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Ownership structure and firm performance: Evidence manufacturing companies listed in Dhaka Stock Exchange

S. M. Khaled Hossain[1*], Md. Imtiaz Sultan[2], Md. Mekail Ahmed[3]
Assistant Professor, Army Institute of Business Administration (AIBA), Dhaka, Bangladesh[1].
Graduate Student, Department of AIS, Jatiya Kabi Kazi Nazrul Islam University, Mymensingh, Bangladesh[2,3]
smkhossain19@gmail.com[1], imtiazsultan22@gmail.com[2], mekailahmed117@gmail.com[3]*

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Abstract
Purpose: This study aims at examining the relationship between ownership structure and firm performance about manufacturing companies listed in Dhaka Stock Exchange (DSE).
Research Methodology: The analysis empirically uses dynamic panel data from 15 pharmaceutical and chemical companies enlisted in Dhaka Stock Exchange (DSE). The study period was 2011-2020. The study used panel data regression analysis.
Results: The study confirms that sampled companies' financial performance represented by ROA and ROE is significantly influenced by institutional ownership, ownership concentration, and foreign ownership whereas, negatively influenced by managerial ownership and insider ownership. The study didn't find any noteworthy association between block holders' ownership with firms' performance.
Contribution: This study keeps a significant role in understanding the ownership structures' influence on firms' performance. More specifically the policymakers may consider the study for implementing the relevant issues.
Limitations: The study's results were restricted to 15 Bangladeshi pharmaceutical and chemical companies enlisted in DSE and could not be applied to other companies doing business in Bangladesh.
Keywords: Firm Performance, Managerial Ownership, Ownership Concentration, Ownership Structure, ROA, ROE
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1. Introduction

The ownership concentration and organization on market efficiency is significant aspect to consider when deciding on the best-governing structure for a particular company. Corporate ownership is broadly spread, and ownership and management are narrowly segregated, according to the majority of research on corporate governance principles of modern businesses. However, research reveals that several nations, especially those outside the Anglo-Saxon world, have a high concentration of ownership (Shleifer and Vishny, 1997). Corporate governance finds ownership arrangement and company efficiency to be essential structural concerns. Historically, centralized control has been seen as better surveillance and development benefits (Leech and Leahy, 1991). However, at the disadvantage of financial institutions, the controlling owners can still make a private profit (Maher and Andersson, 1999). What matters fundamentally for businesses, policymakers, as well as analysts, are when and how ownership structure impacts firm performance. Most research into the ownership structure and corporate performance have shown better return rates for concentrated companies. Owing to the assumption that its overall influence relies on the relative severity of rewards and reinforcing impacts,

different management restrictions have long been problematic, but foreign ownership and institutional ownership have attracted less scrutiny. Demsetz and Lehn (1985), while adapting them to causal owning variables and other variables, noted a little relationship between the concentration of ownership and efficiency of big US companies. Since the ownership-performance relationship is controversial in principle, scientific experiments are becoming increasingly important in deciding which of the scientifically testable hypotheses is the most likely. The conclusions come from a 2001 study performed between 1998 and 2000 of 202 medium and large enterprises. This study calculated the ownership composition by the number of securities held by each investor type and projected efficiency by income per employee. The hypothesis that centralized external ownership enhances performance was tested with regression analysis. The results revealed a significant influence on efficiency. Normally, Ukrainian external owners had no significant impact on results. Kapopoulos and Lazaretou, (2006) tried to ascertain if the idea that changes in the observed corporate ownership structure contribute to systemic adjustments for business results is substantially endorsed.

Morck et al. (1988) investigated whether in 1980, for 456 fortune 500 companies, the non-linear connection exists between managing ownership and firm performance. What fundamentally matters for corporations, politicians, and analysts are when and how the ownership structure impacts company performance. Berle and Means (1932) provided the basic insight into the problems, stating that the division of ownership and regulation in modern firms inevitably decreases management incentives to optimize organizational productivity (Hu and Izumida, 2008). In addition, institutional investors would only invest in companies with projected future success if they were searching for lucrative prospects for investment. Global investors make it possible for businesses to have access to superior technological, management, and financial capital. There are, however, two reasons why foreign investment adversely affects firm efficiency. According to Thomsen, a firm might have a detrimental effect if major shareholders, on the other hand, use their control rights to personal advantage. The idea of the influence of ownership arrangements on business value started to advance in financial science after Jensen and Meckling (1976), both empirically and scientifically. The present study is designed to investigate the ownership structure of manufacturing companies in Bangladesh and explore its influence on firms' financial performance. The study chose 15 pharmaceutical and chemical companies enlisted in DSE, as a sample size considering the study period 2011-2020. The study basically finds out the effect of firms' specific ownership characteristics along with control variables on financial performance.

2. Literature review

Ownership Concentration and Firm Performance

The concentration of ownership is regarded as the degree in which its main shareholders own the stock of a corporation (Sanda *et al.*, 2005). Tested research in developing countries confirms that concentration seems to be linked to strong performance (Wang and Oliver, 2009; Siala *et al.*, 2009). Dakhlallh et al (2019) conducted a study on 180 firms enlisted on Amman Stock Exchange (ASE) during the period 2009-2017. The study explored the significant influence of ownership concentration on firms' performance. An analysis of 175 Greek companies shows a hypothesis of the effect of the structure of ownership of the company's performance by Greek economists Kapopoulos and Lazaretou (2007). Empirical evidence suggests that increasing profitability is enhanced with more stakeholders. In these developing countries, they have also seen a decrease in firm productivity. On the other hand, several research studies also found a negative relationship between ownership concentration and firm performance (Roszaini and Mohammad, 2006; Hu *et al.*, 2010; Millet-Reyes and Zhao, 2010). Farooque et al (2019) conducted a study on 452 companies enlisted in the Thai Stock Exchange Ltd. over the period 2000-2016. Using GMM approach the study found no significant influence of ownership concentration on market-based firm performance. Arosa *et al.* (2010) report that there has been no connection between the concentration of ownership of SMEs in Spain and their performance. Inadequate evidence was concentrated on the allegations of expropriation and control of the particular firms. The findings are unrelated- listed firms according to Miguel *et al* (2004). It does not affect the level of ownership concentration, just as it does not affect behavior. This research gap inspired us to explore the true relationship between these two variables.

H_1 = *There is a statistically significant influence of ownership concentration on firm performance.*

Managerial Ownership and Firm Performance

The percentage of management and executive positions occupied by their board members is used to determine managerial ownership (Wahla *et al.*, 2012; Liang *et al.*, 2011). Managerial ownership, according to Jensen and Meckling (1976), will help in the resolution of agency conflicts because managers are motivated to maximize productivity to produce better performance, resulting in higher incentives for owners. As a result, the relation between managerial ownership and corporate performance remains unclear. Kao et al (2019) investigated the influence of managerial ownership on the financial performance of Taiwanese listed firms during the period 1997-2015. Using 2SLS regression model the study found a significant positive influence of managerial ownership on firms' financial performance. Similar research findings were discovered by other researchers like, Leung and Horwitz, (2010); Farooque et al (2019); Alabdullah (2018). Other scholars including Irina and Nadezhda (2009). Juras and Hinson (2008) have denied their ties in developed countries.

Similar findings were found in Mandaci and Gumus (2010), Liang *et al.* (2011), Tsegba and EziHerbert (2011), and Wahla *et al* (2012). In other developing worlds, Ehikioya (2009), Chung *et al.* (2008), Sing and Sirmans (2008), and Hasnah, similar results were found. On the other hand, in either developing or developed countries two variables have not been related (Siala, 2009; Nuryanah and Islam, 2011; Mohd, 2011; NazliAnum, 2010). (Mandaci and Gumus, 2010; Tsegba and EziHerbert, 2011) found similar results in developing countries. Ehikioya (2009), Chung *et al.* (2008), Sing and Sirmans (2008), and Hasnah (2009) found similar results in other developing countries. Others, on the other hand, discovered no connection between two variables in developing or developed countries (Siala, 2009; Nuryanah and Islam, 2011; Juras and Hinson, 2008; Mohd, 2011; Nazli Anum, 2010). Other researchers found no correlation in developing or developed countries between two variables (Siala, 2009; Nuryanah and Islam, 2011; Juras and Hinson, 2008; Mohd, 2011; Nazli Anum, 2010).

H_2 = *There is a statistically significant influence of managerial ownership on firm performance.*

Institutional ownership and Firm Performance

Institutional investors are commonly considered to be essential for good corporate governance since they have both the capacity and motivation to keep a close eye on management (Ping and Wing, 2011; Aljifri and Moustafa, 2007). Dakhlallh et al (2019) performed research on 180 companies listed on Amman Stock Exchange (ASE) during the period 2009-2017 in which the researchers claimed that institutional ownership has a significant noteworthy impact on firms' financial performance. Similar research results were produced by Kao et al (2019); Amin and Hamadan (2018). According to these authors, institutional investors may hold management accountable because the free-rider issue may be reduced.

They are also powerful because they can bear the expense of successful oversight and be involved in board decision-making, leading to better firm performance (Rose, 2007; Shleifer and Vishny, 1997). The study of Millar and Duggal (1999) claims, however, are at odds with both institutional investors' ability to track and improve the firm's ability to succeed. Gorton and Kahl (1999) likewise argue that, because of their agency conflict, institutional investors may be unimportant for the firm's performance. Several studies have examined the institutional property, but the findings remain unclear. As a result, they demonstrated that in developing countries (e.g. Mizuno, 2010, etc.) there are no connections between institutional ownership and firm performance (Mishra and Kapil, 2017; Chung et al., 2008; Aljifri and Moustafa, 2007; Mollah and Talukdar, 2007).

H_3 = *There is a statistically significant influence of institutional ownership on firm performance.*

Foreign Ownership and Firm Performance

Kao et al (2019) investigated the influence of managerial ownership on the financial performance of Taiwanese listed firms during the period 1997-2015. Using 2SLS regression model the study found a significant positive influence of foreign ownership on firms' financial performance. Similar research findings were discovered by Detthamrong (2017); Saleh et al (2017); Al-Matar et al (2017). Chari et al. (2012), Al-Manaseer et al. (2012), and Uwuigbe and Olusanmi (2012) shall decide the percentage of foreign equity proposed by international investment. Literature on the relationship between foreign

ownership and firm performance is still ongoing. Many studies have investigated this relationship. In the developing world, scientists like (Ghahroudi, 2011; Chari *et al.* 2012) discover important links. In all developing countries, NazliAnum (2010), AL Manaseer *et al.* (2012), Uwuigbe and Olusanmi (2012) have come to the same conclusion.

On the other hand, Amin and Hamdan (2018) have been looking into the relationship between Saudi companies' ownership structures and firm performance. In 2013 and 2014 there were no correlations between the return on assets of the Saudi companies and the total business performance. As a result, they concluded that foreign investment had a negative impact on the performance of their company. Shan and Mclver (2011) who researched relationships between international and regional firms in developed countries but concluded there was no link in developing countries, reported Millet-Reyes and Zhao (2010) while Gurbuz and Aybars (2010) and Tsegba (2011) found a relationship in developing countries.

H_4 = *There is a statistically significant influence of foreign ownership on firm performance.*

Block holders Ownership and Firm Performance

Several studies examined the effect on firm efficiency of block ownership, and much of the study has shown mixed results. A stronger relationship was found between blockholder relationship and firms' financial performance claimed by Ullah, Ali, and Mehmood (2017); Dakhlallh et al (2019). They found that the biggest shareholder has a strong connection to the success of the firm. Increased profitability in the enterprise needs less distributed ownership according to Kapopoulos and Lazaretou (2007). It also demonstrates that the expected issue of the agency would benefit big non-management block holders by reducing value. Moreover, block holders could harm the results of a company because of their high-risk exposure (Demsetz and Lehn, 1985). According to Hollandts and Guedri (2008), the effect of employee ownership on business performance from 2000 to 2005 had a negative effect on firm performance (a shared shareholder holding 5 percent or more of the company stocks). The impact of employee ownership was found to be negative. In the meantime, Hoang, Nguyen, and Hu (2017) agree that ownership of blocks has no major impact on the company's performance. There is no meaningful relationship between the firm's valuation and the shares owned by block holders in terms of Loderer and Martin (1997), Mehran (1995), McConnell and Servaes (1990).

H_5 = *There is a statistically significant influence of blockholder ownership on firm performance.*

Insider Ownership and Firm Performance

Im and Chung (2017) conducted a study on USA-based restaurant firms in where the researchers found that insider ownership has a significant influence on firms' financial performance. Similar research findings are explored by Marimuthu (2017) conducted research on 282 non-financial listed companies. Kaserer and Moldenhauer (2008) looked into the effects of insider ownership on firm performance. Data from 648 German companies from 2003 to 1998 showed that the company's performance was simple and significantly linked to stock price quality. Morck *et al.* (1988), and McConnell and Servaes (1990) all found that insider ownership has a positive impact. Compared with other firms, Lauterbach and Vaninsky (1999) found that insider ownership makes businesses less competitive than non-owner owners. Factors such as insider knowledge and incentives for success are as likely to affect ownership according to Demsetz and Villalonga (2001). The impact on corporate value, interest alignment, and restructuring of insider ownership (La Porta et al. 2000; Gomez-Mejia et al. 2001) implies that insider ownership and firm performance are not linearly linked. There is a shared desire for lower levels of insider access, lower costs for agencies, and better performance.

H_6 = *There is a statistically significant influence of insider ownership on firm performance.*

3. Research methodology

This part consists of four sections in where Section 4.1 explains the sample selection and time frame of the study; Section 4.2 emphasis on variable definition and measures; Section 4.3 presents the statistical summary and correlation matrix, and finally, Section 4.4 focuses on the establishment of the empirical model.

Sample selection and time frame

At present, there are 31 pharmaceutical and chemical industries enlisted in Dhaka Stock Exchange (DSE). The study has excluded 05 companies as they have been formed very recently and 11 companies for data unavailability and irrelevancy. Thus the total sample of the study comprises a balanced panel of 150 observations for 15 pharmaceutical and chemical companies enlisted in DSE, Bangladesh. Data concerned with companies' characteristics (Ownership structure, Firm-level variables) are derived from published annual reports of respective companies whereas, macro-economic data are gathered from the Bangladesh Bureau of Statistics (BBS). The study considers data of 2011-2020 years for conducting the study.

Variables definition

Main variables

To fulfill the objectives, the study has chosen two main variables i.e. firm performance and ownership structure. Two proxy variables were used to measure firms' performance namely, (i) Return on Assets (ROA); and (ii) Return on Equity (ROE). Both of these two variables are extensively used by Rostami and Kohansal (2016); Al Nimer et al., (2015); Khaled et al., (2020); Pointer and Khoi (2019); Bhabra (2007) in their empirical literature. Return on assets (ROA) shows how profitable a company is relative to its assets employment (Barry et al., (2011); Hill and Snell (1988). On the other hand, Return on Equity reflects an organization's profitability about shareholders' equity (Xu et al., 2015). Furthermore, to explore the impact of ownership structure on firms' performance, the study employed ownership structure (OS) as the most significant variable. To measure the ownership structure of firms the study used Managerial Ownership (MNO), Institutional Ownership (IO), Inside Ownership (InO), Ownership Concentration (OC), and Foreign Ownership (FO) as proxy variables.

Firm-level variables

To inspect the influence of ownership structure on firms' performance, the study employs some firm-level and industry-level variables including their metaphors and hypothesized signs which are presented in Table-1. For conducting the study, firm size (SIZE) measured by the natural logarithm of total assets is considered as a noteworthy factor that influences the performance of pharmaceutical and chemical companies of Bangladesh. Several types of research conducted earlier identified firm size as an effective control variable affecting firms' performance (Drakos et al., 2017; Hussain and Hassan, 2019; Laeven and Levine, 2009; Uzun and Webb, 2007; Zribi and Boujelbène, 2011). Another two firm-level variables namely, financial leverage (measured by the proportion of total loan to total assets) and liquidity (measured by the proportion of liquid reserves to total assets) were also used as control variables. Earlier researchers like Arouri et al., (2014), De Jonghe et al., (2015), Laeven and Levine (2009), Chalermchatvichien et al., (2014b) found leverage and liquidity as influential factors of firms' performance. To find out the response of capital expenditures to the firms' performance the study also uses another control variable named capitalization (CAP).

Macroeconomic variables

By following Chaibi and Ftiti (2015), the study includes one macroeconomic variable namely inflation rate (IR) which may affect the endogenous variables.

Summary statistics and correlation analysis

Table-2 represents the descriptive statistics of main variables, firm-level variables, industry-level variables, and macroeconomic variables for the target sample size of the study. In Table 4 the study portraits the correlation matrix by employing Pearson's correlation coefficient. The correlation matrix disclosed that there exists the highest correlation between ROE and foreign ownership (Pearson's correlation = 0.72). So it can be argued that there is no multicollinearity problem in the study[1].

[1] *Barako and Tower (2007) and Gujarati and Porter (2003) claimed that multicollinearity is a serious problem if the correlation coefficient between two independent variables is above 0.80, which is not the case here.*

Table 1. Variables' definition and sources

Variables	Legends	Definition and measure	Hypothesized sign	Data source
Firms' Performance				
Return on Assets	ROA	Net profit after tax/ Total assets		Rostami and Kohansal (2016); Al Nimer (2015); Jewell and Mankin (2011); Hossain and Haque (2018); Selling and Stickney (1989); Amran and Ahmad (2013), Butt and Hasan (2009).
Return on Equity	ROE	Net profit after tax/ Stockholders' Equity		Khaled et al., (2020); Pointer and Khoi (2019); Bhabra (2007); Chen et al., (2005), Xu and Wand (1999); Xu et al., (2015); Barry et al., (2011); Hill and Snell (1989)
Ownership Structure				
Managerial Ownership	MNO	Shares Held by CEOs, directors, and their Immediate Family Members / Number of Total Outstanding Shares	+/-	Uddin et al. (2019), Nazir (2015), Bourakba and Zerargui (2015), Shleifer&Vishny (1986), Leung and Horwitz's (2010), Yermack (1996), Jackling&Johl (2009)
Institutional Ownership	IO	Number of Shares Held by the Institution / Number of Total Outstanding Shares	+/-	Nazir (2015), Uddin et al. (2019), Bourakba and Zerargui (2015), Spring & Rhoades (2017), Arora (2012).
Inside Ownership	InO	Number of Shares Held by the All Insiders / Number of Total Outstanding Shares	+/-	Uddin et al. (2019), Bourakba and Zerargui (2015), Muniandy& Hillier, 2015), Switzer & Tang (2009), Jackling & Johl (2009),
Ownership Concentration	OC	Number of Shares Owned by Major shareholders / Number of Total Outstanding Shares	+/-	Nazir (2015), Bourakba and Zerargui (2015), Berle and Means (1932), Claessens, and Djankov (1999), Mitton (2002), Becht and Röell (1999)
Foreign Ownership	FO	Number of Shares owned by foreigners / Number of Total Outstanding Shares	+/-	Vishny (1986), Leung and Horwitz's (2010), Maury (2006), Bayrakdaroglu (2012), Alabdullah et al. (2016), Nguyen (2011), Wiwattanakantang (2001).
Firm Level Variables				
Firm Size	SIZE	Natural Logarithm of total assets	+	Drakos et al., (2016), Hussain and Hassan (2019), Laeven and Levine (2009), Uzun and Webb (2007), Zribi and Boujelbène 2011).
Liquidity	LIQ	Liquid reserves / total assets	+/-	Khaled et al., (2020); Lin et al., (2011); Margaritis and Psillaki (2010); Swandari and Sadikin (2016); Moon and Tandon (2007); Abobakr and Elgiziry (2016); Endang (2020)
Leverage	LEV	Loans / total assets	+/-	Arouri et al., (2014), De Jonghe et al., (2012), Laeven and Levine (2009), Chalermchatvichien et al. (2014b).
Industry Level Variables				
Market Capitalization	MC	(Cost per share) x (Number of shares)	+/-	Abdolmohammadi (2005); Kumar and Shah (2009); Dias (2013); Narayan et al., (2011); Willmott (2010); Reinganum (1999); Panagiotidis (2005); Anam et al., (2011); Ray (2012)
Macroeconomic Variables				
Inflation Rate	IFR	Annual inflation rate	+/-	Chaibi and Ftiti, (2015); Hussain and Hassan (2005); Unite and Sullivan (2003); Coibion et al., (2012); Herman (2019); Basse and Reddemann (2011)

Empirical model development

Panel data methodology was used in this study, which entails clustering of observations into time series and cross-section units. The panel data analysis provides for greater variation, reduced serial correlation, faster adaptation, bigger sample size, inter heterogeneity consideration, greater flexibility in relation to time series analysis, and improved efficiency (Din et al., 2017). The following models have been used to investigate the influence of ownership structure on company enactment:

$$ROA_{it} = \alpha_0 + \beta 1MNO_{it} + \beta 2IO_{it} + \beta 3InO_{it} + \beta 4OC_{it} + \beta 5FO_{it} + \beta 7SIZE_{it} + \beta 8LIQ_{it} + \beta 9LEV_{it} + \beta 10MC_{it} + \beta 11IFR_{it} + \varepsilon_{it} \quad (1)$$

$$ROE_{it} = \alpha_0 + \beta 1MNO_{it} + \beta 2IO_{it} + \beta 3InO_{it} + \beta 4OC_{it} + \beta 5FO_{it} + \beta 7SIZE_{it} + \beta 8LIQ_{it} + \beta 9LEV_{it} + \beta 10MC_{it} + \beta 11IFR_{it} + \varepsilon_{it} \quad (2)$$

In the equations stated above, the ownership variable regressed on firms' performance including the effects of control variables. In both equations subscripts i indicates DSE listed pharmaceutical and Chemical companies (i=1, 2… 15), and t indicates period (t =2011, 2012… 2020), α and β are the series of parameters to be estimated and ε_{it} is the error term. In Eq. (1) and (2) Return on Assets (ROA) and Return on Equity (ROE) were dependent variables respectively whereas, the ownership structure was the independent variable in both of the equations proxied by Managerial Ownership (MNO), Institutional Ownership (IO), Inside Ownership (InO), Ownership Concentration (OC) and Foreign Ownership (FO). Firm-level control variables were Firm size (SIZE), Liquidity (LIQ), and Leverage (LEV) whereas, the industry level control variable includes Market capitalization (MC). The rate of inflation (IFR) was the country-level control variable comprised in both models.

4. Results and discussion

Descriptive Statistics

Table 2. Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Dev
MNO (%)	48	.04	.71	.43	.14
IO (%)	48	.03	.55	.18	.11
InO (%)	48	.04	.46	.16	.09
OC (%)	48	.02	.61	.21	.14
FO (%)	48	0	.21	.02	.05
FS	48	11.5	30.9	20.35	.82
LIQ	48	.08	.25	.16	.09
LEV (%)	48	.07	.16	.12	.07
MC (%)	48	.05	.16	.09	.05
IFR (%)	48	.054	.059	..034	2.59
ROA (%)	48	.02	10.03	3.43	2.24
ROE (%)	48	.03	6.23	3.19	3.69

Normality Test

Table 3. Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro- Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
MNO	0.197	150	.101*	0.921	150	.206*
IO	0.278	150	.055*	0.725	150	.329*
InO	0.368	150	.020*	0.149	150	.219*
OC	0.201	150	.250*	0.725	150	.364*
FO	0.165	150	.004	0.823	150	.002
FS	0.111	150	.200*	0.852	150	.483*
LIQ	0.068	150	.106*	0.878	150	.399*
LEV	0.423	150	.120*	0.398	150	.301*
MC	0.325	150	.213*	0.725	150	.215*

IFR	0.423	150	.050*	0.612	150	.124*
ROA	0.169	150	.004	0.825	150	.202
ROE	0163	150	.102*	0.325	150	.216*

Note: *. This is a lower bound of the true significance.
a. Lilliefors Significance correction.

Table 3 denotes the results of two familiar tests of normality, i.e. the Kolmogorov-Smirnov Test and the Shapiro-Wilk Test. When the sample sizes of any study consist of less than 50 (<50 samples) then the Shapiro-Wilk Test is more suitable (Vogt, 2005). Therefore, the study considered Shapiro-Wilk test to measure the data normality as the sample size of the study was less than 50. Data is supposed to be normally distributed if the Sig. value of the Shapiro-Wilk Test is greater than 0.05 (Vogt, 2005). If the significance value is lower than 0.05, the data is supposed to have significantly deviated from a normal distribution. Table-3 represents that, for all the variables except foreign ownership (FO) the Sig. value is larger than 0.05 which indicates data collected for all of the above-stated variables except foreign ownership are allocated without deviating from the regular distribution.

Correlation Test

The study established Correlation Coefficient to discover the influence of ownership structure and firm-level, industry-level, and country-level control variables on the dependent variables. The correlation test is extremely important because it examines whether there is any correlation between dependent and independent variables or not before progressing on to regression analysis. The fundamental parameter for the correlation coefficient matrix is as follows: the 0.70 and above coefficient values indicate high correlations, the 0.40 to below 0.50 coefficient values indicate a low correlations and the 0.00 to below 0.40 coefficient values indicate a poor correlation of the variables (Chen and Popovich, 2002).

Table 4 represents that, ownership structure proxied by institutional ownership and foreign ownership has significant influence on firms' financial performance measured by return on assets whereas, firms' return on assets are negatively influenced by the other ownership structure variables namely, managerial ownership, inside ownership and ownership concentration. Similar findings derived by the researchers in case of return on equity where the study found that, another financial performance indicator of the firms return on equity is strongly and positively influenced by institutional ownership and foreign ownership, whereas, negatively influenced by the other three variables namely, managerial ownership, inside ownership and ownership concentration. The correlation matrix also shows that, the financial performance of the studied organizations is positively influenced by firm-level characteristics namely, firm size and liquidity whereas negatively affected by another two variables namely, leverage and inflation rate as country-level characteristics. Furthermore, the study didn't find any noteworthy influence of market capitalization and ROA and ROE as an indicator of firms' financial performance.

Table 4. Correlation matrix

		1	2	3	4	5	6	7	8	9	10	11	12
1	MNO	1.0											
2	IO	0.13	1.0										
3	InO	0.43**	-0.17*	1.0									
4	OC	0.16**	0.16**	-0.08	1.0								
5	FO	0.21**	-0.07	-0.20**	-0.18*	1.0							
6	FS	0.34**	-0.08	0.23*	-0.09	0.12**	1.0						
7	LIQ	0.13*	0.25**	0.34**	0.28**	0.19*	0.04	1.0					
8	LEV	0.06	0.59*	0.35**	0.18**	0.25**	-0.03**	0.02	1.0				
9	MC	0.23**	0.25**	0.19**	-0.12*	0.02	0.21**	0.06	0.19**	1.0			
10	IFR	0.03	0.17**	0.31**	0.25**	0.09	-0.62*	-0.31**	0.11*	0.21**	1.0		
11	ROA	-0.23**	0.86*	-0.26**	-0.15*	0.61**	0.51*	0.32**	-0.23**	0.06	-0.23**	1.0	
12	ROE	-0.12**	0.74**	-0.26*	-0.17**	0.72**	0.24**	0.28*	-0.26**	0.07	-0.15**	0.59**	1.0

Note: **Correlation is significant at the 0.01 (2 tailed).
* Correlation is significant at the 0.05 (2 tailed).

Regression Analysis

Table 5. Model Summary-1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.815[a]	.752	.772	0.35

Predictors: (Constant), MNO, IO, InO, OC, FO, FS, LIQ, LEV, MC, IFR

Table 6. ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	471.25	4	103.45	19.865	.000[b]
	Residual	21917.23	45	425.16		
	Total		49			

Note: a. Dependent Variable: ROA

a. Predictors: (Constant), MNO, IO, InO, OC, FO, FS, LIQ, LEV, MC, IFR

Table 7. Coefficients Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	35.235	4.317		7.825	.000		
	MNO	-1.952	.925	1.245	-1.625	.005	2.735	4.836
	IO	1.526	.632	.971	1.256	.000	2.856	3.455
	InO	-1.862	0.52	.526	-1.435	.001	2.746	6.362
	OC	.567	.058	.512	4.552	.001	2.621	5.872
	FO	1.274	.612	1.523	3.725	.000	1.569	3.775
	FS	1.563	.438	1.625	2.596	.001	2.641	4.562
	LIQ	1.542	.726	1.432	2.432	.000	2.623	3.752
	LEV	-1.725	.712	.726	-1.621	.001	2.635	4.526
	MC	.512	.532	.126	1.254	.002	2.136	3.256
	IFR	-1.715	.253	.124	-1.163	.001	2.369	2.156

Note: a. Dependent Variable: ROA

Table 5 developed on the basis of Model 1 which demonstrated that there is an adjusted R2=0.752 in multi-regression model with a standard error of 0.35 which indicates that the mean Return on Assets deviation predicts that the resulting regression model will be at 95% confidence level of corporate governance, which is responsible for 81.5% of Return on Assets (ROA) as a proxy of firm performance. The variable had meaningful goodness of fit between variables as F value computed as 19.865, as shown in Table 6.

Table-7 of the coefficient model revealed that the ROA of the sampled companies are significantly and positively predicted by the institutional ownership, ownership concentration, and foreign ownership supported by earlier researchers (Hossain et al., 2018; Ahmed and Hadi, 2017; Kapopoulos and Lazaretou, 2007) whereas, significantly and negatively predicted by managerial ownership and insider ownership. These findings are supported by other studies conducted earlier (Fattoum-Guedri et al., 2017; Haron et al. (2017); and Shen et al., 2018). They claimed that managerial ownership and insider ownership are negatively correlated with firms' financial performance. The study also found that there are a significant positive impact of firm-level characteristics- firm size and liquidity on return on assets

as an indicator of financial performance of the studied companies whereas there exists an inverse impact of leverage and the inflation rate of firms' financial performance proxied by ROA.

Table 8. Model Summary-2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.824[a]	.736	.781	0.52

Predictors: (Constant), MNO, IO, InO, OC, FO, FS, LIQ, LEV, MC, IFR

Table 9. ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.	
2	Regression	466.85	4	187.52	19.625	.000[b]
	Residual	22869.32	45	466.15		
	Total		49			

Note: a. Dependent Variable: ROE

a. Predictors: (Constant), MNO, IO, InO, OC, FO, FS, LIQ, LEV, MC, IFR

Table 10. Coefficients Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
2	(Constant)	36.521	3.528		6.812	.000		
	MNO	-1.625	.934	1.124	-1.315	.000	2.265	3.825
	IO	1.236	.532	.852	1.246	.001	2.726	4.215
	InO	-1.152	.521	.476	-1.628	.000	2.589	3.656
	OC	.521	.065	.728	4.256	.000	2.633	5.226
	FO	1.289	.721	1.526	3.821	.001	1.526	3.689
	FS	1.524	.216	1.782	2.156	.001	2.169	3.625
	LIQ	1.256	.852	1.429	2.569	.000	2.146	3.589
	LEV	-1.251	.236	1.253	-1.621	.001	2.535	4.521
	MC	1.241	1.512	.256	1.598	.002	2.169	3.521
	IFR	-1.215	.258	.169	-1.598	.001	3.698	4.258

Note: a. Dependent Variable: ROE

Table-8 based on Model-2, which demonstrated that there is an adjusted R^2=0736 in multiple regression model with a standard error of 0.52, which shows that mean return on equity (ROE), with 95% confidence, predicted that corporate governance is responsible for 82.4% variance in equity returns (ROE) as pro-equity (ROE) model, would have the resulting regression model. The variable had meaningful goodness of fit between variables as F calculated as 19.625, as shown in Table 9.

Table-10 of the coefficient model revealed that the ROE of the sampled companies are significantly and positively predicted by the institutional ownership, ownership concentration, and foreign ownership whereas, significantly and negatively predicted by managerial ownership and insider ownership. The study also found that there is a significant positive impact of firm-level characteristics- firm size and liquidity on return on equity as an indicator of financial performance of the studied companies whereas there exists an inverse impact of leverage and the inflation rate of firms financial performance peroxide by ROE.

5. Concluding remarks and policy implications

The study uses managerial ownership, institutional ownership, insider ownership, ownership concentration and foreign ownership, and other control variables to explore the effects of ownership structures on company performance. The study proposes that different levels of ownership structures have different effects on the financial performance of pharmaceutical and chemical companies in Bangladesh. The findings implied that institutional ownership and foreign ownership have significant influence in improving the financial performance of studied companies thereby providing evidence supporting Sanda *et al*., (2005); Lazaretou (2007); Aljifri and Moustafa (2007); Chari *et al*. (2012); Al-Manaseer *et al*. (2012); Uwuigbe and Olusanmi (2012). The inverse effect of managerial ownership, insider ownership, and ownership concentration on financial performance was also explored by the researchers which supports the findings of earlier researchers Siala (2009); Nuryanah and Islam (2011); Mohd (2011); Nazli Anum (2010); La Porta *et al*. (2000); Gomez-Mejia *et al*. (2001). Findings of the study also reveal that firms' specific variables namely size and liquidity are significantly correlated with financial performance whereas, leverage and country-level specific variable inflation rate have a negative effect on firms' performance. The contributions of the study have very significant implications for several stakeholders like policy makers, shareholders, regulators, researchers, financial analysts, etc. The insights can be useful in guiding corporate finance and investment decisions, as well as theoretically useful in providing new evidence on how to apply existing capital structure and investment theories.

Limitations and study forward

The study's results were restricted to 15 Bangladeshi pharmaceutical and chemical companies enlisted in DSE and could not be applied to other companies doing business in Bangladesh. Another downside of the analysis was that it only used data from the previous ten years (2011-2020) to perform the research, which is a limited period to detect changes in the targeted variables over time. To address the limitations of the current study, future researchers may perform research using a sample of both financial and non-financial organizations over a long period, such as 15-20 years. The study considered the basic ownership characteristics to reflect the ownership structure of the sampled firms for performing the research. More ownership characteristics variables like block holder's ownership, associated companies' ownership, etc. may be considered by future researchers and scholars to unearth more realistic effect of ownership structure on firms' financial performance.

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