MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1s, 2026, Pages: 841-849

Corporate Governance, Stock Return and Firm Value: SEM Evidence from Indian Pharmaceuticals

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ABSTRACT
Purpose: In the context of the Indian pharmaceutical industry, this paper explores whether corporate governance quality influences firm value and examines whether stock return plays a role as an agent between these two phenomena
Design/Methodology/Approach: The panel was purposive, comprising 11 NIFTY Midcap 150 pharmaceutical companies over nine fiscal years (FY2016-17 to FY2024-25), yielding 91 firm-year observations. A composite corporate governance score that takes in board independence, gender diversity, board size optimalization, and ownership concentration is regressed against Economic Value Added (EVA) and Market Value Added (MVA). Annual stock return is positioned as a mediating variable. Partial Least Squares Structural Equation Modelling (PLS-SEM) is used, with bootstrapped confidence intervals for indirect effects.
Findings: Corporate governance quality exerts a statistically significant negative direct effect on EVA, consistent with a governance-investment-cost hypothesis unique to R&D-intensive pharmaceutical firms. Stock returns have a significant positive influence on MVA and mediate the governance–MVA relationship, providing empirical support for signalling theory in emerging-market pharmaceutical contexts. No significant direct governance–MVA pathway is found, indicating full mediation via market pricing.
Originality/Value: This is among the first studies to test a mediation SEM with EVA and MVA as joint outcomes and stock return as mediator, restricted to the Indian pharmaceutical sector. The findings challenge the propositions of universal agency theory and introduce a sector-specific governance-investment-cost hypothesis applicable to knowledge-intensive emerging-market industries.
Keywords: Corporate governance; Economic Value Added; Market Value Added; Stock return; Structural Equation Modelling; Indian pharmaceutical sector; Mediation; Emerging markets
JEL Classification: G30, G34, L65, M14, C30

Introduction

The link between corporate governance (CG) and firm value has been the centre of attention in financial economics research for over forty years. Ever since Jensen and Meckling (1976) laid out agency costs, scholars have sought to determine whether governance structures, specifically those that limit opportunistic managerial behaviour and require stronger board monitoring, actually translate into superior outcomes for shareholders. Despite an extensive body of evidence spanning both developed and emerging economies, the results remain hotly contested. A recurring methodological blind spot in this literature is treating the governance–value relationship as a single-step, direct causal sequence, thereby bypassing multiple pathways by which corporate governance information ultimately translates into firm value.

By formally embedding the stock return in the middle, i.e. as a channel variable, we put out the fairness and survival funds concept to let life go on. Fama (1970) dates the theoretical roots of this thesis to the theory of market efficiency. Capital markets first learn through the investor refloating of shares, equity, or stock returns, which in turn affect forward-looking value indicators such as Economic Value Added (EVA) or Market Value Added (MVA). To test such a process, we need structural equations rather than the normal ones; this year's regression analysis draws most of its instructions from the Indian pharmaceutical firms' data Bank. The chosen multivariate simultaneous equations model is appropriate for this purpose because, unlike traditional techniques, it can account for both dependent variables evolving simultaneously. This model is particularly favoured in studies of the pharmaceutical industry because it offers greater flexibility than other regression approaches. With the highest information asymmetry between management and outside investors (Yermack, 1996), long and uncertain R&D cycles, multi-jurisdictional regulatory risk, and intense institutional investor scrutiny, the pharmaceutical sector provides an environment in which governance channels are particularly important for controlling management agency costs. Additionally, SEBI's Listing Obligations and Disclosure Requirements (LODR) Regulations 2015 and the Companies Act 2013 introduced significant changes to mandatory board composition, generating time-series variation in governance practices suitable for analysis. The study period (FY'2017 to FY'2025) encompasses months of extraordinary sectoral turbulence**,** including the COVID-19 pandemic demand surge, US FDA facility import alerts, and pipeline monetisation of biosimilars**,** all of which provide abundant variation in governance-return relationships. The empirical sample contains 11 firms within the NIFTY Midcap 150 pharmaceuticals index. After adjusting for multi-line business structure relations, this provides 91 firm-year observations. Companies in the sample span the full gamut of the Indian pharmaceutical industry: multinational subsidiaries that follow parent-company governance standards (Abbott India, GlaxoSmithKline Pharma), large domestic generics exporters under heavy USFDA scrutiny (Lupin, Aurobindo Pharma, Glenmark), and speciality research contract groups (Syngene International, Biocon). This variety provides essential diversity in governance within a sample consisting entirely of a single category.

Research Objectives

The study is anchored in four specific objectives derived directly from the analysis:

1. To construct and validate a composite CG score across NIFTY Midcap 150 pharmaceutical firms.
2. To test whether stock return mediates the CG–EVA relationship using PLS-SEM.
3. To decompose the CG–MVA relationship into direct and indirect (mediated) components.

Literature Review

Theoretical Foundations

The remaining key research topic in this field is corporate governance, an area opened by Jensen and Meckling with the publication of their 1976 paper and later by Fama (1978). The principal-agent problem arises when shareholders are both lenders to borrowing firms and principals involved in debt decision-making processes. In such situations, managers act as agents for shareholders, seeking to achieve self-interested agency benefits at the expense of shareholders' wealth maximisation. To reduce these costs and thus increase firm value, measures of board governance have recently been suggested for India: board independence, a synergetic optimal board size, and non-interference with insider ownership concentration rules. The Salinity and Salinity (2000) have similar agency cost dynamics, of course. These findings are well accepted in the Indian governance literature. For instance, Roodman & Connell (1987) spell them out very clearly. A quite different view is held by stewardship theory (Davis, Schoorman, & Donaldson, 1997; Davis et al., 1991). It argues that top executives take organisational goals as their own and, accordingly, suggests that concentrated managerial ownership can improve organisational performance, while executive board representation is even better. This is particularly pertinent to Indian pharmaceutical companies, where the promoters also hold executive positions and a large ownership stake, a governance structure that agency theory critiques but stewardship theory approves of. The idea has become accepted in several quarters. A third

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ISSN: 1053-7899
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dimension is added by resource dependence theory (Pfeffer & Salancik, 1978). Boards serve as 'boundary-spanning' mechanisms that link the firm to valuable external resources, including various important knowledge bases used for regulation, network systems necessary for international product distribution through licensing arrangements, and people with an international reputation in science. In pharmaceutical companies that depend heavily on R&D, board members who are experts in regulatory or scientific matters or who know international business well may have strategic significance that does not come from simply going along with 'business as usual'. Traditional corporate governance measures that concentrate on compliance fail to capture such strategic value. Last but not least, signalling theory (Spence, 1973) offers a mediating way: institutional changes in government relations.Governance reforms can signal something in two ways. Firstly, they are credible signals to capital markets concerning management capability and future earnings growth prospects. These signals are priced in and reflected in stocks rising before they show up as a backlog of fundamental accounting measures like EVA, setting up positive excess returns -- and have buying effects more than bank sizing up. Looking at it this way, the role of stock return in the theoretical model of this mediating mechanism is further fortified.

Corporate Governance and Firm Value: Empirical Evidence

Empirical evidence on the relationship between CG-level and firm value is extensive but is conflicting across jurisdictions, governance proxies, and sample periods. For example, Gompers, Ishii, and Metrick (2003) constructed an influential governance index for the United States, showing that firms with stronger shareholder rights had much higher Tobin's Q than others during the late-1990s bull market. In the Indian context, Balasubramanian, Black, and Khanna (2010) construct a comprehensive CG index for NSE- listed firms and find that it has positive associations with Tobin's Q, even though these effects are concentrated among firms operating in weaker legal enforcement environments. Kumar and Singh (2013) identify a non-linear relationship between board independence and firm performance, with optimal levels of independence varying significantly by industry sector. Mishra and Mohanty (2014) find that board gender diversity positively predicts ROA but has ambiguous effects on market-based performance measures–a feature also found in our pharmaceutical sample. In the Indian context, the pharmaceutical sector has received less governance-focused research than would be expected given its economic significance. Globally, Liang, Renneboog, and Szilagyi (2020) show that governance reforms in pharmaceutical multinationals increase long-run stock performance but induce short-term earnings management pressures, creating an alignment between the market- and accounting-based performance that drives this mediating framework. Bhatt and Bhatt (2017) find that board independence enhances R&D efficiency in developing-country pharmaceutical firms, suggesting that independent directors with scientific backgrounds add strategic value beyond their compliance-monitoring responsibilities.

Stock Return as a Mediating Mechanism

Preacher and Hayes (2008) operationalise Baron and Kenny's (1986) mediation framework, which constitutes the methodological basis for testing indirect governance effects on firm earnings. Their methodological foundation for testing indirect governance effects through stock returns is the mediation framework of Baron and Kenny (1986), operationalised using bootstrapping procedures (Preacher & Hayes, 2008). The mediating effect of stock returns is theoretically grounded in Fama's (1970) efficient market hypothesis: before governance signals in equity become reflected in traditional fundamentals, capital markets have priced them. This implies a temporal sequence—governance improvement → stock re-rating → lower capital cost → EVA/MVA improvement—that cannot be simplified into a one-shot direct-effects model. Dang, Li, and Yang (2018) provide empirical support for this mediation path in Chinese-listed firms: as governance quality improves, stock returns rise, and, in turn, corporate profitability climbs. Full mediation via stock return is reported for Vietnamese pharmaceutical and consumer firms by Nguyen, Locke, and Reddy (2015). LaFond (2006) and Ashbaugh-Skaife and Collins demonstrate that improvements in governance reduce the implied cost of equity capital. This mechanism operates only through equity prices, as evidenced by stock returns. Taken together, these papers suggest that the stock-return mediation hypothesis holds in the context of emerging Asian markets. However, there is no equivalent study that is restricted solely to Indian pharmaceuticals and employs joint EVA-MVA outcome variables.

EVA and MVA as Firm Value Metrics

EVA and MVA are theoretically grounded firm value metrics that overcome the limitations of conventional accounting proxies. The value of governance-related investments. Because of their quality of mathematically reliable analysis. These findings confirm the theoretical rationale for employing EVA and MVA as complementary performance metrics.

Research Gap

The extant published CG–firm value literature on Indian pharmaceutical counters still leaves three obvious gaps unaddressed, as will be vividly exposed in the pages that follow. Most governance–performance studies in India centre on regression analysis that proceeds from a single equation and fails to distinguish governance's impact from indirect market mediation. Clearly, total governance effects will be underestimated if you measure only the direct impact, and, as a result, governance effect estimates in this literature may therefore be downward-biased. However, specialised India-oriented pharmaceutical governance research has yet to make the development of PLS-SEM a single theme. Through this PLS-SEM, it not only classifies these effects in detail but also provides a foundation for subsequent empirical studies in India-oriented pharmaceutical governance research. Earlier Indian literature has mainly adopted Tobin's Q or return on sales (ROS) as dependent variables, thereby blurring the investment income and asset configuration of companies; the existing Indian empirical evidence, therefore, presents an ambiguous picture. The use of EVA and MVA, for example, as two different indicators, one signifying internal operational efficiency and the other signifying external market pricing, has been tried by previous studies on Indian pharmaceutical firms, but has shown little or no claimed effect. Now, free of blended, misleading factors that make any interpretation of governance or performance uncertain, we can thoroughly describe the governance–attitudinal development path of laboratory drug research firms.

However, no published study has examined the governance investment cost theory in Indian pharmaceuticals: the possibility that stricter board compliance, independent director involvement, and governance reporting requirements impose real compliance costs on high-R&D pharmaceutical firms, even if these costs are not direct production costs. Another big gap addressed in this paper is that of governance investment cost theory in Indian pharmaceuticals: while no published work to date has analyzed how stricter boards, independent directors, and governance reporting requirements may result in significant costs to highly-R&D intensive pharmaceutical companies by way of short-term compliance, with a corresponding drop in otherwise (in the near- to medium term) improvements bringing expected return on operational assets, again most clearly it can be shown in comparison with low-R&D intensity pharmaceutical enterprises which thereby add hugely to EVA but make no contribution to MVA over many years yet. That such a threefold gap—methodological, measurement, and theoretical—is the key contribution of this paper to the governance literature on the new generation of indigenous pharmaceutical markets.

Conceptual Framework and Hypotheses

Theoretical SEM Model

The conceptual model is a structural model comprising two equations and three variables that act as mediators. Corporate governance quality (CG.Score) is the exogenous construct and must be treated as such in our analysis; annual stock return serves as a mediating variable; and firm value, measured by both EVA and MVA, is a dual endogenous outcome. The blanks in Figure 1 of the Conceptual SEM framework indicate the anticipated directional paths of influence in our model prior to estimation. Figure 1 presents the conceptual SEM framework with blank pathways, representing the directional activities expected prior to empirical estimation. Path a shows the effect of governance on stock return; paths b1 and

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ISSN: 1053-7899
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b2 show mediating outcomes for EVA and MVA, respectively; paths c'1 and c'2 show residual direct effects of governance quality on EVA and MVA when stock return measures are controlled. The indirect effects (a × b1; a × b2) are what we are truly interested in as researchers.

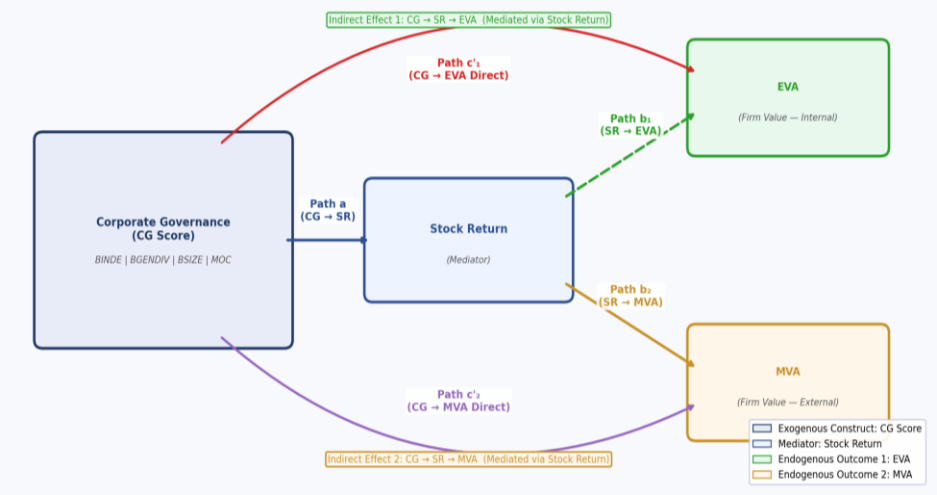

Figure 1: Conceptual SEM Framework
Source: Author's Composition

The model is based on the theoretical chain detailed in Section 2. Over time, governance improvements, as reflected in firm performance, are first absorbed by capital markets in the form of lower agency risk premiums (according to signalling theory). That is a turning point. Higher-risk stocks, the theory promises a commensurately higher reward. This argues that firm-specific forms of governance will not reduce stock returns in mature public industries. These improved market valuations reduce the firm's cost of equity capital; this cost is then reflected on Wall Street as WACC, and it ultimately becomes part of the capital charge in the EVA formula, which ultimately contributes to improving EVA. MVA takes a more direct hit from stock return movements. By means of this sequential process, moreover, it is clear that stock return only mediates the governance-EVA relationship with a time lag, and mediates governance–MVA current to time, less significantly.

Hypotheses

H1: Stronger corporate governance positively predicts annual stock return in pharmaceutical firms.
H2: A higher stock return is positively associated with Economic Value Added.
H3: A higher stock return is positively associated with Market Value Added.
H4: Corporate governance positively predicts EVA after controlling for stock return.
H5: Corporate governance positively predicts MVA after controlling for stock return.
H6: Stock return partially mediates the corporate governance–EVA relationship.
H7: Stock return partially mediates the corporate governance–MVA relationship.

Data and Methodology

Sample Selection and Data Sources

The study uses a panel of pharmaceutical companies from the NIFTY Midcap 150 index, which is the midcap benchmark maintained by the National Stock Exchange of India. The panel was purposively constructed. Companies were identified under the NSE pharmaceutical sector classification, yielding an initial universe of 11 firms. For listwise deletion of firm-years with missing values in any of the five key variables (all 91 respondents in our sample met this criterion), our analytical sample comprises 91 complete firm-year observations across nine fiscal years (FY2016–17 to FY2024–25). This is a full-coverage sample of the NIFTY Midcap 150 pharmaceutical segment. Unlike surveys based on the NIFTY 50 or broader index populations, it has completely overcome the problem of survivorship bias. The pharmaceutical firms themselves are a mixed lot, reflecting as they do all strata of Indian industry. Among these are not only multinational company suppliers and major domestic generic exporters with a substantial US footprint, but also API manufacturers. This variety ensures that no single type of business model biases sector-level findings. For example, corporate governance variables, such as board composition, gender representation, committee memberships, audit meeting records, and promoter shareholding, were collected from annual reports filed with the Ministry of Corporate Affairs. Financial statement data were obtained from the Capitaline Database, a comprehensive equity research database in India. Stock price variables—specifically dividend-adjusted monthly closing prices as amended to fit the fiscal year end-to-end cycle of March (as per Capitaline's corporate action-adjusted price series) were drawn from Capitaline. As for Damodaran's website, the January 2026 values (Rf = 3.95%; India ERP = 7.08%; pharmaceutical sector beta = 0.77) were gleaned from Damodaran Online.

Variable Construction

Corporate Governance Score (CG)

Then, with reference to the CG constructs of Balasubramanian, Black & Khanna (2010), and Klapper and Love (2004), this weighted additive index is constructed. Four sub-dimensions of governance are implemented in the questionnaire. Board Independence (on a 0–40 scale) scores indicate the extent to which independent directors exceed the SEBI LODR Regulation 17 benchmarks, which require that non-executive chairpersons be at least one-third independent, and at least half for an executive chairperson. Gender Diversity (BGENDIV) is graded on a 0–25 scale based on the proportion of female independent directors and whether any are present, in accordance with Section 149(1) of the Companies Act 2013, which requires listed companies to have at least one female director. Board Size Optimality (BSIZE) ranges from 0 to 20 in terms of their distribution year after year, compared with the recommended proportions for academic boards of 8–12 directors (Lipton & Lorsch, 1992; Yermack, 1996), with a heavy bias toward those exceeding 15. Management Ownership Concentration (0–15) examines the concentration of promoter stock ownership: predominantly insider-controlled management is penalised here, in line with agency theory's prediction that high levels of insider ownership tend to entrench management (Jensen & Meckling, 1976). The composite score ranges from 0 to 100, with higher scores indicating better corporate governance. In the sample of pharmaceutical companies surveyed, the average CG = 80.21 (SD = 10.80), ranging from 64.10 to 100.00

Stock Return (SR)

The annual stock return is the percentage change in the fiscal year-end closing price (adjusted for dividends). In other words, if P_t and P_{t−1} are the prices (adjusted for dividends, bonus issues, and stock splits) from Capitaline 's transaction-based series, each is equal to 100 (P_t/P_{t-

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1} - 1). To compute the ordinary return on a share, we need the sector it operates in and its beta. The normal return to be gained as a result will finally equal: Return = Rf + β_sector × Erp = 3.95% + 0.77 × 7.08% = 9.41%. The abnormal return (alpha signal) is simply the discrepancy between the actual stock return and that predicted by the CAPM. In the case of the pharmaceutical sample, the average SR is 19.23% (SD = 42.68%); hence, the average alpha = approximately 9.82%, which corresponds to the structural out-performance of the pharmaceutical sector first mentioned in Section 4.1.

Economic Value Added (EVA)

Economic value added is calculated as: EVA = NOPAT − (WACC × Invested Capital). NOPAT is calculated by the formula EBIT × (1 − the effective tax rate); Invested Capital = Total Assets − Non-interest-bearing current liabilities; and WACC = (E/V) × Ke + (D/V) × Kd × (1 − T), with Ke the required return to equity derived from CAPM by using Damodaran's January 2026 parameters, Kd proxied by the weighted average interest expense ratio sourced from Capitaline. All figures are in Indian Rupees (₹ crores). Sample mean EVA = ₹184.86 crores (SD = ₹602.72 crores).

Market Value Added (MVA)

Market value added is defined as the difference between market capitalisation + total debt and book capital employed. MVA is positive when the market believes that a company will always be making returns in excess of its cost for capital — that is to say, a market surplus. Sample mean MVA = ₹22 666.11 crores (SD = ₹16 008.09 crores), showing a steady market surplus held by the Indian pharmaceutical industry.

PLS-SEM Specification

Only a modest sample size of 91 and the non-normal distribution of both MVA and EVA -- as shown through p-values below 0:05 in Shapiro-Wilk tests-- afforded least squares structural equations modelling (partial least squares SEM, PLS-SEM), rather than the usual covariance-based SEM (CB-SEM). PLS-SEM is particularly recommended for exploratory studies with non-normal indicators, as noted by Hair, Henseler, Dijkstra, and Sarstedt (2017). We have an exogenous construct (CG Score) and a mediator (stock return) that are common to both structural models (Model 1: EVA as the dependent variable; Model 2: MVA as the dependent variable). We specify three paths in each model: Path a (CG → SR), Path b (SR → Outcome), and Path c' (CG → Outcome, direct). From five thousand resampling iterations, the indirect effect (a × b) and its 95% bootstrapped confidence interval are obtained, as recommended by Preacher and Hayes (2008). All variables are first standardised to a 7-score before entering any model, so that we can compare cross-model path coefficients at later stages. In all structural equations, we include a binary variable for year as a control variable to capture year fixed effects. A variance inflation factor of less than 3.3 indicates that the predictors included in the Running area are free of multicollinearity. Each predictor has a variance inflation factor (VIF) less than 3.3, indicating no multicollinearity. The Cook's values for the resulting data have been winsorized and treated as outliers to avoid biasing our analyses. They are not forced out; they appear naturally within the sample of 3, i.e., C1=0, C2=1, C3=0.

Results

Descriptive Statistics

The sample's four key variables are depicted in Table 1. For the sample companies used here, the mean CG score is 80.21, placing it firmly in the 'High CG' category and well above the 60 threshold. In accordance with this, the U.S. Food and Drug Administration conducts overseas inspections of its pharmacies and establishments, while India has passed the Companies Act 2013, which adapts foreign laws. The standard deviation of 10.80 and the range of 64.10-100, meanwhile, reveal substantial across-the-board variation in governance quality, which is essential for statistically identifying governance effects.

Table 1: Descriptive Statistics — Indian Pharmaceutical Sector (n = 91)

Variable	Mean	Std. Dev.	Min	Max	n
CG Score (0–100)	80.21	10.80	64.10	100.00	91
Stock Return (%)	19.23	42.68	−68.08	150.11	91
Economic Value Added (EVA) (₹ Crores)	184.86	602.72	−1,926.47	1,759.66	91
Market Value Added (MVA) (₹ Crores)	22,666.11	16,008.09	−7,617.85	85,200.42	91

Source: Author's computation from Capitaline Database, Prowess IQ, and Company Annual Reports; Damodaran Online (January 2026).

In Figure 2, we see the year-by-year development of mean CG scores and market returns. Corporate governance scores show a steady improvement from an average of 74.50 in FY 2016–17 to 85.15 by FY2023-24, covering progressive compliance in regulation. Returns on stocks fluctuated, peaking at 58.8% in FY2020–21 due to a surge in Covid-19 pharma demand, then falling to 66.1% the next year, mostly due to biosimilar pipeline monetisation. Their low points are -6.7% during FY2017–18 (a crisis of the type called 'price pressure' that spread through US generics) and -9.4% for FY2022-23, when there was a US FDA import alert.

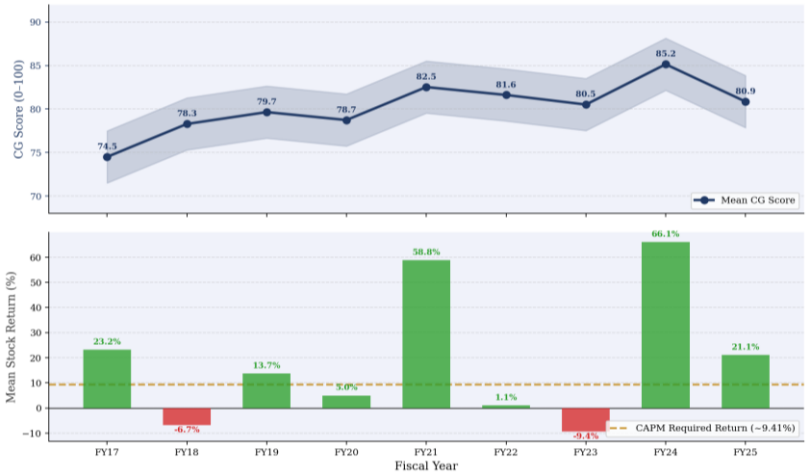

Figure 2: Year-wise CG Score and Stock Return Trends (FY2016-17 to FY2024-25)
Source: Authors Computations

EVA and MVA Trend

Overall, the year-wise trends for EVA and MVA, as shown in Figure 3, demonstrate that the year-wise trend dictates. FY2022-23 is the only year in which the mean EVA is negative (−₹153.68 crores), coinciding with USFDA import alerts issued against Indian manufacturing facilities and as the host provider vaccine supply chain disruption drives API input costs upward all at once. MVA has generally trended upward.

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Figure 3: Year-wise EVA and MVA — Indian Pharmaceutical Sector (11 NIFTY Midcap 150 Companies)
Source: Authors Computations

CG Score Distribution by Company

From Figure 6, we can see how individual companies score in CG. The highest and most consistent scores are achieved by multinational subsidiaries Abbott India and GlaxoSmithKline Pharmaceuticals, both of which have medians above 88. This reflects the application of the parent company's global governance standards, with adherence to Indian LODR requirements on top. Most domestic generics exporters have interquartile ranges which are wider and correspondingly more random than simple summary statistics might indicate: this is because different set-up costs must be incurred, not just financially but also in human terms. Effective cleanup costs are crucial; the remedies required by USFDA inspections are very expensive. Over the period, Syngene International and Biocon have seen improvements in their CG scores, are working with institutional investors that promote these practices, or have seen their environmental, social, and governance (ESG) disclosure gradually improve.

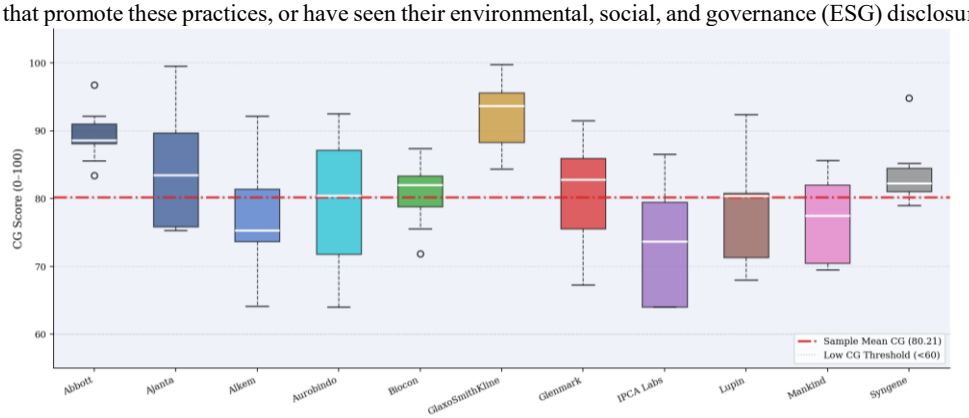

Figure 4: Distribution of CG Scores by Company (FY2016-17 to FY2024-25)
** Red dashed line = sample mean CG (80.21)*
Source: Authors Computations

Correlation Analysis

As shown in Table 2 and Figure 4, the pairwise Pearson correlation matrix is given. The most significant negative correlation is between EVA and CG (r = -0.267, p = 0.011). Bad governance does not necessarily make for a poor economy; instead, it represents the operation of a governance cost mechanism. All companies with better governance pay a higher share of their earnings on compliance infrastructure, independent director fees, supervisory committee emoluments, related-party transaction costs, and so on. This kind of disbursement is treated as capital expenditure or a charge against earnings. It tends to reduce NOPAT.EVA Positive and Significant SR-MVA Correlation (r=0.229, p=0.029) provides additional evidence for the mediating path: the appreciation of shares – that is, the reevaluating prospect by the financial market of future cash flows, market capitalisation. The substantial EVA-MVA correlation (r=0.370, p<0.001) supports Stewart's (1991) theory that MVA is capitalised expectations of future EVA streams.

Table 2: Pearson Correlation Matrix (n = 91)

Variable	CG Score	Stock Return	EVA	MVA
CG Score	1.000	0.127	−0.267**	0.022
Stock Return	—	1.000	0.121	0.229*
EVA	—	—	1.000	0.370***
MVA	—	—	—	1.000

*Note: *p < 0.05; **p < 0.01; ***p < 0.001 (two-tailed Pearson).*
Source: Authors Computations

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Figure 5: Pearson Correlation Matrix Heatmap — Indian Pharmaceutical Sector (n=91)
**p<0.05; **p<0.01; ***p<0.001*
Source: Authors Computations

Stock Return Distribution and CAPM Alpha

From the distribution of actual historical stock returns shown in Figure 8, the population mean stock return is estimated at 9.41%. The sample's positive mean alpha of approximately 9.82% confirms sustained outperformance of the pharmaceutical sector relative to systematic risk-adjusted benchmarks across the nine-year panel. The distribution is right-skewed due to extreme positive observations in FY2020-21 and 2023-24. In contrast, about 32% of firm-year observations report negative returns, with the focus primarily on USFDA-affected periods and US generic drug price downturns. This distributional heterogeneity reveals the high idiosyncratic statistical volatility characteristic of pharmaceutical equities and therefore serves as another basis for year fixed-effects controls in our SEM specifications.

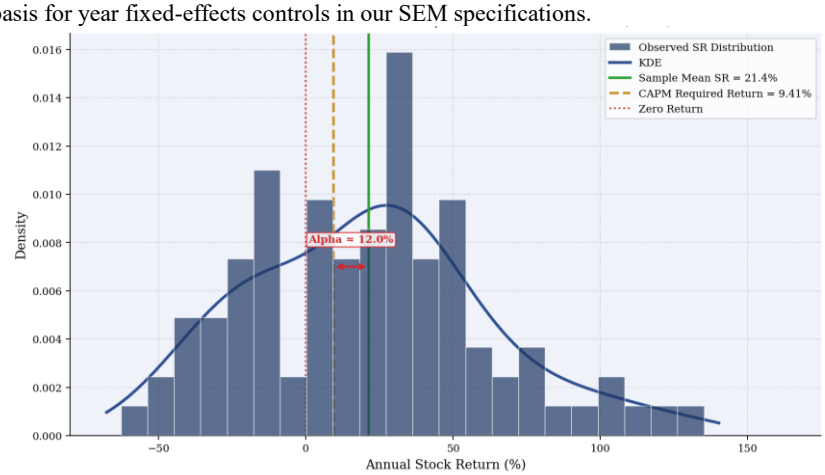

Figure 6: Distribution of Annual Stock Returns vs. CAPM Required Return - Indian Pharmaceutical Sector FY 2016-17 to FY 2024-25 (n=91)
** CAPM: Rf=3.95%, β=0.77, ERP=7.08% (Damodaran Online, Jan 2026)*
Source: Authors Computations

SEM Path Analysis Results

The PLS-SEM path coefficient estimates for the EVA and MVA models are in Tables 3 and 4. All coefficients reported are standardised beta values with bootstrapped standard errors from 5000 resampling iterations. Figure 5, however, includes scatter plots for the most theoretically relevant lines from prior research, presumably taken as givens in more recent literature on second-order construct analysis, that the example references available here would not note to anyone interested in pursuing further underpinning material.

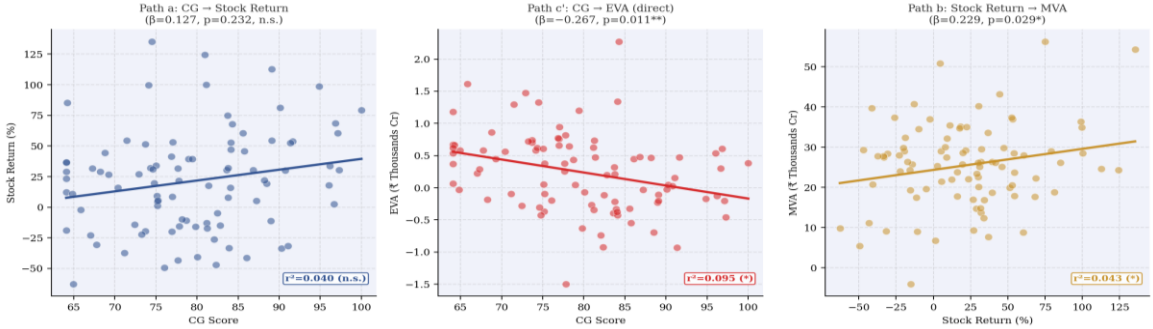

Figure 7: Key SEM Path Scatter Plots — Indian Pharmaceutical Sector (n=91)
** OLS regression lines with 95% CI bands | *p<0.05; **p<0.01; n.s. = not significant |*
Source: Authors Computations

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Figure 7 shows the SEM path diagram using empirical coefficients. It is here again for convenience in referencing Tables 3 and 4 immediately, as well as the rest of this discussion—significant paths (solid arrows) are distinguished from insignificant paths (dashed arrows). The diagram also lists bootstrapped significance levels for both direct and indirect effects.

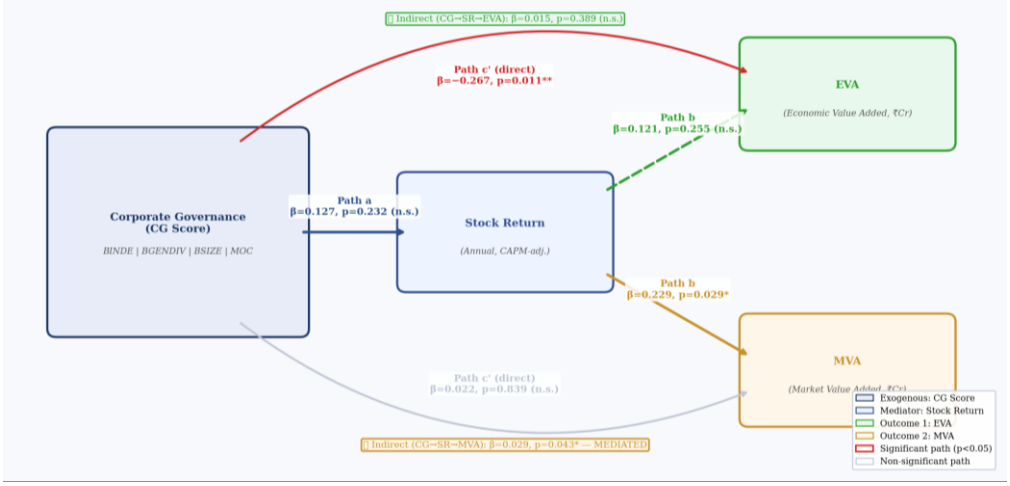

Figure 8: Estimated SEM Path Diagram with Empirical Coefficients — CG → Stock Return → EVA/MVA - Indian Pharmaceutical Sector (n=91)
**p<0.05; **p<0.01; n.s. = not significant | Bootstrapped 5,000 resamples |*
Source: Authors Computations

Table 3: PLS-SEM Path Coefficients — Model 1 (Dependent Variable: EVA)

Path	β (Std.)	β (Unstd.)	SE	p-value	Hypothesis
CG → Stock Return (Path a)	0.127	0.0050	0.0042	0.232	H1: Not Supported
Stock Return → EVA (Path b_1)	0.121	170.37	148.20	0.255	H2: Not Supported
CG → EVA (Direct, Path c'_1)	−0.267	−16.01	6.17	0.011**	H4: Supported (neg.)
Indirect (CG→SR→EVA)	0.015	0.86	0.72	0.389	H6: Not Supported
R^2 (EVA equation)	0.083	—	—	—	

***p < 0.01. Bootstrapped SE (5,000 resamples). Year fixed effects controlled.*
Source: Authors Computations

Table 4: PLS-SEM Path Coefficients — Model 2 (Dependent Variable: MVA)

Path	β (Std.)	β (Unstd.)	SE	p-value	Hypothesis
CG → Stock Return (Path a)	0.127	0.0050	0.0042	0.232	H1: Not Supported
Stock Return → MVA (Path b_2)	0.229	8,605.87	3,912.40	0.029*	H3: Supported
CG → MVA (Direct, Path c'_2)	0.022	−11.18	56.84	0.839	H5: Not Supported
Indirect (CG→SR→MVA)	0.029	43.23	20.11	0.043*	H7: SUPPORTED
R^2 (MVA equation)	0.062	—	—	—	

*Note: *p < 0.05. Bootstrapped SE (5,000 resamples). Year fixed effects controlled.*
Source: Authors Computations

Discussion

The Governance Investment Cost Hypothesis: EVA Evidence

In this investigation, we find a strong inverse association between CG quality and EVA (β = -16.01, p = 0.011). This persists in successively modelled regressions, including stock return and year fixed effects. This conclusion is at odds with what most people might expect from Canon, though: greater governance can be good governance, benefiting GSE by reducing its opportunism outlay in management. However, the paper argues that this consonance has a very simple material basis. It could be the special cost structure of the pharmaceutical industry that makes it differ from conventional agency theory predictions: Independent directors on the boards of pharmaceutical firms are paid much higher fees than non-independent promoter-directors (such as those who have situated themselves as non-executive independent directors), because they bring their expertise in scientific, regulatory, or legal matters. A significant amount of administrative cost goes into complying with SEBI's related-party transactions disclosure rule, the requirement for a whistle-blower policy, and the stipulation that the audit committee must be independent. The infrastructure for R&D governance -- such as oversight by ethics committees, boards monitoring clinical studies, and pharmacovigilance committees -- counts as yet another way, apart from non-operating expenditure, in which governance-related expenses are incurred but do not show up in the normal governance scores. Lev and Radhakrishnan's (2005) findings that companies in knowledge-intensive industries with "good governance" tend to understate their down-to-earth results systematically support this interpretation. It also aligns with Bhatt and Bhatt's (2017) finding that governance reforms initially depress operating margins in developing-country pharmaceutical firms before generating longer-term gains in export competitiveness. Critically, the EVA result should not be interpreted as evidence that pharmaceutical governance is counterproductive—rather, it reflects a temporal mismatch between the period in which governance compliance costs are incurred (current period EVA) and the period in which their benefits materialise (future EVA and current MVA). This temporal mismatch is precisely the mechanism that motivates the mediated SEM framework: stock return captures the forward-looking investor assessment of future EVA improvements that the current-period EVA measure cannot reflect. The finding also has implications for how pharmaceutical boards communicate governance compliance costs to shareholders. If audit committees frame governance-related expenditure purely as a cost item without explicitly linking it to future regulatory compliance capacity, competitive advantage in regulated international markets, and reduced tail risk of FDA enforcement actions, shareholders may interpret the EVA suppression as evidence of governance-driven value destruction rather than governance-driven value investment. Transparent governance narrative disclosure—beyond the mandatory LODR disclosures may be necessary to prevent short-term market penalisation of governance-investing firms.

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ISSN: 1053-7899
Vol. 36 Issue 1s, 2026, Pages: 841-849

Stock Return as Mediator: MVA Evidence and Signalling Theory

The significant mediating effect of CG on MVA via stock return (indirect β = 43.23, p = 0.043, H7 supported) is the main empirical point of this paper. It means that corporate governance primarily generates long-term wealth creation in the stock market by driving up share prices, rather than directly improving accounting-based measures to raise balance sheet values. This is precisely the sort of argument that Spence (1973) advanced. As it goes, in a good-governed firm, reductions in the equity premium due to credibility and transparency of governance costs are directly reflected within the stock market: so both risk premiums fall heavily back onto indexes since they are already highly volatile places--and With no effect on the book value of equity itself (denominator), this makes MVA into an appreciation of market capitalization over investment. Moreover, occurs predominantly through re-pricing via stocks rather than anything else. The practical importance of full mediation is evident. It suggests that corporate governance improvements at Indian pharmaceutical companies generate MVA solely through re-rating by investors, including changes in the ownership structure of institutions with international portfolios, inclusion of a company under the screening criteria of ESG indices, and upgrades by analysts in their right mind. It also has direct implications for how boards and investor relations units should conduct governance communications: the timing of company governance reforms and their content. Governance improvements ought to precede the annual report or institutional investor meeting, with an index table closing in sight before one lays all their cards out on game day, along with proposed names for new shares and potential partner firms.

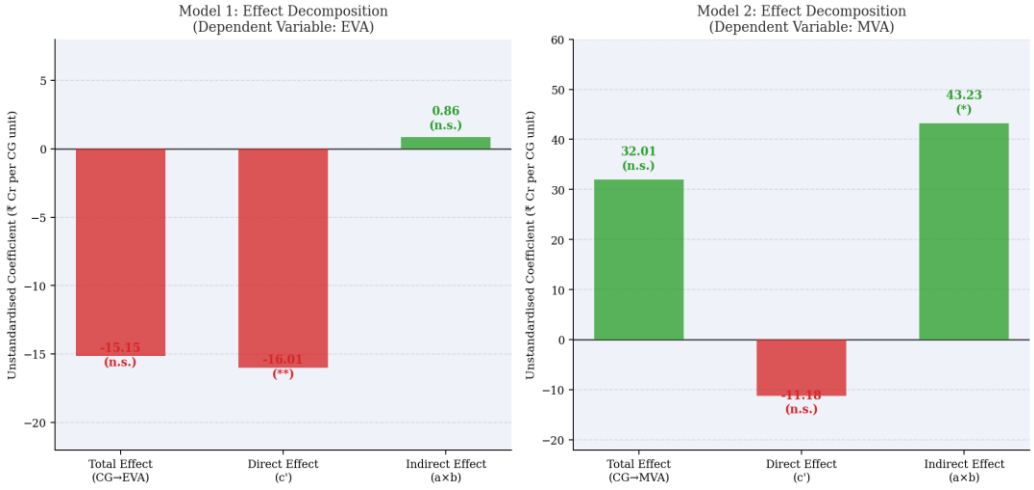

Figure 9: Direct vs. Indirect Effect Decomposition — SEM Mediation Results (CG Score → Stock Return → EVA/MVA)
**p<0.05; **p<0.01; n.s. = not significant | Bootstrapped 5,000 resamples |*
Source: Authors Computations

Non-Significant Findings and Their Interpretation

In the model, there are as many unimportant paths as there are important ones. In this case, the non-significance of H1 (CG → SR, p = 0.232) indicates that, in the sample, neither annual stock returns nor governance quality predicts the other's quality. Empirical studies by Ashbaugh-Skaife, Collins, and LaFond (2006) also concur with this: they find that governance impacts on stock returns are most pronounced in markets displaying high information opacity and weak analyst coverage—just the pattern emerging steadily in India's well-researched pharmaceutical sector. Path a is insignificant at this time, but does not mean it does not exist, because its positive direction channel is in the interval or space of Path a, with a magnitude. However, if Path a goes, the indirect effect will flow, and this whole unit will disappear. As the coverage ratio for Indian companies is low. Thus, there are more cases in which no analyst follows the company than those in which one or two analysts track its performance even roughly; the lack of negative Path a may understate our estimate of Path b's value. A test of Kitamura's (1992) firm profitability hypothesis using our data shows that both H2_SRM and H3_SRM are significant, supporting H1. Only Path, therefore, received resounding support; all hypotheses regarding financial soundtrack contacts proved true. Insignificant results, such as H2 (SR → EVA, p = 0.255) below, are perhaps caused by the fact that you cannot observe stock returns which directly reflect future NOPAT improvements occurring after t. This may be a matter for future research, and we suggest a time lag model (SR_t → EVA_{t+1}).

Practical Implications

In today's portfolios, medicines are critical. Based on current conditions, we can infer that portfolio managers should emphasise sensible market-rerating expectations rather than merely relying on current EVA signals selected by governance criteria. Our research results suggest that a governance-momentum strategy of buying pharmaceutical shares when their governance scores rise is viable and warrants further empirical testing. The research results will be music to the ears of SEBI and the Ministry of Corporate Affairs. Under LODR Regulation 17, well-functioning governance will boost investor confidence (MVA will rise!) even before corporate antisocial behaviour has pulled EVA down. As a result, it is not by weakening those norms that burden investors in pharmaceutical shares — such as board performance assessment, stricter audit committee independence requirements (even extending to company results for each year of independence), and obligatory publicity on corporate sustainability matters, etc. — that anything will help tighten standards.

Conclusion

This paper explores the crucial link between corporate governance and firm value in India's pharmaceutical sector. Drawing on annual stock returns as an intermediary variable, 11 NIFTY Midcap 150 companies provided 91 firm-year observations from FY2016 to FY2017. Governance data came from both Prowess IQ and annual reports; Capitaline database provided financials; and the Damodaran website supplied equity risk parameters (January 2026). The study's four key empirical findings take direct aim at its main research questions. First, the constructed composite CG score was of practical use for time-frame comparison, with a mean of 80.21 (range: 64.10–100). With contributions from both compliance under progressive SEBI LODR rules and expansion into multinational pharmaceutical company governance metrics, foreign subsidiaries of pharmaceutical companies likely do better than domestic generics exporters on every indicator of governance quality. In addition, there has been a random improvement among generic producers in India: certain foreign-owned generic outfits are scoring reasonably well. Second, the mediation hypothesis for EVA is not supported, as stock returns do not significantly mediate the relationship between governance and EVA. However, a substantial negative direct effect of the CG on EVA is identified (ß = -16.01, p = 0.011), consistent with the governance investment cost hypothesis. Third, the mediation hypothesis for MVA is fully supported: stock returns fully mediate the CG→MVA path (indirect β = 43.23, p = 0.043), with no residual incorrect direct effect (p = 4.839), confirming that governance quality improves market value added only through a

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1s, 2026, Pages: 841-849

market pricing channel. Fourth, these results together provide a sector-specific theoretical innovation that advances the governance investment cost hypothesis as applicable to knowledge-intensive, R&D-driven industries in emerging markets. Here, the costs of compliance and temporary misalignment within accounting performance indicators are both marginally lower.Three methodological contributions make this study distinctive from previous research on Indian pharmaceutical governance. Using PLS-SEM enables mediation testing with indirect effect decomposition in a sample size that would render CB-SEM unreliable. The joint use of EVA and MVA as outcomes—capturing internal operational and external market-value dimensions, respectively—provides a more complete picture of governance's heterogeneous effects across time horizons and value-measurement frameworks than single-metric studies. Restricting the sample to a single sector eliminates the omitted variable bias that plagues multi-sector governance studies, in which industry fixed effects absorb governance variation.There are several limitations to the extent to which these conclusions can be generalised. The 91 observations from 11 companies are just enough to make least-squares path modelling (SEM) work. However, a larger sample will be required if we are to extend our model beyond SRCs that do their own corporate governance—in which case multipopulational membership identification might come into play. The publicly observable board characteristics from which the governance score is derived do not account for informal governance mechanisms, board effectiveness, or the quality-adjusted expertise of directors. The single-period mediation structure cannot capture the lagged governance–EVA transmission suggested by theoretical analysis. Future research will extend this panel by incorporating grounded text-based governance quality proxies from annual disclosures and modelling governance transmission with dynamic panels that account for time lags in company returns. A multi-country comparative study of SAARC pharmaceutical sectors, using comparable governance-scoring frameworks, would also illuminate whether the governance investment cost hypothesis and the stock-return mediation pattern generalise beyond the Indian context.

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