Moderating Role of Stock Return Volatility in Corporate Governance–Firm Value Structural Linkages : Insights from a PLS-SEM with IPMA Approach

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Abstract

Purpose : This study examined the structural linkages between corporate governance (CG) and firm value (FV) through financial performance (FP) and CEO-duality (CEOD) as mediating and stock return volatility (SRV) as moderating constructs.

Design/Methodology : This research utilized secondary data derived from the annual reports of listed companies spanning the period from 2011–2012 to 2023–2024, comprising 520 company-year observations. It adopted an advanced methodological approach, a Smart partial least squares structural equation modeling (PLS-SEM) with importance-performance matrix analysis (IPMA), within a panel data framework.

Findings : The findings elucidated that CG and CEOD positively and significantly impacted firm value, while FP had a positive but insignificant impact. CEOD positively and significantly mediated the CG–FV structural relationship, whereas FP mediated this relationship positively but insignificantly. The combined mediating effect of CEOD and FP was also positive but insignificant. SRV negatively and significantly moderated the CG – FV relationship.

Practical/Social Implications : Effective governance boosts profitability and trustworthiness, enabling companies to attract more cost-effective capital. Improved performance yields two key benefits: high tax revenue for the government and greater CSR spending, both promoting sustainable development goals and socio-economic prosperity.

Theoretical Implications : The findings demonstrated that resource dependence theory complemented agency theory while challenging the theoretical foundations of the stewardship theory.

Originality/Value : This is a novel study that examined CG–FV structural linkages of the listed companies in India, utilizing the PLS-SEM methodology with IPMA.

Keywords : **corporate governance, firm value, CEO-duality, stock return volatility, financial performance**

JEL Classification Code : C23, C33, G21, G34, M14

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Over the past three decades, corporate governance (CG) has gained significant attention from regulators, professionals, and academicians because of its vital role in shaping growth trajectories and building investor trust. The repeated occurrences of corporate scams, failures, and bankruptcies in the United States, the UK, and elsewhere in the world have left an indelible impact on the corporate landscape, severely eroding investor confidence and disrupting the development of a healthy industrial culture. These challenges have prompted policymakers to prioritize the need for a robust CG framework that promotes ethical values of responsibility, transparency, accountability, fairness, and improved financial performance (Sharma & Singh, 2022; Singh & Chauhan, 2022a). A landmark movement in the development of CG was the establishment of the Cadbury Committee in the UK in 1991, which set the stage for global CG reforms, including in India. In India, various factors such as the shift in the global CG landscape, the post-1991 economic reforms, rapid technological advancements, and the growing need for a new corporate ethos urged the government to initiate comprehensive CG reforms (Negi & Jain, 2022; Singh et al., 2023a). These initiatives sought to strengthen the CG framework for fostering sustainable financial performance are captured through the accounting and market metrics (Tiep Le & Nguyen, 2022). Accounting measures may vary across companies due to variations in accounting policies, and management may manipulate accounts to present a better financial position in order to justify managerial compensation (Satish & Satyanarayana, 2018). Conversely, the market-based measures are free from such constraints, as the market mechanism offers a framework to address and overcome management entrenchment. Additionally, the market reflects a company's competitiveness and attractiveness to investors, especially institutional ones (Sitorus & Sitorus, 2017).

In most studies, firm value (FV) is popularly used as a key variable for investigating market performance (Haryono & Paminto, 2015; Mahrani & Soewarno, 2018; Singh et al., 2023b; Tiep Le & Nguyen, 2022). Given the superiority of market-based measures over accounting-based measures, this study prioritizes market metrics, especially firm value, as a target construct to examine the CG–FV structural relationship. Extensive research on the direct relationship between CG and FV has been conducted in developed nations, with very limited attention to emerging economies like India; however, the mediating and moderating constructs influencing the structural relationship have often been overlooked (Ferriswara et al., 2022; Haryono & Paminto, 2015; Kapil & Mishra, 2019; Khan et al., 2024; Khongmalai & Distanont, 2017; Ledi & Ameza-Xemalordzo, 2023; Mahrani & Soewarno, 2018; Sarwar et al., 2022). This study investigates the CG–FV structural relationship using mediating and moderating constructs to address this research gap.

In today's globally competitive environment, adopting CG has become essential for companies to create conditions that promote sustainable growth (Kumar & Verma, 2011; Sitorus & Sitorus, 2017). Generally, CG is a system of structures and processes by which corporations are directed, managed, and operated to attain corporate sustainability while adhering to the existing regulatory framework and balancing the interests of owners and other stakeholders in all dimensions of business operations. Several internal and external factors significantly play a crucial role in influencing firm performance, especially FV. Among the internal factors, CG practices, including the leadership role of the board chairman or CEO-duality (CEOD), play a vital role in shaping FV, while among the external factors, stock return volatility (SRV) significantly affects FV. SRV influences firm value, investor perceptions, and financial stability, posing challenges that cannot be managed even by a well-diversified portfolio. High volatility periods are marked by the high cost of capital and low capital supply, exerting pressure on firms' financial sustainability (Khan et al., 2024). However, companies with strong CG mechanisms are better equipped to manage volatile market conditions effectively (Chow et al., 2018). This study utilizes SRV as a moderating construct to examine its impact on CG – FV structural dynamics.

In essence, CG is widely recognized as a foundation for attaining financial stability (DeAngelo & Roll, 2013; Kumar, 2011; Kumar & Chandel, 2010; Singh & Chauhan, 2022b). Chhaochharia and Grinstein (2007), Gompers et al. (2003), and Valenti et al. (2011) revealed that companies with a robust CG framework tend to achieve higher

stock returns than companies with weaker governance practices. They argued that firms with better CG practices exhibit greater FV, higher profitability, higher sales growth, and low cost of capital. The shreds of evidence confirm that FV plays a vital role in influencing shareholder prosperity and investment decisions (Pamungkas et al., 2023; Satrio, 2022; Shleifer & Vishny, 1997). A high stock price is indicative of high FV, while a low stock price suggests otherwise. For companies that have gone public, FV is determined by the market price of their existing stock prices in the capital market, whereas for companies that have not gone public, it reflects the price that potential buyers are willing to pay (Mahrani & Soewarno, 2018). Existing literature underscores the significance of CG in influencing FV; for instance, Lehmann (2019) emphasized that a strong CG mechanism incentivizes companies to use their resources effectively to enhance FV, while Li et al. (2021) observed that poor CG practices lead to financial distress, declining FV, and bankruptcy. Despite this, the understanding of CG–FV structural dynamics remains inconclusive, as empirical studies present conflicting evidence. Dang et al. (2023), Lusy and Riduwan (2020), and Sucuahi and Cambarihan (2016) found a positive and significant impact of CG on FV, while Pandey et al. (2023) and Pamungkas et al. (2023) demonstrated a negative and significant relationship. Further, Haryono and Paminto (2015) and Sitorus and Sitorus (2017) revealed that CG had an insignificant impact on FV. This divergence in findings underscores a critical research gap in understanding the CG–FV structural dynamics. While CG is theoretically and practically important for shaping FV, the variability in findings highlights the need for further investigation to elucidate structural dynamics and implications for financial performance.

This study offers significant empirical, methodological, and theoretical contributions to CG literature. It contributes to the CG–FV structural relationship in several ways. First, empirically, by introducing SRV as a moderating factor, the study investigates how market conditions impact the CG–FV linkages, providing corporate leaders with valuable insights to develop policies and strategies that mitigate the negative effects of SRV on FV. Second, CEOD and financial performance (FP) are incorporated as a mediating construct to assess their impact on the CG–FV structural relationship, underscoring their strong impact on firm performance (Gwala & Mashau, 2023). Third, methodologically, the research contributes to the CG literature by developing a structural model to examine path analysis employing the innovative Smart PLS-SEM and importance-performance matrix analysis (IPMA) approach, offering a novel application in the Indian corporate sector. Fourth, theoretically, the findings of the study are synthesized within CG theories such as resource dependence theory, agency theory, and stewardship theory. The findings highlight the crucial role of robust CG practices and effective board leadership in managing the adverse impacts of market volatility, strengthening investor confidence, and ensuring long-term financial stability. These insights contribute to academic discussions while providing valuable guidance for policymakers, corporate leaders, and investors to align governance practices and strategic decisions with market dynamics to enhance FV.

Theoretical Framework and Literature Review

Understanding the structural relationship between CG and FV has emerged as an important area of research in the contemporary business landscape, particularly within financial literature. This growing interest has encouraged scholars to delve into diverse facets of CG and its influence on overall performance. Several studies have examined both the direct and indirect impact of CG on FV, yielding inconclusive findings. A literature review of significant prior investigations has been summarized below to offer deeper insights.

Theoretical Framework

In this section, the major CG theories are explained to analyze the CG–FV structural dynamics from a theoretical perspective:

↳ **Agency Theory :** The agency theory, originally developed by Jensen and Meckling (1976) to explain the relationship between owners and agents, is frequently used as CG theory to understand the relationship between owners and agents. The theory is based on the conviction of conflict of interest and information asymmetry between principal and agent, which give rise to agency cost. In the agency relationship, the owner delegates authority to the agent to enhance their corporate worth in terms of share price and dividend, while the agents are motivated to maximize their economic and psychological needs (Mahrani & Soewarno, 2018). The key idea of agency theory is to minimize the conflict of interest to maximize the shareholder's worth through monitoring and evaluating the performance of the board of directors. One of the methods to monitor agency relationships and mitigate agency costs is the CG framework. Thus, agency theory endorses the idea of a separate board leadership structure to provide a system of checks and balances to effectively evaluate the performance of the CEO and board of directors to maximize financial performance (Makki & Lodhi, 2013).

↳ **Stewardship Theory :** Stewardship theory, introduced in 1989 by Donaldson and Davis as an alternative to agency theory, assumes that directors are good stewards of resources and are intrinsically motivated, trustworthy, dedicated, and prioritize organizational interest over self-interest (Donaldson & Davis, 1991). A CEO-duality would promote a firm's efficiency through unity of command, leading to greater efficiency and firm performance through strong leadership (Voinea et al., 2022). The theory is rooted in psychological and sociological principles and posits that individuals derive satisfaction from organizational success, recognition, and a sense of purpose, fostering fiduciary relationships. Unlike agency theory, stewardship theory advocates for empowerment, cooperation, and minimal external controls for creating an environment where shared goals and sustainable growth are prioritized. Thus, the integration of the CEO and the board chairman positions would speed up the decision-making process, resulting in improved firm performance.

↳ **Resource Dependency Theory :** Resource dependence theory, proposed by Pfeffer and Salancik (1978), emphasizes the important role of internal and external resources in shaping company performance. The theory underscores the significance of the corporate board in bridging the firm's internal and external environments to ensure the organization's operations, survival, and overall success. Hillman et al. (2000) and Hillman and Dalziel (2003) argued that diversity within the board encompassing aspects such as gender, nationality, ethnicity, the presence of independent and non-executive directors (NED), and the separation of CEO and chair roles (CEO non-duality), strengthens a company's competitive edge, resulting in improved performance. The collective expertise of board members, encompassing their skills, insights, experiences, and diverse backgrounds, contributes to high-quality decision-making, ultimately benefiting the firm (Hsu et al., 2019).

Moreover, exchanging diverse perspectives and ideas during boardroom interactions deepens the understanding of the firm's operational landscape (Nielsen & Huse, 2010). The study applies resource dependence theory to examine the impact of CG and CEO duality on FV. The resource dependence theory complements the agency theory as the agency theory primarily views the board as a monitoring mechanism to curb managerial self-serving behavior, and the resource dependence theory positions the board as a valuable resource that contributes to the firm's success and sustainability (Wijethilake & Ekanayake, 2020).

Direct Impact of Corporate Governance on Financial Performance

The FP represents the company's ability to achieve its economic objectives through efficient utilization of resources, profitability, and value creation for its stakeholders. Generally, FP is measured using metrics like gross profit margin, net profit margin (ROS), return on assets (ROA), and return on equity (ROE), which collectively capture the effect of profitability, liquidity, assets management, and debt management on operational efficiency and shareholder wealth. CG and FP are closely interrelated, as a strong CG framework promotes efficient resource utilization, sound decision-making, and robust risk management, leading to better firm performance. Empirical studies conducted to investigate the impact of CG practices on FP offer diverse findings; for instance, empirical studies by Adekunle and Aghedo (2014), Jackling and Johl (2009), and Kalantonis et al. (2023) confirmed that board size (BS) significantly and positively impacted ROA; conversely, Abdullah and Tursoy (2023) and Malik and Makhdoom (2016), found a negative and significant influence of BS on ROA. Kiel and Nicholson (2003) demonstrated an insignificant impact of BS on ROA, whereas Hamdouni (2010) reported a negative and significant impact of BS on ROE. Malik and Makhdoom (2016) further identified that board meetings and CEO remuneration negatively and significantly influenced ROA, while Singh et al. (2022) noted a significant negative effect of board expertise on ROA. Similarly, Abdullah and Tursoy (2023) observed a negative and significant impact of audit committee practices on ROA and ROE.

Regarding board independence, Malik and Makhdoom (2016) discovered a positive and significant impact on ROA. However, Kalantonis et al. (2023) and Venkatraman and Selvam (2014) reported an insignificant impact on ROA, and Venkatraman and Selvam (2014) also found an insignificant effect on ROE. Gender diversity was positively and significantly associated with ROE while demonstrating a significant negative effect, as noted by Singh et al. (2022). The role of CEOD has also been extensively studied; for instance, studies by Adekunle and Aghedo (2014) and Singh et al. (2022) highlighted that CEOD positively and significantly impacted ROA, while Bhagat and Bolton (2008) and Jackling and Johl (2009) identified a positive and significant influence on ROA. Guo and Kga (2012) found an insignificant influence of CEOD on ROA, while Hamdouni (2010) reported a negative and significant impact on ROE. These findings underscore the complex and nuanced relationships between CG practices and FP, emphasizing the need for further exploration of their interdependencies. Based on the literature review, the following hypotheses are formulated:

- **$Ha_{(1)}$:** FP has a significant impact on FV.
- **$Ha_{(2)}$:** CG has a significant impact on FP.
- **$Ha_{(3)}$:** CEOD has a significant impact on FP.

Direct Impact of Corporate Governance on Firm Value

FV is an integral part of CG analysis, serving as a comprehensive market-based measure of a firm's long-term performance. It reflects both current efficiency and future growth potential, capturing the impact of CG practices on shareholders' wealth through stock market prices and market capitalization. Several studies have been conducted to evaluate the impact of CG practices on FV, yielding mixed findings. Bhagat and Bolton (2008), Hamdouni (2010), Jackling and Johl (2009), Kalantonis et al. (2023), Khan et al. (2024), Kiel and Nicholson (2003), and Singh et al. (2018) revealed that BS positively and significantly influenced FV. In contrast, research by Abdullah and Tursoy (2023) and Malik and Makhdoom (2016) asserted that BS exerted a negative and significant impact on FV, while Jackling and Johl (2009), Kumar and Singh (2013), and Nguyen and Faff (2007) reported an insignificant relationship. Similarly, the impact of board independence on FV is subject to varied conclusions.

Khan et al. (2017) and Malik and Makhdoom (2016) demonstrated a positive and significant impact with FV, while Christensen et al. (2010), Kalantonis et al. (2023), and Singh et al. (2018) confirmed that board independence exhibited a negative and significant association with FV. Meanwhile, Bhagat and Bolton (2008) and Kiel and Nicholson (2003) found no evidence of a significant relationship between board independence and FV. CEOD exhibited a negative and significant impact on FV, as documented by Jackling and Johl (2009), Kapil and Mishra (2019), Singh et al. (2018), and Thomas et al. (2023).

However, Bhagat and Bolton (2008) and Hamdouni (2010) found an insignificant relationship. Ownership patterns also played a critical role, with director ownership (Bhagat & Bolton, 2008) and promoter ownership (Kumar & Singh, 2013) indicating a positive and significant effect on FV. Findings of audit committees (Abdullah & Tursoy, 2023; Khan et al., 2017) and board diversity (Nguyen & Faff, 2007; Singh et al., 2022) positively and significantly influenced FV. Board meetings exerted a positive and significant impact on FV, while board committees and board expertise negatively and significantly influenced FV (Singh et al., 2022). Board meetings generally have a positive effect, though Malik and Makhdoom (2016) reported a negative impact on board meetings and CEO remuneration. Further, market volatility was identified as a negative and significant factor, while Hai (2024) found no significant effect of corporate social responsibility on FV. The analysis of the literature review underscores the complex and multifaceted relationship between CG and FV. Based on these studies, the following hypotheses are formulated:

- **$Ha_{(4)}$:** CG has a significant impact on FV.
- **$Ha_{(5)}$:** CEOD has a significant impact on FV.
- **$Ha_{(6)}$:** CG has a significant impact on CEO-duality.

Corporate Governance – Firm Value Structural Dynamics Using PLS-SEM

Several studies have investigated the impact of CG on FP, FV, and CSR, but the literature reveals a dearth of investigations utilizing PLS-SEM to explore CG–FV structural dynamics with mediating and moderating constructs. The following are prominent studies: Haryono and Paminto (2015) reported that effective CG enhanced FP and reduced firm risk; nevertheless, CG had no direct impact on FV, but it indirectly affected FV through FP. Khongmalai and Distanont (2017) confirmed that the board of directors exerted a negative and significant impact on performance; however, the strategic management system positively mediated this relationship. Mahrani and Soewarno (2018) discovered that CG and CSR had a positive and significant impact on the FP and earnings management of a firm, but earnings management negatively impacted FP. Earning management positively mediated the relationship among CG, CSR, and FP. ElGammal et al. (2018) looked at the relationship between CG, ethics, and CSR and revealed that ethical practices had a positive impact on CG but did not directly impact CSR; CG had a positive impact on CSR, and CG mediated the relationship between ethics and CSR.

Kapil and Mishra (2019) observed that CG had a positive impact on firm performance, whereas control variables such as firm size and leverage negatively impacted it, and firm age positively impacted FP. Khan et al. (2019) stated that CG had a positive impact on organizational performance except for board independence, board meetings, and board committees; innovation and innovative culture significantly mediated and moderated the relationship between CG and organization performance, respectively. Eni-Egwu et al. (2022) asserted that gender diversity had a positive impact, while BS and board composition negatively impacted FP. Ferriswara et al. (2022) demonstrated that CG positively influenced FP but not on FV; financial performance had a positive impact on firm value, whereas capital structure did not affect either FP or FV. Tiep Le and Nguyen (2022) illustrated that

CG positively impacted FV through the mediating role of CSR and organizational identification. Ledi and Ameza-Xemalordzo (2023) found that good CG improved CSR practices and positively impacted corporate image and performance. CG and CSR had an indirect positive impact on performance through the corporate image. Based on the structural analysis of CG–FV, the following hypotheses are proposed for empirical testing:

- **$Ha_{(7)}$:** FP significantly mediated the relationship between CG and FV.
- **$Ha_{(8)}$:** CEO-duality significantly mediated the relationship between CG and FP.
- **$Ha_{(9)}$:** CEO-duality significantly mediated the relationship between CG and FV.
- **$Ha_{(10)}$:** FP significantly mediated the relationship between CEO-duality and FV.
- **$Ha_{(11)}$:** CEO-duality and FP significantly mediated the relationship between CG and FV.
- **$Ha_{(12)}$:** SRV significantly moderated the relationship between CG and FV.

Statement of the Problem

The review of the aforementioned literature indicates that the majority of studies on CG have been conducted in developed nations, with relatively little attention given to emerging economies, particularly India. These studies examined various facets of CG, like CSR, CEOD, FP, EVA, MVA, and FV, employing econometrics methodologies. However, CG–FV structural dynamics within the public and private sectors in India remain unexplored. The current study seeks to fill this gap by investigating CG – FV structural dynamics in the context of India, using advanced methodological approaches. Additionally, the findings are also evaluated through a theoretical lens, offering a distinctive contribution to the existing literature. Given its novelty and rigorous analytical framework, the research problem can be reformulated as: "The Moderating Role of Stock Return Volatility in Corporate Governance-Firm Value Structural Linkages: Insights from a PLS-SEM with IPMA Approach."

Methodological Approach

The methodological approach utilized in the present study is explained in this section below:

Research Question

How are CG–FV structural dynamics in public and private sector companies shaped by financial performance and CEO-duality as moderating variables, with stock market volatility as a moderating variable?

Research Objectives

The following objectives of this study are designed in alignment with the insights from the literature review and the research question:

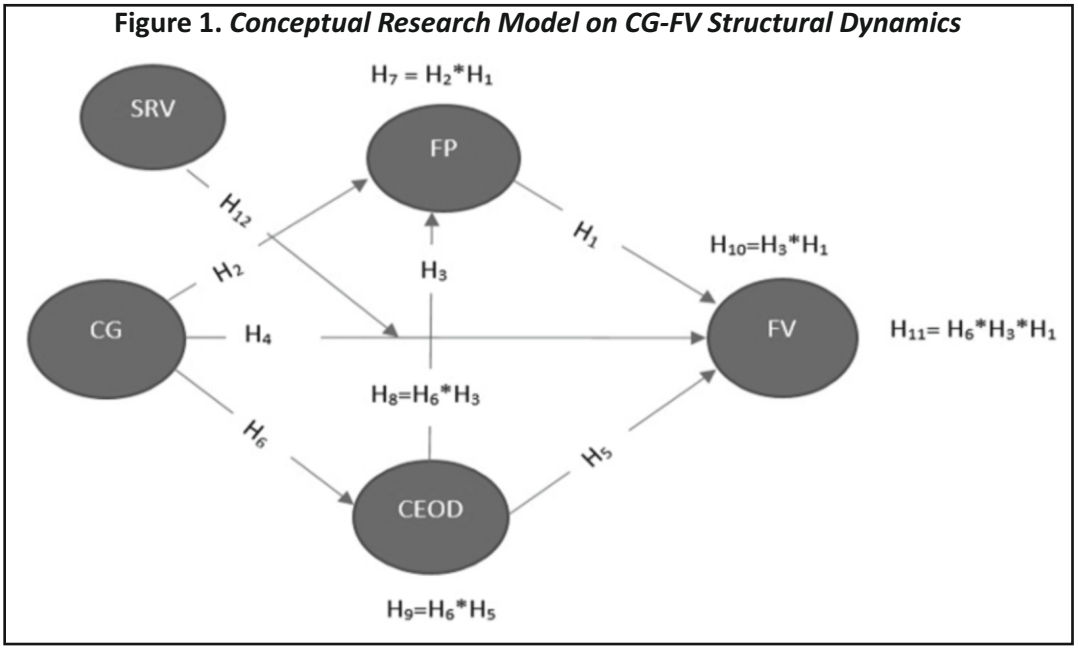
- To assess how CG influences FV in public and private sector companies in India.
- To investigate the mediating roles of FP and CEO-duality in the structural relationship between CG and FV.
- To analyze the moderating effect of SRV in the CG–FV structural relationship.

- To identify key policy factors that reinforce the CG–FV structural linkages using the IPMA approach.

Model Specification

Based on insights from the literature review and the study's objectives, this study proposes a reflective measurement model to investigate the CG–FV structural dynamics in public and private sector companies in India, using FP and CEOD as mediators and SRV as moderating variables. This study employed a more advanced dependency and interdependency statistical methodology, smart partial least squares structural equation modeling (PLS-SEM) Software 4.0.9.9, integrated with IPMA to investigate the mediating and moderating effect within a single model, as outlined by Haryono and Paminto (2015), Kamaliah (2020), Pamungkas et al. (2023), and Tiep Le and Nguyen (2022). This study aims to contribute to CG literature by offering a nuanced and integrated understanding of how CG influences FV through the lens of mediating and moderating constructs. The proposed theoretical model is displayed in Figure 1.

Figure 1. ***Conceptual Research Model on CG-FV Structural Dynamics***



Scope and Time Period

This study applied a quantitative and explanatory statistical methodology to investigate CG–FV structural dynamics in India's public and private sector companies. The research is based on secondary data (Ali et al., 2017; Haryono & Paminto, 2015; Pamungkas et al., 2023) extracted from the annual reports spanning the period from 2011–2012 to 2023–2024 and is structured on the prior studies by Biswas et al. (2022), Kiran and Ramesh (2021), and Kumar and Sudesh (2019). To estimate the CG–FV structural dynamics, the study employed an advanced dependency and interdependency statistical methodology using Smart PLS-SEM Software version 4.0.9.9, incorporating FP and CEOD as mediating variables and SRV as a moderating variable.

Variable Description

The proposed CG–FV model incorporates CG, FP, CEOD, and SRV as exogenous constructs, while FV is

recognized as endogenous. CG is a primary exogenous construct that needs to be examined for its structural relationship with FV. The operational definition of CG is based on the corporate governance perception index (CGPI), measured using a set of 17 proxy variables on a scale of 100 points (Das, 2022). However, in the final analysis, BS, independent directors (ID), NED, and disclosure and transparency (DAT) have been selected as proxy indicators of CG. These are chosen based on factor loading criteria, specifically outer loadings exceeding 0.4 and 0.708 (Hair Jr. et al., 2017).

FP is measured using net profit margin (NPM), ROE, and ROA to assess the impact of CG on FP. The final analysis, however, focused on ROE and ROA (Jain et al., 2023; Kamaliah, 2020; Kapil & Mishra, 2019; Mahrani & Soewarno, 2018) due to factor loading criteria. Debnath et al. (2021) used CEOD as a mediating construct to explore the impact of CG on FV. CEOD is a dummy variable with a value of 1 for positions of board chairman and CEO of a company held by different people (non-CEOD) and 0 for positions held by the same person (CEOD). FV is used to measure market performance and is represented by Tobin's *Q* ratio, price-earnings ratios, and market-to-book value (Haryono & Paminto, 2015; Mahrani & Soewarno, 2018). However, based on the factor loadings criterion, Tobin's *Q* ratio is finally selected to represent FV in the final analysis.

This study incorporates SRV, a macroeconomic and external factor, as a moderating construct to identify the effect of risk factors in market conditions. These risks are shaped by economic, political, technological, and strategic factors, affecting the performance of the company (Khan et al., 2024). Companies with strong CG have chances of managing the changes in market conditions (Chow et al., 2018). The systematic risk of the individual entity is quantified using the β value, computed by the following formula:

$$\beta_1 = \frac{Cov_{im}}{Var_m} = \frac{\sigma_i \sigma_m Cor_{im}}{\sigma^2_m} = \frac{\sigma_i Cov_{im}}{\sigma_m}$$

where β_1 = Beta of individual security; σ_i = Standard deviation of returns of individual security; σ_m = Standard deviation of returns of a market portfolio; Cor_{im} = Correlation coefficient between returns of individual security and market portfolio. Cov_{im} = Correlation coefficient between returns of individual security with the market portfolio.

Sample Size

The sample consists of the 40 companies listed on the National Stock Exchange or Bombay Stock Exchange (Gupta & Maurya, 2021; Heggede & Jadhav, 2021), with 20 each from the public and private sectors (Sandhya & Parashar, 2019). These companies were selected based on their net worth on March 31, 2024. Given the longer study period, the complex nature of data collection, and the comprehensive scope of the study in the panel data framework, the sample size has been confined to 40 companies with 520 company-year observations. This selection aligns with previous studies conducted by Handa (2018), Pandya (2011), and Singh et al. (2020).

Analysis and Interpretation of CG–FV Structural Dynamics

The analysis of the current study is structured into four distinct stages: the measurement model (outer model), the structural model (inner model), the IPMA of constructs, and the IPMA of indicators.

Assessment of the Measurement Model

The reliability of the measurement model was assessed by testing the convergent and discriminant validity. Figure 2 shows the measurement model's test results.

Figure 2. ***Measurement Model Test Results (Outer Mode)***

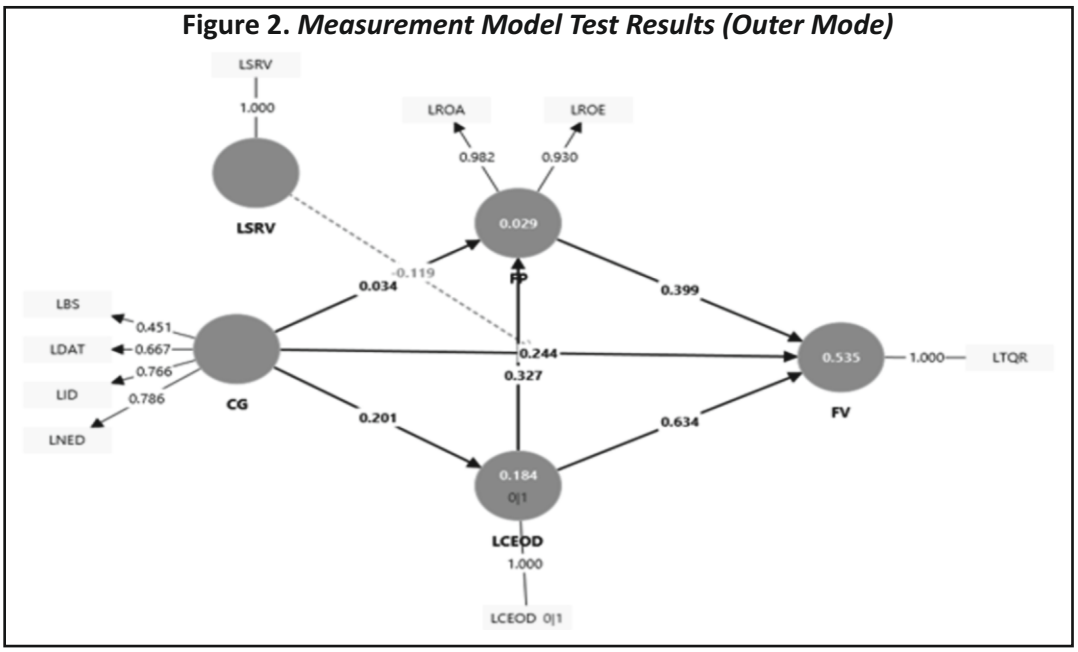


Table 1. ***Estimates of the Reliability and Convergent Validity of the Constructs***

Constructs	Indicators	Loadings	Cronbach's Alpha	C R (rho_c)	AVE	VIF
CG	*BS*	0.451	0.735	0.768	0.507	2.691
	DAT	0.667				1.102
	ID	0.766				6.2
	NED	0.786				6.938
FP	*ROA*	0.982	0.915	0.955	0.914	3.454
	ROE	0.93				3.454
FV	*TQR*	1				1
CEOD	*CEOD*	1				1
SRV	*SRV*	1				1
CSR × CG		1				1

Source : Smart PLS–SEM Output. CR = Composite Reliability; AVE = Average Variance Extracted; VIF = Variance Inflation Factor.

Table 1 demonstrates the results of reliability and convergent validity. The thresholds for factor loadings, AVE, CR, and Cronbach's alpha are 0.708, 0.5, 0.70, and 0.70, respectively (Hair Jr. et al., 2017). The factor loading values range between 0.4 and 0.708, aligning with the guidelines outlined by Hair Jr. et al. (2017). In addition, all VIF values are below five, except for NED, indicating no collinearity issues. Thus, the results of the Cronbach's alpha, CR, and AVE values confirm the model's reliability and convergent validity.

Table 2 presents the discriminant validity estimates using the Fornell–Larcker criterion. The diagonal values, which represent the square root of AVE for each construct—CG (0.68), FP (0.956), FV (1), CEOD (1), and SRV (1)—are greater than the corresponding off-diagonal values. This analysis confirms that the constructs are distinct from one another.

Table 2. ***Discriminant Validity of the Constructs (Fornell–Larcker)***

Constructs	*CG*	*FP*	*FV*	*CEOD*	*SRV*
CG	0.68				
FP	0.1	0.956			
FV	0.423	0.526	1		
CEOD	0.429	0.168	0.484	1	
SRV	–0.097	–0.21	–0.327	–0.087	1

Assessment of the Structural Model

Figure 3 presents the path coefficient estimates for the hypothesized model using 5,000 bootstrap samples. Table 3 reports the estimates of a predictive model, and Table 4 analyses the path coefficients and the findings of the hypotheses testing.

Figure 3. ***Structural Model with Bootstrapping (Inner Model)***

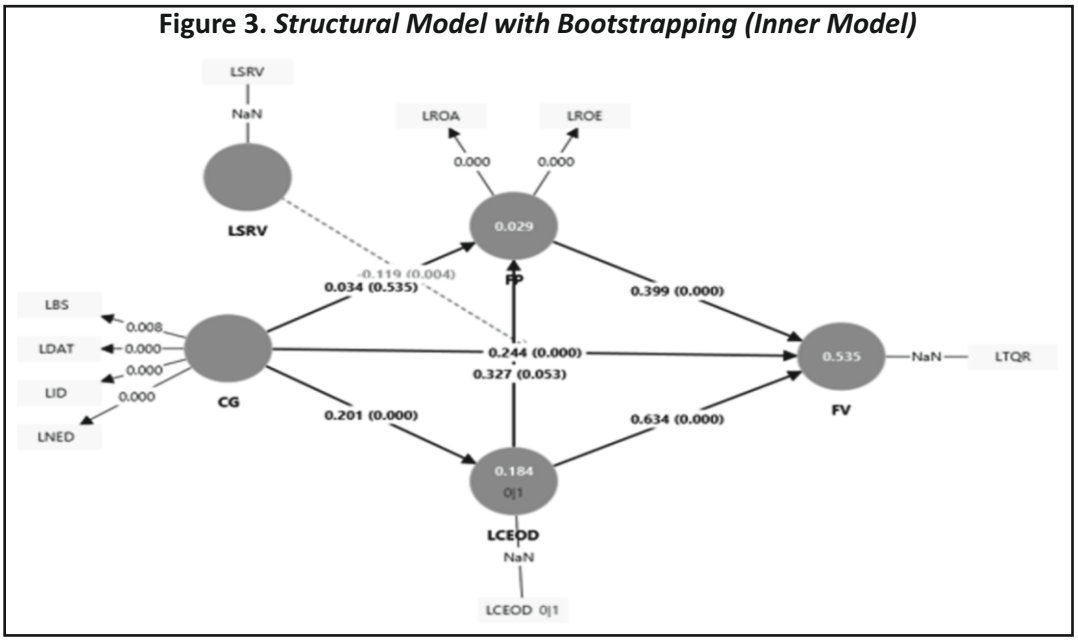


Table 3. ***Predictive Relevance of the Model***

Constructs	R^2 Value	Q^2 Predict	f^2 Value						Model Fit Value
			CG	*FP*	*FV*	*CEOD*	*SRV*	*SRV × CG*	
CG	-----	------	------	0.001	0.104	0.225	-----	------	------
FP	0.029	0.002	-----	-----	0.316	-----	-----	-----	-----
FV	0.535	0.260	-----	-----		-----	-----	-----	-----
CEOD	0.184	0.115	-----	-----	0.152	-----	-----	-----	-----
SRV	-----	-----	-----	0.02	0.075	-----	-----	-----	-----
SRV × CG	-----	-----	-----	-----	0.025	-----	-----	-----	-----
SRMR	-----	-----	-----	-----	-----	-----	-----	-----	0.17

Note. SRMR = Standardized Root Mean Square Residual.

Table 3 illustrates the results of the model's explanatory power, predictive relevance, and overall model. The coefficients of determination (R^2) indicate the variance explained in the endogenous construct by the exogenous constructs. Based on Cohen's (1988) classifications of R^2 values are categorized as weak (0.02–0.13), moderate (0.13–0.26), and substantial (above 0.26). The findings confirm that the explanatory power of FP is weak (0.029), FV is strong (0.536), and CEOD (0.184) is moderate. For effect size (f^2), Cohen's (1988) benchmarks define small, medium, and large effects as 0.02, 0.15, and 0.35, respectively. In this study, the f^2 values for FP and CEOD depict a small effect size, indicating minimal influence, while FV exhibits a medium effect size, signifying a moderate impact. These classifications provide insight into the relative importance of each construct. The SRMR coefficient is 0.17, slightly more than the threshold limit of 0.10; however, this still signifies a satisfactory model fit. Furthermore, the Q^2 values for FP, FV, and CEOD are greater than zero, meeting the criterion for good predictive validity (Hair Jr. et al., 2017). Therefore, these results confirm that the structural model reveals strong predictive relevance for FV.

Table 4 presents the findings of path coefficients and hypothesis testing about the structural linkages between CG and FV. The finding reveals that CG exerts a positive and significant impact on FV ($\beta_4 = 0.244$, $t = 6.71$, p-value = 0.000 > 0.05), thereby supporting the $Ha_{(4)}$. This outcome aligns with the prior studies, such as those by Dang et al. (2023) and Lusy and Riduwan (2020). It supports the resource dependence theory, implying that strong CG practices enhance FV by providing a stable and credible framework for decision-making. CG reveals a positive impact on FP ($\beta_2 = 0.034$, $t = 0.62$, p-value = 0.535 < 0.05), but an insignificant p-value fails to support the $Ha_{(2)}$. This result confirms the earlier findings of Sueyoshi et al. (2010), Wahyuni and Mahliza (2019), and the resource dependency theory. Furthermore, FP shows a positive and significant effect on FV ($\beta_1 = 0.399$, $t = 7.202$, p-value = 0.000 < 0.05), validating $Ha_{(1)}$. This finding resonates with the conclusions of Pamungkas et al. (2023) and signal theory, which asserts that strong FP conveys a favorable impact to stakeholders, thereby enhancing firm value.

The structural relationship involving CEOD has been examined in the context of the board leadership framework and agency and stewardship theories. The analysis reveals that CEOD wields a positive and significant effect on FP ($\beta_3 = 0.327$, $t = 8.27$, p-value = 0.000 < 0.05), confirming the acceptance of $Ha_{(3)}$. This inference aligns

Table 4. ***Path Coefficients and Hypotheses Testing***

Hypotheses	Construct Relationship	Original Sample (*O*) β Coefficients	Sample Mean (*M*)	Std. Dev.	*t*-statistics |O/STDEV|	*p*-values	Decision
$Ha_{(1)}$	*FP –> FV*	0.399	0.412	0.055	7.202	0.000	Accepted
$Ha_{(2)}$	*CG –> FP*	0.034	0.043	0.055	0.62	0.535	Rejected
$Ha_{(3)}$	*CEOD –> FP*	0.327	0.339	0.169	1.933	0.053	Accepted
$Ha_{(4)}$	*CG –> FV*	0.244	0.246	0.036	6.71	0.000	Accepted
$Ha_{(5)}$	*CEOD –> FV*	0.399	0.412	0.055	7.202	0.000	Accepted
$Ha_{(6)}$	*CG –> CEOD*	0.201	0.204	0.024	8.27	0.000	Accepted
$Ha_{(7)}$	*CG –> FP –> FV*	0.014	0.019	0.025	0.546	0.585	Rejected
$Ha_{(8)}$	*CG –> CEOD –> FP*	0.066	0.07	0.036	1.813	0.07	Accepted
$Ha_{(9)}$	*CG –> CEOD –> FV*	0.127	0.125	0.029	4.438	0.000	Accepted
$Ha_{(10)}$	*CEOD –> FP –> FV*	0.131	0.144	0.083	1.581	0.114	Rejected
$Ha_{(11)}$	*CG –> CEOD –> FP –> FV*	0.026	0.03	0.018	1.5	0.134	Rejected
$Ha_{(12)}$	*SRV × CG –> FV*	–0.119	–0.117	0.042	2.849	0.004	Accepted

with the findings of Lew et al. (2018) and underscores the role of CEOD in driving more substantial financial outcomes. Similarly, CEOD has a positive and significant impact on FV (β_5 = 0.399, t = 7.202, p-value = 0.000 < 0.05), supporting $Ha_{(5)}$, though this conclusion differs from the finding of Singh et al. (2022). Additionally, CG positively and significantly influences CEOD (β_6 = 0.201, t = 1.933, p-value = 0.053 < 0.10), supporting $Ha_{(6)}$. This outcome reflects the harmonious and healthy relationship between the board's functioning and the role of the board chairman in the Indian corporate sector, suggesting that effective board leadership supports CEO non-duality structures. The findings of CEOD's structural relationship uphold agency theory by emphasizing the advantages of separating the CEO and chairman roles while challenging stewardship theory's preference for unified leadership.

The analysis provides nuanced findings on the mediating effects of FP and CEOD in the CG–FV structural dynamics. FP positively mediates the relationship between CG and FV (β_7 = 0.014, t = 0.546, p-value = 0.585 < 0.05). However, an insignificant p-value does not support $Ha_{(7)}$ and does not confirm resource dependence t and signaling theories. CG reveals the positive and significant impact on FV (β_8 = 0.066, t = 1.813, p-value = 0.07 > 0.10) through the mediating role of CEOD, confirming the $Ha_{(8)}$. This finding aligns with the premises of both resource dependence theory and agency theory, highlighting that the combined efforts of the board and a separate board leadership structure play a vital role in enhancing FV. Similarly, CEOD acts as a positive and significant mediator between CG and FV (β_9 = 0.127, t = 4.438, p-value = 0.000 < 0.05), confirming $Ha_{(9)}$. The findings align with resource dependence theory and agency theory. However, FP's role as a mediator in the CEOD – FV relationship is positive but insignificant (β_{10} = 0.131, t = 1.581, p-value = 0.114 < 0.05), rejecting the $Ha_{(10)}$, highlighting that other factors might play a stronger mediating role in this linkage. These findings suggest that firms should focus on reinforcing the role of CEOD in leveraging CG to improve FV, while policymakers should promote governance practices that prioritize leadership independence.

The analysis reveals that the mediating effect of CEOD and FP on the relationship between CG and FV is positive but insignificant (β_{11} = 0.026, t = 1.5, p-value = 0.134 > 0.05), leading to the rejection of $Ha_{(11)}$. This conclusion diverges from resource dependence theory and agency theory, suggesting that the corporate board, even with the combined influence of the chairman and FP, has not effectively translated into significant gains in FV in the presence of the chairman and FP and has been ineffective in enhancing FV. The lack of significant impact implies that, despite CG efforts, CEOD and FP improvements have not translated into meaningful gains in FV.

The analysis identifies SRV's negative and significant moderating effect on the relationship between CG and FV (β_{12} = –0.119, t = 2.849, p-value = 0.004 < 0.05). This underscores the vulnerability of governance structures to systematic risk of market conditions, which can undermine their effectiveness in driving value creation. The negative moderating effect of SRV suggests that firms must strengthen their risk management frameworks to mitigate the adverse impacts of market volatility on governance effectiveness. Policymakers and regulators should promote risk-aware governance models, encouraging firms to integrate risk assessment into their policy formulation.

Importance–Performance Map Analysis of Constructs and Indicators

Singh et al. (2024) and Zabukovšek et al. (2022) applied the IMPA approach to identify the policy determinants. The study is novel as it employed the IPMA for constructs and indicators to identify policy determinants that management should prioritize in policy making.

↳ **IPMA of Constructs :** Table 5 reports the direct, indirect, and total effects of the CG, FP, CEOD, and SRV on FV, offering insights into the importance of each exogenous construct in influencing FV. The results reveal that, except for SRV, all constructs have positive and significant direct and indirect impacts on FV. This underscores the

Table 5. ***Summary of Direct, Indirect, and Total Effects of Exogenous Constructs on Endogenous Constructs in the IPMA–Path Model***

Predecessor Constructs	Direct Effects	Indirect Effects	Total Effects	*p*-value of Total Effects
CG	0.244	0.167	0.411	0.000
FP	0.399	------	0.399	0.000
CEOD	0.634	0.131	0.765	0.000
SRV	–0.192	---------	–0.192	0.000

Table 6. ***Summary of Importance–Performance Map Analysis of Constructs***

Constructs	Importance	Performance
CG	0.411	77.294
FP	0.399	77.368
CEOD	0.764	–90.322
SRV	–0.192	54.166
Mean	0.346	29.627

important roles of CG, FP, and CEOD in driving FV, while the negative effect of SRV suggests it may not be a critical factor in this context.

Table 6 summarizes the IPMA results, highlighting the importance and performance of constructs for FV. The result reveals that CG and FP significantly contribute to FV through their importance and performance. Notably, CEOD, despite its negative performance, shows the highest importance, suggesting that the corporate sector should prioritize board leadership effectiveness, particularly by addressing the challenges associated with CEO non-duality. SRV reflects negative importance but positive performance, indicating less impact in improving FV. The findings show that a one-unit increase in the performance of FP from 77.368 to 78.368 and CG from 77.294 to 78.294 would improve FV by the total effects of 0.399 and 0.411, respectively, keeping another factor constant. The findings of IMPA highlight the need for targeted improvements in CG and FP while addressing challenges in CEOD in terms of separate board leadership structures to maximize FV outcomes effectively.

Figure 4 displays the graph of IPMA estimates, dividing the constructs into four quadrants—high-high, low-high, low-low, and high-low—based on their importance and performance. CG and FP are placed in high-performance and high-importance regions, emphasizing their critical role in enhancing FV and suggesting they should remain a focus for policy formulation. In contrast, SRV is positioned in the high-performance but low-importance quadrant, indicating that it does not require prioritization within the corporate sector. Notably, CEOD, despite reflecting the highest importance, is absent from the graph due to its negative performance, signaling a need for substantial improvement in terms of CEO non-duality to unlock its potential contribution to FV. These results imply that the corporate sector should prioritize targeted enhancements in CG and FP to sustain their positive impact on FV.

↳ **IPMA of Indicators :** Table 7 summarizes the IPMA estimates for indicators. The findings reveal that a one-unit increase in the performance of ROE, DAT, ROA, NED, ID, BS, and SRV would increase FV by total effects of 0.141, 0.238, 0.273, 0.209, 0.209, –0.055, and –0.192 ceteris paribus. The mean values of importance and performance of indicators are 0.1688 and 64.5723, respectively, highlighting a noticeable gap between importance and performance.

Figure 4. ***Importance-Performance Map of Constructs for Firm Value***



Table 7. ***Summary of Importance–Performance Map Analysis of Indicators***

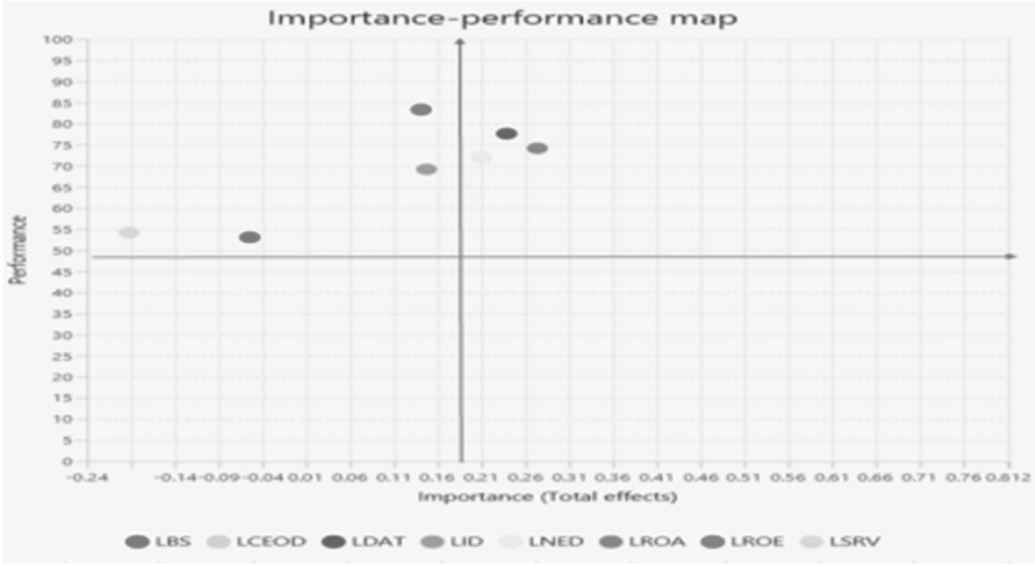
Indicators	Importance (Total Effects)	Performance
LBS	–0.055	53.08
LCEOD	0.764	–90.322
LDAT	0.238	77.637
LID	0.209	69.191
LNED	0.209	72.048
LROA	0.273	74.178
LROE	0.141	83.325
LSRV	–0.192	54.166
Mean	0.190625	49.162875

Figure 5 demonstrates the IPMA estimates for indicators associated with FV, illustrating their relative importance and performance. The study identifies ROA, DAT, and NED as vital determinants that can help in policy formulation due to their high importance and low performance. In contrast, BS, SRV, ID, and ROE demonstrate high performance but relatively low importance, suggesting they do not require immediate prioritization. CEOD, despite having the highest importance, is notably absent from the graph due to its negative performance, underscoring the need for significant improvements in this area. These findings suggest that policy efforts should focus on enhancing the performance of ROA, DAT, NED, and CEOD to maximize their positive impact on FV.

Conclusions and Policy Implications

This study examines the structural linkages between CG and FV within the Indian corporate landscape, incorporating CEOD and FP as mediating and SRV as moderating constructs. The analysis utilizes the Smart

Figure 5. ***Importance–Performance Map Analysis of Indicators for Firm Value***



PLS-SEM methodology with the IPMA approach to test the hypotheses. The results of the measurement model confirmed key criteria, like reliability, convergent validity, discriminant validity, explanatory power, model fit, and predictive relevance, facilitating an in-depth investigation into the CG–FV structural linkages. The findings of the direct impact reveal that CG positively and significantly influences FV, while it exerts a positive and insignificant effect on FP. CEOD, a proxy of the board leadership, exerts a positive and significant impact on FP and FV; likewise, FP demonstrates a positive and significant impact on FV. In terms of indirect effects, CEOD has a positive and significant mediating effect on the CG–FV and CG–FP structural relationship, while FP positively mediates the structural relationship between CG–FV and CEOD–FV, though the effect is not statistically significant. Additionally, the combined mediating effect of CEOD and FP on the CG–FV structural relationship is positive yet insignificant. The SRV negatively and significantly moderates the CG–FV structural relationship, highlighting the necessity of aligning CG practices with the changing market dynamics to enhance the FV.

The IPMA seeks to identify constructs and indicators that hold high importance but reflect low performance, offering critical insights for managerial interventions. The construct of great significance and low performance is CEOD, while the indicators exhibiting analogous attributes are CEOD, ID, and NED, all of which require managerial focus to improve FV. These results align with agency theory, emphasizing that separate board leadership is vital to improving CG. The findings of the OECD support this separation of roles and is widely adopted in countries like the UK, Australia, Germany, and the Netherlands. In India, regulation was introduced on April 1, 2022, mandating the top 500 listed companies based on their market capitalization to ensure the separation of the roles of Chairman and CEO (Negi & Jain, 2022).

The policy implications of the present study offer valuable insights for policymakers, regulators, corporate leaders, and investors, especially institutional investors. Strong CG boosts their profitability and trustworthiness for companies, enabling them to secure more cost-effective capital. Improved performance yields two key benefits for government and society: increased tax revenue and greater CSR spending, promoting sustainable development goals (SDG) and socio-economic prosperity. Institutional investors, prioritizing effective CG to protect and grow their investments, can use these findings to inform their decision-making. The results of path analysis imply that resource dependence theory complements the agency theory, while challenging the theoretical

foundations of stewardship theory, guiding future research and practice in governance frameworks.

A negative SRV implies that the corporate sector has limited control over the market conditions; however, the sector must strengthen its risk management mechanism to alleviate the detrimental effects of market volatility on governance efficacy. Policymakers and regulators should promote risk-aware governance models, encouraging companies to incorporate risk assessment into their policy formulation. Moreover, companies should analyze risk-return dynamics, volatility persistence, leverage effects, spillovers and forecasts analysis using both linear and non-linear GARCH models to navigate market uncertainties better.

Limitations of the Study and Scope for Future Research

Overall, the study's findings are highly promising, confirming the positive impact of policy measures initiated by India's regulatory authority. The research focused on investigating the CG–FV structural dynamics within the Indian corporate setting is subject to some constraints. The scope is confined to the listed companies in India's public and private sectors, encompassing a relatively limited sample size across 13 years from 2011–2012 to 2023–2024. This constrained the generalizability of the findings globally due to differences in CG regulations and business environments across the nations. Thus, to enhance the study's applicability and robustness, future research should expand its scope by incorporating a larger, cross-country sample, including advanced methodologies and constructs like artificial intelligence, machine learning, and deep learning. However, this study offers a nuanced understanding that is valuable for refining the CG framework in India and other emerging nations for promoting socio-economic prosperity in alignment with the SDG agenda.

Authors' Contribution

The concept for the study titled "Market Turbulence as a Moderator in Corporate Governance and Firm Value Structural Linkages of Listed Companies in India: Insights from PLS-SEM and IPMA" was conceived by Dr. Raj Kumar Singh and Dr. Naresh Kumar. Data collection and analysis were carried out by Dr. Naresh Kumar, Dr. Ajay Kumar, and Yashvardhan Singh. The creation of tables and the initial draft of the manuscript were collaboratively undertaken by Dr. Naresh Kumar, Sunil Kumar, and Yashvardhan Singh. Dr. Raj Kumar Singh developed the final version of the manuscript, incorporating input and feedback from the other authors at various stages of its preparation. All authors have read and agreed to the published version of the manuscript.

Data Availability Statement

The data is publically accessible through the annual reports of the respective companies and can be freely downloaded from their websites.

Conflict of Interest

The authors certified that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or material discussed in this manuscript. However, Yashvardhan Singh is employed in Axtria Pvt. Ltd., Noida, Uttar Pradesh.

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