

Finance 5.0 and Corporate Dividend Policy: Artificial Intelligence, ESG, and Sustainable Value Creation under Global Economic Uncertainty

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Abstract

Finance 5.0 makes dividend policy an allocation decision that is technology-enhanced, sustainability-sensitive and resilience-focused. This paper examines the effect of artificial intelligence (AI), environmental, social and governance (ESG) performance and economic uncertainty on corporate payouts and sustainable wealth creation for a sample of listed non-financial Indian firms. This article uses a secondary-data design that is exploratory. It integrates prior research with annual market and institutional indicators for 2017-2026: NIFTY 50 dividend yield, NIFTY100 ESG total-return performance, global private AI investment, the India Economic Policy Uncertainty Index, the World Uncertainty Index, and India's evolving BRR/BRSR framework. Descriptive statistics for the nine complete years 2017-2025 show a mean NIFTY 50 dividend yield of 1.22% and a coefficient of variation of only 5.87%, despite rapid AI-investment growth and sharply higher uncertainty. Global private AI investment increased at an indicative compound annual rate of 38.1%, while India EPU nearly doubled between 2017 and 2025. These patterns are consistent with dividend smoothing, but the annual sample is too small and trend-dominated for causal inference. The paper therefore develops six hypotheses and a firm-level panel model in which ESG moderates the AI-dividend relationship. It concludes that Finance 5.0 requires boards to balance current distributions with digital capability, ESG commitments, liquidity resilience and transparent stakeholder communication.

Keywords: *Finance 5.0; dividend policy; artificial intelligence; ESG; economic uncertainty*

JEL classification: *G35, G32, O33, Q56*

Introduction

Dividend policy is conventionally framed as a choice between distributing earnings and retaining them for investment. Lintner's (1956) evidence on gradual dividend adjustment, Miller and Modigliani's

(1961) irrelevance benchmark and Jensen's (1986) free-cash-flow argument remain central. Yet the decision environment has changed: AI requires substantial capability investment, ESG expectations redirect resources toward sustainable operations, and heightened uncertainty increases the value of liquidity buffers. Finance 5.0 captures this expanded decision architecture. It combines intelligent financial systems, human judgement, stakeholder orientation and sustainable value creation. Artificial intelligence can be used in forecasting, cash-flow monitoring, scenario analysis and capital allocation. However, the cost of implementing and the need for data governance can drive demand for retained earnings. Improved ESG performance can improve reputation, reduce risk and support capacity to pay-out. Environmental and social investment can, however, restrict distributable cash in the short term. Uncertainty makes the trade-off worse by inducing precautionary retention even when managers wish to maintain a credible dividend signal.

Choice of Study and Problem Statement

The topic is selected because dividend research has not fully absorbed the simultaneous rise of AI-enabled finance, mandatory sustainability disclosure and global instability. Indian listed firms are especially relevant: they operate within a rapidly digitalising economy, face progressively structured ESG reporting through BRSR, and remain exposed to domestic policy and global uncertainty. A stable payout can signal confidence, but an excessive distribution may underfund digital transformation, climate adaptation and strategic resilience. The specific research problem is whether AI-driven digital transformation significantly affects the dividend payout of listed Indian non-financial companies; whether ESG performance directly affects payout and moderates the AI-dividend relationship; and whether profitability, governance and uncertainty alter these outcomes. Existing annual aggregates cannot answer those causal questions. They can, however, establish the macro-institutional setting and guide a defensible firm-level design.

Objectives and Research Questions

- Evaluate the relation between AI-driven digital transformation and the dividend pay-out of companies.
- Test the direct effect of ESG performance and its moderating role on the AI-dividend relationship.
- Assess the roles of profitability, corporate governance, size of the firm, leverage and macroeconomic uncertainty.
- Interpret the 2017-2026 market, technology, uncertainty and regulatory trends within Finance 5.0.
- Develop an empirically testable panel-data framework for listed Indian non-financial firms.

Accordingly, the article asks: Do AI capability and ESG orientation compete with or complement shareholder distributions? Does ESG convert technology investment into more resilient value creation? Does uncertainty strengthen the preference for retained earnings?

Literature Review

The literature on sustainability dividends is conflicting but useful. Matos et al. (2020) find that European enterprises with stronger ESG performance pay more stable dividends. Bilyay-Erdogan et al. (2023) find a favourable relationship between ESG and payout through the earnings and risk channels. More CSR disclosure in poor nations means less incentive which is in line with keeping cash for investment (Saeed & Zamir, 2021). ESG can improve the dividend capacity by decreasing risk or reduce the existing payment by competing for resources. Indian evidence too suggests that there is complementarity and not trade off. CSR transparency and dividends as a combination show stakeholder engagement and sustainable performance (Seth and Mahenthiran, 2022). Makhija et al.

(2025) report a favourable aggregate ESG-dividend relation for NSE 500 enterprises, which differs across ESG pillars and industries. However, none of these research considers AI adoption as a primary explanatory variable, nor do they analyse ESG as a moderator of technology-based payment decisions. At the same time literature on AI-finance evolved. Li et al. (2024) find that the deployment of AI improves the efficiency of the allocation of corporate financial assets, especially for firms with strong absorptive, innovative and adaptable ability. This supports the assumption that standard artificial intelligence can help financial planning and risk assessment. But asset allocation is not dividend policy and findings from China cannot be generalised automatically to Indian enterprises with different disclosure, ownership and regulatory circumstances. Uncertainty is the final link. Baker et al. (2016) provide evidence of the effect of policy uncertainty on investment and economic activity. Ahir et al. (2022) create a worldwide text-based uncertainty measure that is related with lower actual outcomes. Uncertainty increases the option value of cash for dividend decisions and can lower payout . Alternatively, mature firms may keep dividends to prevent negative signals. These competing processes indicate an interaction-based Finance 5.0 framework.

Table 1. Theoretical Foundations and Dividend-Policy Predictions

Theory	Finance 5.0 mechanism	Dividend implication
Signaling theory	Dividends communicate management's confidence and cash-flow quality.	Boards resist abrupt cuts despite uncertainty.
Agency/free-cash-flow theory	Payout limits managerial retention and inefficient investment.	Higher free cash flow may support larger payout.
Stakeholder theory	Resources serve shareholders, employees, communities and environmental obligations.	ESG investment may complement or compete with payout.
Dynamic capabilities	AI strengthens sensing, seizing and reconfiguration capabilities.	Efficiency may raise payout; capability investment may lower it initially.

Source/Note: Synthesized from Lintner (1956), Jensen (1986), Freeman (1984), and Teece et al. (1997).

Research Gap and Contribution

Three gaps motivate the study. First, ESG-dividend research and AI-finance research have largely developed in parallel. Second, India-specific studies typically examine CSR/ESG effects without modelling AI capability or uncertainty interactions. Third, macro series are often used without recognising their short length, non-stationarity and measurement mismatch with firm-level constructs. This article integrates the streams while explicitly separating descriptive macro evidence from causal firm-level testing.

The proposed contribution is a moderated panel framework in which AI adoption affects payout directly, ESG affects payout directly and also changes the strength or direction of the AI effect. Profitability, governance, size and leverage capture firm heterogeneity, while India EPU and global WUI measure the external uncertainty environment.

Hypotheses

Detailed Null and Alternative Hypotheses for the Empirical Model

The hypotheses of the study are formulated to investigate the effect of AI-driven digital transformation, ESG performance, profitability, corporate governance, and macroeconomic uncertainty on corporate dividend payout and the moderating effect of ESG performance on the relationship between AI-driven digital transformation and dividend pay-out.

Dividend pay-out is regarded as dependent variable for empirical testing. The main explanatory variables include AI-based digital transformation, ESG performance, profitability, corporate governance, and macroeconomic uncertainty. An interaction term of AI-driven digital transformation and ESG performance is added to examine the moderating influence of ESG.

A general empirical specification can be written as:

$$\text{Dividend Pay-out}_{it} = \beta_0 + \beta_1 \text{AI}_{it} + \beta_2 \text{ESG}_{it} + \beta_3 (\text{AI} \times \text{ESG})_{it} + \beta_4 \text{PROF}_{it} + \beta_5 \text{CG}_{it} + \beta_6 \text{MU}_t + \sum \beta_k \text{Controls}_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Where:

- Dividend Pay-out_{it} = ith firm's dividend payout in year t;
- AI_{it} = AI-enabled digital transformation;
- ESG_{it} = environmental, social and governance performance;
- AI × ESG_{it} = interaction between AI-based digital transformation and ESG performance;
- PROF_{it} = profitability;
- CG_{it} = corporate governance;
- MU_t = uncertainty macroeconomic;
- β_0 = intercept;
- β_1 to β_6 = coefficients of the independent variables;
- $\sum \beta_k \text{Controls}_{it}$ = coefficients of relevant controls;
- μ_i = firm effects;
- λ_t = year effects; and
- ε_{it} = error term.

Table 2: Null and Alternative Hypotheses

Code	Hypotheses: Null and Alternative	Test Coefficient	Expected Sign
H1	Null (H01): There is no significant association between AI-driven digital transformation and dividend payout. Alternative (H11): There is a significant association between AI-driven digital transformation and dividend payout.	H01: $\beta_1 = 0$ H11: $\beta_1 \neq 0$	Ambiguous / Unclear
H2	Null (H02): ESG performance is not significantly associated with dividend payout. Alternative (H12): ESG performance is significantly associated with dividend payout.	H02: $\beta_2 = 0$ H12: $\beta_2 \neq 0$	Ambiguous / Positive
H3	Null (H03): ESG performance does not significantly moderate the relationship between AI-driven digital transformation and dividend payout. Alternative (H13): ESG performance significantly moderates the relationship between AI-driven digital transformation and dividend payout.	H03: $\beta_3 = 0$ H13: $\beta_3 \neq 0$	Ambiguous / Unclear
H4	Null (H04): Profitability is not significantly and positively associated with dividend payout. Alternative (H14): Profitability is significantly and positively associated with dividend payout.	H04: $\beta_4 \leq 0$ H14: $\beta_4 > 0$	Positive

Code	Hypotheses: Null and Alternative	Test Coefficient	Expected Sign
H5	Null (H05): Corporate governance is not significantly and positively associated with dividend payout. Alternative (H15): Corporate governance is significantly and positively associated with dividend payout.	H05: $\beta_5 \leq 0$ H15: $\beta_5 > 0$	Positive
H6	Null (H06): Macroeconomic uncertainty is not significantly and negatively associated with dividend payout. Alternative (H16): Macroeconomic uncertainty is significantly and negatively associated with dividend payout.	H06: $\beta_6 \geq 0$ H16: $\beta_6 < 0$	Negative

Conceptual Understanding of the Whole Hypothesis Framework

The six hypotheses, taken collectively, acknowledge that company dividend policy is affected by a mix of technology, sustainability, financial, governance and macroeconomic issues.

H1 tests the effect of AI-driven digital transformation on firms' dividend decisions in isolation.

H2 investigates whether ESG performance influences dividend pay-out separately.

H3 extends this analysis by testing if ESG performance moderates the magnitude or the direction of the link between AI transformation and dividend pay-out.

H4 captures the basic financial ability of profitable enterprises to pay dividends.

H5 investigates the importance of governance structures to ensure the efficient use and proper allocation of corporate resources to shareholders.

Finally, H6 captures the external economic environment by examining whether increased macroeconomic uncertainty leads enterprises to build up liquidity and cut dividend payments.

The framework thus provides an integrated explanation of the dividend policy in the contemporary corporate environment, where conventional financial determinants are combined with recent forces such as artificial intelligence, digital transformation, ESG priorities, governance quality, and economic uncertainty.

Conceptual and Econometric Model

$$DP_{it} = \beta_0 + \beta_1 AI_{it} + \beta_2 ESG_{it} + \beta_3 (AI \times ESG)_{it} + \beta_4 ROA_{it} + \beta_5 CG_{it} + \beta_6 MU_{it} + \beta_7 SIZE_{it} + \beta_8 LEV_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

DP is dividend payout; μ_i and λ_t represent firm and year effects. The coefficient β_3 is the moderation test. A positive β_3 implies that stronger ESG increases the AI-related payout effect; a negative β_3 implies that ESG redirects or constrains the incremental cash-flow effect of AI. Statistical insignificance leads to failure to reject the null, not acceptance of it.

9. Research Methodology

Research Design and Scope

The present article uses an exploratory, conceptual-empirical secondary-data design covering 2017-2026. The annual dataset supplies context rather than a causal test. Descriptive statistics and simple

Pearson correlations use 2017-2025, the nine years with complete dividend-yield, ESG-return and AI-investment observations. The 2026 values are reported only as provisional or year-to-date indicators.

The confirmatory extension should construct an unbalanced panel of non-financial NIFTY 500 companies. Financial firms should be excluded because prudential regulation, capital adequacy and payout constraints make their dividend process structurally different. Annual reports, BRSR disclosures, stock-exchange filings and a consistent ESG database would provide firm-level measures.

Variable Measurement

Table 3. Proposed Firm-Level Variables

Construct	Operational measure	Role	Source
Dividend policy	Dividend payout ratio; DPS; dividend dummy	Dependent	Annual reports/NSE
AI adoption	Disclosure score: 0 none, 1 mention, 2 operational, 3 strategic	Main explanatory	Annual reports
ESG	ESG score or BRSR disclosure/assurance index	Explanatory/moderator	BRSR/ESG database
Profitability	Return on assets	Control	Financial statements
Governance	Board independence/committee index	Control	Corporate-governance report
Uncertainty	India EPU and global WUI	Macro control	FRED/WUI
Firm size	Natural log of total assets	Control	Financial statements
Leverage	Total debt divided by total assets	Control	Financial statements

Annual Evidence and Descriptive Results

Table 4. Annual Finance 5.0 Indicators, 2017-2026

Year	NIFTY 50 DY (%)	NIFTY100 ESG TRI (%)	Private AI investment (US\$ bn)	India EPU	Global WUI
2017	1.08	33.3	26.0	72.74	24,345.06
2018	1.24	5.2	43.0	57.03	19,924.37
2019	1.24	12.3	58.0	73.09	26,686.82
2020	1.14	23.0	74.0	99.55	27,302.16
2021	1.19	32.3	145.0	59.79	21,777.22
2022	1.27	-2.9	113.0	81.15	23,655.74
2023	1.28	23.4	104.0	78.85	20,803.70
2024	1.27	12.8	150.79	132.23	17,679.50
2025	1.29	11.7	344.66	143.10	46,418.36
2026*	1.17	N/A	N/A	230.21	48,376.73

Source/Note: Compiled from NSE Indices, Stanford AI Index reports, FRED India EPU, World Uncertainty Index/FRED and the attached conference data note. *2026 is incomplete: dividend yield at August 31; EPU January-July average; WUI Q1-Q2 average.

Table 5. Descriptive Statistics for Complete Years, 2017-2025 (N = 9)

Variable	Mean	Std. deviation	Minimum	Maximum
NIFTY 50 dividend yield (%)	1.222	0.072	1.080	1.290
NIFTY100 ESG TRI return (%)	16.789	12.142	-2.900	33.300
Private AI investment (US\$ bn)	117.606	95.540	26.000	344.660
India EPU	88.614	30.543	57.030	143.100
Global WUI	25,399.214	8,478.208	17,679.500	46,418.360

Interpretation

Dividend yield was notably stable: its coefficient of variation was only 5.87%. In contrast, private AI investment grew from US\$26.0 billion to US\$344.66 billion, an indicative CAGR of 38.1%. India EPU increased by 96.7% between 2017 and 2025, and global WUI increased by 162.6% from 2024 to 2025. Pairwise correlations with dividend yield were -0.680 for ESG-index return, 0.535 for AI investment, 0.360 for India EPU and 0.153 for WUI. These coefficients are descriptive only: N = 9, several series trend over time, and ESG-index return is not a firm ESG-performance score.

Findings and Discussion

Dividend Smoothing under Structural Change

The central descriptive finding is the coexistence of stable market dividend yield with large changes in technology investment and uncertainty. This is consistent with Lintner's smoothing proposition: established firms avoid abrupt payout changes because investors interpret them as signals about persistent earnings. The evidence does not show that AI or uncertainty causes higher payout; rather, it shows that aggregate payout behaviour is less volatile than the environment in which it is determined.

AI, ESG and Sustainable Value Creation

AI produces a dual dividend effect. Better forecasting, fraud detection, working-capital control and scenario analysis can improve distributable cash and reduce risk. Conversely, data infrastructure, talent, cybersecurity and process redesign require investment. ESG operates similarly: credible performance can lower risk and strengthen stakeholder trust, yet transition expenditure can reduce current free cash flow. H1 and H2 are therefore non-directional; the expected result depends on firm maturity, capability quality and investment stage.

The moderation hypothesis is the paper's distinctive element. ESG may strengthen the AI-dividend relationship when digital capability improves emissions measurement, supply-chain transparency and operational efficiency. It may weaken it when AI-enabled savings are reinvested in decarbonisation or social commitments rather than distributed. Either outcome can create sustainable value if governance explains the capital-allocation logic and preserves financial resilience.

Uncertainty and India's Disclosure Transition

Rising EPU and WUI should normally encourage precautionary cash retention, supporting H6. Yet a stable dividend can itself be a resilience signal. India's BRSR transition improves the information environment: mandatory BRSR for the top 1,000 listed entities from FY2022-23 and the BRSR Core

glide path from the top 150 to the top 1,000 create a more comparable basis for measuring ESG substance. Disclosure quality and assurance remain essential because a score based only on mentions may reward form over performance.

Implications and Recommendations

- Boards should agree to a dividend corridor based on free cash flow, leverage, digital investment pledges and verified ESG targets.
- Annual reports should distinguish between experimental use of AI and operational and enterprise-wide deployment.
- Investors should read payout in conjunction with AI capital expenditure, BRSR assurance, cash buffers and transition risk.
- Regulators and exchanges should promote similar AI governance disclosures along with BRSR Core metrics.

Limitations

The annual sample is short and 2026 incomplete. Aggregate AI and ESG proxies do not measure Indian firms directly, market dividend yield is not payout, and trending series risk spurious association. Descriptive coefficients therefore do not test H1-H6; firm-level panel data, consistent coding, endogeneity controls and sector analysis are required.

Conclusion

Finance 5.0 turns the dividend policy from a narrow distribution decision into a strategic balancing of shareholder return, digital capacity, ESG commitment and resilience. The evidence from 2017-2025 reveals that the NIFTY 50 dividend yield was rather steady whilst AI investment and uncertainty varied considerably. The pattern is consistent with a smoothing interpretation, but not causal assertions. The proposed panel model addresses the empirical gap by testing AI, ESG, their interplay, profitability, governance and uncertainty in listed Indian non-financial enterprises. Boards are most likely to create sustainable value by preserving credible payments without underinvesting in technology, transition capability or liquidity, and by communicating that balance clearly through assured disclosures.

Appendix A

(A) JEL classification means the Journal of Economic Literature classification system, used to identify the principal subject areas of an economics or finance research paper.

- G35 — Pay-out Policy: Dividends, dividend-pay out decisions, share repurchases and retained earnings.
- G32 — Financing Policy; Financial Risk and Risk Management: Capital structure, debt–equity decisions, corporate financing, firm value and financial-risk management.
- O33 — Technological Change: Selection, adoption, consequences and diffusion of new technologies, including artificial intelligence and digital transformation.
- Q56 — Environment and Development; Sustainability: ESG, sustainable development, environmental performance, environmental measurement and the relationship between business and the natural environment.

Thus, these codes indicate that the paper covers dividend policy, corporate financing, AI-driven technological change and ESG or sustainability.

Appendix B

Hypothesis 1: AI-Based Digital Transformation and Dividend Payouts Null Hypothesis

H01: No substantial association exists between AI-driven digital transformation and corporate dividend distribution.

Mathematically:

H01: $\beta_1 = 0$

Alternate Hypothesis

H11: Corporate dividend distribution has a considerable relevance to AI-driven digital transformation.

In mathematical terms:

H11: $\beta_1 \neq 0$

Expected Sign: Uncertain

The expected sign of β_1 is considered equivocal as AI-driven digital transformation can affect dividend policy via two counteracting mechanisms.

On one hand, the use of AI and digital transformation might boost operational efficiency, cut expenses, strengthen forecasting accuracy, improve working-capital management, raise productivity and produce larger cash flows. If these changes result in higher distributable earnings and free cash flow, corporations may be able to boost dividend payments. In this mechanism:

$\beta_1 > 0$

On the flip side, AI transformation often demands major investment in technological infrastructure, software, cloud computing, data systems, cyber security, employee reskilling, specialised human resources and organisational restructuring. Companies undertaking aggressive digital transformation may consequently retain a bigger share of earnings to fund technology investments rather than releasing those earnings as dividends. With this mechanism:

$\beta_1 < 0$

Thus, the non-directional hypothesis is appropriate since sound theoretical reasoning supports positive as well as negative interactions.

Interpretation: Empirical

If β_1 is positive and substantial, it means AI-Driven Digital Transformation is positively correlated with high dividend payout.

If β_1 is negative and statistically significant, then AI-driven digital transformation is related with a decreased dividend payout.

If β_1 is statistically insignificant, H01 cannot be dismissed, providing no evidence of a systematic AI-dividend link.

Hypothesis 2 : ESG Performance and Dividends Pay-out

Null Hypothesis

H02: There is no substantial association between ESG performance and corporate dividend payout.

In mathematical terms:

H02: $\beta_2=0$

Alternate Hypothesis

H12: Corporate dividend pay-out has a substantial association with ESG performance.

As for mathematics:

H12: $\beta_2 \neq 0$

Expected Sign: Unclear, but Mostly Positive Expectation

The relationship between ESG performance and dividend distribution may also work through conflicting mechanisms.

Firms with better ESG performance may have better stakeholder relationships, stronger reputation, lower regulatory and operational risks, better access to funding, higher managerial discipline and more sustainable cash flows. Thus, a positive association may emerge. A strong ESG performance may also be seen as a signal of financial and organisational excellence. Such enterprises may thus have greater ability to sustain reliable dividend distributions.

Therefore:

$\beta_2 > 0$

can be expected.

But high ESG performance usually involves investments in environmental technology, emissions reduction, renewable energy, employee welfare, community programs, sustainable supply chains, governance mechanisms, and reporting infrastructure. These expenses could vie with dividends for available corporate resources. Firms with robust sustainability policies may consequently keep more earnings for ESG-related investments.

In this instance:

$\beta_2 < 0$

is also in principle possible.

Hence, the hypothesis is maintained non-directional. However, the theoretical expectation can be in the direction of a positive link.

Empirical Interpretation

$\beta_2 > 0$ and significant: stronger ESG performance is connected with higher dividend payout.

$\beta_2 < 0$ and significant: better ESG performance is linked to reduced dividend payout, which could indicate more reinvestment in sustainability activities.

β_2 not significant: no statistically credible direct association is demonstrated.

Hypothesis 3: The Moderating Role of ESG on the AI-Dividend Link

Null hypothesis (H0):

H03: ESG performance does not have a significant moderating effect on the relationship between AI-driven digital transformation and corporate dividend distribution.

Mathematically:

H03: $\beta_3 = 0$

Alternative Hypotheses

H13: The association between AI-driven digital transformation and corporate dividend payout is strongly moderated by ESG performance.

In mathematical terms,

H13: $\beta_3 \neq 0$

The interaction term is . . .

AI x ESG

and its coefficient is β_3 .

Expected Sign: Unclear

This hypothesis varies from H1 and H2 in that it does not examine simply the independent influence of AI or ESG. Rather, it investigates if the impact of AI-driven digital transformation on dividend distribution varies depending on the level of ESG performance of the organization.

The marginal effect of AI on dividend distribution might be written as:

Dividend Payout $\partial AI = \beta_1 + \beta_3 ESG$

Thus, if β_3 is statistically distant from zero, the effect of AI is not continuous.
If

$$\beta_3 > 0$$

and a stronger ESG performance reinforces the beneficial effect of AI on dividends or reduces a negative effect of AI.

For instance, companies with strong ESG processes may be better placed to deploy AI efficiently, manage technology risks, control energy usage, improve transparency and translate digital investments into sustainable revenue flows. This can free up resources for distribution of dividends.

If:

$$\beta_3 < 0$$

then, higher ESG performance decreases the favourable AI–dividend association or worsens the negative relation.

This may happen where corporations concurrently dedicating substantial resources to AI transformation and ESG programs keep more earnings to fund these investments, leaving fewer funds for immediate dividend payouts.

Why $\beta_3 \neq 0$ in H3

The coefficient β_3 is the interaction term AI $\times$ ESG in the regression model provided. This coefficient is considerably different from zero when there is a moderation effect.

Then:

- $\beta_3 = 0$: ESG has no moderating effect on the AI–dividend relationship.
- $\beta_3 > 0$: ESG positively moderates the relationship.
- $\beta_3 < 0$: ESG has a negative moderating effect.
- $\beta_3 \neq 0$ and statistically significant: the moderating hypothesis is validated.

Thus, “positive” is too simplistic, and $\beta_3 \neq 0$ is better, as the theoretical framework suggests that ESG can either strengthen or impair the AI–dividend link.

Hypothesis 4: Profitability and Dividend Distribution

The Null Hypothesis

H04: Profitability does not have a considerable positive effect on corporate dividend payout.

For a one sided test:

$$H04: \beta_4 \leq 0$$

Alternative Hypotheses

H14: There is a considerable positive correlation between the corporate dividend payout and profitability.

Mathematically:

H14: $\beta_4 > 0$

Expected Sign: +

Profitability is the ability of a corporation to create earnings from its resources and operations. The payment of dividends generally depends on the availability of earnings and distributable cash flows. Thus, more profitable organisations have more ability to pass on part of earnings to shareholders without hurting operating requirements.

The positive hypothesis is compatible with the assumption that firms with better financial performance have more internal resources and thus more dividend-paying capacity.

Profitability and other variables can be measured as:

Return on assets (ROA);

Return on Equity (ROE);

EBIT as a percentage of assets;

Net profit margin, or

Profit after tax to total assets.

Empirical Interpretation

$\beta_4 > 0$ and statistically significant: H14 is supported.

$\beta_4 \leq 0$ or statistically insignificant: no evidence for the projected positive profitability–dividend relationship.

Let's take for example the estimated coefficient:

$\beta_4 = 0.25$; $p < 0.05$

the results suggest a statistically significant positive relationship between profitability and dividend payout with the other variables remaining unchanged.

Hypotheses 5 : Corporate Governance and Dividend Payout

Null Hypothesis

H05: Corporate governance has no substantial beneficial relation with corporate dividend distribution.

For directional test:

H05: $\beta_5 \leq 0$

Alternative Hypothesis

H15: Corporate governance is positively related to corporate dividend payout.

In mathematical terms:

H15: $\beta_5 > 0$

Sign Expected: Positive

Corporate governance is believed to have a favourable association with dividend payout. This is because good corporate governance can lessen agency problem between management and shareholders.

Otherwise, managers can keep extra business resources, make wasteful investments, or hold cash balances over economically optimum levels. Such behaviour may be limited by strong boards, independent directors, effective audit processes, transparent disclosure, shareholder protection and institutional supervision.

The dividend payments per se may act as an agency-control device by limiting the free cash flow available for managerial discretion .

Thus organisations with superior corporate governance may:

are more transparent financially;

greater protection for minority shareholders;

bear lower agency charges;

need greater discipline in the managing use of funds;

have more dependable dividend policy;

more willingly distribute surplus cash to shareholders.

Corporate governance can be assessed by the independence of the board, composition of the board, quality of the audit committee, ownership characteristics, governance scores, institutional ownership, or an aggregate corporate-governance index.

Empirical Interpretation and Hypothesis 6: Dividend Payout and Macroeconomic Uncertainty

Section / Item	Details
Empirical Interpretation – Corporate Governance (H5)	• $\beta_5 > 0$ and statistically significant: Stronger corporate governance is associated with greater dividend payout, supporting H15. • $\beta_5 \leq 0$ or statistically insignificant: The expected positive relationship between corporate governance and dividend payout is not supported.
Hypothesis 6	Dividend Payout and Macroeconomic Uncertainty
Null Hypothesis (H06)	Corporate dividend payout is not significantly negatively related to macroeconomic uncertainty. For a one-sided test: H06: $\beta_6 \geq 0$
Alternative Hypothesis (H16)	There is a significant negative association between macroeconomic uncertainty and corporate dividend payout. Mathematically: H16: $\beta_6 < 0$
Expected Sign	Negative
Theoretical Interpretation	Greater macroeconomic uncertainty is expected to reduce corporate dividend payout. When the external economic environment becomes less predictable, firms generally adopt a more financially conservative stance and preserve liquidity.
Sources of Macroeconomic Uncertainty	• Economic policy uncertainty • Price instability / inflationary uncertainty • Interest-rate volatility • Exchange-rate changes • Geopolitical tensions • Risk of recession • Supply-chain disruptions • Financial-market instability • Unforeseen economic shocks
Financial Response of Firms	When uncertainty is high, firms may hold more cash as a precautionary buffer, delay capital expenditure, preserve financial flexibility, reduce discretionary dividends, and increase liquidity reserves. More conservative payout policies may help firms absorb unexpected revenue declines, higher financing costs, or cash-flow interruptions.
Predicted Relationship	$\beta_6 < 0$
Empirical Interpretation – H6	• $\beta_6 < 0$ and statistically significant: Increased macroeconomic uncertainty is associated with lower dividend payout, supporting H16. • $\beta_6 \geq 0$ or statistically insignificant: The hypothesised negative association is not supported.

Rationale-Based Empirical Interpretation and Hypothesis Table

Dividend Payout, Corporate Governance and Macroeconomic Uncertainty

Section / Component	Statement / Specification	Rationale / Empirical Interpretation
H5: Empirical Interpretation	$\beta_5 > 0$ and statistically significant	Stronger corporate governance is associated with a higher dividend payout. This supports the alternative hypothesis H15.
H5: Empirical Interpretation	$\beta_5 \leq 0$ or statistically insignificant	The expected positive relationship between corporate governance and dividend payout is not supported.
Hypothesis 6	Dividend Payout and Macroeconomic Uncertainty	The hypothesis examines whether greater macroeconomic uncertainty is associated with lower corporate dividend payout.
Null Hypothesis (H06)	Corporate dividend payout is not significantly negatively related to macroeconomic uncertainty.	For a one-sided test, the null covers zero or a non-negative relationship.
Mathematical Form of H06	H06: $\beta_6 \geq 0$	A coefficient equal to zero or greater than zero indicates that the proposed negative association is not established.
Alternative Hypothesis (H16)	There is a significant negative association between macroeconomic uncertainty and corporate dividend payout.	The hypothesis predicts that greater uncertainty encourages firms to adopt more conservative payout policies.
Mathematical Form of H16	H16: $\beta_6 < 0$	A negative coefficient is consistent with the predicted inverse relationship.
Expected Sign	Negative	Macroeconomic uncertainty is expected to reduce dividend payout as firms preserve cash and financial flexibility.
Economic Rationale	Higher uncertainty can make firms more financially conservative.	When the external economic environment becomes less predictable, managers may prefer precautionary cash holdings rather than higher discretionary distributions.
Sources of Uncertainty	Economic policy uncertainty; inflation or price instability; interest-rate volatility; exchange-rate changes; geopolitical tensions; recession risk; supply-chain disruptions; financial-market instability; unforeseen economic shocks.	These factors can raise financing costs, disrupt revenues and cash flows, or increase the value of liquidity reserves.
Managerial Response	Firms may hold more cash, delay capital expenditure, preserve financial flexibility, reduce discretionary dividends and strengthen liquidity reserves.	These responses create a precautionary buffer against adverse shocks and uncertain financing conditions.

Section / Component	Statement / Specification	Rationale / Empirical Interpretation
Dividend Policy Implication	Dividend cuts or more conservative payout policies may be adopted during periods of high uncertainty.	Lower payouts can help firms absorb unexpected revenue declines, higher borrowing costs and interruptions in operating cash flow.
Predicted Relationship	$\beta_6 < 0$	An increase in macroeconomic uncertainty is predicted to be associated with a decrease in corporate dividend payout.
H6: Empirical Interpretation	$\beta_6 < 0$ and statistically significant	Higher macroeconomic uncertainty is associated with lower dividend payout. This finding supports H16.
H6: Empirical Interpretation	$\beta_6 \geq 0$ or statistically insignificant	The hypothesised negative association between macroeconomic uncertainty and dividend payout is not supported.

Decision rule: A coefficient is considered statistically significant when $p < .05$, subject to model validity and economic significance.