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Does Shareholder Activism Add Value to the Performance of the Firms in India? The Role of Disclosures as Moderators

Shailesh RASTOGI [1]
Bhakti AGARWAL[2]
Saumya SINGH[3]
Varun SARDA[4]

Abstract

The study's main aim is to determine the role of shareholder activism (SHA) in the performance of the firms. The performance of the firms is viewed as operating performance, valuation, and technical efficiency. The relevant panel data is taken for 78 non-financial firms part BSE-100 index from India for five years (2015-2019). A shareholder activism index is built to measure shareholder activism. The analysis is conducted at three levels, first, by the linear association, second by non-linear association and third by using transparency and disclosures (TD) as an interaction term on the association of SHA and the performance of the firms. It is found that SHA significantly influences the firm's operating performance. The non-linear linkage is significant. A significant positive association of TD as moderating variable on operating performance and efficiency of the firms ensures the supportive role of SHA on the performance of the firms. The study's findings should reduce widespread reluctance and resistance to SHA. The first main implication of the study is that the managers understand the positive role of SHA on the firm's performance. It would be one of the two main implications of the study. The second main implication is for the policymakers. The significant and positive association of SHA for the performance of the firms can be the basis for the long-term policy on SHA. Scarcely available are the studies that have observed on the association of SHA for the efficiency of the firms. This study would be the first such study on the topic. Moreover, the literature does not see the non-linear association of SHA on

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[1] Dr., Symbiosis Institute of Business Management, Nagpur; Symbiosis International (Deemed) University India, Email: krishnasgdas@gmail.com, Orcid id: 0000-0001-6766-8708
[2] Ph.D. Scholar, Symbiosis Institute of Business Management, Nagpur; Symbiosis International (Deemed) University, India, Corresponding author: agarwal.bhakti96@gmail.com, Orcid id: 0000-0003-1956-4538
[3] Ph.D. Scholar, Symbiosis Institute of Business Management, Nagpur; Symbiosis International (Deemed) University India, Email: sumosinghvns@gmail.com
[4] Assistant Professor, Symbiosis Institute of Business Management, Nagpur; Symbiosis International (Deemed) University, India, Email id - varunsardaindore@gmail.com, Orcid id: 0000-0002-3537-0429

the firms' operating performance, valuation, and efficiency. This study would be the first such study. Above all, no other study is observed using TD as the moderating variable to study the impact of SHA on the performance of the firms.

Key Words: Shareholder Activism; Transparency and Disclosures; Valuation; Operating Performance; Efficiency, Panel Data

JEL Codes: G34, M4, L25, C23, C33

1. Introduction

The governance of the corporates recently gets more traction from Shareholders' Activism (SHA), which is a relatively older proposition (Stathopoulos and Voulgaris, 2016, Karpoff, 2001, Denes et al., 2017). Corporate governance (CG) is the cynosure for long to enhance the performance of the firms. The aim of the business is shareholder wealth maximization (SWM). CG aims to better governance of the firms, which entails SWM (Agrawal and Knoeber, 2012, Al-Tamimi, 2012, Arevalo and Aravind, 2011). SHA is broadly viewed as an offshoot of CG. Therefore, it is obvious to expect SHA to support the better performance of the firms and ensure SWM. However, its (SHA's) causes, processes, methodology and outcomes vary significantly (Goranova and Ryan, 2014). We define SHA in the current study as using ownership stakes to influence the firms' policies and decisions.

The involvement of the company's shareholders in corporate governance (CG) processes is defined by shareholder activism. A SHA index is created in preparation for the SHA evaluation. The current study has established the SHA index of the enterprises listed in India (Sarkar and Sarkar, 2000; Islam, 2020). This index was created by going over several corporate governances (CG) initiatives and the shareholders' participation in them. According to Gillan and Starks (2000), a CG practice is assigned a value of "1" if the shareholders are participating in that particular activity; otherwise, it is set to zero. The analysis only takes into account CG operations that adhere to the legislative requirements for Indian-listed corporations as outlined in the Companies Act of 2013.

The literature on the SHA can broadly be divided into studies focused on tangible and intangible outcomes. The studies on the intangible outcomes of SHA are mainly focused on the governance of the firm (Denes et al., 2017, Fabrizio et al., 2019, Souha and Anis, 2016), environmental and sustainability issues (Wahba, 2010, Yang et al., 2018, Perrault and Clark, 2016), social issues (O'Rourke, 2003, Sjöström, 2008) and issues having political connotations (Wang and Mao, 2015, Goranova and Ryan, 2014). SHA means for intangible causes do serve its purpose. However, the studies which explore tangible repercussions (or financial benefits) of SHA appear to have strong footings. Such trade-offs between tangible and intangible benefits of SHA become pertinent when there is a clamor on the issue of the utility of SHA (Fox and Lorsch, 2012).

The studies focused on the tangible outcomes can broadly be divided into two sets: 1) determining the association of SHA for operating performance (Hadani

et al., 2011); and 2) valuation of the firms (Brav et al., 2008). Another set of studies that qualify for the tangible outcome is SHA focused on change in management control (Greenwood and Schor, 2009). All three kinds of studies are equivocal and do not present any unanimous verdict on the role of SHA for the firms. This situation is further exacerbated because SHA for firms, as a concept and practice, is more focused in the USA or other developed securities markets (Denes et al., 2017, Karpoff, 2001, Goranova and Ryan, 2014). SHA as a concept and practice both are in its nascent stage, fledgling and vulnerable to be misused for vested interests in an under-developed securities market similar to India (Shingade et al., 2020). Lack of institutionalization of SHA in emerging economies is a serious concern, especially when private benefits may be the driving force behind SHA.

Furthermore, we also believe in an unavoidable link between disclosures and SHA in the firms, which cannot be ignored. A set of literature exhibits that SHA supports the disclosure in the firms. However, it is mainly aimed at voluntary disclosure, assuming mandatory disclosure are already in place (Bourveau and Schoenfeld, 2017). Disclosure should not be limited to and classified into voluntary or mandatory disclosures(Wettstein and Waddock, 2005). The time is ripe to talk about corporate disclosures in the context of SHA instead of the water-tight compartments of voluntary and mandatory disclosures (Francis et al., 1994). TD impacts on the performance of the firms may be debatable (Stanwick and Stanwick, 2000, Qiu et al., 2016), but how TD interacts with SHA to influence the performance of the firm can be an area of exploration. We do not observe any other study exploring Therefore, it is justified to have this line of inquiry in the current study.

Therefore, it makes sense to look for a fresh set of evidence to explore the tangible benefits of SHA exclusively meant for an emerging economy like India. Therefore, the study's objective is to determine the impact of SHA on the performance of the firms while TD moderates the association.

SHA is a reality in emerging economies, including India, despite a lack of acceptance and robust mechanism to address its concerns (Shingade and Rastogi, 2019, Shingade and Rastogi, 2020). It is relevant to explore how SHA will play out in India and emerging economies. There is a learning curve concerning SHA from the US and other developed securities markets. It is exciting and challenging to explore how that learning regarding SHA will help shape emerging economies. The limitation of private benefits and other intangible issues that rule the roost are significant concerns for SHA. These issues are the primary motivation for this study in the Indian context. India is one of the leading emerging economies. Hence, the scope of this study is broad, and the results can easily be replicated in other emerging economies.

Surprisingly, the findings of the current study find SHA supporting the performance of the firms. Performance has been viewed from several aspects, including financial performance, technical efficiency, and firm value. SHA shows

positive and significant association in the majority of the models (both linear and non-linear association). The moderation of TD on the positive association of SHA on the performance of the firms is also positively significant in a few cases. The significant interaction term implies positive reinforcement by disclosures on the association of SHA with the firm's performance. The significant non-linear role of SHA on the firm's performance is not observed in the literature. TD's moderation on the association of SHA and performance of the firm is also a unique contribution to the study. The findings have multi-pronged implications for both managers and policymakers.

The paper is further divided into six sections, including the introduction section. The subsequent section discusses the relevant literature. The third section presents the data and methodology adopted to serve the study's objective. The results are reported in the fourth section. The following section (the fifth section) discusses the present study's findings. The paper is concluded in the last and sixth section.

2. Theoretical framework, literature review and hypotheses formulation

2.1 SHA, its historical relevance and India

The beginning of Shareholder Activism (SHA) can be seen in investor capitalism (Goranova and Ryan, 2014). Investor capitalism, as a narrative, takes shape to defend the darker side of capitalism (Freeman et al., 2007). Investor capitalism is also meant to defend the agency problem and pronounce the supremacy of shareholders or stakeholders in the affairs of the firms (Conard, 1988). The communication of displeasures or concerns of shareholders to the firms' management can be considered the precursor of SHA in the world. The formal channel to communicate the concerns by a shareholder to the management of the firm- shareholder proposal became popular in the 1980s, which can be the formal beginning of SHA in the firms.

Since the beginning, the concerns raised by shareholders are either for governance, policy and performance (Souha and Anis, 2016, Briggs, 2007, Brav et al., 2008, Prevost and Rao, 2000, Cai and Walkling, 2011) or social (O'Rourke, 2003), political (Wang and Mao, 2015) and environmental (Yang et al., 2018). Judge et al. (2010) and Karpoff et al. (1996) name them as financial and social aspects of SHA. Irrespective of the nature of the concerns (financial or social), the issues raised in the name of SHA can be broadly divided into the following five categories (Shingade and Rastogi, 2020, Shingade et al., 2020): 1) board related issues; 2) senior management and their pay; 3) financial and valuation-based issues; 4) idle cash and capital structure-related issues, and 5) miscellaneous issues.

The institutional investor took the baton in their hands and raised shareholders' voices in the form of SHA at the beginning of shareholder activism (Smith, 1996, Klein and Zur, 2009). The hedge funds also contributed to the journey of shareholder activism from the very beginning (Cheffins and Armour, 2011). SHA also took shape and grew over the years as an anti-takeover tool by the

shareholders (Pound, 1992, Black, 1992). In the emerging economies as of India, it is the large shareholder groups, and mainly institutional investors started raising the voice of shareholders (Varottil, 2012). Earlier, the difference between management and owners (shareholders) was vague, attempts to hostile takeover were also less, and institutional investors were not united to raise the issues in India (Islam, 2020). SHA was either non-existent or, if present, was insignificant in India before the second decade of the 21st century. However, a significant impetus regarding SHA is seen in India after the amendment of Companies Act 1956 into a newer version of the act- Companies Act 2013 (CA 2013) (Manchiraju and Rajgopal, 2017, Das and Dey, 2016, Aggarwal et al., 2020). In addition to that, many other legislative, regulatory changes and guidelines are amended or enacted by the regulatory authorities in India (Securities Exchange Board of India) to facilitate SHA. Due to these developments, SHA is happening in India and more institutional investors and other investor groups use the facilities available and extend the demands and concerns of shareholders to the management of the firms (Bhandari and Arora, 2016, Sarkar and Sarkar, 2000, Sridhar, 2016).

2.2 SHA and its influence on CG

There is a widespread curiosity on the causes and outcomes of SHA in the firms across the board, including academia and industry (Partnoy, 2015, Denes et al., 2017). Earlier, the literature supports the premise that the outcome of SHA on the performance of the firms (in terms of value enhancement and operating performance) may be little or no impact, but it (SHA) indeed has its significant influence on the governance of the firms (Karpoff, 2001, Karpoff et al., 1996). Due to this reason, there was widespread dissatisfaction due to SHA in the firms. SHA is labelled a waste of time and money for the managers and firms as it does not deliver any tangible or financial gains (Heard and Sherman, 1987, Wohlstetter, 1993).

However, more recent research on SHA find a different perspective. Denes et al. (2017) find a positive impact of SHA on the firm's performance during the latter part of his survey on SHA and firms. In the later studies (post-1990's), it is found that SHA impacts the firm's performance significantly, which was missing earlier. Moreover, both kinds of studies are found on SHA and its impact on CG. Some studies support the association (Prevost et al., 2012, Beebeejaun and Koobloll, 2018, Thomas and Cotter, 2007). However, there is little evidence of no impact on SHA on CG (Del Guercio and Hawkins, 1999). Hence, further empirical evidence may add value to the existing knowledge about how effective SHA is for the firms regarding performance, valuation and CG.

2.3 The tangible influence of SHA on the firms other than through CG

If we ignore the contrasting findings of SHA and its impact on CG of the firm, we have all the good reasons to postulate that CG will support the financial

performance of the firms. There is literature that supports the premise that CG helps improve the firm's financial performance (Paniagua et al., 2018, Gruszczynski, 2006, Abdo and Fisher, 2007). Such supporting evidence bolster our premise that SHA will eventually improve the financial performance of the firms as SHA supports CG in the firms (please refer to the discussion in section 2.2).

2.3.1 Impact of SHA on Operating Performance and valuation of the firms

Denes et al. (2017) present that the impact of SHA on the performance of the firms (operating performance and valuation) are found. They present that the instances of the significant association go up considerably post 1990's. The intent to get the management control also differentiate the effectiveness of SHA on the performance of the firms (Greenwood and Schor, 2009, Armour et al., 2011). Denes et al. (2017) advocate that the effectiveness of SHA on the performance of the firms goes up if shareholder activism intends to get the controlling stakes of the firms.

Furthermore, even after the 1990s, as suggested by Denes et al. (2017), the impact of SHA on the operating performance is not unidirectional, whereas it is mixed. One set of studies finds evidence of the positive impact of SHA on the operating performance of the firms (Brav et al., 2008, Brav et al., 2015, Boyson and Mooradian, 2011, Greenwood and Schor, 2009). Another set of studies shows that there is no impact of SAH on the operating performance of the firms (Del Guercio and Hawkins, 1999, Prevost and Rao, 2000, Klein and Zur, 2009). The third set of studies does find the positive association of SHA for the operating performance of the firm's subject to the conditions of types of investors and their level of engagement (Hoskisson et al., 2002, Siegel et al., 2011, Tihanyi et al., 2003). The lack of consensus on SHA's impact on the operating performance of the firms is a matter of concern. Moreover, conditionality on the association of SAH on the operating performance of the firms is another area of concern. Both prompt for a fresh look at the issue. Thus, the following hypothesis is built in the alternate form for the empirical testing:

H_1: Shareholder activism linearly impacts the operating performance of the firms.

H_2: Shareholder activism non-lineally impacts the operating performance of the firms.

The extant literature is also equally ambiguous and uncertain regarding the impact of SHA on the valuation of the firms. Some studies claim that the SAH erodes the value due to the firms' bad intent, mainly the takeover benefits of getting the management control (Clifford, 2008, Alexander et al., 2010, Edmans, 2014, Gantchev and Giannetti, 2020). Other studies find no evidence of any association of SAH with the firm value (Filatotchev and Dotsenko, 2015, Song and Szewczyk, 2003, Gillan and Starks, 2000, Karpoff et al., 1996). However, some studies proclaim the positive association of SHA for the firm value (Cai and Walkling,

2011, Cunat et al., 2012). Hence, the following hypothesis is framed for empirical testing due to inconsistent findings on SHA and firm value.

H_3: Shareholder activism linearly impacts the firms' value.

H_4: Shareholder activism non-linearly impacts the firms' value.

2.3.2 Technical Efficiency of the firms

We do not find much evidence in the literature to find the association between SHA and efficiency (technical efficiency) (Yang and Chang, 2009, Saha and Ravisankar, 2000). Guimaraes et al. (2019), in a study on 194 firms during 2010-2012, find evidence of a negative association between activism and efficiency. They further say that shareholder activists usually target inefficient firms. We do not observe many studies which explicitly link efficiency and SHA. However, some studies link CG with the efficiency of the firms (Zheka, 2005, Sonza and de Oliveira Kloeckner, 2014, Destefanis and Sena, 2007). Because SHA supports CG (Beebeejaun and Koobloll, 2018, Prevost et al., 2012), CG supports the efficiency of the firms. Therefore, we can expect to have a direct link of SHA to support the efficiency of the firms. Therefore, to establish the empirical evidence between SHA and efficiency of the firms, the following hypothesis is formed for the empirical testing:

H_5: Shareholder activism linearly impacts the firms' efficiency.

H_6: Shareholder activism non-linearly impacts the firms' efficiency.

2.4 SHA and performance of the firms: moderation by disclosures

It is evident in the literature that corporate transparency and disclosures (TD) add value to the firm (Asay et al., 2017, Jiao, 2011). TD also supports the firms' operating performance (Gatimbu and Wabwire, 2016, Hail, 2002). Therefore, this is construed that TD supports the performance of the firms. Therefore, in the current study, we postulate the moderating role of TD on the possible association of SHA for the performance of the firms. There is little evidence regarding the association between SHA and TD. Bourveau and Schoenfeld (2017) show that activism induces the firms to disclose more to defend themselves against the issues raised via SHA. Such evidence reinforces the premise that TD should moderate the association between SHA and the performance of the firms. Lack of enough evidence on the issue of how TD impacts the SHA and performance of the firms, following hypothesis is framed for empirical testing:

H_7: The association between shareholder activism and the performance of the firms is moderated by Transparency and Disclosures (TD).
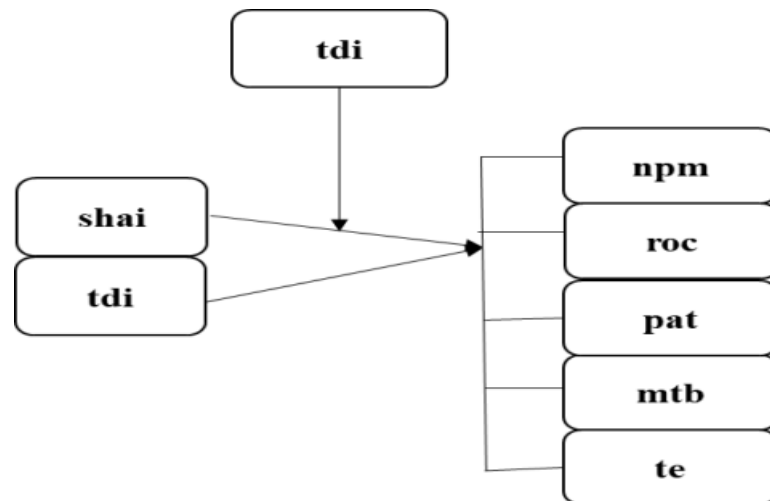
Figure 1. Conceptual model

Note: The figure shows that the corporate governance (Shareholder activism index (shai) and Transparency and disclosure index (tdi)) are impacting the performance (net profit margin, Return on capital and Profit after tax); Firm value (market to book value) and efficiency level of firms and moderate by Transparency and disclosure index. Whereas the corporate governance the independent variable and performance (net profit margin, Return on capital and Profit after tax); Firm value (market to book value) and efficiency level of firms are dependent variable. The tdi variables is moderator, tdi which moderate the relationship between corporate governance, firm performance value and efficiency.

3. Data and Methodology

3.1 Sample and data

The sample of this study consists of 78 non-financial companies listed in India. These 78 companies are divided across 13 different sectors (see Annexure A) and form a part of the S&P BSE 100 Index. The S&P BSE index is a well-known index of India's Bombay Stock Exchange (BSE). The broad-based index, the S&P BSE-100, was launched in India and have1983-84 as its base year. The index was changed to the globally accepted free-float methodology from April 5, 2004. The index represents a performance benchmark of the financially sound companies listed on the BSE.

Five-year data from 2016 to 2020 is collected for the sampled 78 firms. Therefore, data for 78 firms for five years constitute 390 companies-years data points for econometric analysis. The data is collected from CMIE Prowess and annual reports of the companies sampled. Panel data methodology is employed in this paper. As already known, panel data produced can efficiently deal with the issue of unobserved heterogeneity. Besides, panel data combines cross-sectional and time-series data to produce highly enriched insights.

3.2 Variables

The variables of this study are reported in table one. The dependent variables include the measures of financial performance, namely the net profit margin, return on capital and the profit after tax. The market performance measures include firm value measured by the market to book ratio. In addition, we include technical efficiency, measured by data envelopment analysis (DEA), as a dependent variable. The study adopts DEA because it is a proven method for assessing efficiency and can model multiple inputs and outputs without any prior assumption of the functional form of the underlying technology. The efficiency (te) of a company is calculated using Data Envelope Analysis (DEA) (Cooper et al. 2011; Shao et al. 2019). Technical efficiency is the best use of input resources to produce the intended result. Three inputs—operating expenses, equity, and cost of sales—and three outputs—operating profit, return on equity, and revenue—are utilized by Lo and Lu (2006) to determine efficiency. In line with several investigations, like Shao et al. (2019), this study also employs DEA because of its nonparametric methodology, which eliminates the necessity for pre-specified data. Thus, it determines which model produces consistent findings the best (Shao et al. 2019). The company is extremely efficient if its efficiency value is higher.

Two independent variables included in this study are measures of corporate governance, defined as two indices, namely the shareholder activism index (shai) and the transparency and disclosure index (tdi). The shai for this study is based on an index to measure shareholder activism. The study adopts an unweighted index based on studies like Altaf and Shah (2018), Bhandari and Arora (2016), Shigade and Rastogi (2020), Vargas et al. (2018), Guimaraes et al. (2019), Munir and Gul (2010), and Maigoshi et al. (2016). A dichotomous rating is applied. The index consists of six broad categories related to - Board Structure and Compensation (7 attributes), Financial Performance (12 attributes), Ownership Concentration (3 attributes), Idle Cash and Capital Structure (4 attributes), Shareholder related Issues (6), and Related Party Transactions (3 attributes).

Similarly, the tdi for this is based on an index to measure transparency and disclosures. This study adopts the unweighted disclosure index like Patel and Dallas (2002), Turrent and Ariza (2012), Arsov and Bucevska (2017), and Kumar and Kidwai (2018). A dichotomous rating scale assigns "1" for the disclosed attribute and "0" for the undisclosed attribute. The index includes 102 desirable attributes based on literature. The broad categories include - Financial Transparency and Information Disclosure (30 attributes), Board & Management Structures & Processes (29 attributes), Ownership Structure & Investor Relations (10 attributes), and the Strategic, Technology, and Basel Disclosures (33 attributes).

In addition, two non-linear variants of the independent variables are included as regressors in this study. First, a square term (sq_shai) of the shareholder activism index (shai) is included to test if a non-linear relationship exists between shai and the included dependent variables. The square term, sq_shai, is calculated

by first demanding the variable shai and then squaring the demanded value. This method to calculate the square term follows a working paper on identifying the non-linearities in panel regressions, especially the fixed-effects models (Mcintosh & Schlenker, 2006). Second, an interaction term (product term), shai X tdi, is included as a regressor to test if tdi moderates the relationship between shai and the identified dependent variables. The interaction term sha X tdi is calculated by first demeaning the individual terms and then calculating their product. Once again, this method of calculating the interaction term follows Panayi et al. (2021).

Finally, the regression models include three control variables, the natural logarithm of sales, leverage, and market competition. In this study, the market competition is measured as an inverse of industry-adjusted price-cost margin, also denoted as industry-adjusted Lerner's index (lerneri). This method to proxy product market competition follows the work of Chou et al. (2011).

Table I. Variables

Variable		Measurement	References
Panel A: Dependent variables (DVs)			
Financial performance	Net profit margin (npm)	Net profit divided by revenue	(Alikhani & Maranjory, 2013)
	Return on capital (roc)	Earnings before interest and taxes divided by capital employed	(Saini & Singhania, 2019)
	Profit after tax (pat)	PAT= total income + change in stocks - total expenses (value derived from CMIE prowess)	-
Firm value	Market to book ratio (mtb)	Current market value relative to its book value of the stock	(Bokpin et al., 2015)
Efficiency	Technical efficiency (te)	Constant return Scale-Weighted sum of output/ Weighted sum of input.	(Lo and Lu et al., 2006; Tsai et al., 2016; Varas et al., 2021)
Panel B: Independent variables (IVs)			
Corporate governance	Shareholder activism index (shai)	A score calculated using dichotomous method (taking value 1 if activism does persist and 0 otherwise) from the self-made shareholder activism index	(Souha & Anis, 2016; Bauaziz et al., 2020).
	Transparency and disclosure index (tdi)	A score calculated using unweighted methodology (taking value 1 if attribute	(Turrent and Ariza, 2012; Arsov and Bucevska, 2017)

		present and 0 otherwise) from the self-made transparency and disclosure index	
Panel C: Derived regressors (DRs)			
Nonlinear	Square of shareholder activism index (sq_shai)	(shai – mean value of shai)^2	-
tdi as a moderator of the relationship between shai and DVs	Interaction term of shai and tdi (sha X tdi)	(shai – mean value of shai) X (tdi – mean value of tdi)	-
Panel D: Control variables (CVs)			
	Sales (ln_sales)	Natural logarithm of sales	(Busru and Shanmugasundaram, 2017)
	Leverage (lev)	Total borrowings divided by total assets	(Schoenmaker and Wierts, 2015)
	Market competition (comp)	Proxied as inverse of industry-adjusted Lerner's index (lerneri)	(Fosu et al., 2018; Fungáčová and Weill, 2013; Tabak et al., 2015).

Notes: Panel A in the table represents the dependent variables in terms of financial performance, value, and efficiency. Panel B includes the independent variables in the form of indices to represent shareholder activism and transparency and disclosures. Panel C includes the derived regressors to capture the non-linear effects of independent variables on the dependent variables. Finally, the controls as described in the variable sections are measured as defined by measurements in Panel D of the table.

3.3 Descriptive statistics

Table II presents the descriptive statistics of the sample. The table includes measured values of specific notable statistics of the derived regressors (the square term and the interaction term), alongside the independent variables, dependent variables and the controls used in this study. The average values of the dependent variables are *pat (3279.322), npm (0.133), roc (0.210), mtb (7.047)* and *te (0.786),* representing a net positive performance on average for the sample. Notably, the value of *mtb* is indicative of good market-based performance. The values of the independent variables of primary interest, *shai (0.675)* and *tdi (0.595),* indicate that both SHA and TD correspond to above fifty per cent on average for the indices constructed and used in this study. These values brand the indices as fair

representatives of the SHA and TD. In addition, the measured statistic of other variables presented in Table II is based on their measurements as defined in Table I.

Table II. Descriptive statistics

	pat	npm	roc	mtb	te	shai	tdi	ln_sales	lev	lerneri
Mean	3279.322	0.133	0.210	7.047	0.786	0.675	0.595	9.599	0.160	0.139
Median	1289.760	0.127	0.170	4.370	0.778	0.703	0.621	9.381	0.074	0.121
Std. Dev	6168.891	0.116	0.156	8.890	0.170	0.066	0.095	1.337	0.181	0.283
Kurtosis	10.985	16.014	4.302	30.036	-0.767	0.166	0.014	0.284	0.041	19.884
Skewness	1.577	1.718	1.750	4.505	-0.279	-0.769	-0.731	0.254	1.029	3.748
Range	69700.200	1.405	1.027	87.820	0.804	0.352	0.469	8.027	0.705	2.293
Minimum	-36088.200	-0.418	-0.104	0.000	0.196	0.459	0.310	5.304	0.000	-0.229
Maximum	33612.000	0.987	0.923	87.820	1.000	0.811	0.779	13.331	0.705	2.064

Notes: Elaborated by authors. The descriptive statistics in the table are calculated from naturally occurring values of the variables for the sampled firms. The values that were suspected to be unnatural outliers or caused by entry errors were corrected, if required, by referencing the financial reports.

3.4 Multicollinearity

Table III presents the regression coefficients and variance inflation factors (VIFs). Notably, the correlation coefficient between *sq_shai* and *shai X tdi* is sizable at 0.862. Besides, the VIF values of these non-linear regressors are large (VIF > 4), indicating that multicollinearity may impact the estimates if both these variables are included in the same regression equation. Therefore, following Wooldridge (2013), we separate the non-linear terms, *sq_shai* and *shai X tdi,* into different equations. The results in three models (A, B, and C) are specified in the following subsection. The resultant VIFs of the regressors are less than 3, an acceptable value.

3.5 Model specification

We specify the fixed-effects models based on the significance of the Hausman test ($p < 0.05$, in all cases). In general, the fixed effects model is specified as:

$$Y_{it} = \alpha + \beta_k X_{it} + \alpha_i + u_{it}$$

Where α: constant term, α_i: entity fixed effects; Y_{it}: dependent variable; X_{it}: independent variable; β_k: coefficient; u_{it}: error term, which is independently identically distributed with mean zero, constant variance; t: period, k: number of independent variables.

Table III. Correlation matrix and VIFs

	Correlation Matrix							Variance inflation factors (VIF)			
	shai	tdi	sq_shai	shai X tdi	ln_sales	lev	lerneri	VIF (All IVs in one model)	VIF (Combination of model A IVs)	VIF (Combination of model B IVs)	VIF (Combination of model C IVs)
shai	1.000							2.94	2.71	2.92	2.93
tdi	0.793	1.000						2.83	2.77	2.83	2.81
sq_shai	-0.676	-0.587	1.000					4.55	Not included	1.44	Excluded
shai X tdi	-0.522	-0.492	0.862	1.000				4.70	Not included	Excluded	1.40
ln_sales	0.180	0.167	-0.133	-0.001	1.000			1.20	1.13	1.15	1.03
lev	0.140	0.197	-0.091	-0.136	0.293	1.000		1.26	1.21	1.22	1.21
lerneri	-0.068	-0.087	-0.019	-0.035	-0.059	0.223	1.000	1.10	1.09	1.09	1.10

Notes: The VIFs are calculated based on combinations of variables included in the regression models A, B, and C fall within the acceptable range (all VIFs values < 3). To tackle the VIFs of sq_shai and shai X tdi, these variables were either not included together or Excluded from models A, B, and C, as depicted in the table. This treatment fool-proofs the standard errors against multicollinearity issues to produce efficient estimates.

The models specific to this study that follows from the multicollinearity subsection are:

The baseline model (A): $DV_{it} = \alpha + \beta_1\ shai_{it} + \beta_2\ tdi_{it} + \alpha_i + u_{it}$

The sq. term model (B): $DV_{it} = \alpha + \beta_1\ shai_{it} + \beta_2\ tdi_{it} + \beta_2\ sq\_shai_{it} + \alpha_i + u_{it}$

The int. term model (C): $DV_{it} = \alpha + \beta_1\ shai_{it} + \beta_2\ tdi_{it} + \beta_2\ shai\ X\ tdi_{it} + \alpha_i + u_{it}$

Where *DV* is one of the independent variables, *sq. term* and *int. term* are shorthand notations for the square and interaction terms.

4. Analysis and results

4.1 Regression and diagnostics

Panel data regression is used to conduct econometric analysis. The selection between fixed effects and random-effects models follows the Hausman test, which is significant ($p < 0.05$). The null indicated no entity fixed effects are rejected; hence, the fixed effects model is preferred (Baltagi, 2008). Furthermore, fixed effects indicate that individual or entity-specific effects are a part of the intercept and not the error variance (Kuknor and Rastogi, 2021). Tables IV, V, and VI include the regression outputs.

The diagnostics reveal the presence of heteroskedastic and autocorrection of order one. Therefore, we calculate robust standard errors using the Huber-White sandwich estimator to correct heteroskedasticity (Huber, 1967; White, 1980). The robust standard errors are clustered at the firm level to correct heteroskedasticity and autocorrelation (Froot, 1989; Williams, 2000). Thus, correctly estimated t-statistics help arrive at valid conclusions regarding the relationships of variables.

Table IV. Regression results and diagnostics for baseline (category A) models

	npm	roc	pat	mtb	te
shai	0.505	0.433	-95.163	23.861	-0.253
	(2.16)**	(2.59)**	(-0.01)	(2.89)***	(-1.67)*
tdi	-0.103	-0.184	-	-8.931	-0.103
	(-0.61)	(-1.95)*	6314.829	(-1.01)	(-0.85)
			(-1.3)		
ln_sales	-0.073	0.023	1292.236	2.051	0.047
	(-1.09)	(0.58)	(1.52)	(1.59)	(2.27)**
lev	-0.074	-0.182	-	1.385	0.078
	(-0.74)	(-2.07)**	6363.325	(0.35)	(1.1)
			(-1.46)		
lerneri	-0.137	0.072	4762.342	1.388	0.355
	(-1.26)	(1.78)*	(1.27)	(1.31)	(4.78)***
constant	0.58	-0.17	-	-23.848	0.503
	(1.09)	(-0.49)	4943.578	(-1.54)	(2.85)***

			(-0.61)		
Model, F (5,307)	4.59***	7.33***	4.20***	2.26**	8.83***
F-Test, (Fixed Effect), F(77, 307)	3.46***	23.70***	15.49***	14.05***	23.35***
Breusch Pagan Lagrange multiplier test, $\chi^2(01)$	63.21***	495.84***	388.81***	379.72***	482.22***
Hausman Test (χ^2)	19.55**	13.38**	18.93**	16.11**	21.03**
R-squared	0.11	0.17	0.30	0.09	0.07
Adj R-squared	0.10	0.15	0.29	0.08	0.06
Mean VIF	1.78	1.78	1.78	1.78	1.78
Wald test, H_0 : No heteroskedasticity, $\chi^2(78)$	5.9 X 10^{05}***	26197.24***	4.7 X 10^{06} ***	5.1 X 10^{06}***	1.4 X 10^{07}***
Wooldridge test H_0: No first-order autocorrelation, F(1, 77)	7.380***	89.918***	0.722	37.851***	25.925***

Notes: The results of the level terms shai and tdi can be interpretated from this table.* significant at 10%, ** significant at 5%, *** significant at 1% level of significance, t-stat corrected for heteroskedasticity, and autocorrelation are enclosed in parentheses. Wald test is the test of groupwise heteroskedasticity for panel data, and Wooldridge test is the test to check the presence of first order correlation.

Table V. Regression results and diagnostics for sq. term (category B) models

	npm	roc	pat	mtb	te
shai	0.559 (2.26)**	0.443 (2.46)**	2902.206 (0.28)	21.722 (2.5)**	-0.185 (-1.18)
tdi	-0.129 (-0.77)	-0.189 (-1.92)*	- 7783.236 (-1.53)	-7.883 (-0.93)	-0.137 (-1.1)
sq_shai	1.783 (1.17)	0.33 (0.31)	100305 (2.33)**	-71.577 (-1.04)	2.302 (2.15)**
ln_sales	-0.07 (-1.05)	0.023 (0.59)	1417.258 (1.64)	1.961 (1.58)	0.05 (2.46)**
lev	-0.091 (-0.87)	-0.186 (-2.08)**	- 7340.084 (-1.67)*	2.082 (0.51)	0.055 (0.79)
lerneri	-0.133 (-1.23)	0.072 (1.8)*	4956.915 (1.31)	1.249 (1.17)	0.36 (4.83)***
constant	0.533 (0.99)	-0.178 (-0.5)	-7601.56 (-0.88)	-21.951 (-1.44)	0.442 (2.41)***
F-Test (6,306), (Model)	4.14***	6.11***	4.74***	(0.0549)	16.75**
F-Test, (Fixed Effect), F(77, 306)	3.50***	23.53***	15.80***	14.07***	`23.61***

Breusch Pagan Lagrange multiplier test, $\chi^2(01)$	62.53***	494.86***	388.29***	378.95***	484.34***
Hausman Test (χ^2)	21.93***	13.20**	22.72***	17.08***	21.03**
R-squared	0.11	0.17	0.30	0.09	0.07
Adj R-squared	0.10	0.16	0.29	0.08	0.06
Mean VIF	1.76	1.76	1.76	1.76	1.76
Wald test, H_0 : No heteroskedasticity, $\chi^2(78)$	2.2 X 10^{05***}	27008.42***	1.0 X 10^{07} ***	5.9 X 10^{06***}	1.4 X 10^{06***}
Wooldridge test, H_0: No first-order autocorrelation, F(1, 77)	7.746***	94.972***	0.631	52.299***	25.925***

Notes: The results of the square term sq_shai can be interpretated from this table. Rest, same as Table IV

Table VI. Regression results and diagnostics for int. term (category C) models

	npm	roc	pat	mtb	te
shai	0.568	0.441	4696.198	23.52	-0.133
	(2.4)**	(2.41)**	(0.51)	(2.41)**	(-0.83)
tdi	-0.152	-0.191	-	-8.663	-0.197
	(-0.92)	(-1.88)**	10068.92	(-1.04)	(-1.54)
			(-1.78)*		
shai X tdi	1.128	0.15	86573.92	-6.16	2.18
	(1.06)	(0.16)	(2.34)**	(-0.12)	(2.03)**
ln_sales	-0.073	0.023	1289.488	2.051	0.047
	(-1.08)	(0.58)	(1.57)	(1.59)	(2.49)**
lev	-0.076	-0.183	-	1.401	0.072
	(-0.74)	(-2.06)**	6585.574	(0.36)	(1.05)
			(-1.52)		
lerneri	-0.134	0.072	4985.21	1.372	0.361
	(-1.21)	(1.8)*	(1.3)	(1.32)	(4.91)***
constant	0.562	-0.172	-6345.23	-23.748	0.468
	(1.06)	(-0.49)	(-0.8)	(-1.52)	(2.69)***
F-Test (6,306), (Model)	3.99***		4.78***	1.88*	17.02***
		6.09***			
F-Test, (Fixed Effect), F(77, 306)	3.48***	23.63***	15.81***	13.99***	23.83***
Breusch Pagan Lagrange multiplier test, $\chi^2(01)$	63.33***	495.86***	383.41***	378.32***	481.98***
Hausman Test (χ^2)	20.15**	12.91**	38.31**	16.20**	22.84
R-squared	0.11	0.17	0.30	0.09	0.07
Adj R-squared	0.10	0.15	0.29	0.08	0.05
Mean VIF	1.78	1.78	1.78	1.78	1.78
Wald test, H_0 : No heteroskedasticity, $\chi^2(78)$	5.7 X 10^{05***}	24908.76***	7.9 X 10^{06***}	5.4 X 10^{06***}	1.4 X 10^{06***}

Wooldridge test, H$_0$: No first-order autocorrelation, F(1, 77)	8.218**	91.257***	0.623	44.160***	26.219***

Notes: The results of the interaction term shai X tdi can be interpretated from this table. Rest, same as Table IV.

4.2 Results

The effects of the base terms, *shai,* and *tdi* are interpreted from Table IV. The output of the baseline models (category A) indicates that *shai* is positively significant on *npm at 5%, roc at 5%, and mtb at 1%* level of significance. However, *shai* is not significant on *pat* but negatively significant on te at 10% significance level. On the other hand, *tdi* is negatively significant at 10% level only on roc, without affecting the remaining dependent variables.

The non-linear square term (sq_shai) results are interpreted from the square term models (category B) included in Table V. The output indicates that *sq_shai* is positively significant on *pat* and *te,* at a 5% significance level for both the dependent variables. However, *sq_shai* is insignificant on *npm, roc,* and *mtb.*

The results for the interaction term (*shai X tdi*) follow from the integration term models (category C) included in Table VI. The output indicates that the *shai X tdi* is positively significant on *pat* and *te,* at a 5% significance level for both the dependent variables. However, *shai X tdi* is insignificant on *npm, roc,* and *mtb.*

4.3 Robustness against endogeneity

Literature signifies that the problem of endogeneity must be addressed to produce unbiased estimates. Endogeneity may occur when an explanatory variable in the regression model is correlated to the error term. Endogeneity may occur if : 1) the measurement of variables is erroneous: 2) simultaneity; and 3) omitted variables. Therefore, dealing with endogeneity, if present, is essential (Singh *et al.*, 2021). In our study, we detect that endogeneity is insignificant.

We applied the Durbin-Wu-Hausman (DWH) test to check the presence of endogeneity. The results reported in Table VII rule out the endogeneity of variables in this study. The endogeneity of variables is calculated using the variable's third lag (L3. variable) as an instrument, as depicted in the table. These instruments are correlated to the potential endogenous variables (which were tested for endogeneity) and fail to predict the dependent variable individually. Therefore, the instruments are valid and reliable.

Table VII. Durbin-Wu-Hausman (DWH) test for endogeneity

H$_0$: Regressors are exogenous						
shai	tdi	sq_shai	shai X tdi	ln_sales	lev	lerneri

Durbin $\chi^2(1)$	0.102	0.700	0.248	0.248	0.867	0.306	1.920
	(0.749)	(0.402)	(0.618)	(0.618)	(0.351)	(0.580)	(0.165)
Wu-Hausman	0.100	0.689	0	0.244	0.856	0.301	1.907
F-stat: F(1,153)	(0.752)	(0.407)	.24407	(0.622)	(0.356)	(0.584)	(0.169)
			(0.622)				

Notes: p-values are enclosed in parentheses, (p-value). The endogeneity of variables is calculated by using third lag (L3. variable) of the variable as instrument. These instruments are correlated to the potential endogenous variables (which were tested for endogeneity) and fail to predict the dependent variable individually. Therefore, the instruments are valid and reliable.

5. Discussion

5.1 Hypothesis Testing

The first hypothesis that SHA linearly impacts the operating performance cannot be rejected as out of three cases of operating performance (*npm*, *roc* and *pat*), SHA (*shai*) is significantly impacted by two cases (*npm* and *roc*) (Table IV). The second hypothesis that SHA non-linearly impacts the operating performance also cannot be rejected because, out of three cases of operating performance (*npm*, *roc* and *pat*), *pat* is significantly impacted by the square of SHA (*sq_shai*) (Table V). The third hypothesis that SHA linearly impacts the firm's valuation cannot be rejected as mtb is significantly impacted by SHA (*shai*) at 1% level of significance (Table IV). However, the fourth hypothesis that SHA non-linearly impacts the firm's valuation is rejected because *sq_shai* does not significantly impact the valuation of the firms (mtb) (Table V). The fifth hypothesis that SHA impacts the efficiency (*te*) of the firms cannot be rejected as SHA (*shai*) is significant at 10% (Table IV). The sixth hypothesis that SHA (*shai*) non-linearly impacts the efficiency (*te*) also cannot be rejected as sq-shai is significant at 5% (Table V). The seventh hypothesis that TD moderates the association between SHA and the firm's performance cannot be rejected. Out of five cases, in two cases (with *pat* and *te*), the interaction term (*shai X tdi*) is significant at 5% (Table VI).

5.2 Discussion and Comparison of the findings

The linear association of SHA with operating performance is significant with *npm* and *roc*. However, with *pat*, it is not significant. It implies that as SHA (*shai*) increases, there is an improvement in the operating performance of the firms concerning nim and *roc*. The increase in SHA initially hampers the operating performance concerning *pat* because of the positive non-linear association of SHA with *pat* (Table V). However, as the SHA crosses a threshold level, SHA positively supports the *pat*. The positive square term has a U-shaped association. Therefore, initially, SHA hampers the *pat*. However, in the long-run, higher SHA values also support the pat.

Furthermore, TD as a moderator is also found positively and significantly associated with *pat*. This finding implies that SHA may not be supporting *pat*

initially. However, along with TD, SHA can positively support the *pat*. Overall, it can be construed that SHA helps in the firm's operating performance, and the support is enhanced by TD.

Concerning the firm's valuation, SHA impacts the valuation (mtb) only linearly, not non-linearly. Moreover, TD does not moderate the association of SHA with the valuation. Overall, it can be interpreted that SHA impacts the firm's valuation linearly, and TD does not influence the association of SHA with the valuation.

The efficiency (*te*) of the firms has a negative linear association. However, the square term of SHA (*sq_shai*) has a positive non-linear association with the efficiency of the firms. Both linear and non-linear associations of SHA with efficiency can be understood much effectively together. As it is evident from the U-shaped association of SHA with efficiency confirms that initially, SHA hampers the efficiency of the firms. However, as the threshold level of SHA is crossed, it supports improving the firm's efficiency. The negative linear association of SHA with efficiency can be interpreted in that way.
Furthermore, TD positively moderates the association of SHA with the efficiency of the firms. The negative association of SHA with efficiency can be turned into a positive impact if SHA is put together along with TD. Overall, it can be interpreted that SHA supports the efficiency of the firms as well, and the support is enhanced by TD further.

The findings of the paper concerning SHA and operating performance of the firms are consistent with the observations made by Denes et al. (2017) that there is substantial evidence of SHA's impact on the firm's operating performance if the study period is post-2000. The duration of the current study is 2015-2019. We find evidence of the significant and positive influence of SHA on the performance of the firms. The findings of the current study are further corroborated by other studies as well (Brav et al., 2015, Brav et al., 2008, Greenwood and Schor, 2009, Boyson and Mooradian, 2011). As highlighted by Denes et al. (2017), the current study's findings also contradict the set of studies mostly having the study period prior to 2000 (Karpoff et al., 1996, Smith, 1996, Del Guercio and Hawkins, 1999). However, we do not find any study where SHA's non-linear and its interaction with TD are studied regarding firm performance. Hence, comparison of both the analysis is not possible.

Positive and significant findings of SHA on the valuation of the firms of the current study has relatively less support in the literature (Brav et al., 2008, Greenwood and Schor, 2009, Denes et al., 2017). Most of the positive association is conditional to having the SHA guided by informed and active (Hendry et al., 2004, Clifford, 2008) or pressure-resistant investors (David et al., 1998). The current study has no demarcation on the SHA concerning the type of investor. Hence, comparison with them is difficult. However, all such studies find evidence that active investors (not passive investors) do support increasing the value of the

firms (Alexander et al., 2010, Gantchev and Giannetti, 2020). The findings of the current studies are, in fact, in contradiction with the studies, which puts a question mark on the relevance of SHA and its impact on the valuation (Edmans, 2014, Song and Szewczyk, 2003). Similar to the case of operating performance and SHA, in the case of valuation and SHA, we find no study which addresses the non-linear and interaction terms (due to TD) of SHA on the valuation of the firms.

We do not observe any other study to compare our findings of the impact of SHA on the efficiency of the firms. Only Guimaraes et al. (2019) find evidence that SHA targets inefficient firms, and hence SHA is inversely related to the efficiency of the firms. However, SHA overall supports increasing the firms' efficiency, especially when TD moderates the association. The negative linear association found in our study may get support from the findings of Guimaraes et al. (2019). However, the positively significant non-linear association of SAH with efficiency found in our study depicts that despite initial blips, SHA helps improve the firms' efficiency.

5.3 Contribution

In a survey on the SHA and its empirical evidence for firm performance, Gillan and Starks (1998) put forth the evidence that measuring SHA is a complex process. Taking clues from Guimaraes et al. (2019) and others (Vargas et al., 2018, Bouaziz et al., 2020), a shareholder activism index is built (after duly adapting them to suit our purpose) in the current study. The building of an index is one main contribution of the study. There is literature on how SHA impacts the operating performance and valuation of the firms. However, we do not observe any other study that provides empirical evidence on how SHA influences the firms' efficiency. This study is supposedly the first study to cater to this gap. No other study explores the non-linear association of SHA with the operating performance and valuation of the firms. We believe that non-linear association is an obvious choice because SHA cannot unilaterally influence the performance of the first, which is quite evident in the current study's findings. This study is again the first such study. Above all, we do not find any other study which attempts to explore the moderating role of disclosures despite its (TD's) increasing relevance in the governance of the firms. It is also quite evident due to the presence of significant moderation by TD to the association of SHA with two out of five proxied variables of performance of the firms. These are pretty significant contributions of the current study to the extant knowledge on the relevance of SHA for the firms and their performance.

We believe that the study's findings can be a milestone in setting the long-term policy on SHA and TD. This study can be an eye-opener for managers who are in denial of SHA for the benefit of the firms. One of the alternative interpretations of the current findings is that if SHA remains moderately or half-heartedly, it may not help instead hamper the firm's performance, which is evident in the positive non-linear significant association of SHA for the performance of the firms. The evidence of the current paper is from India. However, its scope is quite broad, especially in the emerging and developed economies where SHA is nascent.

Such nations can take vital clues from the current study's findings and set their policies on SHA and TD after adaptations suitable to their regulatory framework.

5.4 Implication

An enormous amount of resistance is seen in the firms against SHA, especially when it (SHA) connives as takeover attempts by various shareholders or shareholder groups (Armour et al., 2011). SHA is criticized for the implicit private benefits of the various shareholder groups (Briggs, 2007, Rehbein et al., 2004). In addition to this, other evidence defies the utility of SHA per se and links it with the wastage of resources and time of the corporate and managers (Fox and Lorsch, 2012, Hoffmann et al., 2016). Based on such evidence and literature, the current study's findings carry major implications for managers and policymakers. This study presents the finding in unequivocal terms. It says that SHA significantly improves the performance of the firms in India, which presents irrefutable empirical evidence. For managers, the findings of the current study help them decide the long-term policy to cater to the shareholder requirement and their concerns, which will be more than mere investors' relation. A more conducive environment for SHA can be built by the managers. Another set of implications will be for the policymakers. The current study's findings will help them devise the regulatory policies to support SHA, which are yet in their nascent stage in India's emerging economies. In the broader context, policymakers can club both disclosures and SHA. As the findings show the significant moderating role of TD on SHA for the performance of the firms, policies can be evolved to let both complement each other. The not so healthy environment against SHA may be reduced, and more favorable guidelines for SHA and TD could be designed and executed.

6. Concluding Observations

6.1 Conclusion

This study is aimed at determining the empirical association of SHA for the performance of the firms. It is found in the study that SHA significantly improves the performance of the firms when it is viewed as operating performance, valuation and efficiency. Moreover, the significant TD as a moderator ensures its supportive role between SHA and the performance of the firms. The findings are essential as they fill a considerable research gap. It is pretty significant because policymakers are hugely concerned about improving the governance and disclosures in the firm. As evident by the current study's findings, SHA directly or indirectly can contribute significantly. We believe that the study's findings will have a pretty long-term impact on the policies on SHA. Because SHA is in the early stages, this is the apt time to frame the policies from scratch compared to changing one already established policy. The findings can easily be tested and replicated in other countries and even within the country, in different sectors.

The study concludes that there is strong evidence of the significant influence of shareholder activism on the operating performance of firms, indicating a complex and non-linear relationship. Further supporting the beneficial impact of shareholder activism on business performance and efficiency, the results highlight the critical role that disclosures and transparency play as moderating variables. These findings emphasize the value of open corporate practices and proactive shareholder participation in improving firm outcomes. Legislators and business executives should appreciate the importance of shareholder activism going forward and give top priority to initiatives that encourage increased disclosure and openness within companies in order to maximize their operational efficiency and, in the end, generate value for stakeholders. Companies should be proactive in reaching out to their shareholders and asking for their opinions on important business decisions. This may involve setting up official channels of communication, holding frequent shareholder meetings, and encouraging positive discourse between investors and management. Corporate plans should be in line with the interests of shareholders and other stakeholders, with a focus on long-term strategic objectives superseding short-term financial advantages. This could entail making investments in environmentally friendly corporate operations, encouraging innovation, and looking for chances for expansion and diversification.

6.2 Limitation and Future Scope

The SHA index built in the study I snot for its robustness. There are not many established scales to measure the SHA. It is one of the limitations of the current study. Another limitation is not to divide the SHA into SHA by active and passive investors. It is observed that active and passive SHA can have a different impact on the performance of the firms. A future study can be done on such lines.

We would further recommend exploring different proxies of SHA, and such measures of SHA can test the robustness of the findings in the current study. SHA can further be tested on its influence on the firms while moderated by other essential parameters, for example, governance or ESG (Environmental, Social and Governance). ESG is supposed to extend the role of governance beyond the disclosures and provide more insights on the critical role of SHA on the performance of the firms.

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Annexure A

Table A. Sample description

Sl.no	Sector	Count of Companies
1	Automobile	12
2	Chemicals	5
3	Communication	2
4	Cons Durable	3
5	Construction	7
6	Energy	12
7	Engineering	2
8	FMCG	9
9	Healthcare	10
10	Metals	4
11	Services	6
12	Technology	5
13	Textiles	1
	Total	**78**

Notes: The industry classification of the sample is as the Bombay Stock Exchange (BSE), India data represents. The sample is heterogenous in in nature with companies from 13 sectors as in the table A.

Table B. List of 78 Firms

Sr. No.	Company name
1	ACC
2	Airtel
3	Ambuja
4	Apollo
5	Ashok Leland
6	Asian Paints
7	Aurobindo
8	Avenue
9	Bajaj Auto
10	Berger
11	Bharat Forge
12	Biocon
13	Bosch
14	BPCL
15	Britannia
16	CG
17	Cipla
18	CoalIndia
19	Colgate
20	ConCor
21	Dabur
22	Divilab
23	DLF
24	Dr Reddy
25	Eicher
26	GAIL
27	Godrej
28	Grasim
29	Havells
30	HCL
31	HERO
32	Hindalco
33	HPCL
34	HUL
35	Indraprastha
36	Indus
37	InfoEdge
38	Infosys
39	Interglobe
40	IOCL
41	ITC
42	JSW
43	Jubilant

44	L&T
45	Lupin
46	M&M
47	Marico
48	Maruti
49	Motherson
50	MRF
51	Nestle
52	NTPC
53	ONGC
54	Page
55	Petronet
56	PI
57	Pidilite
58	Piramal
59	PowerGrid
60	RIL
61	Shree
62	Siemens
63	Sunpharma
64	Tata Motors
65	Tata Steel
66	TataConsumer
67	TataPower
68	TCS
69	TechM
70	Titan
71	Torrentpharma
72	TVS Motors
73	Ultratech
74	UPL
75	Vedanta
76	Voltas
77	Wipro
78	ZEE