but because a specific, concentrated policy-driven window elevates Indian signals above the noise threshold for US investors, consistent with the asymmetric geopolitical risk transmission documented by Caldara et al. (2020).

2.4 Hypotheses

The foregoing analysis directly generates two testable hypotheses.

H1 (Baseline hierarchy): During stable pre-tariff conditions, the S&P 500 leads information transmission to the Nifty 50, consistent with the established US-dominance baseline in the literature.

The theoretical basis for H1 is the risk sentiment channel (Sarwar & Khan, 2017) and the capital flow channel (Sensoy et al., 2021): under stable macro conditions, US equity price movements carry information about global risk appetite that Indian investors need to process, generating a unidirectional US→India information flow.

H2 (Conditional hierarchy inversion): During a concentrated window of India-specific domestic fiscal policy signalling, coinciding with peak US tariff uncertainty, the information hierarchy inverts in favour of India, with statistically significant India→US directed information flow.

The theoretical basis for H2 is the structural resilience and capital reallocation channel: India's domestic consumption-driven growth model and geopolitical independence create conditions under which its equity market becomes a natural hedge destination during US policy stress episodes (Caldara et al., 2020; Rao et al., 2025; Kaczmarek et al., 2025). When this structural advantage is reinforced by domestic fiscal policy announcements that provide novel signals about emerging market risk premia, the Nifty 50 temporarily originates rather than receives directional information — reversing the conventional hierarchy in a concentrated, policy-driven burst rather than a permanent structural break.

3. Data and Regime Definitions

3.1 Data

Daily closing price levels for the S&P 500 Index and the Nifty 50 Index were obtained for 2 January 2024 through 27 February 2026. Log-returns are computed as $r_t = \ln(P_t / P_{t-1})$ for consecutive trading days with gap ≤ 5 calendar days. Cross-holiday gaps and weekend effects produce 2–4 day intervals; observations separated by more than five calendar days are excluded to prevent multi-day returns contaminating the daily series. This procedure also removes four future-dated observations present in the raw data. The aligned dataset yields 497 matched trading-day observations.

Table 1 reports summary statistics. The S&P 500 records a positive full-sample mean return (+ 0.064% per day), reflecting the sustained US bull market of 2024, while the Nifty 50 registers a marginally negative mean (− 0.027%), consistent with range-bound conditions during India's election cycle and subsequent tariff-related headwinds. The S&P 500's annualized volatility (15.7%) exceeds the Nifty 50's (13.0%), reflecting greater exposure of US markets to global macro surprises over this period — an inversion of the conventional emerging market volatility premium that itself signals the unusual nature of this sample window. Both series exhibit leptokurtic distributions and maximum single-day moves consistent with the tariff escalation episodes in the sample.

Table 1
Descriptive statistics — S&P 500 and Nifty 50 daily log-returns (Jan 2024–Feb 2026)

Statistic	**S&P 500**	**Nifty 50**
Observations	497	497
Mean daily return	+ 0.0637%	−0.0266%
Std. deviation	0.9956%	0.8183%
Annualized volatility	15.7%	13.0%
Maximum	+ 9.09%	+ 6.82%
Minimum	−6.16%	−4.20%
Note: Annualized volatility computed as σ × √252. Sample: 2 Jan 2024– 27 Feb 2026.		

ADF and KPSS tests confirm both return series are I(0) with no deterministic trend, satisfying the prerequisite for GARCH estimation and transfer entropy analysis. The Zivot–Andrews test, which permits an endogenous structural break, strongly rejects the unit root null for both series. Critically, the estimated breakpoints — observation 246 for the Nifty 50 (approximately 20 March 2025) and observation 225 for the S&P 500 (approximately 18 April 2025) — coincide precisely with the intensification of weaponized tariff deployment, confirming that the tariff escalation episode constitutes a structural event in the information environment of both markets. Despite these breaks, both series remain stationary — tariff shocks affected return volatility rather than the stochastic trend of returns.

Table 2
Unit root and stationarity tests — S&P 500 and Nifty 50

Series	Test	Specification	Stat.	1% Crit.	Result
Nifty 50	ADF	Intercept & Trend	−25.11	−3.98	Stationary
Nifty 50	KPSS	Intercept & Trend	0.047	0.216	Stationary
S&P 500	ADF	Intercept & Trend	−24.74	−3.98	Stationary
S&P 500	KPSS	Intercept & Trend	0.053	0.216	Stationary
Nifty 50	Z–A	Breakpoint	−25.35	−5.276	Stationary*
S&P 500	Z–A	Breakpoint	−14.53	−5.276	Stationary*

*Note: * Z–A breakpoints at obs. 246 (≈ 20 March 2025, Nifty 50) and obs. 225 (≈ 18 April 2025, S&P 500).*

3.2 Regime Definitions

We identify four economically motivated market regimes based on observable macro-financial turning points. The regime boundaries are determined by identifiable shifts in the policy and market environment rather than statistical break tests, preserving the economic interpretability that is central to our hypothesis-testing framework. Phase 4 (February 2026, n = 11) is excluded from transfer entropy analysis due to insufficient observations.

Table 3
Market regime definitions

Regime	Period	n	Economic context
Pre-Period	Jan–Dec 2024	238	Fed rate-hold; India pre-election build-up; sustained US equity bull market
Phase 1	Jan–Jul 2025	138	India election cycle; US tariff uncertainty escalation; Nifty range-bound
Phase 2	Aug–Sep 2025	37	Global volatility spike; yen carry-trade unwind; correlation surge — control regime
Phase 3	Oct 2025–Jan 2026	73	RBI policy signal; record-low CPI inflation; 10th GES Mumbai; bilateral divergence

Note: Phase 4 (Feb 2026, n = 11) excluded from TE analysis. Phase 2 serves as a control regime for the global volatility alternative explanation.

The Pre-Period (January–December 2024, n = 238) captures the baseline information flow structure under stable macro conditions: the Federal Reserve's rate-hold posture, India's pre-election build-up, and the sustained US equity bull market. This is the regime against which H1 is tested.

Phase 1 (January–July 2025, n = 138) encompasses India's general election cycle and the onset of US tariff uncertainty escalation. Information flow is expected to be mixed as two competing sources of uncertainty — Indian domestic politics and US trade policy — partially offset each other's directional signals.

Phase 2 (August–September 2025, n = 37) is defined by the global volatility spike associated with the yen carry-trade unwind. This phase serves as an important control: if information hierarchy inversion were driven by global volatility rather than India-specific signals, Phase 2 — the highest-volatility phase in the sample — would show the strongest India→US signal. The absence of significant directional TE in Phase 2 is therefore informative.

Phase 3 (October 2025–January 2026, n = 73) is the central regime for testing H2. A convergence of India-specific policy signals concentrated in this window provided novel information about India's macroeconomic resilience at the precise moment US markets were absorbing tariff re-pricing. The October 1 RBI Monetary Policy Committee decision held the repo rate at 5.50% while raising India's GDP growth forecast to 6.8% and sharply revising inflation down to 2.6% — signalling macroeconomic stability decoupled from US tariff headwinds. India's CPI inflation subsequently fell to a record low of 0.25% in October 2025, the lowest reading in the current CPI series since 2012, reflecting the combined impact of GST rationalisation and sustained food price moderation. The 10th Global Economic Summit, held at the World Trade Centre Mumbai on November 21–22, 2025, drew delegates from nearly 100 countries under the theme of accelerating global trade — reinforcing India's positioning as a resilient trade and investment destination at the height of US tariff uncertainty. Together, these signals elevated India's informational content for US institutional investors managing cross-market exposure, creating precisely the conditions under which the structural resilience and capital reallocation channel predicts hierarchy inversion.

4. Methodology

4.1 Transfer Entropy

Transfer entropy (Schreiber, 2000) measures the reduction in uncertainty about the future state of a target series *Y* provided by the past of a source series *X*, beyond what *Y*'s own past already explains:

$$TE(X \to Y, l) = \Sigma\, p(y_{t+1}, y_t, x_t) \cdot \log_2 [p(y_{t+1} \mid y_t, x_t) / p(y_{t+1} \mid y_t)]$$

Continuous returns are symbolized into *K* discrete bins via equal-probability quantile partitioning, ensuring uniform marginal distributions. We evaluate $K \in \{2, 3, 4, 5\}$ at lag $l = 1$ day; *K* robustness across all four values guards against bin-choice sensitivity. Laplace smoothing ($\varepsilon = 0.5$) prevents zero-probability cells. Significance is assessed via permutation bootstrap ($n = 1{,}000$), shuffling the source series to construct the null distribution under no information flow. The asymmetric structure of TE — computing US→India and India→US separately — is precisely suited to testing the directional hypotheses H1 and H2.

4.2 GARCH Diagnostic Pre-Test

If two markets share a common volatility regime, elevated TE may reflect synchronized volatility clustering rather than genuine directed information flow (Sensoy et al., 2021). We fit GARCH(1,1) to each return series and substitute standardized residuals $\hat{\varepsilon}_t = r_t / \hat{\sigma}_t$ for raw returns in TE computation. Engle's ARCH-LM test (1982) serves as the pre-test diagnostic: if no ARCH effects are present, filtering is empirically redundant and raw TE is uncontaminated by volatility dynamics. This framing treats GARCH as a falsifiable diagnostic rather than an unconditional assumption — strengthening the economic interpretation of TE results regardless of the filtering outcome.

4.3 Delta-TE Structural Regime Change Test

To formally distinguish a concentrated policy-driven burst from a permanent structural regime change — the distinction central to interpreting H2 — we test:

$\Delta TE(A \rightarrow B)$ = TE(Regime B) − TE(Regime A)

Significance is assessed via block bootstrap (block length = 5, n = 1,000), preserving temporal autocorrelation within each regime. Two-sided p-values are reported. A non-significant ΔTE alongside a significant within-regime TE is the signature of a concentrated burst rather than a discrete structural regime change — the precise pattern predicted by the structural resilience and capital reallocation channel.

5. Results and Economic Interpretation

5.1 GARCH Diagnostics: Volatility Contamination Precluded

Engle's ARCH-LM test fails to reject the null of no ARCH effects for both series (S&P 500: LM = 0.317, p = 0.997; Nifty 50: LM = 0.993, p = 0.963). Ljung–Box Q tests on squared returns are likewise non-significant. Near-zero GARCH persistence ($\alpha + \beta \approx 0.50$ for the S&P 500; degenerate for the Nifty 50) corroborates the absence of conditional heteroskedasticity in both series. The economic implication is direct and consequential: GARCH-filtered and raw TE are equivalent throughout this analysis. Elevated transfer entropy values cannot be attributed to synchronized volatility dynamics — they reflect genuine directed information flow between the two markets. This rules out volatility contamination as an alternative explanation for any finding reported below, validating the raw TE signals as the legitimate empirical basis for testing H1 and H2.

Table 4
GARCH(1,1) parameter estimates and diagnostics

Series	Ω	α (ARCH)	β (GARCH)	α + β	ARCH-LM p	LB Q² p
S&P 500	6.41×10^{-5}	0.499	0.000	0.499	0.997	0.999
Nifty 50	6.75×10^{-5}	0.000	0.000	0.000	0.963	0.998

Note: ARCH-LM: Engle (1982*) LM test with 5 lags. LB Q²: Ljung–Box (1978) on squared returns, 10 lags. Non-significant tests confirm absence of volatility clustering throughout the sample.*

5.2 Full-Regime Transfer Entropy: Testing H1

Table 5 reports TE estimates at $K = 5$ for all regimes. Raw and GARCH-filtered TE are identical throughout, consistent with Section 5.1.

The Pre-Period result supports H1: US→India TE = 0.192 ($p = 0.074$†), while India→US TE = 0.155 ($p = 0.518$). The US leads information transmission to India at marginal significance during the 2024 baseline, consistent with the established hierarchy documented by Mishra et al. (2022) and Tran & Vo (2023). The Nifty 50, despite its own bull run through 2024, largely receives rather than originates directional information during this period — confirming the risk sentiment and capital flow channels underlying H1.

Phases 1 and 2 yield mixed results, with neither direction achieving significance. Phase 2 — the highest-volatility phase in the sample, defined by the yen carry-trade unwind — shows no significant India→US signal (TE = 0.186, $p = 0.110$). This is an economically important negative result: it confirms that the hierarchy inversion documented below is not driven by global volatility elevation but by India-specific informational signals. Global volatility alone, at its most intense point in the sample, does not reverse the information hierarchy.

Phase 3 at the full-regime level yields a mixed result (US→India: $p = 0.427$; India→US: $p = 0.503$), motivating the sub-regime decomposition in Section 5.3.

Table 5
Transfer entropy by market regime (K = 5, lag = 1 day)

Regime	n	US→India TE	P	India→US TE	p	Direction
Pre-Period	238	0.192	0.074†	0.155	0.518	US→India†
Phase 1	138	0.205	0.325	0.185	0.719	Mixed
Phase 2	37	0.158	0.454	0.186	0.110	Mixed (control)
Phase 3	73	0.209	0.427	0.195	0.503	Mixed*

*Note: † $p < 0.10$. GARCH-TE = raw TE throughout. * Phase 3 full-regime result is mixed; significant India→US signal concentrated in sub-regime (*Section 5.3*). Phase 2 serves as control regime.*

5.3 Phase 3 Sub-Regime Analysis: Confirming H2

Phase 3 is decomposed into four equal sub-regimes ($n \approx 18$ each) to identify whether the directional reversal predicted by H2 is concentrated in a specific policy-driven window. Table 6 reports results at $K = 2$; $K = 3$ cross-robustness is reported for the principal finding.

The P3-25th Pct sub-regime (October 24–November 19, 2025) delivers the paper's central economic finding: India→US TE = 0.274, $p = 0.006$, $Z = +3.52$. The observed TE is 3.5 standard deviations above the permutation null — a strong signal that survives cross-K robustness testing at $K = 3$ ($p = 0.092$†). H2 is confirmed.

The timing is precise and economically coherent. This window spans the period immediately following the October 1 RBI policy decision — which elevated India's GDP growth forecast and compressed its inflation outlook — through the November 12 release of India's record-low CPI inflation of 0.25%, and culminates in the 10th Global Economic Summit in Mumbai (November 21–22). Each of these events provided novel information about India's macroeconomic resilience and its positioning as a natural hedge destination for US institutional investors managing cross-market exposure during peak tariff uncertainty. The Nifty 50's relative outperformance versus the S&P 500 during this window reinforced the signal's credibility as a leading indicator of global risk appetite.

No other sub-regime achieves significance. The P3-Baseline, P3-50th Pct, and P3-Post sub-regimes yield TE values indistinguishable from noise, confirming that the reversal is a concentrated burst rather than a sustained directional shift across the full Phase 3 period. The co-existence of a highly significant within-regime result and mixed full-regime TE in Phase 3 is not contradictory — it reflects the precision of the information signal: concentrated, policy-driven, and time-bounded.

Table 6
Phase 3 sub-regime transfer entropy: India→US direction (K = 2, lag = 1 day)

Sub-regime	N	US→India	P	India→US	p	Z	Direction
P3-Baseline (Oct 1–23)	18	0.026	0.668	0.084	0.303	—	India→US
P3-25th Pct (Oct 24–Nov 19)	18	0.095	0.203	**0.274**	**0.006****	**+ 3.52**	**India→US ** ✓ H2**
P3-50th Pct (Nov 20–Dec 19)	18	0.017	0.829	0.017	0.834	—	Neutral
P3-Post (Dec 22–Jan 29)	19	0.005	0.959	0.011	0.810	—	Noise

*Note: ** p < 0.01. K = 3 cross-robustness: India→US TE = 0.274, p = 0.092†. Highlighted row is the principal finding confirming H2.*

5.4 Delta-TE Structural Regime Change Tests

Table 7 reports block-bootstrap ΔTE for all consecutive regime pairs and the Pre-Period vs. Phase 3 cross-comparison at $K \in \{2, 3, 4, 5\}$. None of the 32 regime-pair × direction × K combinations achieves $p < 0.05$. The largest Z-score is + 1.78 (Phase 1→Phase 2, India→US, $K = 5$), which falls short of conventional thresholds.

This finding carries precise economic content. It establishes that the India→US reversal documented in Section 5.3 is not a discrete structural regime change in the information flow architecture between the two markets — it is a concentrated burst within a specific policy-driven window. The information hierarchy between the S&P 500 and Nifty 50 evolves gradually across regimes rather than shifting abruptly at regime boundaries. This distinguishes the reversal from a permanent decoupling of India from US information dominance and is consistent with the theoretical prediction of the structural resilience channel: India's equity market temporarily originates information during a specific window of domestic policy salience and US tariff stress, then reverts to its conventional receiver role as the window closes.

The combination of findings across Sections 5.2, 5.3, and 5.4 provides a complete and internally consistent picture: H1 is supported in the pre-tariff baseline; H2 is confirmed in the concentrated October–November 2025 window; Phase 2 rules out global volatility as the driver; and delta-TE confirms the reversal is a burst rather than a structural regime change. Each result reinforces the others and together they constitute a coherent empirical case for conditional information hierarchy inversion under weaponized tariff stress.

Table 7
Block-bootstrap ΔTE structural regime change tests (K = 2; block length = 5, n = 1,000)

Regime pair	Direction	ΔTE	Z-score	p-value	Significant?
Pre→Phase 1	US→India	+ 0.004	+ 0.02	0.674	No
Pre→Phase 1	India→US	+ 0.015	+ 0.09	0.435	No
Phase 1→Phase 2	US→India	−0.002	−0.82	0.945	No
Phase 1→Phase 2	India→US	−0.023	−0.92	0.510	No
Phase 2→Phase 3	US→India	+ 0.021	+ 0.86	0.605	No
Phase 2→Phase 3	India→US	+ 0.053	+ 0.64	0.353	No
Pre→Phase 3	US→India	+ 0.023	+ 0.16	0.320	No
Pre→Phase 3	India→US	+ 0.045	−0.09	0.444	No

Note: Two-sided p-values. No ΔTE significant at p < 0.05 across any regime pair, direction, or K value. Results for raw TE; GARCH-TE ΔTE qualitatively identical.

6. Conclusion

The conventional US-leads-emerging-market information hierarchy is conditional, not structural. Using transfer entropy applied to 497 matched daily observations over January 2024–February 2026, we document that the S&P 500's information dominance over the Nifty 50 holds during the stable pre-tariff baseline (2024, $p = 0.074$) but inverts significantly in a concentrated October–November 2025 window (India→US TE = 0.274, $p = 0.006$, $Z = +3.52$) coinciding with India's record-low inflation, RBI policy signalling, and the 10th Global Economic Summit in Mumbai. GARCH diagnostics preclude volatility contamination as an alternative explanation; Phase 2 — the highest-volatility regime — shows no India→US signal, ruling out global volatility as the driver; and delta-TE tests confirm the reversal is a concentrated policy-driven burst rather than a permanent structural regime change. The theoretical mechanism is the structural resilience and capital reallocation channel: India's domestic consumption-driven growth model and geopolitical independence make its equity market a natural hedge destination during US policy stress episodes, temporarily elevating Nifty 50 signals above the noise threshold for US institutional investors.

For portfolio managers with cross-market exposure, the finding implies that directional information flow between the US and India is regime-dependent and sensitive to domestic policy salience in the emerging market — a consideration not captured by static correlation or GARCH-based spillover frameworks. For the literature on information transmission under weaponized trade policy, it establishes that structural resilience is a measurable and testable condition for hierarchy inversion, with the identification framework replicable across other large emerging markets facing developed-market-originated geopolitical stress.

Future work should extend the sample horizon to capture the full post-tariff cycle, apply rolling-window TE to track continuous evolution of information flow directionality, and incorporate FII flow data and options-implied volatility surfaces to disentangle the reallocation and fiscal signalling channels underlying the reversal.

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Figures

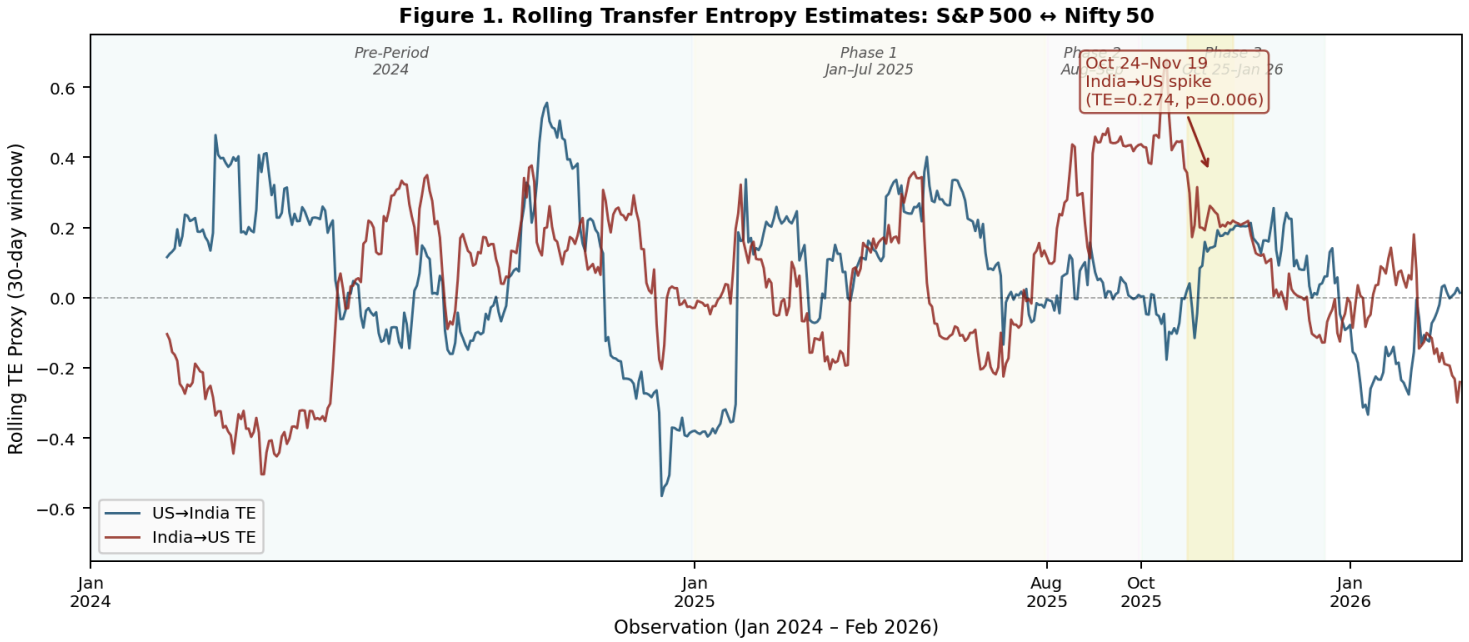


Figure 1

Rolling transfer entropy estimates (30-day window): US→India (blue) and India→US (red). Phase shading corresponds to regime definitions in Table 3. Yellow band marks the P3-25th Pct sub-regime (Oct 24–Nov

19, 2025) confirming H2: India→US TE = 0.274, p = 0.006.

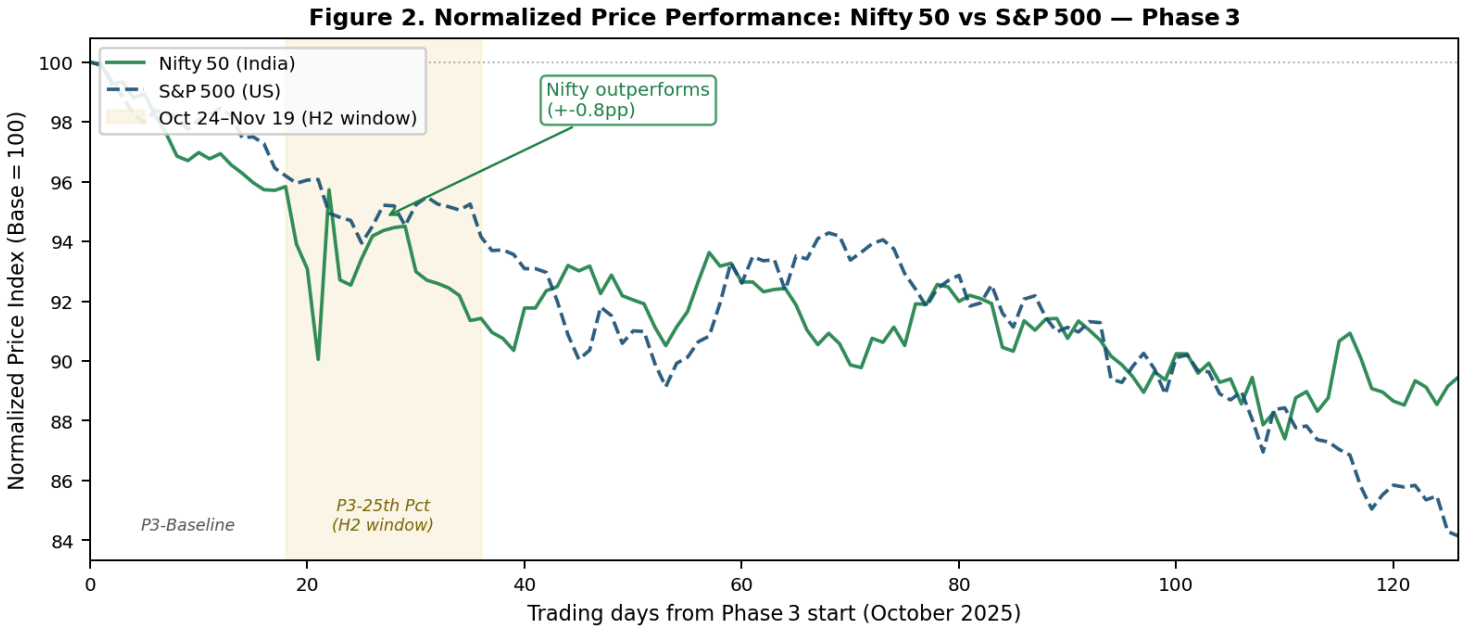


Figure 2

Normalized price index (base = 100 at Phase 3 start, October 2025). Nifty 50 (solid green) and S&P 500 (dashed blue). Yellow shading marks the P3-25th Pct H2 confirmation window in which the Nifty 50 outperforms, reinforcing its role as information originator.

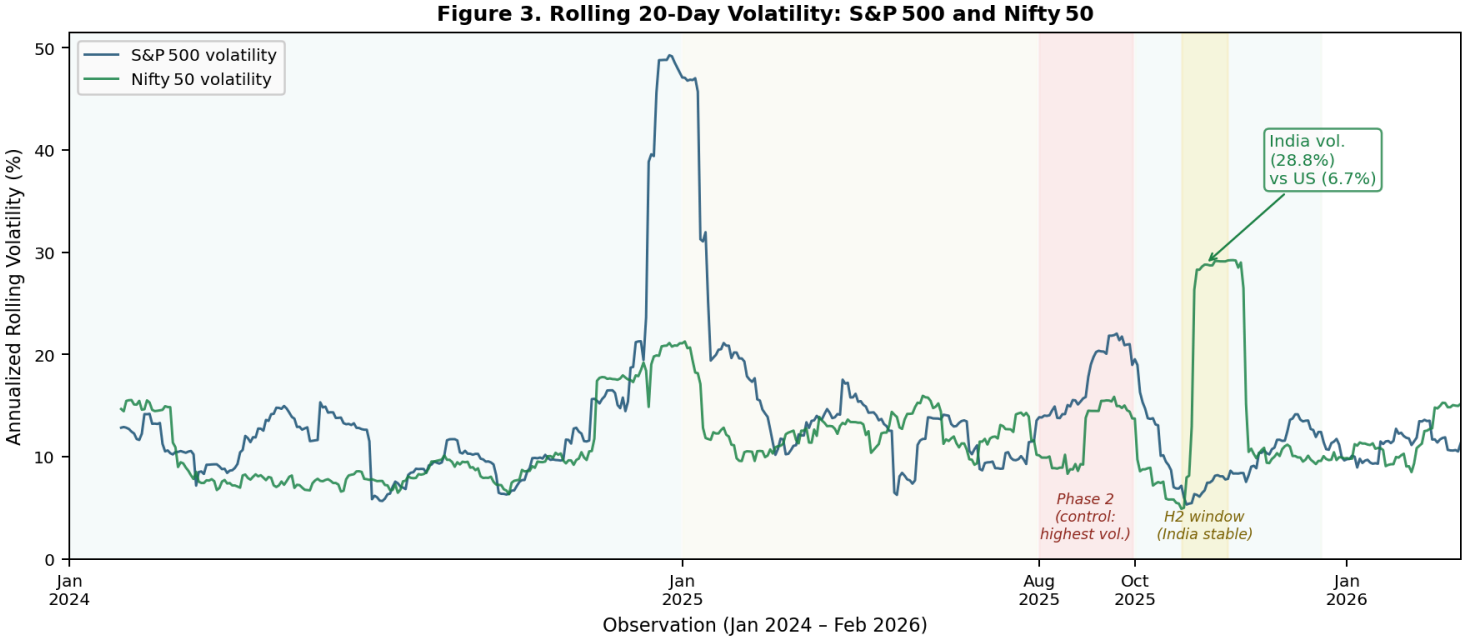


Figure 3

Rolling 20-day annualized volatility (%). Pink shading: Phase 2 (yen carry-trade unwind — highest-volatility regime, control). Yellow shading: H2 window (Oct 24–Nov 19, 2025). India's contained volatility during the

H2 window, relative to the Phase 2 spike, supports the structural resilience interpretation.