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Responsible Corporate Governance and Financial Performance: Insights from India's Automobile Sector

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Abstract

This exploratory study examines whether responsible corporate governance is associated with financial performance among ten automobile companies of Indian origin over fiscal years 2021–2025. Two board-level governance mechanisms, board independence and board gender diversity, are analysed together with promoter shareholding, which is treated as a distinct ownership-structure dimension rather than as a measure of governance quality. Performance is measured by return on assets (ROA) and by an approximate Tobin's Q, with a market-to-book ratio as an alternative valuation measure. The balanced panel of fifty firm-year observations was hand-collected from audited consolidated financial statements, corporate governance reports and stock-exchange price records; no values were interpolated. Pooled OLS, random-effects, firm fixed-effects and two-way fixed-effects models are estimated with firm-clustered standard errors and wild cluster bootstrap inference, controlling for firm size, leverage and firm age. None of the three hypothesised positive associations is supported: board independence, promoter shareholding and gender diversity show no robust positive relationship with either ROA or market valuation. The one consistent result is that leverage is strongly and negatively associated with ROA. With only ten firms the tests have limited statistical power, so the findings are presented as exploratory evidence, not causal estimates. They are nonetheless consistent with the view that formal board structures in promoter-controlled Indian firms do not by themselves translate into measurable performance differences, and that capital structure is the more visible correlate of operating returns in this industry.

Keywords: *Corporate Governance; Board Independence; Promoter Ownership; Gender Diversity; Financial Performance.*
JEL Classification: G30, G32, G34, L62

1. Introduction

The Indian automobile industry is one of the structurally most important segments of the national economy, contributing close to half of manufacturing gross domestic product and employing several million people directly and indirectly across original-equipment manufacturers, component suppliers and dealerships(Jain et al., 2023a). It is distinguished by its corporate governance structure. Contrary to the widely-owned businesses in the Anglosphere version of corporate governance, Indian car makers tend to stay under the control of founding families including Tata, Mahindra, Bajaj, Munjal, Lal, who continue to own considerable shares and serve as board members in the respective companies. Such a corporate governance ownership is an ideal setting to study the impact of corporate governance on financial performance in the case of concentrated control. (Alahdal et al., 2024).

For the years covered from FY2021 to FY2025, these companies found themselves operating in a highly volatile landscape of collapsed demand, disruption of the supply chain as a result of the COVID-19 pandemic, semiconductor

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shortage, price fluctuations of commodities, and fast-paced transition to electric mobility. Under such circumstances, the effectiveness of the board's oversight, the agreement between the controlling stockholders and minorities, and diversity of perspectives at the board table must have played a key role in the survival and success of these firms.

The term "responsible corporate governance" is used in this paper to denote governance that goes beyond the letter of the Companies Act, 2013 and the Securities and Exchange Board of India (SEBI) Listing Obligations and Disclosure Requirements to embody substantive accountability effective independent monitoring, equitable treatment of minority investors, and inclusive board composition. It is defined as "RCG is a stakeholder-oriented policy approach allocating responsibilities to societal actors, who will drive corporate accountability" (Kuhndt et al., n.d.). (Aluchna & Idowu, 2017) Responsible corporate governance determines the systems, principles, and processes by which large firms or state-owned entities are governed. The study treats this construct as having two observable dimensions. Board-level governance mechanisms are captured by board independence and board gender diversity. Promoter shareholding is analysed alongside them as an ownership-structure characteristic, not as an indicator of governance quality in itself: concentrated ownership defines the principal–principal setting in which Indian boards operate and conditions how far formal board mechanisms can be substantive. All three variables are observable from statutory disclosures and recur throughout the Indian governance literature.

The research question is exploratory: are these board mechanisms, and the ownership structure within which they operate, measurably associated with the financial performance of Indian-origin automobile firms after controlling for firm size, leverage and age? The contribution is threefold. First, the paper provides sector-specific, recent (post-pandemic) panel evidence for an industry that prior Indian studies have analysed only as part of broad multi-sector samples. Second, it pairs an accounting measure (ROA) with a market measure (an approximate Tobin's Q) to separate operating effects from valuation effects(Bhatt & Bhattacharya, 2015). Third, it rests on a fully documented, hand-collected dataset in which every observation is traceable to an audited annual report or exchange price record, and it reports the results as exploratory evidence from a small panel rather than as robust causal estimates, contributing to the policy debate on whether structural board mandates deliver measurable performance benefits in promoter-controlled firms.

The remainder of the paper is organised as follows. Section 2 reviews the relevant Indian and international literature and develops three hypotheses. Section 3 describes the sample, variables, data provenance and the econometric models. Section 4 presents descriptive statistics, correlations, the regression results for both performance measures, robustness and sensitivity checks, and an assessment of the hypotheses. Section 5 concludes with implications, limitations and an agenda for future research. Appendix A documents the provenance of every board-composition observation..

2. Review of Literature

Literature Review and Hypothesis Development

There is extensive literature on the issue of corporate governance and firm performance in India, but there is no conclusive evidence from the empirical studies, a fact that drives the need for in-depth analysis. The theoretical framework under which the relationship between corporate governance and firm performance is explained is outlined below before evidence is presented on the three governance mechanisms.

Theoretical Framework

The research is based on three theories which complement each other. According to agency theory, when there is a separation between ownership and control, monitoring costs arise which can be minimized via independent boards and proper ownership structures. (Farhan et al., 2019). However, in the Indian context, the pertinent form of the principal-agent problem is not the traditional one between the owner and the manager but the principal-principal problem between the controlling promoter on one hand and the minority shareholders on the other. Resource Dependence Theory says that the board acts as an intermediary to get access to outside resources. Therefore, we expect that gender diversity in the boardroom will lead to better decision-making and networking. (Le & Behl, 2022). However, stewardship theory offers some counterbalance to the above: if controlling families are indeed long-term stewards of the firm's value, promoter concentration is entirely consistent with the objectives of shareholders (Sharma et al., 2023). Responsible

corporate governance, as used here, draws on all three. Agency and resource-dependence arguments motivate the two board mechanisms (independence and gender diversity). The principal–principal and stewardship arguments explain why promoter ownership is examined separately: it is the ownership context that can either reinforce or neutralise those board mechanisms, and is therefore modelled as an ownership-structure variable in its own right rather than as a component of governance quality.

Board Independence and Performance

Agency theory predicts that independent directors improve performance by monitoring management and protecting minority shareholders(Saha & Chandra Kabra, 2019; Sarkar & Sarkar, 2009). The Indian evidence is particularly mixed, though. Large-sample studies have found that board independence is associated with poor accounting performance because independent directors in promoters' firms are just symbols of independence (Goel et al., 2022; Haldar et al., 2018; Jain et al., 2023b). (Arora & Sharma, 2016) find that formal independence does not equal effective independence in Indian manufacturing, while(Arora, 2024) shows that independence can nonetheless act as a positive moderator of other governance arrangements. (M. & Sasidharan, 2020; R. Mishra & Kapil, 2017) find that the value relevance of independence is conditional on ownership structure. Given this divergence, and the automobile sector's strong promoter control, the directional expectation is uncertain but the relationship merits testing.

H1: Board independence is positively associated with the financial performance

Promoter Shareholding (Ownership Structure) and Performance

Concentrated promoter ownership can align incentives and reduce the classic owner–manager agency conflict (alignment hypothesis), or it can entrench controlling families and facilitate expropriation of minority shareholders (entrenchment hypothesis). Indian studies repeatedly find promoter ownership to be performance-enhancing on average (Kumar & Singh, 2013) identify a positive threshold around 40 percent; (Banik & Chatterjee, 2021; Chauhan et al., 2016) report that promoter and institutional ownership drive performance more reliably than board structure does. (S. Bhatia & Srivastava, 2017; Chahal, 2024) document non-linear, U-shaped relationships. Performance in family-controlled automobile firms is plausibly underpinned by promoter commitment, long horizons and reputational stakes.

H2: Promoter shareholding is positively associated with the financial performance

Board Gender Diversity and Performance

Women directors bring value to the board from the perspectives of resource dependence theory and the upper echelons theory since they enrich the information sets of the boards. In India, the critical mass theory seems to hold sway in view of the research because having one woman director makes very little difference, but having several does. (Aggarwal et al., 2019; Biswas et al., 2025; C. Chatterjee & Nag, 2023; Jayaraman et al., 2025; Kumar & Singh, 2013; Pandey & Chaturvedi Sharma, 2025) caution that business-group affiliation can dilute diversity benefits. Following the weight of recent evidence, a positive association is expected.

H3: Board gender diversity is positively associated with the financial performance

The control variables firm size, leverage and age follow standard practice (A. Bhatia & Kumari, 2024; S. Mishra & Mohanty, 2014; Sehrawat et al., 2020). Leverage is consistently found to depress performance in the high-borrowing-cost Indian environment (A. Bhatia & Kumari, 2024), an expectation tested directly below..

3. Data and Methodology

Ten automobile manufacturing firms of Indian origin which are listed on the National Stock Exchange and Bombay Stock Exchange have been taken as the sample for analysis. Each firm is observed for five financial years, FY2021 to FY2025 (years ended 31 March), giving a balanced panel of fifty firm-year observations. "Indian origin" means companies promoted by Indian promoters or business houses.

Sample and Period

The sample spans passenger vehicles, commercial vehicles, two- and three-wheelers and tractors, capturing the breadth of the domestic industry. The sample was not enlarged for two reasons. Adding auto-component manufacturers would mix firms with materially different capital intensity, customer structure and regulatory exposure, and extending the window to FY2026 would break comparability because Tata Motors demerged its commercial-vehicle business

during that year. Ten firms and fifty observations give limited statistical power, so the study is explicitly exploratory: its estimates describe associations in this sample and are not offered as robust causal evidence. The ten firms are listed in Table 1.

Table 1: Sample Firms from the Indian Automobile Industry

Company	Founded	Primary segment	Controlling group
Tata Motors	1945	CV / PV / EV	Tata Group
Mahindra & Mahindra	1945	UV / Tractors	Mahindra Group
Maruti Suzuki India	1981	Passenger vehicles	Suzuki (India-listed)
Bajaj Auto	1945	Two/Three-wheelers	Bajaj Group
Hero MotoCorp	1984	Two-wheelers	Munjal family
Eicher Motors	1948	Two-wheelers / CV	Lal family
TVS Motor	1978	Two/Three-wheelers	TVS Group
Ashok Leyland	1948	Commercial vehicles	Hinduja Group
Force Motors	1958	UV / CV / Engines	Firodia family
Escorts Kubota	1944	Tractors	Nanda family / Kubota

Source: *Author's compilation based on company annual reports and official corporate disclosures.*

Note: *Sample of ten Indian-origin automobile firms. Maruti Suzuki is included as an India-listed, India-incorporated firm; Suzuki parentage is noted in the robustness discussion.*

Variables and Measurement

The variable definitions follow established Indian governance studies and are summarised in Table 2. The two dependent variables capture complementary dimensions of performance. ROA is consolidated profit after tax (before non-controlling interests) divided by year-end total assets. The market measure is an approximate Tobin's Q: market capitalisation plus the book value of total borrowings, divided by the book value of total assets.

Table 2: Definition and Operationalisation of Study Variables.

Variable	Symbol	Type	Definition	References
Return on assets	ROA	Dependent (acct.)	Consolidated profit after tax ÷ total assets (%)	(M. Chatterjee et al., 2024)
Approximate Tobin's Q	TQ	Dependent (market)	(Market capitalisation + book value of total borrowings) ÷ total assets	(Jha et al., 2025)
Market-to-book ratio	MTB	Dependent (robustness)	Market capitalisation ÷ total equity	(R. Mishra & Kapil, 2017)
Board independence	BIND	Independent (CG)	Independent directors ÷ board size (%)	(Kalita & Tiwari, 2023)
Promoter shareholding	PROM	Independent (ownership)	Promoter & group equity held (%)	(Chahal, 2024)
Board gender diversity	GDIV	Independent (CG)	Women directors ÷ board size (%)	(Pathak et al., n.d.)
Firm size	SIZE	Control	Natural log of total assets	(Chahal, 2024)
Leverage	LEV	Control	Total borrowings ÷ total assets	(Edacherian et al., 2024)
Firm age	AGE	Control	Natural log of years since founding	(Abebe & Dhaliwal, 2024)

Source: *Compiled by the author based on the definitions and measurement approaches reported in the cited studies; adaptations and calculations are specified in the table.*

It is an approximation because the book value of debt stands in for its market value and book total assets stand in for replacement cost. Total borrowings are non-current plus current borrowings as shown in the consolidated balance sheet (including current maturities of long-term debt); lease liabilities, trade payables and compulsorily convertible preference shares are excluded. Market capitalisation is the closing share price on the Bombay Stock Exchange on the last trading day of March multiplied by the shares outstanding on 31 March; for Tata Motors, which had two listed share classes until 2024, both classes are included. As an alternative valuation measure that does not depend on the treatment of debt, a market-to-book ratio (market capitalisation divided by total equity) is used in the robustness analysis. Board independence and gender diversity are measured on the board as constituted on 31 March. Promoter shareholding is the promoter and promoter-group holding at year-end and is classified as an ownership-structure variable.

Data Sources and Provenance

All data were hand-collected from primary documents; no observation was interpolated, extrapolated or filled with trend-consistent values. Board size, the number of independent directors and the number of women directors were taken from the Report on Corporate Governance in each firm's annual report, and promoter shareholding from the shareholding pattern or share-capital note. Total assets, profit after tax, borrowings and total equity were taken from the audited consolidated financial statements as first reported for each year; figures reported in rupees million or lakh were converted to rupees crore. Share prices are unadjusted monthly closing prices from the Bombay Stock Exchange archive. Of the 50 firm-years, 41 have board-composition data read directly from the annual report for that year. For the remaining nine, namely FY2021 for every firm except Tata Motors, the FY2021 annual report was not available to the authors and the board as at 31 March 2021 was reconstructed from the FY2022 annual report by reversing the director appointments and cessations that the report records for the year. This is a documentary reconstruction, not a statistical imputation, and it affects only board size, independent directors and women directors in those nine observations (18 percent of the panel); their financial and ownership data are the audited prior-year comparatives. Appendix A lists each affected observation and the basis of reconstruction, and Section 4.6 reports the results with these nine observations excluded. Tata Motors' market capitalisation for FY2021–FY2024 combines its ordinary and 'A' ordinary shares, with share counts derived from the paid-up capital in its audited results.

Empirical Models

Four estimators are applied to each dependent variable. Pooled OLS (Equation 1) estimates the average relationship across all firm-years. A random-effects model allows for firm-specific intercepts uncorrelated with the regressors. A firm fixed-effects model and a two-way (firm and year) fixed-effects model (Equation 2) absorb time-invariant firm heterogeneity and, in the two-way case, common year shocks, giving a more conservative within-firm estimate. A Hausman test is used to choose between fixed and random effects. Firm age is omitted from the fixed-effects models because, within a firm, it increases mechanically with time and is not separately identified from the year effects. All standard errors are clustered at the firm level. Because cluster-robust inference is unreliable with only ten clusters, p-values for the key coefficients are also computed with a restricted wild cluster bootstrap (Rademacher weights, all 1,024 sign combinations), and conclusions are drawn only where the two agree.

$$(1)\quad FP^{it} = \alpha + \beta_1 BIND^{it} + \beta_2 PROM^{it} + \beta_3 GDIV^{it} + \gamma' Controls^{it} + \varepsilon^{it}$$

$$(2)\quad FP^{it} = \alpha + \beta_1 BIND^{it} + \beta_2 PROM^{it} + \beta_3 GDIV^{it} + \gamma' Controls^{it} + \mu^{i} + \lambda^{t} + \varepsilon^{it}$$

where FP is ROA, approximate Tobin's Q or (in the robustness analysis) the market-to-book ratio, μ_i are firm fixed effects and λ_t are year fixed effects.

5. Results and Discussion

Descriptive Statistics

Table 3 reports descriptive statistics for the pooled panel. Board independence averages 53.1 percent and ranges from about 31 to 78 percent, so the typical board is at or above the one-half threshold that applies where the chairperson is an executive or a promoter. Promoter holdings average 47.3 percent and are widely dispersed (18.1 to 72.9 percent), confirming the concentration of ownership in this industry. Board gender diversity averages 17.7 percent; every board

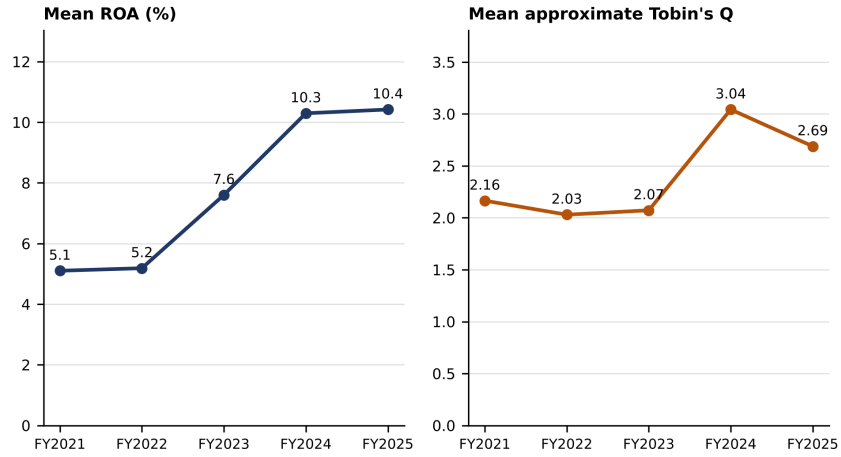
has at least one woman director, and the range (7.7 to 37.5 percent) shows that some boards have moved well beyond the statutory minimum. ROA averages 7.7 percent with a wide spread, including loss-making firm-years (minimum −3.9 percent). Approximate Tobin's Q averages 2.40 and the market-to-book ratio 4.36. Leverage is highly skewed (median 0.08, maximum 0.61) because four firms consolidate vehicle-finance subsidiaries while most of the others carry little or no debt.

Table 3: Descriptive Statistics of Study Variables

Variable	Mean	Std. Dev.	Min	Median	Max
BIND (%)	53.09	9.85	30.77	50.00	77.78
PROM (%)	47.35	13.60	18.14	50.54	72.89
GDIV (%)	17.68	7.97	7.69	16.67	37.50
ROA (%)	7.72	6.16	−3.90	7.76	19.59
Approx. Tobin's Q	2.40	1.34	0.62	2.39	6.54
Market-to-book	4.36	2.68	0.77	3.78	15.07
SIZE (ln)	10.59	1.30	8.08	10.47	12.84
LEV	0.22	0.24	0.00	0.08	0.61
AGE (ln)	4.14	0.28	3.61	4.32	4.39

Source: *Author's calculations based on the study sample of 50 firm-year observations covering FY2021–FY2025.*

Figure 1: Sample mean ROA and approximate Tobin's Q by financial year.



Source: *Author's calculations based on company annual reports and financial statements, FY2021–FY2025.*

The changes in mean performance over time can be seen in Figure 1. Mean ROA is lowest in the pandemic-affected FY2021 (5.1 percent) and FY2022 (5.2 percent), and roughly doubles to 10.3 percent in FY2024 and 10.4 percent in FY2025 as volumes normalised and the product mix moved towards premium vehicles. Mean approximate Tobin's Q is flat at about 2.0 to 2.2 through FY2023, rises to 3.04 in FY2024 and eases to 2.69 in FY2025.

Firm-Level Profile

Table 4 presents five-year firm-level means, illustrating the structural diversity of the sample. The two-wheeler specialists and Eicher Motors (Bajaj Auto, Eicher Motors, Hero MotoCorp) combine high ROA with elevated valuations and almost no debt. Tata Motors, Mahindra & Mahindra, Ashok Leyland and TVS Motor show the lowest ROA; all four either carry substantial borrowings or consolidate a vehicle-finance subsidiary.

Promoter holding is lowest at Mahindra & Mahindra and Hero MotoCorp and highest at Force Motors and Maruti Suzuki. Gender diversity is highest at Tata Motors, Mahindra & Mahindra and Hero MotoCorp. Notably, the firms with the most independent and most gender-diverse boards are not the best performers, which anticipates the regression results.

Table 4: Firm-Level Five-Year Average of Corporate Governance and Firm Performance Variables

Firm (5-yr mean)	BIND %	PROM %	GDIV %	ROA %	TQ
Tata Motors	58.3	40.7	27.1	1.9	0.90
Mahindra & Mahindra	58.1	18.6	26.6	4.2	1.26
Maruti Suzuki	33.4	57.1	12.0	8.8	3.03
Bajaj Auto	50.9	54.5	12.7	16.5	4.02
Hero MotoCorp	52.0	34.7	25.7	12.9	2.57
Eicher Motors	57.0	49.2	15.7	13.9	4.69
TVS Motor	53.3	51.8	15.9	3.7	2.31
Ashok Leyland	55.5	51.1	9.3	2.0	1.34
Force Motors	62.3	61.1	12.0	4.3	1.31
Escorts Kubota	50.0	54.6	20.0	9.2	2.59

Source: *Author's calculations based on data compiled from the annual reports and financial statements of the selected firms for FY2021–FY2025.*

Correlation and Multicollinearity

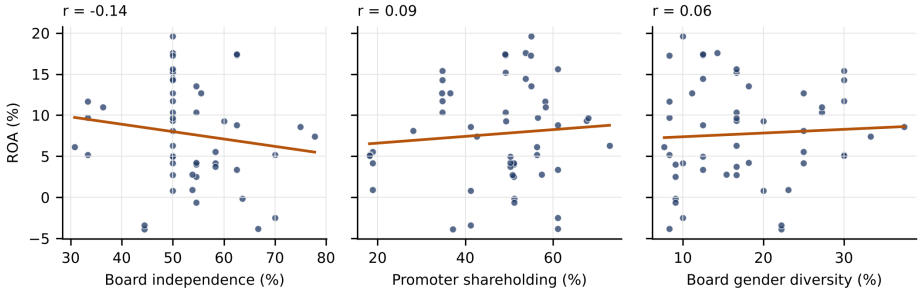
Table 5 reports pairwise correlations. None of the three governance and ownership variables is strongly correlated with ROA (board independence r = −0.14, promoter holding r = 0.09, gender diversity r = 0.06). For approximate Tobin's Q the correlations are modest and, for the two board variables, negative (r = −0.27 and −0.22), while promoter holding is positively correlated (r = 0.26). Leverage is strongly negatively correlated with both ROA (r = −0.72) and Tobin's Q (r = −0.57), and ROA and Tobin's Q are strongly positively correlated (r = 0.77). Among the explanatory variables the largest correlation is between promoter holding and gender diversity (r = −0.64): firms with lower promoter stakes tend to have more women directors. Multicollinearity is not a concern, as all variance-inflation factors are below 2.5 (maximum VIF = 2.18).

Table 5. Pearson Correlation Matrix and Multicollinearity Diagnostics for Governance, Ownership, and Firm Performance Variables

	BIND	PROM	GDIV	ROA	TQ	LEV
BIND	1.00					
PROM	−0.18	1.00				
GDIV	0.26	−0.64	1.00			
ROA	−0.14	0.09	0.06	1.00		
TQ	−0.27	0.26	−0.22	0.77	1.00	
LEV	0.27	−0.24	−0.04	−0.72	−0.57	1.00

Source: *Author's calculations based on firm-level data compiled from annual reports and financial databases, FY2021–FY2025.*

Figure 2. Weak Bivariate Associations Between Corporate Governance Characteristics and Return on Assets (ROA)



Source: *Author's calculations based on CMIE Prowess database.*

Regression Results: ROA

Table 6 reports the determinants of ROA. In the pooled OLS model none of the three governance and ownership variables is statistically significant: the coefficients on board independence (0.056), promoter shareholding (−0.048) and gender diversity (−0.071) are small and imprecisely estimated. The dominant relationship is leverage, which is strongly negative (−20.68 per unit of the debt-to-assets ratio; wild-bootstrap p = 0.033), consistent with (A. Bhatia & Kumari, 2024) and with the high cost of borrowing in India. The pooled model explains 53 percent of the variation in ROA. The Hausman test rejects random effects ($\chi^2 = 52.2$, $p < 0.001$), so the fixed-effects estimates are preferred. Under firm and two-way fixed effects, board independence and gender diversity remain close to zero and insignificant, and leverage remains strongly negative (−39.64; wild-bootstrap p = 0.072). Promoter shareholding turns negative and appears significant with conventional clustered standard errors (−0.159), but this is not confirmed by the wild cluster bootstrap (p = 0.229) and, as Section 4.6 shows, it is produced by a single firm. The overall picture is that within-firm changes in board composition are not associated with changes in ROA, in line with Indian evidence that formal board structure is weakly related to accounting performance in promoter-controlled firms (Arora & Sharma, 2016; Banik & Chatterjee, 2021).

Table 6: Panel Regression Estimates of the Determinants of Return on Assets (ROA)

Variable	**Pooled OLS**	**Random effects**	**Firm FE**	**Two-way FE**
BIND	0.056 (0.656)	0.024 (0.744)	0.013 (0.719)	−0.028 (0.564)
PROM	−0.048 (0.242)	−0.037 (0.414)	−0.110*** (0.001)	−0.159*** (0.000)
GDIV	−0.071 (0.662)	0.047 (0.595)	0.001 (0.990)	−0.041 (0.671)
SIZE	0.374 (0.655)	3.628** (0.014)	9.246*** (0.000)	−0.909 (0.839)
LEV	−20.685*** (0.000)	−36.395*** (0.000)	−46.617*** (0.000)	−39.641*** (0.000)
AGE	−0.270 (0.942)	7.627 (0.341)	—	—
Firm effects	No	Random	Yes	Yes
Year effects	No	No	No	Yes
R^2 (overall)	0.530	0.550	0.724	0.676
N	50	50	50	50

Source: *Author's calculations based on the study sample; estimates from pooled OLS, random-effects, firm fixed-effects, and two-way fixed-effects models.*

Note:*Determinants of ROA. Cells show the coefficient with the firm-clustered p-value in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01. The LEV coefficient is per unit of the debt-to-assets ratio. AGE is omitted from the fixed-effects models because it is not separately identified from firm and year effects. Hausman test (fixed vs random effects): $\chi^2(5) = 52.16$, $p < 0.001$. Wild cluster bootstrap p-values, two-way FE: BIND 0.707, PROM 0.229, GDIV 0.676, LEV 0.072; pooled OLS: BIND 0.688, PROM 0.244, GDIV 0.723, LEV 0.033.*

Regression Results: Approximate Tobin's Q

Table 7 reports the determinants of market valuation. In the pooled model the coefficients on board independence (−0.005), promoter shareholding (−0.004) and gender diversity (−0.048) are all close to zero and insignificant, and leverage is again negative (−3.45; wild-bootstrap p = 0.066). The pooled model explains 39 percent of the variation in valuation. For Tobin's Q the Hausman test does not reject random effects ($\chi^2 = 6.35$, p = 0.27), and the random-effects estimates tell the same story as pooled OLS. Under two-way fixed effects all three governance and ownership coefficients are negative. Only gender diversity (−0.033) remains significant under the wild cluster bootstrap (p = 0.021); board independence (p = 0.311) and promoter shareholding (p = 0.367) do not. The negative within-firm association for gender diversity should be read with caution: it is not present in the pooled or random-effects models, it disappears when the market-to-book ratio is used instead (Section 4.6), and several firms added women directors in the same years in which valuations across the sector were re-rated. The results therefore do not support the proposition, reported in earlier Indian studies, that governance attributes are priced positively by the market (Arora & Bodhanwala, 2018; R. Mishra &

Kapil, 2017; Sehrawat et al., 2020); in this sample and period there is no evidence of a valuation premium for more independent or more diverse boards, or for higher promoter ownership.

Table 7: Corporate Governance and Firm Valuation: Panel Regression Results

Variable	Pooled OLS	Random effects	Firm FE	Two-way FE
BIND	−0.005 (0.856)	−0.005 (0.596)	−0.002 (0.867)	−0.019 (0.130)
PROM	−0.004 (0.796)	0.001 (0.926)	−0.011*** (0.004)	−0.019** (0.017)
GDIV	−0.048 (0.154)	−0.015 (0.172)	−0.018 (0.167)	−0.033*** (0.006)
SIZE	0.077 (0.748)	0.458 (0.101)	1.394*** (0.001)	−1.947 (0.272)
LEV	−3.446** (0.036)	−3.085** (0.044)	−2.339 (0.274)	0.309 (0.909)
AGE	0.087 (0.913)	1.385 (0.147)	—	—
Firm effects	No	Random	Yes	Yes
Year effects	No	No	No	Yes
R^2 (overall)	0.389	0.140	0.218	0.231
N	50	50	50	50

Source: *Author's calculations based on the study sample; estimates from pooled OLS, random-effects, firm fixed-effects, and two-way fixed-effects models.*

Note: *Determinants of approximate Tobin's Q. Cells show the coefficient with the firm-clustered p-value in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. AGE is omitted from the fixed-effects models. Hausman test: $\chi^2(5) = 6.35$, $p = 0.274$. Wild cluster bootstrap p-values, two-way FE: BIND 0.311, PROM 0.367, GDIV 0.021, LEV 0.914; pooled OLS: BIND 0.861, PROM 0.840, GDIV 0.287, LEV 0.066.*

Robustness and Sensitivity Analysis

Table 8 presents five sets of robustness checks to assess the stability of the baseline findings. First, the nine firm-year observations for which board composition was reconstructed using information from the subsequent annual report are excluded (N = 41). The results remain substantively unchanged. Board independence and gender diversity continue to exhibit statistically insignificant associations with ROA, while leverage remains strongly and negatively associated with ROA. The coefficient signs for Tobin's Q are also consistent with the baseline estimates, indicating that the findings are not driven by observations involving reconstructed board information.

Second, the robustness of the promoter-shareholding result is examined using the case of Escorts Kubota. Its reported promoter ownership increased sharply from 28.09 percent in FY2022 to 72.89 percent in FY2023 because Kubota Corporation, which had already held a 16.39 percent stake, was reclassified from a public shareholder to a promoter and subsequently increased its ownership. Excluding Escorts Kubota causes the negative coefficient of promoter shareholding on ROA to reverse and become positive (0.298**). This suggests that the baseline fixed-effects estimate is largely attributable to this specific ownership reclassification rather than a systematic relationship. Importantly, incorporating Kubota Corporation's stake into the FY2022 figure does not materially change the baseline results.

Third, consistent with the conceptual distinction between governance mechanisms and ownership structure, board characteristics and promoter shareholding are estimated in separate models. In the board-only specification, neither board mechanism is significantly related to ROA, while the gender-diversity coefficient for Tobin's Q loses statistical significance.

Fourth, the market-to-book ratio is employed as an alternative measure of firm performance. Under both two-way fixed-effects and pooled specifications, none of the governance or ownership variables is statistically significant. The wild-bootstrap p-values for board independence, promoter ownership, and gender diversity under two-way fixed effects are 0.23, 0.38, and 0.21, respectively. Thus, the previously observed negative association between gender diversity and performance appears specific to the approximate Tobin's Q measure.

Finally, an indicator for firm-years involving consolidated vehicle-finance subsidiaries is introduced to account for potentially inflated leverage. The relevant firms are Mahindra & Mahindra, Ashok Leyland, TVS Motor, and Bajaj Auto

from FY2025. The results remain stable: governance coefficients are insignificant, whereas leverage continues to exhibit a strong negative association with ROA. Overall, the robustness analyses reinforce the conclusion that governance and ownership variables do not display robust positive relationships with firm performance, while higher leverage is consistently associated with lower ROA.

Table 8: Robustness and Sensitivity Analysis of the Main Regression Results

Specification (two-way FE unless stated)	Dependent	BIND	PROM	GDIV	LEV	N
Baseline	ROA	−0.028	−0.159***	−0.041	−39.641***	50
Baseline	TQ	−0.019	−0.019**	−0.033***	0.309	50
Excluding the nine reconstructed FY2021 observations	ROA	−0.028	−0.086***	−0.002	−40.977***	41
Excluding the nine reconstructed FY2021 observations	TQ	−0.024	−0.020**	−0.031*	0.373	41
Excluding Escorts Kubota	ROA	−0.024	0.298**	−0.055	−43.512***	45
Excluding Escorts Kubota	TQ	−0.020	−0.098	−0.035***	0.800	45
Escorts FY2022 promoter holding incl. Kubota (44.48%)	ROA	−0.019	−0.235***	−0.054	−40.899***	50
Escorts FY2022 promoter holding incl. Kubota (44.48%)	TQ	−0.019	−0.020*	−0.031**	0.210	50
Board mechanisms only (PROM excluded)	ROA	−0.041	—	0.043	−39.354***	50
Board mechanisms only (PROM excluded)	TQ	−0.021	—	−0.023	0.343	50
Ownership only (BIND, GDIV excluded)	ROA	—	−0.148***	—	−39.092***	50
Ownership only (BIND, GDIV excluded)	TQ	—	−0.010*	—	0.725	50
Market-to-book ratio as valuation measure	MTB	−0.035	−0.059	−0.051	0.666	50
Market-to-book ratio, pooled OLS	MTB	−0.011	0.045	0.005	3.381	50
Pooled OLS with finance-subsidiary indicator	ROA	0.099	0.021	−0.030	−36.897***	50
Pooled OLS with finance-subsidiary indicator	TQ	0.004	0.010	−0.039	−6.802***	50

Source: *Author's calculations based on the study sample.*

Note: *Robustness and sensitivity checks. Coefficients with firm-clustered significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Two-way fixed-effects models include SIZE and LEV as controls; pooled models include SIZE, LEV and AGE. With ten clusters, clustered significance levels overstate precision and should be read together with the wild-bootstrap p-values reported in Tables 6 and 7.*

Hypothesis Assessment

Table 9 summarises the empirical evidence for each hypothesis. H1, concerning board independence, is not supported. The coefficient on board independence is close to zero across all ROA models and negative for Tobin's Q, with none of the estimates achieving statistical significance under the wild cluster bootstrap. H2, relating to promoter shareholding, is also not supported. Although the fixed-effects specification produces a negative coefficient, this result is primarily attributable to the ownership reclassification of a single shareholder at Escorts Kubota, while the pooled estimates remain statistically insignificant. H3, concerning gender diversity, is similarly not supported. Gender diversity shows no significant association with ROA, while its negative relationship with Tobin's Q under fixed effects disappears when the market-to-book ratio is employed as an alternative performance measure. The absence of a positive diversity effect is broadly consistent with the critical-mass perspective, which suggests that women directors may influence organisational outcomes only after reaching a sufficient representation threshold (C. Chatterjee & Nag, 2023; Jayaraman et al., 2025). However, the present study does not directly test this threshold. In contrast, the hypothesised negative relationship between leverage and ROA is consistently supported. Nevertheless, given the relatively small number of

firms in the sample, statistically insignificant results should not be interpreted as definitive evidence of no relationship, as the tests have limited power to identify relatively small effects.

Table 9: Summary of Hypothesized Relationships Between Governance and Firm Performance

Hypothesis	Expected	Pooled OLS (ROA / TQ)	Two-way FE (ROA / TQ)	Assessment
H1 Board independence → FP	+	0.056 / −0.005	−0.028 / −0.019	Not supported
H2 Promoter holding → FP	+	−0.048 / −0.004	−0.159*** / −0.019**	Not supported (FE estimate driven by one firm)
H3 Gender diversity → FP	+	−0.071 / −0.048	−0.041 / −0.033***	Not supported (negative for TQ, not robust to MTB)
Leverage (control) → ROA	−	−20.685***	−39.641***	Confirmed

Source: *Author's compilation based on regression results reported in Tables 6 and 7.*

Note: *Summary of hypothesis tests. FP = financial performance. Significance from firm-clustered standard errors: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; see Tables 6 and 7 for wild-bootstrap p-values.*

5. Conclusion, Implications and Limitations

Summary of Findings

This exploratory study examined whether two board-level governance mechanisms, board independence and board gender diversity, and the ownership structure within which they operate, measured by promoter shareholding, are associated with the financial performance of ten Indian-origin automobile firms over FY2021–FY2025. Three findings stand out. First, none of the three variables shows a robust positive association with performance. Board independence and gender diversity are unrelated to ROA in pooled, random-effects and fixed-effects models, and neither attracts a valuation premium. Second, promoter shareholding is likewise unrelated to performance once a single ownership reclassification is accounted for, which supports treating ownership structure as a separate dimension and not as a marker of governance quality. Third, financial leverage is strongly and negatively associated with ROA in every specification. In this capital-intensive industry, differences in capital structure, including whether a firm carries a captive finance business, are far more visible in operating returns than differences in formal board structure.

Implications

These findings are exploratory and the implications are offered accordingly. For boards and controlling owners, the results suggest that meeting or exceeding the formal thresholds for independent and women directors is not, by itself, reflected in operating returns or valuation; responsible governance has to be sought in how the board functions, which structural counts do not capture. For regulators, the results do not call the direction of SEBI and Companies Act requirements into question, but they indicate that composition mandates should not be expected to produce visible performance differences in promoter-controlled firms without attention to board process and effectiveness. For investors, board-composition ratios and promoter-holding levels were not reliable signals of either profitability or valuation in this sector over this period, whereas leverage was….

Limitations and Future Research

The main limitation is the small panel (ten firms, five years, fifty observations), which limits statistical power and makes cluster-robust inference fragile; the study is therefore exploratory, and a failure to detect an association is not evidence of its absence. Second, board composition for nine FY2021 firm-years was reconstructed from the following year's report (Appendix A), although excluding them does not change the results. Third, the valuation measure is an approximation of Tobin's Q, and Tata Motors' market capitalisation for FY2021–FY2024 relies on a secondary source for one of its two share classes. Fourth, consolidated figures for four firms include vehicle-finance subsidiaries, which raises their leverage relative to pure manufacturers. Fifth, board independence and gender diversity are counts of structure and do not measure how boards function. Finally, endogeneity, in particular reverse causality from performance

to governance, is only partially addressed by fixed effects. Future research should extend the panel across more firms and years, including the wider automotive supply chain where comparability permits, use database sources such as CMIE Prowess or Capitaline to enlarge the sample, estimate dynamic models such as system GMM to address endogeneity, and add process-based dimensions of responsible governance such as board committees, meeting attendance, environmental, social and governance disclosure and related-party transaction intensity.

Appendix A. Provenance of board-composition data

Board size, independent directors and women directors were read directly from the Report on Corporate Governance for 41 of the 50 firm-years: all five years for Tata Motors, and FY2022–FY2025 for the other nine firms. For FY2021 at those nine firms, the board as at 31 March 2021 was reconstructed from the FY2022 annual report by reversing the appointments and cessations recorded for FY2022. Table A1 gives the reconstructed board (size / independent / women) and its basis. No other variable in these observations is reconstructed.

Table A1: Reconstruction of FY2021 Board Characteristics from Subsequent-Year Disclosures

Firm (FY2021)	Board / independent / women	Basis of reconstruction from the FY2022 annual report
Mahindra & Mahindra	13 / 7 / 3	FY2022 board of 12, plus the managing director whose term ended on 1 April 2021
Bajaj Auto	16 / 8 / 2	FY2022 board of 14, plus the non-executive chairman who resigned on 30 April 2021 and one independent director who resigned on 9 July 2021
Hero MotoCorp	9 / 5 / 1	FY2022 board of 11, less three directors appointed in November 2021 (two independent, one non-executive; two women), plus one independent director whose term ended on 4 May 2021
Maruti Suzuki	13 / 4 / 1	FY2022 board of 12, plus one whole-time director who ceased on 28 April 2021
Ashok Leyland	11 / 7 / 1	FY2022 board of 11, less one director appointed in November 2021, plus the managing director who resigned in December 2021; one director was independent until July 2021
TVS Motor	13 / 7 / 2	FY2022 board of 12, plus one independent director who resigned on 20 August 2021
Eicher Motors	5 / 3 / 1	FY2022 board of 6, less the whole-time director appointed on 18 August 2021
Force Motors	12 / 8 / 1	FY2022 board of 10, plus one non-executive director who ceased on 28 February 2022 and one independent director who resigned on 30 March 2022
Escorts Kubota	12 / 6 / 3	FY2022 board of 12; the FY2022 report records no director changes during the year

Source: *Author's reconstruction based on FY2022 annual reports of the respective companies.*

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