

Firm performance, vertical agency crisis and corporate governance of Indian listed companies

Premananda Sethi and Tarak Nath Sahu

Department of Commerce, Vidyasagar University, Midnapore, India, and

Sudarshan Maity

The Institute of Cost Accountants of India, Kolkata, India

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Abstract

Purpose – This study aims to examine the influence of corporate governance variables on firm performance and also to find out whether the corporate governance mechanism is capable of mitigating the vertical agency crisis. Here the researcher uses corporate governance mechanisms such as board meeting frequency, board independence, percentage of non-executive directors, percentage of woman directors on board and the board size to measure the firm performance and, at the same time, tries to mitigate the agency crisis, which is measured through return on asset and asset turnover ratio.

Design/methodology/approach – The present study considers period from 2009 to 2020 with data corresponding to a panel of 271 non-financial firms listed in 500 NSE index, India. The study introduces a panel regression model to analyze the data collected from the sample firms.

Findings – The study detects a positive as well as a statistically significant relationship between board size and vertical agency cost. The study also observes a negative relationship between board independence and agency cost. Further, the study finds a positive relationship between corporate governance variables and firm performance, though it is non-significant.

Originality/value – As the study progresses, the study detects a negative relationship between non-executive directors and agency costs. This study tries to give policy prescription to the corporate policymaker regarding various measures to be taken by the firm for the improvement of firm performance and reduction of owner and manager conflict inside the company. The study fills the literature gap by revealing a significant relationship between corporate governance, vertical agency crisis and firm performance.

Keywords Corporate governance, Firm performance, Vertical agency crisis

Paper type Research paper

1. Introduction

Agency costs are the cost of a company due to self-centric behaviors by an agent of an organization who always focuses on his benefit by making excessive money, earning bonuses and secret cash in the way of unproductive business investment. This not only leads to zero value creation for the company but also compensates the overall objective of the business concern. Past literature suggests that the agent of a firm may not consistently act in line with the objectives of the principal (Henderson, 1986), but on the other hand, the principal works for the whole objective of the concern. So, these types of conflict in thinking lead to an emergence of a problem inside the working environment of the firm. In corporate finance, it is justified as a vertical agency problem. It creates conflict in decision-making and the overall failure of the firm. The proper design of a good and strong governance mechanism acts as a



monitoring device, which tries to keep an eye on the related group to counter the agency cost (Rose-Ackerman, 1973). To monitor these crises, many studies have been conducted in the recent past. Now, how to counter the agency crisis remains an answerable topic among researchers. Policymakers and analysts in the recent past and many studies have provided measures to mitigate the agency crisis in the international market (Li *et al.*, 2021; Imelda and Dewi, 2019) as well as under the Indian market (Chaudhary, 2021; Katti and Raithatha, 2018).

The performance of a firm is very much essential for survival, growth and diversification in this competitive market. On the counterpart, the collapse in the performance of a company leads to the emergence of several problems like labor turnover, stakeholder dissatisfaction and liquidation. So, to strengthen the performance of the company, the different key managerial personnel and important stakeholders are working continuously. Performance of the firm depends upon various factors such as board meetings (Chou *et al.*, 2013; Buchdadi, 2019; Eluyela *et al.*, 2018; Al-Daoud *et al.*, 2016), board independence (Jaidi *et al.*, 2021), woman director on the board (Jyothi and Mangalagiri, 2019), board size (Shunu, 2017) and presence of independent non-executive director on the board (Alhaji *et al.*, 2013).

Women are treated as the home leader and good decision-makers. Many European Union countries try to give an idea to introduce the quota for a female director for inclusion in the board of directors in case of large companies (Chapple and Humprey, 2014). Corporate board meetings are also an important tool for the effective execution of the crucial policy and tasks of the corporate board (Zahra and Pearce, 1989). Board size is considered as an important mechanism of firm performance (Shunu, 2017), and it is a crucial aspect of reducing agency costs (Venugopalan and Shaifali, 2018). Further, the higher non-executive director and independent board of directors reduce agency costs as well (Chaudhary, 2021).

Through considering the above-mentioned theoretical and empirical background of past literature, this piece of work is conducted to investigate the association between the performance of the firm, vertical agency crisis and corporate governance of Indian listed companies.

2. Review of literature

This particular section of the paper puts emphasis on reviewing prospective literature concerning firm performance, vertical agency crisis and corporate governance. Particularly, principal and agent's conflict and firm performance of Indian companies listed in the National Stock Exchange (NSE). Buchdadi (2019) has come up with studies with regard to variables and sample size that empirically investigated the interrelationship between the meeting of the board of directors and the performance of firms. By considering 135 companies with the sample data from 2013 to 2016, the study tried to find out how board meeting helps in improving the overall efficacy of the firms as well as monitoring their performance. The study considered panel data regression, and the outcome states that a meeting of the boards of directors has a statistically positive linkage with firm performance (market value-based performance), and the attendance in a board meeting by a board of directors also has a statistically positive association with firm performance (accounting-based performance). Similarly, following the methodology, Chou *et al.* (2013) have empirically documented the attendance in the corporate board meeting and its impact on the firm performance by taking Taiwanese listed companies as their sample. In their study, they find that directors with higher qualifications attend board meetings more frequently as compared to others, and the high attendance of the director has a positive relationship with the performance than their representatives. The ownership of the biggest shareholder of a company also has a statistically positive influence on the director's meeting attendance. Further, Agarwal and Singh (2020) have investigated the impact of board meeting frequency on mitigating the agency cost by considering 30 firms listed on the NSE and Bombay Stock Exchange (BSE)

from 2007 to 2019. They considered return on assets (ROA) to measure the agency cost. By employing fixed effect regression model, the study reveals existence of positive relationship between the frequency of board meetings and firm performance.

Rashid (2015) has tried to investigate the impact of board independence on the agency cost of the listed firms in Bangladesh. Here, the researcher concludes that the independent board of directors have high concentrated ownership and insider representation in the board. They considered parameters like expense ratio and asset utilization ratio (AUR) for measuring the agency cost. The finding shows that board independence can mitigate agency costs under the AUR only. Furthermore, the test relating to non-linearity suggests that the advantages of having outside independent directors are generally influential for controlling agency costs for a medium level of board independence. Yegon *et al.* (2014) have investigated the impact of board independence on agency cost, which is measured through AUR. The study considers nine firms from Nairobi Securities Exchange for the period from 2008 to 2012. By employing a multivariate fixed effect regression model, the study detects a positive relation between board independence and agency cost. Further, Setia-Atmaja *et al.* (2011) have examined the impact of board independence on mitigating the agency problem by considering the firms traded on the Australian Securities Exchange. Their study covers period from 2000 to 2004. By considering panel data analysis, the study finds that a higher proportion of independent directors help in mitigating agency problems. Kweh *et al.* (2019) have investigated the impact of board independence on firm performance of 200 Malaysian firms traded in Bursa Malaysia during the time of 2010–2015. By employing ordinary least squares (OLS), two stages least square (2SLS), generalized method of moments (GMM) estimation, the study finds independent directors have a negative and significant relationship with firm performance. Further, Jaidi *et al.* (2021) have examined the impact of board independence on firm performance. For analysis purpose, they have considered 860 Chinese firms from 2010 to 2019. By running panel data regression analysis, the result depicts a positive relationship between board independence and firm performance. Somewhat, Nepal and Deb (2021) have investigated the impact of board independence on firm performance. They considered 40 sample textile firms listed on the BSE from 2015 to 2019 for sampling. By considering panel data regression analysis, the study finds an inverse as well as significant relationship between board independence and firm performance.

Baral and Patnaik (2021) have investigated the interrelationship between board composition and agency cost relating to the 30 Indian banks from 2008 to 2018. They considered director, size of the board, woman on board and non-executive director as an explanatory variable. Further, asset turnover ratio (ATR) has been considered as a proxy of agency cost. Econometrics models like panel least square model, fixed effect model and random effect model have been employed to explain the dependent variables. Chaudhary (2021) has investigated the impact of board structure on mitigating the agency cost by considering all the non-financial firms of the NSE 500 index from 2010 to 2019. By considering GMM analysis, the study finds that the non-executive director has a positive effect on sales to total asset ratio (which is considered as a proxy of agency cost). Further, the non-executive director is negatively related to the operating expenses to sales ratio (another proxy of agency cost). Furthermore, Owusu and Weir (2018) have examined the relationship between corporate governance and agency cost of Ghanaian firms that are listed on the Ghana Stock Exchange from 2000 to 2009. By employing fixed effect regression model, the study finds the proportion of non-executive directors has no impact on mitigating agency costs. Further, the study of Alhaji *et al.* (2013) have examined the impact of independent non-executive directors on firm performance by considering 813 companies from 2009 to 2011. The outcome is mixed relating to the influence of independent non-executive directors on firm performance.

Ain *et al.* (2020) have investigated the impact of female directors on mitigating the agency cost of 23,340 Chinese firms from 2004 to 2017. AUR is used as a proxy for measuring agency

cost. Fixed effect model, 2SLS model has been used to explain the dependent variable, the outcome of the result shows that participation of female director on board reduces agency costs. Further, [Yadav and Yadav \(2021\)](#) try to examine whether, in the case of Indian corporation, gender diversity acts as a measure of reducing agency cost. They have considered 75 companies from 2006 to 2019 as the sample. By employing econometric tests like fixed effect and random effect model, they come to know that there is no significant impact of female directors on mitigating the agency cost. [Wellalage and Locke \(2013\)](#) have tried to examine the impact of woman on board on mitigating the agency cost and, also at the same time, try to find out the impact on firm performance. Their sample consists of Sri Lankan listed companies that are listed on the Colombo Stock Exchange from 2006 to 2010. By employing the GMM estimator, the result of the study depicts that board gender diversity leads to increases in the agency conflict, but leads to decrease firm performance. Further, [Jyothi and Mangalagiri \(2019\)](#) have investigated whether woman directors help in firm performance or not by considering 16,526 observations from 2005 to 2015. For their study, they have considered ROA as a measure of firm performance. By considering regression analysis, the result reveals that women directors have a positive and significant relationship with firm performance. [Simionescu et al. \(2021\)](#) have investigated whether gender diversity in the board affects the firm performance. For their study, they have considered 71 companies (information technology (IT) based) listed under Standard and Poor's 500 Index from 2009–2020. Considering ROA as a proxy of firm performance through regression analysis, the study finds a positive but no statistically significant relationship between board gender diversity and firm performance. The study by [Agarwal and Singh \(2020\)](#) also finds that a women director has a negative impact on reducing agency cost. Similarly, [Kweh et al. \(2019\)](#) have also found woman directors have a negative and significant relationship with firm performance.

The study of [Calopa et al. \(2020\)](#) tries to examine the impact of board size on mitigating agency cost of 219 Croatian companies. From 2014 to 2018 by considering panel data regression analysis the study finds board size has a significant and negative relationship with AUR, which is used as a proxy of agency costs. Again, the study of [Agarwal and Singh \(2020\)](#) has investigated the impact of board size on reducing the agency cost of 30 firms of the NSE and BSE during the period from 2007 to 2019. They considered ROA as a proxy of agency cost. The result shows a positive relationship between board size and agency cost. Furthermore, [Chaudhary \(2021\)](#) has claimed that board size has a harmful effect on agency cost. In other words, board size increases the agency problem of the sampled companies under consideration, i.e. NSE 500 non-financial firms from 2010 to 2019. Further, evidence provided by [Bublykova \(2014\)](#) shows having interrelationship between the board size and performance of Hungarian joint-stock corporations for the study periods from 1992 to 2011. The result provides a negative linkage between board size and performance of the firm, which is proxied through ROA. Further, [Sarpal and Singh \(2013\)](#) have empirically investigated the influence of board size on the performance of the firm by taking the BSE listed companies as their sample size. Their results remain robust and conclude that board size has no association with firm performance. [Shumu \(2017\)](#) sought to examine the influence of board composition on the performance of 68 listed firms in the Nairobi Security Exchange. The study considers secondary data from 2006 to 2015. Notably, multiple regression analysis is taken into consideration to test the hypothesis. The outcome suggests both significant and positive effects of board size on firm performance.

After an in-depth study of past literature, relating to the association between firm performance, vertical agency crisis and corporate governance, the study finds heterogeneous and inconsistent results relating to the relationship between the variables. The result of different studies emerges due to different factors such as sample, period considered and

application of the sophisticated method to explain the variables. Thus, the researcher needs to revisit and re-examine the cause-and-effect relationship between firm performance, vertical agency crisis and corporate governance, in the recent era. Based on the above careful investigation of literature, the study is conducted in Indian perspective by considering NSE listed companies.

3. Data and methodology

3.1 Data

The present study is conducted to establish to check whether the corporate governance mechanism inside an organization helps in improving the firm performance and, at the same time, leads to mitigate the owner and manager conflict, which is called vertical agency crisis. For conducting this study, the researcher here considers 271 non-financial NSE 500 listed firms from 2009 to 2020. For the collection of data, the researcher here relies on Capitaline Plus' database marketed by Capital Market Publishers Pvt. Ltd. Further, the researcher also went through annual reports of the representative sample companies.

3.2 Variables under consideration

In this study, the researcher has tried to establish the interrelationship between firm performance, vertical agency cost (Pandey and Sahu, 2021) and corporate governance. For conducting the study, the researcher here considers explanatory variables like board meeting frequency, board independence, percentage of non-executive directors on board, percentage of woman directors on board and board size (Pareek *et al.*, 2019; Manna *et al.*, 2020). Other control variables also used to find out the better impact and those are age of the firm, size of the firm, liquidity and leverage. Further, the study uses the ATR as a proxy of vertical agency cost and ROA to measure the firm performance.

3.3 Statistical and econometric tests used

In this section, the researchers have discussed the various statistical and econometrics tools that are to be used in this study. For establishing the association between firm performance, vertical agency crisis and corporate governance, the study employs multivariate static panel data regression analysis. Before running the analysis, the study checks various properties of regression analysis like multicollinearity and heteroskedasticity problems. Coming to the selection of appropriate econometrics model between OLS and fixed effects model (FEM), the study considered restricted F -test, again the study considers Breusch–Pagan Lagrange multiplier test (Breusch and Pagan, 1980) to choose the best model between OLS and random effects model (REM). Last but not least, the study employs Hausman test (Hausman, 1978) to select the best model between FEM and REM.

To examine the inter-relationship between NSE listed firm's performance, vertical agency crisis and corporate governance, the following is the estimated linear regression model:

$$y_{ijt} = \delta_t + \beta_{jt} X_{ijt} + \varepsilon_{jt} \quad (1)$$

where “ j ” refers to an individual listed Indian firm; “ t ” refers to the year, y_{ijt} refers to the ROA ($r = 1$) and ATR ($r = 2$), and “ y ” is the observation of firm “ j ” in a particular year “ t ”; X_i represents the factors or determinants of a firm and ε_{jt} is a normally distributed random variable disturbance term.

By extending [equation \(1\)](#) to reflect the variables, as described in [Table 1](#), the baseline model is formulated as follows:

$$\begin{aligned} ROA_{jt} = & \delta_0 + \beta_1 BMF_{jt} + \beta_2 BIND_{jt} + \beta_3 NON - ED_{jt} + \beta_4 WDIR_{jt} + \beta_5 BS_{jt} + \beta_6 AGE_{jt} \\ & + \beta_7 SIZF_{jt} + \beta_8 LIQ_{jt} + \beta_9 LEV_{jt} + \varepsilon_{jt} \end{aligned} \tag{2}$$

$$\begin{aligned} ATR_{jt} = & \delta_0 + \beta_1 BMF_{jt} + \beta_2 BIND_{jt} + \beta_3 NON - ED_{jt} + \beta_4 WDIR_{jt} + \beta_5 BS_{jt} + \beta_6 AGE_{jt} \\ & + \beta_7 SIZF_{jt} + \beta_8 LIQ_{jt} + \beta_9 LEV_{jt} + \varepsilon_{jt} \end{aligned} \tag{3}$$

4. Analysis and findings

4.1 Descriptive statistics

For conducting the study and drawing valid conclusions, the study starts with the description of the variable, which is represented in [Table 1](#). After that, the study tries to calculate the descriptive statistics to know the properties of the variables, which include the calculation of measures of central tendencies and dispersion ([Table 2](#)). The mean board meeting frequency is 1.79, which is quite good for the sampled firm. Again, the mean value of board independence and proportion of non-executive directors is 0.59 and 0.72, respectively, which shows a good indication. Further, the average ROA tends to be 10.81, which shows a good return from asset utilization by the management of sampled companies. Last but not least, the mean ATR is 1.56. From the mean of the current ratio, it reveals that the liquidity position is looking good.

4.2 Test of multicollinearity and heteroskedasticity

Before going to estimate the panel data analysis, the study tries to check some of the econometrics properties of the regression model, i.e. multicollinearity and heteroskedasticity, which are shown in [Tables 3 and 4](#), respectively. The study employs variance inflation factor (VIF) to check whether our model is suffering from multicollinearity problem or not. The result of

Variable	Acronym	Measurement
Board meetings frequency	BMF	Natural log of number of board meetings held
Board independence	BIND	The ratio of number of independent directors to the total board of directors
Percentage of non-executive director	Non-ED	Ratio of total non-executive directors on the board to total board of directors
Percentage of woman directors on board	WDIR	Ratio of number of woman directors on board to total number of board of directors
Board size	BS	Total number of board of directors
Age of firms	AGE	Calculated on the basis of "Age of the firm since each firms establishment"
Size of the firm	SIZF	Log natural of total assets
Firms liquidity	LIQ	Measured on the basis of the current ratio, i.e. ratio of current assets to current liabilities
Leverage	LEV	The ratio of debt capital to equity capital
Return on assets	ROA	Performance of the firm, calculated by dividing the firm's net income by its total assets
Asset turnover ratio	ATR	Vertical agency cost, calculated as the ratio of total annual sales to total assets

Source(s): Prepared by researchers

Table 1.
Description of
variables

Table 2.
Summary statistics

Variables	Minimum	Maximum	Mean	Standard deviation
BMF	1.39	2.40	1.79	0.29
BIND	0.27	0.62	0.59	0.16
NON-ED	0.36	1.1	0.72	0.15
WDIR	1.00	2.60	14.7	8.79
BS	7.00	16.00	6.56	4.53
AGE	2	87	41.47	20.38
SIZF	8.71	15.1	11.94	1.48
LIQ	0.19	3.77	1.38	0.69
LEV	0.00	1.47	0.32	0.18
ROA	-5.12	38.02	10.81	6.57
ATR	0.01	4.53	1.56	1.02

Source(s): Calculated by researchers**Table 3.**
VIF statistics

Variables	VIF	1/VIF (= tolerance)
BMF	1.26	0.795
BIND	1.14	0.874
Non-ED	1.32	0.756
WDIR	1.15	0.866
BS	1.11	0.901
AGE	1.13	0.885
SIZF	1.3	0.769
LIQ	1.2	0.832
LEV	1.17	0.851
Mean VIF		1.20

Source(s): Calculated by researchers**Table 4.**
Test of
heteroskedasticity

Dependent variable	Test	Chi-sq value	Prob
ROA	Breusch-Pagan/Cook-Weisberg test	$\chi^2(1) = 117.44$	Prob > $\chi^2 = 0.0000$
	White's test	$\chi^2(54) = 77.59$	Prob > $\chi^2 = 0.0194$
ATR	Breusch-Pagan/Cook-Weisberg test	$\chi^2(1) = 61.69$	Prob > $\chi^2 = 0.0000$
	White's test	$\chi^2(54) = 154.15$	Prob > $\chi^2 = 0.0000$

Source(s): Authors' calculation

the average VIF tends to be 1.20, which is less than the threshold limit, so here, the researcher predicts the absence of multicollinearity problem in the regression model. Further, the study also employed robust standard error (White, 1980) to counter the heteroskedasticity problem.

4.3 Result of panel data regression analysis

In this particular study, the researcher tries to establish the linkage between firm performance, vertical agency crisis and corporate governance. To find a robust result out of the panel regression model, the study uses VIF test, robust standard error (White, 1980), Breusch-Pagan/Cook Weisberg test (1980). After going through the preliminary checking, the study detects R^2 of 0.284 under the dependent variable ROA, which indicates all the corporate governance variables under the study explain our dependent variable 28.4%

(Table 5). Again, to choose an appropriate model between OLS, FEM and REM (under dependent variable ROA), the study uses appropriate econometrics tests like restricted *F*-test, Breusch–Pagan Lagrange multiplier test (Breusch and Pagan, 1980), Hausman test (Hausman, 1978). From Table 6, we observe that the FEM model is the suitable model. Because here, the Hausman test tends to be significant.

Coming to the other aspect of the study, i.e. finding out the impact of corporate governance variable on agency cost. Here, the study also considers the FEM model as the result of the Hausman test became statistically significant, which is presented in Table 7. Further, the R^2 of the FEM shows 0.313 (Table 8), which is also good for our model. From this, we come to know that all corporate governance variables are sufficient to explain our dependent variable, which is ATR.

5. Results and discussion

Corporate governance is a human-made protection mechanism that protects the interest of different stakeholders directly or indirectly associated with the firm. The mechanism of good corporate governance creates confidence in the mind of the investors, creditors, bankers and society as a whole. On the counterpart, bad governance leads to the creation of doubt in the minds of people. Since these practices, policies and guidelines help how a corporation takes its crucial decisions for all, the corporate governance mechanism claims to have a vital opinion on firm performance. At the same time, it leads to the mitigation of different owner and manager conflicts of the firm, which is known as vertical agency cost.

OLS model			Fixed effect model			Random effect model		
Variable	Coefficient	<i>T</i> -stat	Variable	Coefficient	<i>T</i> -stat	Variable	Coefficient	<i>Z</i> -stat
Intercept	35.023	7.00***	Intercept	41.158	2.87***	Intercept	38.569	5.20***
BMF	4.026	2.29**	BMF	1.021	0.47	BMF	1.708	0.91
BIND	6.184	2.16**	BIND	3.922	0.94	BIND	4.168	1.14
Non-ED	-2.470	-0.79	Non-ED	0.576	0.11	Non-ED	-2.068	-0.52
WDIR	0.040	1.00	WDIR	0.028	0.50	WDIR	0.036	0.72
BS	0.049	0.74	BS	0.029	0.36	BS	0.040	0.57
AGE	-0.010	-0.49	AGE	-0.153	-0.46	AGE	-0.004	-0.14
SIZEF	-2.583	-7.86***	SIZEF	-2.585	-1.33	SIZEF	-2.629	-5.16***
LIQ	1.158	1.21	LIQ	4.618	4.86***	LIQ	2.243	3.30***
LEV	-7.784	-9.33***	LEV	-8.644	-3.77***	LEV	-6.547	-4.72***
<i>F</i> -stat	28.17***		<i>F</i> -stat	6.22***		Wald- χ^2	97.45*	
R^2	0.285		R^2	0.284		R^2	0.275	

Note(s): “***”, and “**” significant at 1, 5% level of significance, respectively

Source(s): Calculated by researchers

Table 5.
Summary of the regression model (dependent variable: ROA)

Purpose	Null hypothesis	Test	<i>t</i> -statistics
OLS vs FEM	All $u_i = 0$ (null hypothesis: There is no difference in intercepts of all the sample firms if considered individually)	Restricted <i>F</i> -test	$F(71, 326) = 3.54^{***}$
OLS vs REM	$\sigma^2 u = 0$ Null hypothesis: There is a systematic difference in coefficients (intercepts)	Breusch–Pagan Lagrange multiplier test	$\chi^2(01) = 112.32^{***}$
FEM vs REM	Difference in coefficients is not systematic	Hausman test	$\chi^2(9) = 18.46^{***}$

Note(s): “***” significant at 1% level and “**” at 5% level, respectively

Source(s): Calculated by researchers

Table 6.
Selection of the appropriate model (dependent variable: ROA)

Talking about the overall framework, the present study tries to draw some fresh evidence relating to the linkage between the firm performance, vertical agency crisis and corporate governance mechanism. By applying a multivariate panel data regression model, the study finds a positive relationship between board meeting frequency and firm performance, which is in line with the findings of [Al-Daoud et al. \(2016\)](#) and [Eluyela et al. \(2018\)](#). It may be due to the discussion of different issues relating to the management like improving operational and financial performance, etc. As the study progresses, the researcher finds a positive association between the proportion of woman directors on the board and firm performance, which is similar to the findings of [Jeet \(2020\)](#). The reason may be the leadership capability of the woman experienced through daily life. The study also detects a positive relationship between non-executive directors and firm performance. It is because of the attitude of challenging the management relating to strict compliance with of firm’s objectives. Though, the present result is not supported by [Mangena et al. \(2012\)](#).

The study also finds a positive and statistically significant relationship between board size and agency cost, which contradicts the study of [Yan et al. \(2021\)](#). Further, the study also detects a negative relationship between board independence and agency cost. It is because of having conflict in thinking, decision-making, etc., which is conflicting with the study of [Sajid et al. \(2012\)](#).

6. Conclusion and recommendations

The firm having good performance leads to attraction of new investors, creation of cordial and workable environment inside the company, timely disbursement of various perks, bonus, salary, etc. On the counterpart, the unhealthy performance on behalf of the firm leads to various economic and social problems inside the company. The other dimension of this paper is the vertical agency problem, i.e. conflict of interest between owner and manager. This problem of conflict of interest is also capable of collapsing the management of the business. So, for this reason, the present study tries to establish the interrelationship between firm performance, vertical agency crisis and corporate governance mechanism and tries to draw valid conclusions and policy prescription.

The present study employs multivariate static panel data analysis and finds some significant, some negative and positive relationships between the independent and dependent variables. The researcher finds a positive relationship between corporate governance variables and firm performance, though it is not significant. The study also detects a positive as well as significant relationship between board size and agency crisis. It is because the appropriate size of the board leads to the overall effectiveness of the board ([Agarwal and Singh, 2020](#)). If the size of the board of directors increases, it may lead to a decrease in agency crisis ([Sanjaya and Christianti, 2012](#)). It may be the reason for the quality of discussion regarding various policies, redressal of dispute relating to management and elimination of unproductive activity associated with the company. As our results suggest that the increase in the board size leads to a reduction of owner–manager conflict, this logic might not work in all situations. Especially in

Purpose	Null hypothesis	Test	t-statistics
OLS vs FEM	All $u_i = 0$	Restricted F-test	$F(71, 328) = 22.05^{***}$
OLS vs REM	$\sigma^2_u = 0$	Breusch–Pagan Lagrange multiplier test	$\chi^2(1) = 528.71^{***}$
FEM vs REM	Difference in coefficients is not systematic	Hausman test	$\chi^{2(9)} = 60.25^{***}$

Note(s): ***Significant at 1% level
Source(s): Calculated by researchers

Table 7. Selection of the appropriate model (dependent variable = ATR)

OLS model Variable	Coefficient	T-stat	Variable	FEM Coefficient	T-stat	Variable	REM Coefficient	Z-stat
Intercept	7.789	10.97 ^{***}	Intercept	6.246	7.96 ^{***}	Intercept	7.100	10.01 ^{***}
BMF	0.863	4.74 ^{***}	BMF	0.177	1.31	BMF	0.268	1.95*
BIND	-0.569	-1.70*	BIND	-0.295	-1.12	BIND	-0.304	-1.14
Non-ED	0.287	0.73	Non-ED	-0.432	-1.33	Non-ED	-0.385	-1.20
WDIR	0.018	3.12 ^{***}	WDIR	0.003	0.86	WDIR	0.005	1.32
BS	-0.007	-0.92	BS	0.011	2.21*	BS	0.009	1.87*
AGE	0.011	4.36 ^{***}	AGE	-0.078	-4.86 ^{***}	AGE	0.005	0.98
SIZEF	-0.642	-14.00 ^{***}	SIZEF	-0.071	-0.76	SIZEF	-0.448	-7.95 ^{***}
LIQ	-0.398	-6.04 ^{***}	LIQ	-0.213	-3.57 ^{***}	LIQ	-0.246	-4.21 ^{***}
LEV	0.168	0.94	LEV	-0.374	-2.61*	LEV	-0.128	-0.97
F-Stat	26.86 ^{***}		F-stat	10.54 ^{***}		Wald- χ^2	92.56 ^{***}	
R ²	0.441		R ²	0.313		R ²	0.376	

Note(s): ^{***}, ^{**}, ^{*} and ^{*}, significant at 1, 5 and 10% level of significance, respectively
Source(s): Calculated by researchers

Table 8.
Summary of the
regression model
(dependent
variable = ATR)

the case of a small business concern, it is very much difficult to keep more number of board of directors associated with the board due to more expenditure to manage those intelligent minds. So, the study strongly recommends that small corporations design the board in such a manner that it will be easier to handle, and at the same time, it will solve the issue of the concern. Here, the researcher also suggests the quality of the board member is required to solve all key management issues rather than keeping more directors on the board. This practices should be followed in both for small as well as large organizations.

As the diversity in the corporate board leads to better firm performance and mitigation of various conflicts inside the organization, so, more research is needed in the present context, which covers issues like performance of the firm, owner–manager conflict (vertical agency crisis) and corporate governance mechanism. During the past two years, due to the COVID-19 crisis, industries are also facing challenges of profitability and survival of the firms (Maity *et al.*, 2020). Further, more dimensions in this field need to be explored for making a better decision. Based on the claim in this paper, here, the researcher admits that the findings of the study are limited and justifiable for the Indian corporate sector only. Here, the researcher emphasized cross-country investigations of corporate governance mechanisms in the near future.

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About the authors

Premananda Sethi is currently working as a full-time PhD Research scholar and UGC Senior Research Fellow (SRF) in the Department of Commerce, Vidyasagar University, Midnapore, West Bengal, having research interest on the topics related to finance. He has presented papers at several international conferences and seminars.

Dr Tarak Nath Sahu is an Associate Professor in the Department of Commerce, Vidyasagar University, Midnapore, West Bengal, India. He has over 14 years of postgraduate teaching and research experience. Dr. Sahu, a gold medalist at both graduate and postgraduate level, has authored three books published by Palgrave Macmillan, New York and Emerald Publishing Limited, UK, and co-edited five books. He has already completed a research project sponsored by UGC. Dr. Sahu has published more than 60 research articles in different refereed and indexed journals published by different reputed publishers, including Springer, Tailor and Francis, Wiley–Blackwell, Emerald, SAGE, MacMillan, Inderscience, etc. Tarak Nath Sahu is the corresponding and can be contacted at: taraknathsahu1982@gmail.com

CMA (Dr) Sudarshan Maity is presently the Deputy Director in the Directorate of Examination, The Institute of Cost Accountants of India, Kolkata, West Bengal, India. He has over 19 years of administrative experience in various industries. He is a postgraduate from Calcutta University and all India rank holder in the Final Examination of The Institute of Cost Accountants of India. His research area is in finance, social science, etc., and he has published more than 35 research articles in different journals published by different reputed publishers, including Tailor and Francis, Wiley–Blackwell, Palgrave Macmillan, SAGE, Emerald, Inderscience, etc. His research work has also been shared in more than 30 national and international conferences.

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