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## **BOARD INDEPENDENCE AND EARNINGS STABILITY: A NON-LINEAR PERSPECTIVE FROM INDIAN COMPANIES**

**Keywords:** corporate governance, board independence, stability of earnings, non-linear approach, Indian companies.

**J E L Classification:** G3, G34, L25.

**Abstract:** This research examines the relationship between board independence and earnings stability in Indian companies. The study focuses on the BSE-500 index constituents, which represent 4,044 firm-years from 2011 to 2022, and aims to fill gaps in the literature by providing insights into how various board characteristics affect earnings stability. The study employs a novel non-linear approach that integrates Resource Dependency Theory (RDT) and Stewardship Theory to assess the impact of board independence on earnings stability. The study uses a quadratic regression model to ex-

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amine the relationship between board independence and earnings stability, with earnings stability measured using the Return on Assets Consistency Ratio (ROACR). The findings indicate an inverted U-shaped relationship between board independence and earnings stability, suggesting there is an optimal level of board independence that maximizes stability in earnings. The study also explores other factors such as asset turnover ratio, institutional ownership, leverage, promoter holdings, and firm size. This research highlights the importance of balanced board composition and provides valuable insights for policymakers and practitioners aiming to optimize corporate governance structures for sustainable firm performance.

## ■■■ INTRODUCTION

The relationship between corporate governance and firm performance is a central theme in business and management research, and board characteristics, such as size and independence, are a key area of focus. Theoretical frameworks, including Agency Theory, Resource Dependence Theory, and Stewardship Theory, have been employed to understand the impact of these factors on firm performance. However, the literature contains a notable gap: the prevalent use of linear models to evaluate the influence of board characteristics on firm performance. This approach neglects the complex dynamics involved. Additionally, traditional performance metrics like Return on Assets and Tobin's Q have diverted attention away from earnings stability as a measure of firm performance.

This study aims to address these gaps by analyzing the relationship between board independence and earnings stability, using a non-linear approach. This research adds fresh perspectives to the corporate governance field by focusing on the influence of board independence on earnings stability. The study includes a wider range of companies listed on the BSE-500 index in India, with the final sample comprising 416 companies and 4,044 firm-years. This extensive sample not only strengthens the robustness of the findings but also allows for greater control over industry-specific variables.

This research employs an alternative measure of financial performance, namely earnings stability, which represents a company's consistent profitability over time and demonstrates its resilience and adaptability in various business conditions. The study hypothesizes a non-linear, inverted U-shaped relationship between board independence and earnings stability. It suggests that an optimal level of board independence can enhance earnings stability, but exceeding this level may reduce stability in earnings. This hypothesis is based on

the principles of both RDT and Stewardship Theory, which emphasize the importance of a balanced approach in corporate governance.

Our regression analysis reveals a significant positive association between board independence and earnings stability, which displays an inverted U-shaped curve, emphasizing the need for a balanced board composition in accordance with RDT and Stewardship theory. Contrary to some previous studies, we do not find a significant association between the asset turnover ratio (ATR) and earnings stability. However, we do find that institutional ownership (I.O.) has a positive impact on earnings stability, suggesting that institutional investors foster long-term value creation through sustainable growth of earnings of their investee firm. The study also uncovers that higher leverage (D/E Ratio) is associated with less stable earnings, while promoter holdings (P.O.) and a larger firm size positively influence earnings stability. These findings provide valuable insights to investors, corporate managers, stock analysts, and policymakers, offering guidance for more effective investment strategies and corporate governance.

### LITERATURE REVIEW

The relationship between board characteristics and firm performance has been the subject of extensive research, drawing on a variety of theoretical frameworks. The majority of the literature supports a positive association between board size and independence and firm performance. Studies by Pearce and Zahra (1992), Dalton, Daily, Johnson and Ellstrand (1999), and Abor and Biekpe (2007) have consistently found this positive association. Furthermore, research by Jensen (1993), Yermack (1996), and Hermalin and Weisbach (1991) has emphasized the positive impact of insider-ownership control on board effectiveness and firm performance.

However, traditional linear approaches in these studies have come under increasing scrutiny. The studies like Barnhart, Marr and Rosenstein (1994) and De Andres and Vallelado (2008), suggests that the relationship between board characteristics and firm performance is more complex and nuanced, and proposes an optimal mix of executive and non-executive directors on boards to maximize firm performance.

In the Indian context, shaped by the Companies Act of 2013 and Clause 49 by SEBI, researchers like Kathuria and Dash (1999) and Mohapatra (2016) have

emphasized the benefits of larger boards, while others such as Kumar and Singh (2013) and Palaniappan (2017) advocate for smaller boards. Mishra and Kapil (2018) have attempted to reconcile these differing viewpoints, advocating for a balanced board composition that integrates insights from both Agency Theory and RDT. A significant contribution by Potharla and Amirishetty (2021) identifies an inverted U-shaped relationship between board attributes and performance in India, which underscores the complexity of these dynamics.

Expanding the geographical scope, Chakraborty (2023) investigates the pharmaceutical and chemical industries in Bangladesh, concluding that board independence and institutional ownership significantly affect financial performance, while factors like board size, gender, and meeting frequency have a negligible impact. This finding underscores the importance of board composition and governance structure in emerging economies.

In the context of Africa, Sanyaolu, Adejumo and Kadiri (2020) conducted a study to examine the influence of board diligence on the financial performance of Nigerian Deposit Money Banks. Their findings showed that board diligence had a negative impact on financial performance, which contradicts traditional expectations and emphasizes the significance of board meeting quality over frequency.

Additionally, Singh and Dwesar (2022) conducted a global review of the discussion on board gender diversity. Their analysis of existing literature revealed mixed results regarding the impact of gender diversity on firm performance and risk, indicating the need for further research, particularly in emerging economies, to fully understand these relationships.

This literature review examines the relationship between board characteristics and firm performance. Earlier studies found a positive association between board size, independence, and firm performance. However, recent research suggests a more complex relationship, proposing an optimal mix of board members. In India, there are contrasting views on board size, with some research favoring a balanced composition. Studies in Bangladesh and Nigeria emphasize the importance of board composition in emerging economies, while global research on gender diversity yields mixed results.

### **THEORETICAL BACKGROUND OF THE STUDY**

Corporate governance plays a crucial role in determining a company's performance, particularly through the characteristics of its board, such as size and independence. Prior studies have investigated the relationship between corporate governance and firm performance through three distinct theories: Agency Theory, Resource Dependence Theory (RDT), and Stewardship Theory.

Agency Theory posits that a larger, more independent board can mitigate conflicts between shareholders and management, thereby increasing shareholder value (Johnson, Daily & Ellstrand, 1996; Dalton, Hitt, Certo & Dalton, 2007; Zahra & Pearce, 1989). In contrast, Stewardship Theory advocates for smaller boards with a substantial presence of insiders, arguing that aligned interests between managers and the company lead to the prioritization of company goals (Donaldson & Davis, 1991). RDT offers another perspective by highlighting the benefits of outside directors who bring diverse expertise and extensive information networks, aligning with contemporary governance standards (Hillman, Cannella & Paetzold, 2000).

The theoretical framework of the study explores into how corporate governance affects firm performance through the attributes of the board. Agency Theory favors larger, independent boards to reduce shareholder-management conflicts, while Stewardship Theory prefers smaller, insider-dominated boards for aligned interests. Resource Dependence Theory emphasizes the advantage of outside directors for their diverse expertise and networks.

### **RESEARCH GAP AND MOTIVATION OF THE STUDY**

The extensive research conducted on the impact of various board features on company performance in India has led to the identification of significant gaps, which present opportunities for further investigation. This research study aims to address these gaps and provide a insightful understanding of the research phenomenon. By utilizing a dataset from the BSE-500 index, which includes 4044 firm-years represented 416 firms in the final sample, this study enables more reliable generalizations and refined control of industry-specific influences. The breadth of this sample significantly improves upon previous studies, which often focused on a smaller number of firms.

This study distinguishes itself in two ways. Firstly, its methodological approach differs from most existing literature, which relies on linear models. This research employs a quadratic function to explore the interaction between Resource Dependence Theory (RDT) and Stewardship Theory, providing a non-linear approach that is expected to yield novel insights into the relationship between board characteristics and firm performance.

Secondly, the study also features a robust measure of earnings stability. Unlike prior studies that primarily use Return on Assets (ROA) or Tobin's Q, this study estimates earnings stability as the ratio of the average ROA over twelve rolling quarters divided by the standard deviation of ROA during the same period. This measure of earnings stability offers several advantages, including its ability to capture the consistency of performance over time, reflecting a firm's resilience and adaptability in varying market conditions. This aspect is particularly relevant in corporate governance, where board decisions often have long-term implications. By examining the impact of board independence on earnings stability, the study aims to provide insights into how governance structures contribute to the sustainable growth of a firm.

This study's importance stems from its examination of corporate governance in India, with a particular focus on the association between board independence and earnings stability. The study's considerable sample size, rigorous methodology, and unique performance indicators lend substantial credence to its findings.

## **RESEARCH METHODOLOGY AND THE COURSE OF THE RESEARCH PROCESS**

### **Data Source and Study Period**

The dataset for this research was obtained from the Centre for Monitoring Indian Economy (CMIE) database. The study covers the period from 2011 to 2022, providing a relevant and contemporary timeframe to examine the dynamic relationship between board independence and earnings stability. This period was selected for its recent relevance and the comprehensive data available, enabling a thorough examination of current trends and patterns in corporate governance.

### Sample Selection

The study's sample comprises companies listed on the BSE-500 index, which represents approximately 93% of the total market capitalization in India. This index, reflecting the diverse spectrum of India's economic growth, offers robust insights into the corporate landscape of the country. The BSE-500 index was specifically chosen as it provides a broad and representative sample of Indian companies across various industries. After excluding firms from the financial sector and those with incomplete data, the final sample included 416 companies, amounting to 4,044 firm-years. This extensive sample size enhances the generalizability of the study's findings and allows for a more insightful understanding of the impact of board characteristics on firm performance.

### Estimation of Return on Assets Consistency Ratio (ROACR)

A pivotal aspect of this study is the use of the Return on Assets Consistency Ratio (ROACR) as a measure of earnings stability. The ROACR is calculated by dividing the mean ROA across two consecutive quarters by the standard deviation of ROA for the same period. This measure was selected for its ability to encapsulate the stability and consistency of a firm's earnings, reflecting both profitability and resilience in fluctuating market conditions. The use of ROACR offers a more robust and insightful perspective on financial performance compared to traditional measures such as ROA alone.

### Empirical Model

To analyze the relationship between board characteristics and earnings stability, the following regression model was employed:

$$\text{ROACR} = \beta_0 + \beta_1 * \text{BI} + \beta_2 * \text{BI}^2 + \beta_3 * \text{ATR} + \beta_4 * \text{IO} + \beta_5 * \text{D/E} + \beta_6 * \text{PO} + \beta_7 * \text{SIZE} + \varepsilon$$

In this model, the dependent variable is ROACR, representing a firm's earnings stability. The selection of this regression model is justified by its capacity to capture both linear and non-linear relationships between board independence (BI) and earnings stability. The BI variable indicates the proportion of independent directors on a firm's board, reflecting the degree of external over-

sight. The inclusion of BI<sup>2</sup> facilitates the examination of potential non-linear effects. Other variables in the model include Asset Turnover Ratio (ATR), Institutional Ownership (IO), Debt-to-Equity ratio (D/E), Promoter Holdings (PO), and firm size (SIZE), each selected for their relevance in evaluating the impact of corporate governance on firm performance.

## RESULTS OF THE ANALYSIS

### Descriptive Statistics and Correlation Analysis

**Table 1.** Descriptive Statistics

	ROACR	BI	ATR	IO	D/E	PO	SIZE
Mean	3.93	0.49	3.34	22.80	0.48	56.70	10.85
Median	3.02	0.50	2.25	20.63	0.18	57.53	10.71
Max	13.60	0.69	15.53	53.20	3.33	86.77	13.59
Min	-0.75	0.23	0.18	1.18	0.00	19.03	8.66
Std. Dev.	3.46	0.12	3.38	13.49	0.73	16.61	1.33
Skew	1.12	-0.42	2.05	0.44	2.45	-0.38	0.41
Kurt	3.82	2.79	7.23	2.45	9.13	2.45	2.46
Observations	4044	4044	4044	4044	4044	4044	4044

Source: authors' calculations.

Table 1 shows that the average Return on Assets Consistency Ratio (ROACR) for the sampled firms is 3.93, with a median of 3.02. The ROACR values range from -0.75 to 13.6, demonstrating a wide disparity in earnings stability among the firms. This variability is further underscored by the relatively high standard deviation of 3.46. Board Independence (B.I.), measured as the proportion of independent directors on a firm's board, averages at 0.49. This indicates that, on average, nearly half of the board members in a typical firm are independent. The independence ratio spans from 0.23 to 0.69, with a slight skew towards higher values.

The Asset Turnover Ratio (ATR), which assesses the efficiency of a firm's use of assets in generating revenue, has an average of 3.34. However, the substantial standard deviation of 3.38 suggests significant variations in operational efficiency across the firms. Institutional Ownership (I.O.) has an average of 22.8%, signifying that institutional investors hold a considerable share of the equity in these firms. The Debt-to-Equity ratio (D/E), indicative of a firm's financial leverage, averages at 0.48. Its high standard deviation of 0.73 and a skewness of 2.45 point to a pronounced variation and a tendency towards firms with lower leverage. Promoter Holdings (P.O.) average at 56.7%, showing that promoters usually maintain a majority stake in these firms. Lastly, the average firm size (SIZE) in the sample is 10.85, with a relatively narrow standard deviation of 1.33, indicating a relatively consistent firm size across the sample.

**Table 2.** Correlation Analysis

	ROACR	BI	ATR	IO	D/E	PO	SIZE
ROACR	1						
BI	0.022	1					
ATR	0.047***	-0.100***	1				
IO	0.173***	0.133***	-0.031**	1			
D/E	-0.211***	-0.034**	-0.154***	-0.069***	1		
PO	0.005	-0.239***	0.076***	-0.654***	0.005	1	
SIZE	0.093***	-0.087***	-0.156***	0.347***	0.286***	-0.046***	1

Note: The stars (\*) represent the level of significance: \* signifies the 10% level, \*\* signifies the 5% level, and \*\*\* signifies the 1% significance level.

Source: authors' calculations.

Table 2 presents the correlation analysis of the ROACR variable, which exhibits a significant positive correlation with both the Asset Turnover Ratio (ATR) and Institutional Ownership (I.O.) at the 1% significance level. Conversely, it shows a significant negative correlation with the Debt-to-Equity ratio (D/E) at the same level of significance. This implies that increases in ATR and I.O. are associated with enhancements in ROACR, whereas an increase in D/E typically leads to a reduction in ROACR. Board Independence (B.I.) is inversely

correlated with ATR at the 1% significance level, suggesting that an increase in ATR is generally associated with a decrease in B.I., and vice versa. In contrast, B.I. has a direct, significant correlation with I.O. at the 1% level, indicating that an increase in I.O. is typically linked with an increase in B.I.

Furthermore, ATR shows a significant negative correlation with both D/E and firm size (SIZE) at the 1% level. This indicates that companies with larger sizes and higher debt levels tend to have lower asset turnover ratios. In comparison, businesses exhibiting faster growth often demonstrate wider ATRs. Institutional Ownership (I.O.) is negatively correlated with Promoter Ownership (P.O.) and D/E, while it is positively correlated with SIZE. This suggests that larger companies tend to have greater institutional ownership. The D/E ratio displays a significant positive correlation with SIZE at the 1% level, implying that larger companies typically have higher debt levels. Lastly, SIZE is inversely related to Promoter Ownership (P.O.) at the 1% significance level, suggesting that larger firms generally have lower promoter holdings.

### Regression Analysis

**Table 3.** Impact of Board Independence and Firm Metrics on Earnings Stability

Variable	Parameter Estimate	Standard Error	t value	Pr >  t	Standardized Estimate
Intercept	-3.972	0.840	-4.730	<.0001	----
BI	6.168	2.741	2.250	0.025	0.212
BI^2	-6.266	2.914	-2.150	0.032	-0.203
ATR	0.000	0.017	-0.020	0.983	0.000
IO	0.067	0.006	11.510	<.0001	0.262
D/E Ratio	-0.850	0.078	-10.920	<.0001	-0.182
PO	0.041	0.004	9.510	<.0001	0.200
SIZE	0.255	0.049	5.210	<.0001	0.101

Source: authors' calculations.

Table 3 reveals that the coefficient for Board Independence (B.I.) is positive and statistically significant ( $p=0.025$ ), suggesting a direct positive association between board independence and earnings consistency. Firms with a higher proportion of independent directors on their boards generally experience more stable earnings. This finding is consistent with agency theory, as proposed by Jensen and Meckling (1976) and Fama and Jensen (1983), which posits that including independent directors can mitigate agency conflicts between management and shareholders, thus enhancing firm performance. The positive coefficient of B.I. highlights the significance of board independence, reinforcing the perspective of agency theory. However, the relationship between B.I. and earnings stability is more complex. The significant negative coefficient for  $BI^2$  indicates an inverted U-shaped relationship. This implies that the benefits of B.I. on earnings stability increase up to a certain point, after which additional increases in B.I. may reduce earnings stability. This aligns with the findings of Barnhart and Rosenstein (1998) and De Andres and Vallelado (2008), who observed a similar non-linear relationship between B.I. and firm performance. This offers a nuanced view that harmonizes the concepts of Resource Dependence Theory (RDT) and Stewardship Theory.

Contrary to expectations, the coefficient for the Asset Turnover Ratio (ATR) is not statistically significant, suggesting that asset utilization efficiency does not have a significant impact on earnings stability. This deviates from studies like Deloof (2003), which suggest a significant association between asset utilization efficiency and financial performance. The relationship between Institutional Ownership (I.O.) and earnings stability is both significant and positive. Institutional investors, often considered sophisticated, are believed to influence corporate decisions towards long-term value creation. Their presence is seen as providing better oversight and discouraging short-sighted managerial behavior, as per Shleifer & Vishny (1986) and Gillan and Starks (2000). The positive effect of I.O. on earnings stability supports this perspective.

The Debt-to-Equity (D/E) Ratio displays a significant negative relationship with earnings stability, indicating that firms with higher debt levels relative to equity tend to experience less stable earnings. This is in line with the view that high leverage can increase risk and financial instability, especially given the obligations of debt servicing, which can aggravate financial distress in downturns (Modigliani & Miller, 1958; Jensen & Meckling, 1976). The association of Promoter Holdings (P.O.) with earnings consistency is significant. This suggests that promoters, due to their substantial ownership and pivotal roles,

can ensure consistent profits. This might be attributed to their ability to make strategic decisions benefiting the company in the long run, resonating with the principles of stewardship theory (Donaldson & Davis, 1991; Davis, Frankforter, Vollrath & Hill, 2007).

Lastly, firm size (SIZE) has a positive effect on earnings stability. Larger firms, often having more diversified operations and robust risk management practices, tend to exhibit more stable earnings. This findings is consistent with theoretical predictions and empirical findings that associate firm size with performance stability (Rajan & Zingales, 1995). In summary, our findings contribute to the understanding of the intricate association between corporate governance attributes and firm performance, particularly concerning earnings stability. The results highlight the need to recognize non-linear relationships and contextual factors in evaluating the impact of corporate governance practices on firm performance.

**Table 4.** Model Fit Statistics

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	47	8950.135	190.4284	19.86	<.0001
Error	3996	38319	9.5893		
Corrected Total	4043	47269			
R-Square	0.1893	Root MSE			3.097
Adj R-Sq	0.1798	Number of Observations			4044

Source: authors' calculations.

Table 4 displays the model fit statistics, offering insights into the regression model's goodness-of-fit. The R-squared value, standing at 0.1893, suggests that approximately 19% of the variation in earnings stability is explained by the model's independent variables. The adjusted R-squared, at 0.1798, is marginally lower but still indicates a substantial model fit, taking into account the number of predictors in the model. The F-value, at 19.86, along with its corresponding p-value (less than 0.0001), confirms the statistical significance of the

model's explanatory power. Furthermore, the Root Mean Square Error (RMSE) is noted at 3.097, providing an estimate of the model's prediction error.

## ■■■ CONCLUSION

This study explores into the relationship between board independence and firm performance, with a specific focus on earnings stability (ROACR) in listed Indian companies. This study examines the implications of Resource Dependence Theory (RDT) and Stewardship Theory in the context of India's evolving corporate governance landscape. Using the stability of Return on Assets (ROACR) as a dependent variable provides a robust measure of financial performance, crucial for investors and stakeholders. A stable ROA not only signals consistent profitability and efficient asset management but also implies reduced investment risk, thereby attracting investor interest. This study's emphasis on earnings stability addresses an essential gap in existing literature. A pivotal finding of this study is the non-linear, inverted U-shaped relationship between Board Independence (B.I.) and earnings stability. This indicates that the principles of both resource dependence and stewardship are applicable in the Indian corporate governance setting. It suggests an optimal level of board independence conducive to enhanced firm performance; however, the benefits diminish beyond a certain threshold. Excessively high levels of board independence could potentially impact communication, decision-making, and the dynamics within the board, in addition to escalating agency costs.

## IMPLICATIONS OF THE STUDY

The findings of this research shed light on critical insights that are of significant importance to both corporate stakeholders and the academic community. This study elucidates the complex relationship between board independence and earnings stability, offering valuable insights for both institutional and individual investors. It provides a roadmap for more informed investment decisions, enabling investors to identify companies that effectively leverage board independence to maximize efficiency and achieve desirable outcomes. Moreover, corporate management can utilize these findings to strategically design boards that promote optimal performance. Stock analysts can also benefit from these findings, as it enables them to conduct more thorough evaluations of a compa-

ny's earnings potential, leading to richer and more precise investment advice. Academically, this research opens new avenues for studying the relationship between board characteristics and a company's path to long-term success. This study not only enhances decision-making tools for investors and market analysts but also stimulates innovative discussions in academic realms.

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