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From Executive Cognition to Capital Allocation: An Integrative Review of the Antecedents and Financial Consequences of Corporate ESG Performance in Emerging Markets

A Conceptual and Evidence-Synthesis Study

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Abstract
Research on environmental, social, and governance (ESG) performance has expanded rapidly along two largely separate tracks: one asking who inside the firm produces ESG outcomes, and another asking what those outcomes are worth in capital markets. This paper integrates the two by synthesising six recent empirical studies of Chinese and Indian listed firms that, taken together, trace a complete causal chain from executive attributes through firm-level ESG performance to credit allocation, equity returns, and capital structure adjustment. Drawing on upper echelons theory, institutional theory, resource dependence theory, and signalling theory, the review develops an integrative framework organised around three findings. First, executive human and political capital is a robust antecedent of ESG performance: environmental backgrounds, Party School training, and general educational attainment each carry positive and independently identified associations, operating through distinguishable cognitive and value-based pathways. Second, the financial consequences of ESG are conditional rather than uniform: ESG performance expands green credit access but simultaneously crowds out the green share of total lending, predicts excess stock returns only in private and non-polluting firms, and does not systematically accelerate leverage adjustment except through its governance component. Third, measurement quality is not a technical footnote but a first-order determinant of estimated effects; closed-list coding of executive attributes attenuates associations by roughly thirty per cent relative to construct-validated large language model classification, and disclosure-performance gaps produce greenwashing that severs the link between credit access and emissions reduction. The paper advances seven propositions and an agenda for research that treats substance-versus-symbol discrimination as the central methodological problem in ESG scholarship.

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1. Introduction

Environmental, social, and governance (ESG) performance has migrated from the periphery of voluntary corporate reporting to the centre of strategic and financial decision-making. Global ESG-related investment now exceeds thirty trillion United States dollars (Sharma & Banerji, 2026), regulators across major economies have converted encouragement into mandate (Camilleri, 2015; Hummel & Jobst, 2024), and financial institutions have been directed to embed sustainability criteria into credit evaluation (Xue & Geng, 2026). This institutional consolidation has generated an enormous empirical literature, but that literature remains bifurcated. One stream, rooted in upper echelons theory, asks who inside the organisation produces ESG outcomes and treats executive characteristics as the explanatory variable (Hambrick, 2007; Hambrick & Mason, 1984). A second stream, rooted in signalling and asset-pricing traditions, asks what ESG performance is worth once produced, treating it as the explanatory variable for credit access, valuation, and financing behaviour (Friede et al., 2015; Gillan et al., 2021). The two streams cite different theories, use different estimators, and rarely meet.

This separation is analytically costly. If ESG performance is partly a product of executive cognition and values, then its informational content for outside capital providers depends on which executives produced it and by what means. A sustainability score generated by an executive with substantive environmental expertise, expressed through patenting and pollution-control investment, is a different object from a score generated by an executive optimising for political legitimacy or by a disclosure department optimising for the rating algorithm. Yet the consequence-side literature routinely treats the ESG score as a homogeneous input, and the antecedent-side literature routinely stops at the score without asking whether markets can distinguish among its producers. The greenwashing evidence now available demonstrates the price of that omission: firms with strong disclosure but weak underlying performance obtain green credit and then channel it into working capital, research and development, and administrative expense rather than into environmental improvement (Xue & Geng, 2026).

This paper integrates the two streams. It synthesises six recent empirical studies which, taken together, span the full chain from executive attributes to capital-market outcomes in two of the largest emerging economies. On the antecedent side, the studies examine CEO environmental backgrounds using a large language model classification workflow validated against expert human coders (Lei et al., 2026), formal political-ideological training through Party School education in Chinese state-owned enterprises (He et al., 2026), and general executive educational attainment (Tu & Guo, 2024). On the consequence side, they examine whether ESG performance functions as a credible signal in banks' green credit granting (Xue & Geng, 2026), whether ESG ratings predict stock excess returns and by what mechanism (Zhang & Zhang, 2026), and whether ESG

performance shapes the speed at which firms adjust toward target leverage (Sharma & Banerji, 2026). Four of the six studies use Chinese A-share data; one uses Indian listed firms; sample periods run from 2007 to 2023.

Three research questions organise the synthesis. First, which executive attributes are reliably associated with corporate ESG performance, and through which organisational pathways do they operate? Second, under what conditions does ESG performance translate into measurable financial consequences for credit, equity, and capital structure? Third, how does the way ESG constructs are measured, whether executive backgrounds coded from biographical text or firm performance coded by rating agencies, condition the answers to the first two questions?

The paper makes three contributions. Theoretically, it links upper echelons theory to signalling theory through a capability-based intermediate layer, arguing that executive attributes generate ESG outcomes only when activated by firm-level green capabilities (Bin-Nashwan & Li, 2025; Bin-Nashwan et al., 2026), and that the credibility of the resulting signal depends on whether those capabilities are substantive or ceremonial. Methodologically, it foregrounds measurement error as a first-order concern rather than a robustness afterthought, drawing on evidence that rule-based coding of executive attributes attenuates estimated associations by close to thirty per cent (Lei et al., 2026) and that rating divergence across providers systematically alters inference (Berg et al., 2022; Gibson Brandon et al., 2021). Practically, it specifies where boards, lenders, and regulators should expect executive selection and ESG disclosure to matter, and where the evidence suggests they should not.

The remainder of the paper proceeds as follows. Section 2 develops the theoretical foundations. Section 3 describes the review corpus and synthesis approach. Section 4 examines executive attributes as antecedents. Section 5 examines financial consequences. Section 6 draws out five cross-cutting themes. Section 7 presents an integrative framework and seven propositions. Sections 8 and 9 discuss implications and limitations, and Section 10 concludes.

2. Theoretical Foundations

2.1 Upper Echelons Theory and the Executive as Antecedent

Upper echelons theory holds that organisational outcomes reflect the cognitive bases and values of the executives who lead them, because bounded rationality forces leaders to filter complex strategic situations through personalised interpretive schemas (Hambrick & Mason, 1984; Hambrick, 2007). Observable executive characteristics such as functional background, education, and career history serve as proxies for these unobservable psychological constructs. Applied to sustainability, the theory predicts that executives possessing environmental expertise will interpret ecological risk differently, evaluate green investment opportunities more accurately, and allocate strategic attention toward sustainability more consistently than peers without such expertise.

Two limitations of the conventional formulation matter for the present synthesis. First, upper echelons theory tends to treat cognition and values as a fused construct, leaving the

underlying micro-mechanisms entangled (Neely et al., 2020). This is addressed directly by separating a cognitive pathway, expressed through forward-looking green technology innovation investment, from a value pathway, expressed through current-period environmental governance investment, and then demonstrating differential activation: academic training strengthens the innovation pathway while female leadership strengthens the governance pathway (Lei et al., 2026). This is the strongest available evidence that the two sub-mechanisms are empirically separable rather than two labels for one tendency.

Second, executive-level attributes do not convert into firm-level outcomes automatically. A capability-based perspective grounded in the resource-based and knowledge-based views holds that green intellectual capital, comprising sustainable competency capital, digital capital, and collaborative ecosystem resources, mediates between top-level environmental orientation and observable practice (Bin-Nashwan et al., 2026), and that AI-infused knowledge platforms increasingly reshape how such capital accumulates (Bin-Nashwan & Li, 2025). This layer explains why otherwise comparable green executives are associated with divergent outcomes across firms, and it supplies the theoretical bridge to the consequence-side literature: capabilities, not credentials, are what capital providers ultimately price.

2.2 Institutional Theory and Resource Dependence

Institutional theory holds that organisations conform to the norms and expectations of their environments in order to secure legitimacy and resources (DiMaggio & Powell, 1983). In state-influenced economies this mechanism operates with unusual force. Party School education does not merely give executives access to political networks but internalises state logics, converting institutional pressure from an external compliance constraint into an internal governance norm (He et al., 2026). The textual-alignment mechanism, measuring the frequency of state-priority terminology in management discussion and analysis sections (Loughran & McDonald, 2016), accounts for roughly seventy-four per cent of the total effect on aggregate ESG performance, the largest single mediating share reported across the corpus.

Resource dependence theory complements this account by explaining how political embeddedness converts into material advantage (Hillman et al., 2009). Access to government subsidies mediates between forty-six and fifty-six per cent of the total effect, extending resource dependence beyond informal or positional political ties to formalised political-educational channels (He et al., 2026). The same logic operates in the credit market, where green credit is administratively directed toward environmentally responsible sectors and away from high-pollution industries, so that ESG performance functions as an access key to a politically allocated resource pool rather than as a purely market-priced attribute (Xue & Geng, 2026).

2.3 Signalling Theory, Information Asymmetry, and the Limits of Disclosure

Signalling theory originates in labour market analysis of asymmetric information (Spence, 1973) and extends naturally to credit markets, where lenders cannot directly observe borrower type. Classical credit rationing arises precisely because information asymmetry generates adverse

selection and moral hazard, leading banks to ration rather than price risk (Stiglitz & Weiss, 1981). ESG disclosure is theorised as a costly signal that reduces this asymmetry, lowering banks' search and monitoring costs and improving credit expectations (Xue & Geng, 2026).

The theory carries an explicit condition, however: the signal must be costly to imitate. Where disclosure is voluntary, unstandardised, and weakly verified, imitation becomes cheap and the separating equilibrium collapses. This collapse is operationalised as greenwashing, measured as the standardised gap between a firm's environmental disclosure score and its standardised environmental performance score (Xue & Geng, 2026; see also Zhang, 2022; Hu et al., 2023). The central result is that the environmental efficacy of green credit is entirely conditional on this gap: among low-greenwashing firms a one-unit increase in green credit reduces energy intensity by 0.594 per cent, while among high-greenwashing firms energy intensity actually rises. Signalling theory therefore does not predict that ESG disclosure works; it predicts that ESG disclosure works only under verification conditions that the Chinese regime, at least through 2020, did not supply.

2.4 Stakeholder Theory and the Dynamic Trade-Off Framework

On the equity side, stakeholder theory holds that firms which engage effectively with the full constituency of resource providers accrue reputational and legitimacy benefits that translate into superior performance (Freeman, 1984; El Ghoul et al., 2011). Building directly on this logic, ESG performance has been shown to raise stock excess returns partly by improving return on assets, with financial performance operating as a partial mediator (Zhang & Zhang, 2026). Meta-analytic evidence broadly supports a positive ESG-performance association (Friede et al., 2015), although the relationship is heterogeneous across regions, industries, and disclosure regimes (Eccles et al., 2014).

Capital structure research supplies a fourth theoretical lens. The dynamic trade-off framework holds that firms possess a target leverage ratio but approach it only partially in each period because transaction costs, market frictions, and firm-specific constraints make instantaneous rebalancing prohibitive (Flannery & Rangan, 2006; Lemmon et al., 2008; Ozkan, 2001). The theoretical prediction is that ESG performance should accelerate adjustment by reducing information asymmetry and easing access to external finance (Adeneye, 2022; Ho et al., 2021). Tested on Indian listed firms, this prediction is unsupported at both aggregate and pillar level, with only the governance component showing a persistent association with leverage decisions themselves (Sharma & Banerji, 2026). The result matters because it identifies a boundary: ESG appears to shape where firms want to be rather than how quickly they get there.

3. Review Corpus and Synthesis Approach

The synthesis follows a structured narrative approach rather than a meta-analysis, because the six studies employ non-commensurable dependent variables, ranging from standardised rating scores to log green loan balances to first-differenced leverage ratios, and non-commensurable estimators, ranging from staggered difference-in-differences to system generalised method of

moments. Effect sizes are therefore compared in direction, statistical reliability, and mechanism rather than pooled magnitude.

Studies were organised along the causal chain rather than by publication outlet. Three studies place an executive attribute on the right-hand side and ESG performance on the left; three reverse the ordering. This structural symmetry permits the chain to be assembled end to end, with ESG performance functioning as the dependent variable in Section 4 and the explanatory variable in Section 5. Table 1 summarises the corpus.

Table 1

Characteristics of the Six Studies Synthesised

Study	**Setting and sample**	**Period**	**Focal relationship**	**Identification**	**Headline result**
Lei et al., 2026	Chinese A-share firms; 3,126 firm-years with CEO succession	2013-2023	Green-background CEO to ESG score	Staggered DID; PSM; entropy balancing; IV with plausible-exogeneity bounds	+2.74 percentage points on comprehensive ESG
He et al., 2026	Shanghai-listed state-owned enterprises; 9,984 firm-years	2010-2023	CEO Party School education to ESG rating	Firm, year and province-year FE; Heckman; PSM; 2SLS	Coefficient 0.122 ($p < .01$) on log ESG
Tu & Guo, 2024	Chinese A-share non-financial, non-real-estate firms; 17,032 firm-years	2013-2022	Executive education level to ESG rating	Two-way fixed effects; exogenous shock exclusion	Coefficient 0.0254 ($p < .05$) under two-way FE
Xue & Geng, 2026	Chinese A-share listed firms; up to 25,831 observations	2012-2020	ESG rating to green credit scale and structure	Fixed-effects panel; 2SLS; PSM	+0.02 green credit volume; -0.019% green share

Study	Setting and sample	Period	Focal relationship	Identification	Headline result
Zhang & Zhang, 2026	Chinese A-share listed firms; 29,518 observations	2016-2023	ESG rating to stock excess return	Industry and year FE; lagged-ESG IV; mediation	Positive and significant; partially mediated by ROA
Sharma & Banerji, 2026	Indian NSE 500 and BSE 500 firms; 1,203 firms	2007-2023	ESG performance to speed of leverage adjustment	System GMM; pooled OLS with generated regressor; firm FE	No effect on adjustment speed; governance affects target leverage

Note. DID = difference-in-differences; PSM = propensity score matching; IV = instrumental variable; FE = fixed effects; 2SLS = two-stage least squares; GMM = generalised method of moments; ROA = return on assets.

Two features of the corpus require comment. First, the studies rely on at least five distinct ESG rating providers: Bloomberg and HUAZHENG (Lei et al., 2026), Hexun and SynTao Green Finance (He et al., 2026), China Securities via WIND (Tu & Guo, 2024; Xue & Geng, 2026; Zhang & Zhang, 2026), and Refinitiv (Sharma & Banerji, 2026). Given documented divergence among providers (Berg et al., 2022; Gibson Brandon et al., 2021), convergent findings across this set constitute stronger evidence than any single study, while divergent findings cannot be attributed to rating methodology alone. Second, the corpus is heavily weighted toward China. The Indian case supplies useful contrast precisely because its governance framework is comparatively formalised while its environmental and social reporting infrastructure remains developing (Sharma & Banerji, 2026), an institutional asymmetry that helps explain why only the governance pillar registers there.

4. Executive Attributes as Antecedents of ESG Performance

4.1 Green Human Capital

The most direct application of upper echelons logic to sustainability concerns executives whose education or career history is itself environmental. Prior work in heavily polluting industries links CEO green experience to environmental performance through managerial green perception and corporate green innovation (Deng et al., 2024), and complementary evidence distinguishes green education, which raises environmental awareness, from green work experience, which supports innovation and reduces administrative penalties (Li & Zhong, 2024). Related lines extend the construct to foreign experience (Liu et al., 2024), succession events as recalibration points

(Cambrea et al., 2025), leaders' green cultural background (Du et al., 2025), and personal characteristics in privately held firms (Oyinlola, 2025).

This literature is advanced on three fronts (Lei et al., 2026). Treating CEO succession as a quasi-natural experiment across 3,126 firm-year observations, the study estimates that appointing a green-background CEO is associated with an improvement of approximately 2.74 percentage points in comprehensive ESG scores. The estimate survives an unusually wide battery: propensity score matching returns 0.0259, entropy balancing 0.0244, an alternative HUAZHENG rating 0.0231, exclusion of the 2020 to 2022 pandemic window 0.0268, and expanded institutional controls for state ownership, pollution intensity, and provincial environmental policy stringency 0.0246. Estimators robust to staggered timing and heterogeneous treatment effects (Callaway & Sant'Anna, 2021; Sun & Abraham, 2021) yield 0.0263 and 0.0247 respectively, ruling out the possibility that the finding depends on homogeneity assumptions embedded in two-way fixed effects.

The instrumental variable analysis deserves particular attention because it illustrates good practice in a setting where exclusion restrictions are inherently contestable. The baseline instrument, the lagged industry-level proportion of green-background CEOs among peer firms (Lu & Jiang, 2022), plausibly correlates with industry-wide regulatory attention and shared environmental shocks. The response is a geographic leave-out variant restricted to other provinces, explicit industry-level time-varying controls for regulatory intensity and mean industry ESG, and a plausible-exogeneity bounding exercise (Conley et al., 2012) that traces the coefficient as the assumed direct effect rises from zero to the full reduced form (Lei et al., 2026). The point estimate remains positive across that entire range and the ninety-five per cent interval excludes zero for direct effects up to roughly a tenth of the reduced-form association. This is a more honest presentation than the conventional practice of asserting exclusion and reporting a single first-stage F statistic.

Mechanism evidence supports both theorised pathways. Green technology innovation investment carries an indirect effect of 0.0038 with a bias-corrected bootstrap interval of [0.0011, 0.0079], and environmental governance investment carries 0.0023 with an interval of [0.0004, 0.0058]. Sub-dimension decomposition shows the association concentrated in the environmental pillar (0.0387), extending partially to social (0.0218), and reaching only marginal significance in governance (0.0142), a gradient consistent with the expertise-matching logic of upper echelons theory. Boundary conditions add nuance: the association is stronger among academically trained CEOs (3.42 versus 2.01 percentage points, group difference $p = .042$) and modestly stronger among female CEOs (3.56 versus 2.39 percentage points, $p = .087$).

4.2 Political and Ideological Capital

A form of executive human capital with no close analogue outside single-party institutional settings is formal ideological training delivered through the Party School system (He et al., 2026). The theoretical contribution is to distinguish this construct from both conventional education and

informal political connection. Party School training is a structured cognitive socialisation process that shapes managerial ideology and interpretive schemas, and it is positioned as ideological imprinting, an additional and previously unexamined dimension of upper-echelon heterogeneity (Beladi et al., 2022).

Empirically, the baseline coefficient on Party School education is 0.122 for aggregate ESG, significant at the one per cent level, with pillar-level coefficients of 0.313 for environmental, 0.016 for social, and 0.345 for governance performance. The economic magnitudes are strikingly uneven: a one-standard-deviation increase in Party School education corresponds to a 9.7 per cent increase in environmental performance and a 10.9 per cent increase in governance performance, but only 0.12 per cent in social performance. Propensity score matching (Rosenbaum & Rubin, 1983) raises the aggregate coefficient to 0.233, and two-stage least squares using the number of city-level Party Schools and distance to the nearest provincial Party School as instruments returns 0.176 with a first-stage F statistic of 35.12. A placebo test randomly reassigning both instruments within provincial groups across one thousand iterations produces a distribution tightly centred on zero.

Four mechanisms are tested using causal mediation within an instrumental variables framework (Dippel et al., 2020), an approach that avoids the well-known failure of three-step mediation models to account for feedback and omitted variable bias between mediator and outcome. Alignment with government objectives mediates 73.77 per cent of the total effect on aggregate ESG; responsiveness to local economic development pressure mediates 58.15 per cent; political promotion incentives mediate 54.29 per cent; and access to government subsidies mediates 53.33 per cent. Heterogeneity analysis places the effect in local rather than central state-owned enterprises, in service rather than manufacturing sectors, in low-marketisation rather than high-marketisation regions, and in regions with stronger rather than weaker legal environments.

This last pattern warrants scrutiny because it sits uneasily with a purely symbolic interpretation. If Party School training produced only ceremonial compliance, one would expect its measured benefit to concentrate where enforcement is weak and detection unlikely. That the effect is significant in strong legal environments and insignificant in weak ones suggests that political alignment complements rather than substitutes for formal accountability. The design nonetheless cannot fully disentangle genuine ESG improvement from politically motivated symbolic compliance (He et al., 2026), a concern with deep roots in the Chinese corporate social responsibility literature (Marquis & Qian, 2014) and in the agency-theoretic critique of politically driven ESG engagement (Benabou & Tirole, 2010).

4.3 General Educational Capital

The baseline case against which the specialised constructs should be read is general educational attainment (Tu & Guo, 2024). Coding executive education on a five-point ordinal scale across 17,032 firm-year observations yields a positive association with China Securities ESG ratings that is significant only at the ten per cent level under industry and year fixed effects

(0.0014), strengthening to the five per cent level under two-way fixed effects (0.0254) and to the one per cent level when post-2019 pandemic years are excluded (0.0343). The mediating mechanism is internal control quality, tested using the conventional two-step procedure (Baron & Kenny, 1986), with education raising internal control quality at the one per cent level and internal control quality raising ESG at the five per cent level. Heterogeneity analysis locates the effect exclusively in non-state-owned enterprises.

Read alongside the other two antecedent studies, this result is instructive in its comparative weakness. General educational attainment produces a marginal and specification-sensitive association operating through a generic governance channel; environmental specificity and political socialisation each produce larger, more robust associations operating through channels matched to their content. The implication for upper echelons research is that the informational value of an executive attribute rises with its specificity to the outcome domain, a point made explicitly in the attribution of the stronger academic-experience result to scholarly socialisation rather than to years of schooling as such (Lei et al., 2026).

4.4 Measurement: Large Language Models as Research Infrastructure

The most methodologically consequential contribution in the corpus concerns not what is estimated but how the explanatory variable is constructed. Coding executive backgrounds from biographical text has historically relied either on manual reading, which is accurate but unscalable and inconsistent, or on closed-list rules matching a fixed set of environmental majors and nominal roles, which is scalable but crude (Hu & Shi, 2025; Xu et al., 2025). Three large language models, ChatGPT-4, Claude 3.5 Sonnet, and Gemini 1.5 Pro, are deployed under identical structured prompts instructing them to distinguish superficial mentions of environmental topics from substantive professional engagement, then validated against consensus coding by two trained research assistants on a stratified random sample of 500 CEO profiles (Lei et al., 2026).

Agreement with human judgment reaches Cohen's kappa of 0.888 with 95.2 per cent accuracy for Claude 3.5 Sonnet, 0.846 and 93.4 per cent for ChatGPT-4, and 0.809 and 91.8 per cent for Gemini 1.5 Pro. Crucially, the authors go beyond inter-rater agreement to construct validity. A prompt sensitivity check re-classifying all 500 profiles under conservative, permissive, and neutral prompt variants returns kappa relative to the main prompt between 0.851 and 0.894, indicating that outcomes are not artefacts of prompt phrasing. A substance-versus-keyword stress test on 80 profiles in which environmental vocabulary appears without a substantively environmental career, including finance executives who endorsed corporate environmental statements and managers whose only signal is a brief committee rotation, yields 91.3 per cent correct classification as non-green. Split-sample stability checks across the 2013 to 2017 versus 2018 to 2023 disclosure regimes and across heavily polluting versus other industries return kappa between 0.879 and 0.901.

The decisive test is the rule-based comparison. Applying conventional closed-list coding to the same sample produces an alternative indicator that coincides with the substance-based

measure for 86.4 per cent of observations. Among the 13.6 per cent that diverge, 8.1 percentage points are cases the rule codes as green but substance does not, typically nominal committee rotations or endorsed statements, and 5.5 percentage points are cases the rule misses, typically green careers described in newer vocabulary such as renewable-energy leadership or chief sustainability officer roles. Re-estimating the baseline with the rule-based measure returns 0.0193, significant only at the ten per cent level and close to thirty per cent below the substance-based estimate of 0.0274. The direction matches the attenuation that non-differential misclassification of a binary regressor produces. The contribution of the workflow, as the authors put it, is better measurement rather than faster coding, and the corollary is that the existing closed-list literature systematically understates executive effects on sustainability.

Table 2

Mechanisms and Boundary Conditions Across the Antecedent Studies

Study	Mechanisms tested	Mediation approach	Boundary conditions
Lei et al., 2026	Green technology innovation investment (cognitive pathway); environmental governance investment (value pathway)	Non-parametric bootstrap, 5,000 resamples, bias-corrected intervals; moderated mediation indices	Academic experience strengthens innovation pathway; female leadership strengthens governance pathway; effect concentrated in environmental pillar
He et al., 2026	Government goal alignment; local development pressure; political promotion incentive; subsidy access	Causal mediation within IV framework (Dippel et al., 2020)	Local rather than central SOEs; service rather than manufacturing; low marketisation; strong legal environment
Tu & Guo, 2024	Internal control quality	Two-step procedure (Baron & Kenny, 1986)	Significant only in non-state-owned enterprises

Note. SOE = state-owned enterprise; IV = instrumental variable.

5. Financial Consequences of ESG Performance

5.1 Credit Allocation and the Crowding-Out Effect

Whether ESG performance functions as a valid signal in banks' green credit granting has been examined for both the scale and the structure of lending (Xue & Geng, 2026). The scale result confirms the signalling prediction: a one-point improvement in ESG rating is associated with a 0.02 increase in green credit volume, significant at the ten per cent level in the baseline and rising to 0.026 under two-stage least squares using the proportion of executives with overseas education

and the industry-year leave-out mean ESG score as instruments. The upward revision under instrumentation suggests that endogeneity biases the naive estimate downward.

The structural result is the paper's principal novelty and reverses the conventional narrative. Each unit rise in ESG reduces green credit's share of total lending by 0.019 per cent, because firms with strong ESG obtain more total bank credit than green credit specifically. Lagging the explanatory variable by one, two, and three periods produces reductions of 0.019, 0.610, and 1.312 per cent respectively, indicating a crowding-out effect that intensifies over time. Green credit therefore expands in absolute terms while contracting in relative terms, an outcome invisible to any design that measures scale alone.

Three mechanisms are documented. ESG performance improves information transparency, proxied by the absolute value of discretionary accruals (Chowdhury et al., 2018), with a coefficient of -0.002 at the one per cent level. It reduces business risk, proxied by the Z-index, with a coefficient of 0.020. And it raises total factor productivity, with a coefficient of 0.013. Moderation analysis shows the ESG-credit relationship concentrated in green-credit-restricted industries designated under the 2012 Green Credit Guidelines (interaction coefficient 0.018) and in regions with high environmental regulatory intensity (interaction coefficient 0.112).

The environmental efficacy analysis is where the argument turns. Across the full sample, the association between ESG-driven green credit and energy or emission intensity is statistically insignificant. Partitioning by greenwashing score, defined as the standardised gap between environmental disclosure and environmental performance (Zhang, 2022; Hu et al., 2023), reveals the source of the null: among low-greenwashing firms a one-unit increase in green credit reduces energy intensity by 0.594 per cent and emission intensity by 0.082 per cent, whereas among high-greenwashing firms energy intensity rises by 0.256 per cent. Tracing the destination of funds confirms the diagnosis. Green credit obtained through strong ESG performance raises working capital by 2.886 per cent, research and development investment by 0.275 per cent, and administrative expenses by 1.888 per cent, all statistically significant, while green innovation inputs, environmental compliance costs, and environmental capital expenditure shares show negative and insignificant coefficients. This structural deviation between the stated and actual use of green credit is the sharpest evidence in the corpus that ESG scores can function as an access key rather than as a performance signal.

5.2 Equity Returns and the Performance Channel

Across 29,518 observations of A-share firms from 2016 to 2023, ESG ratings positively predict stock excess returns, with coefficients ranging from 0.0066 to 0.0094 across specifications and remaining significant at the one per cent level under full controls (Zhang & Zhang, 2026). Endogeneity is addressed using the lagged ESG score as an instrument, exploiting temporal precedence; the second-stage coefficient remains positive and significant. Mediation analysis shows return on assets carrying a significant positive coefficient on ESG (0.0069) and on returns (0.2426), with the direct ESG coefficient falling from 0.0068 to 0.0051 but remaining significant,

consistent with partial mediation through financial performance rather than pure sentiment-driven repricing.

The heterogeneity results qualify the headline substantially. Among state-owned enterprises the ESG-return association is statistically insignificant (0.0051), while among private enterprises it is significant at the one per cent level (0.0063). Among heavily polluting firms the coefficient is 0.0082 and significant, while among non-heavily polluting firms it is 0.0073 and insignificant, a pattern the authors interpret through differential regulatory scrutiny and stakeholder expectation. The state-ownership result deserves emphasis because it connects directly to the antecedent literature: political capital raises ESG scores in state-owned enterprises (He et al., 2026), while ESG scores do not raise excess returns in state-owned enterprises (Zhang & Zhang, 2026). Read together, the two findings suggest that equity markets discount ESG improvements they attribute to political rather than economic logic, precisely the discriminating behaviour that signalling theory predicts when investors suspect cheap imitation.

5.3 Capital Structure and the Speed of Leverage Adjustment

The corpus's most instructive null result comes from the Indian evidence (Sharma & Banerji, 2026). Using 1,203 Indian firms from the NSE 500 and BSE 500 indices over 2007 to 2023, with ESG scores from Refinitiv and financials from CMIE Prowess, the study first confirms partial adjustment: the lagged leverage coefficient ranges from 0.726 to 0.781 under system generalised method of moments (Arellano & Bover, 1995; Blundell & Bond, 1998), implying an adjustment speed of twenty-two to twenty-seven per cent per period. The deviation term in the second-stage adjustment model is positive and significant at the one per cent level across all specifications, confirming systematic rebalancing behaviour.

The interaction between ESG performance and the deviation from target leverage, which is the direct test of whether ESG accelerates adjustment, is statistically insignificant under both pooled and fixed effects estimation. Decomposing ESG into environmental, social, and governance pillars and interacting each with the deviation term likewise yields insignificant coefficients throughout. The hypothesis that ESG performance influences the speed of leverage adjustment is therefore rejected, and the pillar-level hypothesis is rejected as well.

What survives is a governance effect on the level rather than the speed. The governance pillar carries a positive and significant coefficient on leverage in the contemporaneous specification, and the lagged governance variable remains positive and significant, while aggregate ESG, the environmental pillar, and the social pillar are all insignificant. The authors interpret this asymmetry institutionally: in India, governance frameworks are comparatively formalised and tied to regulatory compliance, whereas environmental and social standards, though visible through Business Responsibility and Sustainability Reporting and mandatory corporate social responsibility provisions, remain in enforcement development. The finding refines the dynamic trade-off framework by locating ESG's influence in the determination of target leverage rather than in the adjustment mechanism (Jensen & Meckling, 1976; Myers, 1984).

6. Cross-Cutting Themes

6.1 The Substance-Versus-Symbol Problem

The single thread running through all six studies is the difficulty of distinguishing substantive sustainability from its ceremonial imitation. The problem appears at both ends of the causal chain. At the antecedent end, closed-list coding treats nominal environmental affiliations as real expertise, inflating the treated group with executives whose only environmental credential is a committee rotation, and this misclassification attenuates the estimated association by nearly thirty per cent (Lei et al., 2026). At the consequence end, disclosure-performance gaps allow firms to obtain green credit without deploying it environmentally (Xue & Geng, 2026). The concern is named explicitly as a limitation elsewhere in the corpus, with the acknowledgement that the design cannot fully separate genuine improvement from symbolic compliance motivated by political incentive (He et al., 2026).

These are not three separate problems but one problem observed at three points. In each case a construct that theory treats as substantive is measured by a text-based proxy that responds to vocabulary rather than to conduct. The methodological response demonstrated in the corpus is to build discrimination tests directly into the measurement stage, constructing an adversarial validation sample of keyword-laden but non-substantive cases and reporting the classifier's accuracy on it (Lei et al., 2026). This design principle generalises well beyond executive coding: any ESG construct derived from disclosure text should be validated against a set of cases engineered to be superficially compliant and substantively empty.

6.2 Measurement Error and Rating Divergence

The corpus spans at least five rating providers with documented methodological divergence (Berg et al., 2022; Gibson Brandon et al., 2021). Several studies address this by re-estimating with alternative ratings: substituting HUAZHENG for Bloomberg yields 0.0231 against a baseline of 0.0274 (Lei et al., 2026); substituting SynTao Green Finance for Hexun retains significance (He et al., 2026); and substituting Bloomberg for China Securities leaves the disaggregated environmental, social, and governance components each significant at the ten per cent level or better (Xue & Geng, 2026). Convergence across providers strengthens confidence considerably, since rating methodologies differ in weighting, coverage, and data collection.

Divergence, however, carries interpretive weight of its own. Provider variation is explicitly identified as a limitation, with a call for composite indices (Sharma & Banerji, 2026). The deeper issue is that rating disagreement is not random noise but reflects genuine ambiguity about what ESG performance is, and that ambiguity is precisely what permits greenwashing to survive. A rating regime in which providers agreed would be a regime in which the disclosure-performance gap was observable and therefore punishable.

6.3 Contingency: Ownership, Industry, and Region

No relationship in the corpus holds uniformly. Ownership conditions results in four of the six studies, and it does so in a theoretically coherent direction. General educational capital matters

in non-state-owned enterprises but not in state-owned ones (Tu & Guo, 2024), consistent with market-oriented firms relying on managerial competence where political direction is absent. Political capital matters in local rather than central state-owned enterprises (He et al., 2026), consistent with informal networks providing leverage where formal directives are less standardised. And ESG performance predicts excess returns in private but not state-owned firms (Zhang & Zhang, 2026). The pattern suggests that political and managerial capital are partial substitutes: each matters most where the other is scarce.

Industry pollution intensity conditions results in the opposite direction across studies, and the divergence is informative. The ESG-credit relationship is stronger in green-credit-restricted industries, where regulatory constraint makes the signal decision-relevant (Xue & Geng, 2026). ESG-return associations are significant in heavily polluting industries but insignificant elsewhere (Zhang & Zhang, 2026). Party School effects are present in both but of differing magnitude (He et al., 2026). By contrast, heavily polluting firms exhibit lower baseline ESG scores while the executive-level association persists alongside pollution intensity rather than being absorbed by it (Lei et al., 2026). The reconciliation is that pollution intensity raises the salience of environmental information without determining who supplies it.

Regional institutional environment conditions results in the two studies that test it. Party School effects are concentrated in low-marketisation regions, where informal political connection carries more weight, and in strong legal environments, where compliance is enforced (He et al., 2026). Regions with mature ESG disclosure mechanisms and robust green credit systems achieve energy intensity reductions of 0.426 per cent and emission intensity reductions of 0.281 per cent per unit of green credit, significant at the one per cent level, against insignificant effects in underdeveloped regions (Xue & Geng, 2026). Institutional infrastructure, in other words, is not a control variable but a precondition.

6.4 Mechanism Architecture

The mechanisms documented across the corpus fall into three families. Cognitive and capability mechanisms include green technology innovation investment (Lei et al., 2026), internal control quality (Tu & Guo, 2024), and total factor productivity (Xue & Geng, 2026). Value and orientation mechanisms include environmental governance investment (Lei et al., 2026) and textual alignment with government objectives (He et al., 2026). Resource and information mechanisms include subsidy access and promotion incentives (He et al., 2026), information transparency and business risk reduction (Xue & Geng, 2026), and financial performance (Zhang & Zhang, 2026).

Two observations follow. First, mediated shares differ by an order of magnitude across studies, from indirect effects of 0.0038 and 0.0023 (Lei et al., 2026) to mediating shares between forty-two and seventy-four per cent (He et al., 2026). This is partly a matter of estimator: causal mediation within an instrumental variables framework (Dippel et al., 2020) recovers larger indirect effects than bootstrap decomposition of a two-equation system, and both recover more than the

sequential procedure (Baron & Kenny, 1986) used in the education study (Tu & Guo, 2024). Comparisons of mediated share across studies employing different mediation estimators should therefore be treated as uninformative. Second, and more substantively, only one study tests whether distinct mediators are differentially activated by distinct executive attributes (Lei et al., 2026). That test, showing academic training operating through innovation and female leadership through governance investment, is what converts a list of mediators into a mechanism architecture.

6.5 Identification Strategies and Their Limits

The corpus displays a clear methodological hierarchy. The strongest design combines a quasi-experimental event, staggered-timing-robust estimators, multiple balancing methods, multiple instruments with different vulnerability profiles, and explicit sensitivity bounds on the exclusion restriction (Lei et al., 2026). Next comes multi-strategy fixed effects with Heckman correction, matching, and instrumentation with a placebo distribution (He et al., 2026). Panel fixed effects with instrumentation and matching follows (Xue & Geng, 2026), then fixed effects with a lagged-variable instrument (Zhang & Zhang, 2026), then two-way fixed effects with a shock-exclusion robustness check (Tu & Guo, 2024). A distinct position is occupied by the capital structure study, which uses system GMM appropriate to a dynamic panel with a lagged dependent variable and corrects for the generated-regressor problem through bootstrapped standard errors (Sharma & Banerji, 2026).

Two limitations recur regardless of design sophistication. Selection on unobservables cannot be eliminated in any observational setting; this is conceded explicitly, with the estimates framed as associations net of observable controls and fixed effects (Lei et al., 2026). And lagged-variable instruments (Zhang & Zhang, 2026) satisfy relevance easily but satisfy exclusion only under the assumption that no persistent omitted factor drives both past ESG and current returns, an assumption that is difficult to defend and rarely defended. The corpus is strongest where it reports convergence across strategies with different vulnerabilities rather than perfection within any one.

7. An Integrative Framework and Propositions

The synthesis supports a four-stage framework. Stage one comprises executive attributes: green human capital, political-ideological capital, and general educational capital. Stage two comprises firm-level green capabilities, the intermediate layer through which executive orientation becomes organisational practice, encompassing innovation investment, environmental governance investment, internal control quality, and disclosure infrastructure. Stage three comprises observed ESG performance as rendered by a rating provider, which is a noisy and provider-specific function of stage two. Stage four comprises financial consequences: credit allocation, equity valuation, and capital structure. Two moderating layers operate throughout: an institutional layer of ownership, regulation, marketisation, and legal enforcement, and a verification layer determining the extent to which stage three faithfully represents stage two.

Seven propositions follow.

Proposition 1. The association between an executive attribute and corporate ESG performance increases with the domain specificity of that attribute, so that environmental and politically socialised backgrounds carry larger and more robust associations than general educational attainment.

Proposition 2. Executive attributes influence ESG performance through pathways matched to their content: cognitive attributes such as academic training operate primarily through forward-looking innovation capability, whereas relational and value-based attributes operate primarily through current-period governance investment.

Proposition 3. Political and managerial human capital function as partial substitutes, such that the marginal contribution of each to ESG performance is greater where the other is institutionally scarce.

Proposition 4. Measurement of executive attributes by closed-list rules produces non-differential misclassification that attenuates estimated associations toward zero; construct-validated classification recovers larger and more reliable estimates.

Proposition 5. ESG performance expands access to policy-directed credit while simultaneously reducing the relative share of that credit within total borrowing, so that scale-only measurement systematically overstates the environmental redirection of capital.

Proposition 6. The environmental efficacy of ESG-linked financing is conditional on the disclosure-performance gap: where greenwashing is high, credit expansion produces no reduction in energy or emission intensity, and funds are redirected to working capital and administrative expense.

Proposition 7. ESG performance influences the determination of target capital structure through its governance component but does not influence the speed of adjustment toward that target, which remains governed by transaction costs and firm-specific frictions.

8. Implications for Practice and Policy

For boards and nomination committees, the evidence supports building systematic evaluation of environmental background into executive selection, while treating credential vocabulary with caution. The documented divergence between closed-list and substance-based coding (Lei et al., 2026) is a warning that nominal environmental affiliations, single committee rotations, and endorsed sustainability statements are poor predictors of subsequent ESG improvement, whereas careers described in newer terminology may be overlooked by conventional screening. Boards should also attend to the interaction between background and other executive attributes, since academic training and, more modestly, female leadership condition how strongly environmental expertise reaches firm-level outcomes.

For banks and lenders, the implications are sharper. ESG ratings alone are insufficient for green credit allocation and post-loan monitoring is essential, since funds obtained on the basis of favourable disclosure flow disproportionately to working capital and administrative expense (Xue & Geng, 2026). Lenders should complement rating scores with observed environmental

performance data and should monitor the green share of a borrower's total facilities rather than the green balance alone, given the documented crowding-out dynamic. Investors face an analogous problem, since the ESG-return relationship is confined to private enterprises (Zhang & Zhang, 2026), suggesting that portfolio construction should condition on ownership rather than on rating level alone.

For regulators, three priorities emerge. Disclosure standards require unification and verifiability, particularly for environmental indicators, with penalties attached to demonstrable disclosure-performance gaps (Xue & Geng, 2026). Institutional infrastructure matters as much as rules, since the environmental effects of green credit appear only in regions with mature disclosure and lending mechanisms. And where executive human capital is a policy lever, a dual-track leadership development model combining political training with internationally recognised ESG certification has been proposed (He et al., 2026), an approach that addresses the substitutability of political and professional competence identified in Proposition 3.

9. Limitations and Future Research

Four limitations qualify this synthesis. First, five of the six studies examine Chinese listed firms, and the sixth examines India. The findings speak to state-influenced and rapidly institutionalising economies and should not be generalised to settings with mature voluntary disclosure regimes and dispersed ownership. One framework is acknowledged explicitly to be context-specific to single-party political environments (He et al., 2026). Second, sample periods overlap only partially, running from 2007 to 2023 across the corpus but from 2012 to 2020 in the credit study, which therefore excludes the most recent phase of Chinese ESG regulatory tightening. Third, the corpus draws on multiple rating providers whose divergence is documented but whose sources are not decomposed. Fourth, narrative synthesis cannot deliver pooled effect sizes, and the direction-and-mechanism comparisons offered here are correspondingly weaker than meta-analytic estimates would be.

Six research directions follow. First, cross-jurisdictional replication of the succession-based design would establish whether executive effects scale with regulatory pressure, as the Chinese setting's institutional intensity suggests. Second, the large language model classification workflow should be extended to other executive attributes, including international and digital experience, and to multilingual biographical corpora, with the adversarial validation design retained. Third, the substance-versus-symbol problem invites experimental and field designs capable of observing conduct rather than text, including third-party ESG audits and outcome-based indicators (He et al., 2026). Fourth, the crowding-out finding should be re-examined on post-2020 data to determine whether tightening disclosure requirements have altered the structural dynamic. Fifth, the interaction between antecedent and consequence, specifically whether markets price ESG differently according to who produced it, remains untested and is the most direct implication of assembling these two literatures. Sixth, the capital structure null result should be tested outside

India, since the governance-only pattern is attributed to an institutional asymmetry that varies across emerging markets (Sharma & Banerji, 2026).

10. Conclusion

This paper has assembled six recent empirical studies into a single account running from executive cognition to capital allocation. Three conclusions stand out. Executive attributes are robust antecedents of corporate ESG performance, but their explanatory power rises with domain specificity and operates through pathways matched to their content, with green backgrounds working through innovation and governance investment, political training through state alignment and resource access, and general education through internal control quality. Financial consequences are real but conditional, expanding credit access while diluting its green share, predicting equity returns only where ownership signals economic rather than political motivation, and shaping target leverage through governance alone rather than accelerating adjustment toward it.

The third conclusion is methodological and, in the medium term, the most consequential. Both ends of the causal chain are limited by the same weakness: constructs that theory treats as substantive are measured by proxies that respond to vocabulary. Closed-list coding of executive backgrounds attenuates estimated effects by roughly thirty per cent because it counts nominal affiliations as expertise (Lei et al., 2026); disclosure-based ESG ratings sever the link between credit and emissions because they count reporting as performance (Xue & Geng, 2026). The response demonstrated in this corpus, building discrimination between substance and surface directly into the measurement stage and validating it against adversarial cases, is a design principle that ESG research should adopt generally. Until it does, the field will continue to estimate the effects of sustainability language rather than of sustainability.

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