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The Role of Ownership Structure and Board Characteristics in Stock Market Liquidity

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Abstract: Corporate governance plays a significant role in the value of shareholders and share prices, hence stock market liquidity is affected. Previous research has mainly focused on the issue in developed markets, whereas in developing countries there is a need to analyze the influence of corporate governance on stock market liquidity. Therefore, the present study aims to examine the impact of ownership structure and board characteristics on stock market liquidity of non-financial firms of South Asian countries such as Pakistan, Sri Lanka, Bangladesh, and India. The data in the study is collected from the DataStream for the 2011–2020 period. The study uses a fixed effect model for the analysis of the data and hypotheses testing and generalized method of moments (GMM) is used to check the robustness of the results. The findings of the study indicate that institutional ownership, board size, board independence, and CEO duality have a significant and positive impact on stock market liquidity, whereas managerial ownership has a significant and negative effect on stock market liquidity.

Keywords: institutional ownership; managerial ownership; board of directors; stock market liquidity

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1. Introduction

Corporate governance issues are not new; rather they emerge with the introduction of a corporation. The need for recognition, introduction, and implementation of corporate governance mechanisms gathers the attention and interest of the whole corporate world, due to these cases. Due to the Asian financial crises in the twenty-first century, this issue gathers attention and interest in Asian countries. Corporate governance is a system which assures the fund providers that they will gain reasonable return on their investments (Shleifer and Vishny 1997). Brennan and Solomon (2008) describe corporate governance as a strategy that confirms that management is handling the firm's operations in a way that helps to protect stakeholders' interest. More precisely, Huu Nguyen et al. (2020) explain corporate governance as a system which controls and directs the matters of a firm. Corporate governance helps to align the incentives of the management of the firm with those of the shareholders (Boubaker et al. 2012).

Effective corporate governance helps to reduce information asymmetry that leads to increased liquidity (Berglund 2020). To a firm, corporate governance provides a framework that not only helps to direct it, but it helps to control in a better way. Claessens and Yurtoglu (2013) argue that a better governance system is fruitful for firms to have access to finance and the desired output for their stakeholders. Firms adopt corporate governance mechanisms and frameworks with the purpose of assigning responsibilities to managers.

These practices help to monitor the activities of directors and to contemplate the rights of shareholders in order to increase firm performance and enhance stock market liquidity. In a competitive world, businesses take growth opportunities around the world for favorable results (Mehmood et al. 2019).

Corporate governance practices play an important role in the functioning of stock markets (Boubaker et al. 2019). Stock market liquidity grabs the attention of researchers mainly in emerging markets because market liquidity helps to allocate financial resources efficiently (Hunjra et al. 2020c). An increase in the liquidity of stock markets improves the efficiency of stock valuation, and therefore may help to improve the value of a firm. Therefore, to achieve this objective, firms need to implement a better corporate governance system. Chung et al. (2012) conclude that shares of the firms with effective corporate governance are more liquid than shares of the firms with bad corporate governance, irrespective of the legal origins in which the firms work. Given the importance of stock liquidity for both firms and investors, it is important to evaluate the stock liquidity. Coffee (1991) argues that firms with large investors have more focus on internal governance mechanisms as these mechanisms increase stock market liquidity.

Asymmetric information is a main cause of market imperfection while taking financing decisions by firms (Ahmad et al. 2021a). Better corporate governance practices are helpful for mitigating information asymmetry between managers and investors (Ali et al. 2017). A decrease in information asymmetry risks ultimately increases stock liquidity (Berglund 2020). Furthermore, less information asymmetry reduces expected costs relating to trading with an adverse selection that makes trading in these shares more attractive; therefore, stock liquidity increases. Corporate governance increases financial transparency by mitigating the ability and incentive of management to misrepresent information disclosures (Leuz et al. 2003). This study analyses South Asian countries such as Pakistan, Sri Lanka, India, and Bangladesh. The economies of these countries are at growing stages. The corporate governance system is also progressing in these countries (Hunjra et al. 2020b). Emerging countries and firms operating in these countries face the problem of an effective governance system and they try to resolve this issue in order to attract investors and compete in the market (Boubaker and Nguyen 2014). In addition, capital market growth is very low in developing countries as compared to developed countries (Hunjra et al. 2020a). Further, corporate governance policies are not effectively implemented in emerging countries which results in decreasing stock market liquidity (Hunjra et al. 2020c). Moreover, emerging markets face stock market liquidity problems due to high information asymmetry in comparison to developed markets (Hunjra et al. 2020c). In emerging countries, there exists information asymmetry that decreases the liquidity of the stock market (Rubin 2007).

Keeping in view the importance of corporate governance and its influence in shaping the value of shareholders and share prices mainly in South Asian countries, our study aims to investigate the relationship between ownership structure, board characteristics, and stock market liquidity in South Asia. By using data from 511 non-financial firms in Pakistan, Sri Lanka, India, and Bangladesh, the current study applies panel regression analysis. Fixed effect and random effect are the main models of panel data regression. Based on significant *p*-values from the Redundant test and the Hausman test, a fixed effect model is applied for data analysis. This study finds that institutional ownership, board size, and board independence have significant and positive effects on stock market liquidity, whereas managerial ownership significantly and negatively affects stock market liquidity.

The remainder of the paper is structured in the following manner. In Section 2, the study presents a brief review of the literature as a basis for the hypothesis of the study. In Section 3, the study discusses the sample and method of analysis. Section 4 explains the empirical findings and Section 5 concludes the paper.

2. Literature Review

The roots of the agency problem were first highlighted by Adam Smith in the 18th century, Smith explained this problem in his famous book *Wealth of Nations*. The emergence

of agency theory was noticed in the seminal papers of Alchian and Demsetz (1972) and Jensen and Meckling (1976) who discussed conflicts of interest between managers and owners. They suggested that managers have more focus on their self-interest rather than the interest of the firm and owners which results in inefficiencies and adverse selection problems and leads to agency cost. They considered the contractual relationship under which the principal wants the agent to provide services and make decisions in the best interest of principal. When managers hold more shares, they have more power, which may cause them to prefer their private benefits as compared to the firms' benefits. On the other hand, Donaldson and Davis (1991) present stewardship theory and argue that by supposing the managers to be the caretakers of the firm, they are considered to perform in the best interest of the owners of the firm. Hence, stewardship theory argues that there is no conflict of interest between managers and owners and suggests that the optimal governance structure helps managers to be more collaborative and efficient in achieving the firm's goals in the best interest of owners. Donaldson and Davis (1994) focus on the stewardship theory and demonstrate that there is superior corporate performance if the directors on the board are insiders and they work to maximize the profits of shareholders.

Fama and Jensen (1983) argue that subordinate managers, due to their specific expertise and position in the firm, possess firm-specific information and are a great source of information. Subordinate managers are directly held responsible for the compiling of value-relevant information for the firm. They can foster the use of objective information for the firm and may be involved in the improvement of the information production process inside the firm which may help to improve information disclosure. Because of information asymmetry between investors and inside traders, the issue of adverse selection arisis (Ahmad et al. 2021b). Diamond and Verrecchia (1991) and Kim and Verrecchia (1994) explain that improved disclosure may help to overcome information asymmetry among investors. For overcoming information asymmetry, efficient corporate governance is needed. Moreover, corporate governance influences stock market liquidity because good governance reduces information asymmetry between investors by enhancing the quality of disclosure in a timely manner (Biswas 2020). Chung et al. (2010) state that the adoption of corporate governance standards that mitigate the informational asymmetry between the firm's insiders and external shareholder can improve stock market liquidity.

Relevant literature on the effects of corporate governance on stock market liquidity presents diverse results across countries. The reason for this lies in the corporate governance practices and provisions that express openness to the market for corporate control which is more common in firms that openly share information with their investors. This would also reduce the investors' activism and reduce the expropriation of the outside investors. In addition, Al-Faryan and Dockery (2021) argue that corporate governance helps to improve the release of information in a timely manner, while inefficient corporate governance slows down the process of incorporating new information into stock prices. Efficient corporate governance assures more transparency which helps investors to accurately forecast (Huu Nguyen et al. 2020). Asymmetry of information has a direct impact on the liquidity of stocks in the market, but by enhancing the information environment, corporate governance also affects the liquidity of stocks in the market (Chen et al. 2007; Chung et al. 2010; Attig et al. 2006). Chen et al. (2007) conclude that S&P 500 firms with effective corporate governance practices enjoy improved stock market liquidity. Therefore, they find a positive relationship between corporate governance and stock market liquidity. In addition, Chung et al. (2010) and Jain et al. (2011) find that good corporate governance of firms in the US helps to increase stock market liquidity. However, studies conducted in other developed countries such as those by Bar-Yosef and Prencipe (2013) in Italy, Karmani et al. (2015) in France, and Ali et al. (2016) in Australia find that corporate governance has a positive influence on stock market liquidity.

Empirical support of the significance of the function of corporate governance in improving stock market liquidity justifies the advantages of implementing certain regulations on firms with regards to ownership composition, board size, and CEO role (Sidhu and

Kaur 2019). Economists in the past have invested in studies relating to the issues of separation and the controlling of ownership (Kong et al. 2020). Institutions and managers are considered informed investors as they have more inside information (Ajina and Lakhal 2010). Institutional investors represent the number of shares held by institutions (Biswas 2020). Institutional investors are motivated to monitor the acts of management to avoid agency issues. In addition, institutional investors are recognized as important market players for the liquidity of stock markets. The number of institutional investors is growing in developing countries (Hunjra et al. 2020c). Ajina et al. (2015) find that institutional investors improve the liquidity of stock markets. According to Dang et al. (2018), institutional investors positively affect stock market liquidity. Ali and Hashmi (2018) explain that due to having more inside information and more trading volume, institutional investors drive stock market liquidity. Moreover, Hunjra et al. (2020c) conclude that institutional investors have a positive influence on stock market liquidity. The above literature suggests that when more shares are held by institutions, stock market liquidity improves. Therefore, this study develops the following hypothesis based on the above studies.

Hypothesis 1 (H1). *Institutional investors positively affect stock market liquidity.*

Managerial ownership is an important element of corporate governance because, following agency theory, managers of firms work for their interest which ultimately affects financial decisions and the stock market. Managerial ownership represents part of the total shares held by managers of the firm (Muslim and Setiawan 2021). As the corporate governance system is imperfect by default, managers make such decisions that are in favor of their interests and ignore the interests of shareholders (Saona et al. 2020). Jensen and Meckling (1976) explain that managers tend to work to maximize their benefits and exploit the benefits of shareholders and firms. Managers also have more private information given the operations they perform within a firm (Bettis et al. 2000). Moreover, Leland (1992) finds that managerial ownership negatively affects stock market liquidity. Faccio and Lang (2000) explain that managers retain private information due to their financial participation in the firm and have an inverse effect on the liquidity of the stock market. The above literature suggests that when managers hold more shares, stock market liquidity is decreased. Therefore, this study presents the following hypothesis based on the above studies.

Hypothesis 2 (H2). *Managerial ownership negatively affects stock market liquidity.*

Firms with a large board size may have more stock liquidity. The board size of a firm measures the number of directors working on the board (Boubaker and Nguyen 2012). Board size depends on corporate governance strategies in emerging economies where corporate governance structure has changed substantially (Min 2018). Anderson et al. (2004) argue that a large board size exhibits more control over management and processes of financial accounting with a high level of transparency; therefore, information asymmetry is decreased and stock market liquidity is improved. A large board helps to reduce information asymmetry and improve stock market liquidity (Cai et al. 2006). Tang and Wang (2011) investigate, among others, the impact of the composition and size of the board on stock liquidity and find that the board of directors has a significant effect on stock liquidity. Further, a large and efficient board helps improve the liquidity of stock. Klein (2002) explains that a large board monitors management more effectively because of their expertise to operate more works in comparison to a small board. Moreover, a large board size provides the advantage of better monitoring the management which leads to better stock market performance. Based on the above studies, the following hypothesis is developed.

Hypothesis 3 (H3). *Board size has a positive impact on stock market liquidity.*

The dual role of the CEO is another challenge in corporate governance because of having leadership power with CEO duality. Separation of CEO and chairman of the board is beneficial for a firm to decrease information asymmetry and increase stock liquidity (Levesque et al. 2010). However, Cai et al. (2006) argue that CEO duality may lead to the dissemination of information publicly and may reduce the chances of informed trading. Therefore, this may help to reduce the adverse selection problem and improve stock liquidity. CEOs with a dual role may help a firm to achieve its objectives due to an increased leadership command and a decrease in information cost and less involvement (Hashim and Devi 2008; Ramdani and Witteloostuijn 2010). Furthermore, Donaldson and Davis (1991); Rechner and Dalton (1991); and Dahya et al. (1996) support the dual role of CEOs based on stewardship theory which argues that the managers of firms work for the interest of shareholders and firms. They also argue that CEO duality increases the board's effectiveness. Based on the above literature, the study proposes the following hypothesis.

Hypothesis 4 (H4). *CEO duality has a positive effect on stock market liquidity.*

Independent directors increase the efficiency of the board with monitoring power. From the agency view, independent directors are considered more effective while monitoring, as well as controlling management behavior and minimizing agency issues (Fama 1980; Fama and Jensen 1983). Chen and Jaggi (2000) demonstrate that due to more monitoring power, the percentage of independent directors on a board helps to increase comprehensiveness in the disclosure of financial information. This ultimately helps shareholders and the stock market and has a positive relationship on the comprehensiveness of financial disclosure. Corporate governance with high monitoring costs leads to increased stock liquidity. A large number of outside directors helps firms to lower their information asymmetry levels; therefore, stock liquidity is increased (Levesque et al. 2010). Further studies reveal that a higher proportion of independent directors helps to increase liquidity (Foo and Zain 2010; Levesque et al. 2010). The above studies help us to develop the following hypothesis.

Hypothesis 5 (H5). *Board independence has a positive effect on stock market liquidity.*

3. Methodology

This study investigates the effects of ownership structure and board characteristics on stock market liquidity. Panel data from non-financial firms in South Asia (Pakistan, Sri Lanka, India, and Bangladesh) was collected. The study extracted data from DataStream from 2010 to 2020 by taking a total sample of 511 non-financial firms. Out of the total sample, 260 firms are from Pakistan, 91 firms are from Sri Lanka, 115 firms are from India, and 45 firms are from Bangladesh. The study takes sample firms based on 75% market capitalization.

In conducting the analysis, panel regression analysis is a tool used to prescribe and indicate the link among different variables. In this study, this tool was applied to analyze the relationship between corporate governance and stock market liquidity. The following is the statistical frame of the research:

$$\begin{aligned} SML = \alpha + \beta 1\ (IO)\ i,t + \beta 2\ (MO)\ i,t + \beta 3\ (BS)\ i,t + \beta 4\ (BIND)\ i,t + \beta 5\ (DUAL)\ i,t \\ + \beta 6\ (AGE)\ i,t + \beta 7\ (SZ)\ i,t + \beta 8\ (VOL)\ i,t + \beta 9\ (IND)i + \beta 10\ (YD)t + e\ i,t \end{aligned} \quad (1)$$

where: α = Constant term; SML = Stock market liquidity; IO = Institutional Ownership; MO = Managerial ownership; BS = Board size; BIND = Board independence; DUAL = CEO and chairman duality; SZ = Firm size; VOL = Volatility of returns; IND = Industry dummy; YD = Year dummy; e = Error term; β = Intercept of the models; i = Firms, t = Time period.

For stock market liquidity, the study takes two proxies; first, the study calculates the level of information asymmetry by taking Amihud's (2002) illiquidity ratio which explains price movement connected with trading volume (Chai et al. 2010). The current study also

followed Karolyi et al. (2012) to add a constant and take the log in order to reduce the impact of outliers.

$$ILLIQiy = \frac{1}{Diy}\sum_{t=1}^{Diy}\frac{|Riyd|}{VOLDiyd} \quad (2)$$

where, *ILLIQ* is illiquidity for the stock of firm *i* in year *y*; *D* is the number of the days; Riyd = Stock return for the firm *i* on day d and in year *y*; and *VOLDiyd* is the daily trading volume. A higher value of *ILLIQ* means a lower stock liquidity.

Liquidity ratio (*LR*) is used as another proxy for stock market liquidity, it relates to the level of trading volume that is linked with a change in one unit of stock price (Biswas 2020). As per Amihud et al. (1997) and Boubaker et al. (2019), *LR* is measured as follows:

$$LRiy = \frac{\sum_{d=1}^{Diy} VOLidy}{\sum_{d=1}^{Diy}|Ridy|} \quad (3)$$

where, *VOLidy* is the daily volume of trading of firm *i* on day *d* for year *y*, $|Ridy|$ is an absolute return of stock *i* on day d for year *y*, whereas *Diy* shows the number of days with the trading of shares for firm i on day d.

The study calculates institutional ownership as the number of shares owned by institutions over total outstanding shares. De Cesari et al. (2012) and Biswas (2020) use the same measure of institutional ownership. Following Muslim and Setiawan (2021), the study uses the proxy for managerial ownership as the part of total shares owned by the managers of the firm. As per the study of Uddin et al. (2019), total board members are taken as a proxy for board size and board independence. The study follows Mehmood et al. (2019) to calculate CEO duality as value 1 if the CEO is also chairman of the board, otherwise 0. Our study's main model controls for the firm age, firm size, and return volatility. The size of a firm can be reflected by production capacity when it is a non-financial firm or by variety of services when it is a service firm. Therefore, the current study takes firm size as control variable as a sample of the study consists of non-financial firms and production is the main function of non-financial firms. In this study firm size is measured by taking the natural log of total assets Chan et al. (2013). Firm age helps to evaluate how stock market liquidity varies with the growing age of a firm. Age is calculated as the number of years since the existence of a firm as measured by Khan et al. (2021). Due to uncertainty in South Asian markets, volatility of stock returns is the area of concern for investors and portfolio managers. This study takes standard deviation of stock returns as a measure of the volatility of returns. This measure is also used by Al-Jaifi (2017). The summary of the variables is presented in Table 1.

Table 1. Description and measurement of variables.

Variables	Proxies	Measurement	Reference/s
Stock Liquidity	Illiquidity	$ILLIQiy = \frac{1}{Diy}\sum_{t=1}^{Diy}\frac{\|Riyd\|}{VOLDiyd}$	Amihud (2002); Shin and Kim (2015)
	Liquidity ratio	$LRiy = \frac{\sum_{d=1}^{Diy} VOLidy}{\sum_{d=1}^{Diy}\|Ridy\|}$	Amihud et al. (1997); Boubaker et al. (2019)
Corporate Governance	Institutional ownership	Number of shares owned by institutions/total outstanding shares	De Cesari et al. (2012); Biswas (2020)
	Managerial ownership	The proportion of shares owned by managers of the firm	Muslim and Setiawan (2021)
	Board size	Number of board members	Mehmood et al. (2019); Uddin et al. (2019)
	Board independence	Number of independent directors on board/total directors	Uddin et al. (2019)
	CEO duality	Value 1 if CEO is also chairman of the board, otherwise 0	Mehmood et al. (2019)

Table 1. *Cont.*

Variables	Proxies	Measurement	Reference/s
Control Variables	Firm size	Natural log of total assets	Chan et al. (2013)
	Age	Number of years of operation of a firm	Khan et al. (2021)
	Return volatility	Standard deviation of stock returns	Al-Jaifi (2017)

4. Empirical Results

Table 2 provides a description of the data with mean, minimum values, maximum values, standard deviation, and observations.

Table 2. Descriptive Statistics.

Variables	Mean	Median	Q1	Q3	Minimum	Maximum	Std. Dev.
ILLIQ	−1.416	−1.195	−1.121	−1.201	−2.953	14.156	4.286
LR	9.106	8.205	7.992	8.512	5.169	16.802	1.466
IO	0.270	0.215	0.162	0.243	0.113	0.493	0.705
MO	0.295	0.291	0.182	0.317	0.104	0.453	1.503
BS	8.149	7.041	6.625	7.675	3	15	0.839
BI	0.214	0.207	0.148	0.293	0.000	0.601	5.095
DUAL	0.418	0.311	0.185	0.387	0	1	0.480
SZ	14.250	12.025	11.925	12.827	17.524	24.927	0.493
AGE	31	26	22	28	7	61	5.223
VOL	0.081	0.056	0.012	0.098	0.019	0.143	0.116

Note: ILLIQ = Illiquidity, LR = Liquidity Ratio, IO = Institutional Ownership, MO = Managerial Ownership, BS = Board Size, BI = Board Independence, DUAL = Duality, SZ = Size, VOL = Volatility of Returns, Q1 = First Quartile, Q3 = Third Quartile, Std. Dev. = Standard Deviation.

The results from the descriptive statistics show that illiquidity has a low average value, meaning that the stock market is more liquid. In addition, the high average value of the liquidity ratio also shows that the stocks of South Asian firms provide more returns with high variations in values of liquidity measures. The average value of institutional ownership suggests that institutions are keen to buy shares of non-financial firms; however, the share of institutions is less than half of the total investment. Managerial ownership is also less than half of the total investment in shares. However, deviation in the values of managerial ownership is high. Board size shows that on average, there are eight members on board of non-financial firms in South Asia. Further, there is a lower proportion of independent directors in total investment. However, a significant difference between maximum and minimum values is the reason for the higher standard deviation. The outcomes suggest that, on average, most CEOs do not act as chairman in non-financial firms in South Asia due to the burden of more responsibilities. The results on firm size show consistency regarding investment of total assets. The age of the firms shows high variation in the values suggesting that some firms are very new and others are very old. Moreover, stock return volatility shows less variation in the values.

The correlation matrix of the study is presented in Table 3 which shows the extent of correlation among the explanatory variables of our study. The results of the correlation matrix show a weak correlation among independent and control variables indicating that there is no problem of multicollinearity. The study also indicates that values of variance inflation factor (VIF) are within the limit of five. Therefore, it is validated that there is no multicollinearity issue in our study.

Table 3. Correlation analysis.

Variables	ILLIQ	LR	IO	MO	BS	BI	DUAL	SZ	AGE	VOL
ILLIQ	1									
LR	0.157	1								
IO	−0.082	0.465 **	1							
MO	0.291 **	−0.279 **	0.417 **	1						
BS	0.439 **	0.083	−0.175 *	0.127	1					
BI	0.183 *	−0.455 **	0.076	−0.091	−0.085	1				
DUAL	−0.097	0.209 *	0.422 **	−0.381 **	0.117	0.109	1			
SZ	0.337 **	0.239 *	0.391 **	0.228 **	0.392 **	−0.118	0.308	1		
AGE	−0.516 ***	0.073	−0.143	0.516 ***	0.273 **	0.254 *	0.107	0.227 *	1	
VOL	0.068	0.138	0.098	0.182	0.198 *	0.116	0.219 *	0.137	0.158	1

Note: ILLIQ = Illiquidity, LR = Liquidity Ratio, IO = Institutional Ownership, MO = Managerial Ownership, BS = Board Size, BI = Board Independence, DUAL = Duality, SZ = Size, VOL = Volatility of Returns, ***, ** and * show significance levels at 1%, 5% and 10%, respectively.

For analyzing the effects of corporate governance on stock market liquidity, the study applied panel regression, as shown in Table 4. Fixed and random effects are the main models of panel regression. The study analyzed regression coefficients by applying common, random, and fixed effects. Based on significant *p*-values of the Redundant test and the Hausman test, the decision was taken to apply a fixed effect model for data analysis.

Table 4. Fixed effect model.

	Model 1		Model 2	
Variables	**Coeff.**	**T-Values**	**Coeff.**	**T-Values**
C	−0.409 ***	(−5.045)	0.371 ***	(4.627)
IO	−0.004 **	(−2.031)	0.003 *	(1.817)
MO	0.004 ***	(5.080)	−0.002 **	(−2.148)
BS	−0.001 ***	(−5.428)	0.004 ***	(4.147)
BI	−0.002 **	(−4.089)	0.002 ***	(4.002)
DUAL	−0.089 *	(−1.782)	0.742 *	(1.842)
SZ	−0.414 *	(−1.743)	0.756 *	(1.745)
AGE	0.008 *	(1.817)	−0.019	(−0.836)
VOL	−0.120 *	(−1.798)	0.007 ***	(3.112)
Industry dummy	Yes		Yes	
Year dummy	Yes		Yes	
R-square	0.426		0.647	
F-statistics	12.463 ***		14.969 ***	
Likelihood test (*p*-values)	0.000		0.000	
Hausman test (*p*-values)	0.000		0.000	

Note: C = Constant, Model 1 represents Amihud's (2002) illiquidity ratio as dependent variable, Model 2 represents Amihud et al. (1997) liquidity ratio as dependent variable, IO = Institutional Ownership, MO = Managerial Ownership, BS = Board Size, BI = Board Independence, DUAL = Duality, SZ = Size, VOL = Volatility of Returns, ***, ** and * show significance level at 1%, 5% and 10% respectively.

The study used two proxies for our dependent variable. Therefore, two models were run for data analysis. Model 1 represents Amihud's (2002) illiquidity as the dependent variable, while Model 2 represents Amihud et al.'s (1997) liquidity ratio as a dependent variable. The study found that institutional ownership has a significant and negative

coefficient, implying that when institutions own more shares, there is low illiquidity and when there is more institutional ownership, there is high liquidity. Findings signify that institutional investors have more inside information than other investors (Ali and Hashmi 2018). Their information reflects stock prices, and as a result, there is an increase in stock market liquidity. Moreover, informed investors aggressively compete, and their private information is exposed in share prices very quickly (Liu 2013). Our findings are similar to the results of Ajina et al. (2015) and Ali and Hashmi (2018). Managerial ownership has a significant and negative effect on stock market liquidity. The negative relationship follows the theoretical background that managers work for their interests (Jensen and Meckling 1976); therefore, an increase in the number of shares owned by the managers significantly decreases stock market liquidity. Managerial ownership leads to a high cost of adverse selection and a decrease in liquidity (Attig et al. 2006). The findings of Leland (1992) also show a negative relationship between managerial ownership and stock market liquidity.

Board size significantly and positively affects stock market liquidity. This positive relation is because large board size helps to decrease information asymmetry and adverse selection issues which ultimately leads to improved stock liquidity (Cai et al. 2006). Furthermore, results show that the more independent directors on board, the more stock liquidity increases because independent board members play an important monitoring role in decreasing asymmetry information and ultimately help to improve stock liquidity (Foo and Zain 2010). CEO duality significantly increases stock market liquidity which means that the dual role of CEOs increases leadership and monitoring power (Ramdani and Witteloostuijn 2010), it also helps to control adverse selection problems and stock market liquidity is positively affected. Findings of this study are similar to the outcomes of Cai et al. (2006). Firm size shows a significant and positive effect on stock liquidity. The positive effect reveals that large firms are more experienced and older than small firms; therefore, they operate well to control asymmetry information as well as to increase stock liquidity (Lundvall and Battese 2000). Our results are similar to those of Al-Jaifi (2017). The age of the firms has a significant and negative effect on stock liquidity in Model 1 only. The finding signifies that stock market liquidity is not affected whether the firm is old or new. Further, the study finds that volatility of stock return is significantly and positively related to stock market liquidity. The findings suggest that stock market liquidity is improved when there is more volatility in returns which ultimately attracts investors to provide funds to earn more returns. Hunjra et al. (2020c) found the same results in their study.

The study provides a fixed effect regression analysis of each country, as shown in Table 5. The analysis shows different results depending on the economic conditions and nature of the business environment in each country. The study found that institutional ownership has a significant and positive impact on stock market liquidity in the case of Pakistan, India, and Bangladesh. However, in the case of Sri Lanka, institutional investors do not play a significant role in influencing stock liquidity, suggesting that institutions do not own large shares in Sri Lanka. Further analysis reveals that managerial ownership has a significant and negative effect on stock market liquidity for Sri Lanka, Pakistan, and India (only for Model 1). However, for Bangladesh, managerial ownership does not have any significant impact on stock liquidity. The results follow agency problems and show that managers in South Asian countries such as Pakistan, India, and Sri Lanka act for their personal interest which results in adverse selection and an increase in asymmetry information.

Table 5. Fixed effect model (country-wise analysis).

Variables	Pakistan		Sri Lanka		India		Bangladesh	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
C	−0.837 *** (−11.758)	0.822 * (1.722)	−0.558 *** (−4.110)	0.557 *** (4.085)	−0.420 *** (−3.168)	0.357 ** (2.257)	0.539 (0.777)	−0.587 (−0.842)
IO	−0.130 * (−1.807)	0.132 * (1.720)	−0.143 * (−1.852)	0.143 ** (2.241)	−0.281 * (−1.718)	0.001 *** (5.419)	−0.021 (−1.015)	0.004 (0.419)
MO	0.016 *** (7.421)	−0.824 * (−1.836)	−0.007 (−0.362)	0.007 (0.341)	0.028 ** (2.217)	−0.019 (−0.774)	0.104 ** (2.364)	−0.099 *** (−6.347)
BS	−0.014 *** (−2.410)	0.014 *** (3.472)	−0.714 * (−1.846)	0.004 *** (0.855)	−0.022 (−1.602)	−0.013 (−0.889)	−0.005 *** (−7.717)	0.004 *** (5.659)
BI	−0.002 ** (−2.145)	0.002 *** (3.968)	−0.001 * (−1.758)	0.701 * (1.764)	−0.421 ** (−2.193)	0.001 *** (4.694)	−0.002 *** (−7.794)	0.002 *** (5.734)
DUAL	−0.262 ** (−2.336)	0.263 (0.537)	−0.156 *** (−3.973)	0.157 *** (3.971)	−0.031 * (−1.760)	0.064 ** (2.123)	−0.129 * (−1.787)	0.125 *** (6.970)
SZ	−0.014 (−0.502)	0.013 * (1.776)	−0.013 *** (−2.119)	0.013 *** (4.121)	−0.681 (−0.279)	0.926 (0.464)	−0.036 * (−1.828)	0.038 ** (2.287)
AGE	−0.602 (−0.790)	0.572 (0.845)	−0.001 (−1.178)	0.001 (1.159)	−0.003 *** (−0.438)	0.013 (0.550)	−0.004 *** (−7.588)	0.684 * (1.735)
VOL	−0.687 * (−1.883)	0.619 (0.843)	−0.872 (−0.267)	0.845 * (1.858)	−0.032 ** (−2.232)	0.054 * (1.889)	−0.155 ** (−2.240)	0.714 * (1.715)
R-square	0.602	0.603	0.516	0.116	0.525	0.046	0.536	0.537
F-statistics	6.937 *** **	6.744 *** ***	7.248 ***	2.892 **	2.233 **	0.897	10.232 ***	6.081 ***
Likelihood test (*p*-values)	0.004	0.001	0.001	0.003	0.000	0.000	0.000	0.000
Hausman test (*p*-values)	0.000	0.000	0.0020000	0.0000000	0.000	0.001	0.000	0.000

Note: C = Constant, Model 1 represents Amihud's (2002) illiquidity ratio as dependent variable, ILLIQ = Illiquidity, LR = Liquidity Ratio, IO = Institutional Ownership, MO = Managerial Ownership, BS = Board Size, BI = Board Independence, DUAL = Duality, SZ = Size, DPO = Dividend Payout Ratio, VOL = Volatility of Returns, ***, ** and * show significance level at 1%, 5% and 10% respectively.

Board size has a significant and positive effect on stock market liquidity for Pakistan, Bangladesh, and Sri Lanka, whereas, in the case of India, it has an insignificant impact on stock market liquidity. Moreover, independent directors play a significant role in improving the liquidity of the stock market suggesting that in South Asia, independent directors have more expertise and monitoring which results in more corporate transparency which ultimately reduces information asymmetry. The results of the study indicate that CEO duality has a significant and positive effect on stock liquidity in India, Sri Lanka, and Bangladesh, whereas, in the case of Pakistan, it has a significant effect on stock liquidity in Model 1 only. Firm size has a significant and positive effect on stock liquidity for Pakistan (in Model 2 only), Bangladesh, and Sri Lanka. The significant positive influence shows that large firms are old firms which have easy access to finance in comparison to small firms (Beck et al. 2005). Therefore, they work more efficiently which ultimately improves firm operating capabilities and increases stock liquidity. Moreover, firm size does not significantly affect stock market liquidity in India. Age has a significant and positive effect on stock market liquidity for India (in Model 1 only) and Bangladesh, whereas it does not have a significant influence on stock liquidity in the case of Pakistan and Sri Lanka. In addition, for India and Bangladesh, there is no significant impact of age on the liquidity of

the stock market. Return volatility has a significant and positive impact on stock market liquidity for Pakistan (in Model 1 only), India, Sri Lanka (in Model 2 only), and Bangladesh.

The current study reports the results of the robustness of our results in Table 6. Generalized method of moments (GMM) was applied to analyze the data. For that purpose, the study used a two-step system dynamic panel regression that is suited for the short time and long cross-sectional data. The GMM technique helps to deal with endogeneity problems. GMM is a common technique applied in statistics to evaluate the parameters of a statistical model. Arellano and Bond (1991) and Arellano and Bover (1995) developed the GMM technique. The findings of the study reveal that institutional ownership, board size, and board independence have a significant and positive effect on stock market liquidity. However, managerial ownership has a significant and positive impact on stock liquidity. CEO duality has a significant and positive effect on stock market liquidity. Among the control variables of our study, firm size and return volatility have significant and positive effects on stock market liquidity, whereas the age of the firm does not significantly affect stock market liquidity. The study further finds that the Sargan value is insignificant which indicates that our GMM results are reliable and accurate. The result of the study reveals that AR1 is significant, whereas AR2 is insignificant which means that there is no problem of autocorrelation in this study. The study finds the same outcomes from the GMM as it finds from the fixed effect model.

Table 6. Dynamic panel estimation.

	Model 1		**Model 2**	
	Coeff.	**t-Values**	**Coeff.**	**t-Values**
L1.	−0.739 **	(−2.213)	0.091 ***	(7.186)
L2.	−0.118 ***	(−8.842)	0.845 ***	(10.513)
IO	−0.051 ***	(−5.815)	0.392 *	(1.861)
MO	0.081 ***	(4.087)	−0.071 **	(−2.185)
BS	−0.782 *	(−1.876)	0.407 **	(2.326)
BI	−0.081 *	(−1.713)	0.002 ***	(4.733)
DUAL	−0.183 *	(−1.841)	0.092 **	(2.270)
SZ	−0.183 *	(−1.807)	0.825 *	(1.703)
AGE	0.081	(0.718)	0.165	(0.725)
VOL	−0.008 ***	(−6.172)	0.091 ***	(7.471)
C	−0.008 ***	(−11.876)	0.003 ***	(9.176)
Industry dummy	Yes		Yes	
Year dummy	Yes		Yes	
Sargan	8.214		9.232	
p-value	0.097		0.086	
AR_1 (*p*-value)	0.059		0.024	
AR_2 (*p*-value)	0.788		0.815	

Note: Model 1 represents Amihud's (2002) illiquidity ratio as dependent variable, Model 2 represents Amihud et al. (1997) liquidity ratio as dependent variable, IO = Institutional Ownership, MO = Managerial Ownership, BS = Board Size, BI = Board Independence, DUAL = Duality, SZ = Size, VOL = Volatility of Returns, Sargan = test for over-identifying restrictions, AR1 = Arellano–Bond first-order autocorrelation, AR2 = Arellano–Bond second-order autocorrelation, C = Constant, ***, ** and * show significance level at 1%, 5% and 10% respectively.

5. Conclusions

The implementation of corporate governance strategies is at a growing stage mainly in South Asian countries. Furthermore, corporate governance ultimately influences information asymmetry and stock market liquidity. Therefore, the purpose of the current study is

to analyze the impact of ownership structure and board characteristics on the stock market liquidity of the non-financial sector operating in South Asian countries, such as Pakistan, Sri Lanka, India, and Bangladesh. The study applies a fixed effect model for the data analysis, while for the robustness of the results the GMM technique is applied. The study investigates the stock market liquidity from the perspective of South Asian economies as the liquidity of stocks is important in these economies and liquid markets allow effective allocation of financial resources. This effective allocation of financial resources reduces the cost of capital and maintains equilibrium in the market.

The findings of the study show that there is a positive impact of institutional ownership on the stock market liquidity in South Asia indicating that when part of the ownership goes in the hands of institutions, it helps to maintain effective liquidity levels in the market because of more transparency and reduced levels of information asymmetry. Institutional investors have more inside information which is reflected in stock prices, therefore, stock market liquidity is improved. Further, the study finds a significant and positive influence of board size on stock market liquidity which means that a large board size helps to efficiently monitor and decrease information asymmetry and adverse selection problems, and as a result, there is an increase in stock market liquidity. Moreover, the results show that managerial ownership has a significant and negative relationship with stock market liquidity which supports the agency issue that managers work for their interests and neglect the interests of shareholders. As a result, stock liquidity is negatively affected. The findings of the study further reveal that independent directors significantly and positively affect stock market liquidity because of their monitoring power on the board.

Based on the results of the study, it is recommended that regulatory bodies introduce effective corporate governance practices to help firms with liquidity issues. Further, they must protect the rights of shareholders by incorporating such policies which favor shareholders instead of managers. Therefore, management should implement such policies which are for the protection of shareholders' rights instead of their own rights. Accountability issues are important relating to the firms, and these should ensure that all decisions are taken in the best interest of the shareholders. The decreased risk and increased investment opportunities are the results of better corporate governance, and it attracts local and foreign investors as well. A better regulated and an overseas environment would increase the stock market liquidity for the firms. Although, this study was conducted after comprehensive efforts to cover most of the aspects and issues of corporate governance and stock market liquidity, this study does have some limitations. Corporate governance index data could be used for a more accurate measure of external governance. The same study could be conducted in the future considering more control variables such as intangible assets, research and development expenditures, stock prices, and market return. This would increase the important insights from the results of the current study. In addition, some possible reverse causalities between corporate governance determinants and stock liquidity remain open for future research.

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