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Corporate Governance, Financial Crisis and Stock Liquidity: The Interplay of Governance Compliance and Operating Liquidity

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Economic crunch, Stock liquidity,Operating liquidity,Governance obedience, Fixed effects model

ABSTRACT

This study investigates how corporate governance obedience and economic crunch affects the liquidity of stocks. By employing fixed effects model on a sample of 170 non-financial listed firms of Pakistan for the period 2007-2016, the study finds that governance obedience affects the stock liquidity positively, while it is negatively affected by the global economic crunch. By dividing the sample based on operating liquidity and governance quality, the study further finds that the economic crisis-stock liquidity relationship is influenced by corporate governance quality and operating liquidity. Predominantly, outcomes of the study highlight the eminence of corporate governance obedience and economic crunch in shaping stock liquidity, and signify the value of governance quality and operating liquidity during an economic crisisfor Pakistani firms. The results have repercussions for strategy buildingandinvestment in Pakistan.

INTRODUCTION

Corporate governance compliance[3] is the level of a firm's administration obedience to the code of the country's corporate regulatory authority (Goncharov et al., 2006). Conformity to the given code ensures accountability of the firm's financial reports (Rizwan et al., 2016), and mitigates the information asymmetry problem. Investors choose firms for their portfolio based on their adaptation to the corporate regulatory body (Glosten & Milgrom, 1985; Gompers et al., 2003), because more complied firms are more transparent and thus reduced information asymmetry

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[3] Compliance and obedience are used interchangeably

(Chung et al., 2010; LaPorta et al., 2000). Thus investors preference for stocks increases their liquidity(Ali et al., 2017). Therefore, we can claim that the stock liquidity of a firm is linked with its compliance with the corporate governance code, which is the motivation of this study.

Stock liquidity[4]refers tothe speedyconversion of stock into cashwith minimal transaction cost(Amihud & Mendelson, 2006). It worth's more to investors and firms (Ali et al., 2016). According toHanda and Schwartz (1996),investors want liquidity, liquidity and just liquidity in security. Investors constitute their portfolio of liquid securities because of their easy and frequentexchangeability (Amihud & Mendelson, 2006). Firms like their securities to be highly liquid because transaction cost is transferred by the investors through demanding higher returns for holding illiquid securities, which increases the capital cost for firms (Butler et al., 2005) and results in decreased firm value(Fang et al., 2009).Besides, firms like their securities to be liquid, for it makes iteasy for them to obtain funds due to increased investors demand(Nassar, 2016).

Stock liquidity is widely examined in relation to governance mechanisms like the size of the board, duality of CEO, board impartiality, ownership structure and gender diversity,(see, for instance, Ahmed & Ali, 2017; Lei et al., 2013). The results of these studies reveal that stock liquidity is positively affected by corporate governance, because of increased intensive care over the management and augmented accountability and transparency in financial reports (Prommin et al., 2014). The above-mentioned studies examine stock liquidity in relation to individual governance mechanisms, and none has evaluated the effect of corporate governance obedience on share liquidity, which is the main focus of this study, and therefore, this is the first study, which explores this relationship.

The impact of corporate governance quality on stock liquidity is examined by a limited number of researchers in developed markets. For example, in the United States, Chung et al. (2010) investigated this relationship. The researchers found that the share liquidity of US firms is affected positively by corporate governance quality. Similarly,Ali et al. (2016), explored this link in Australia and found inline results to that of Chung et al. (2010), stating that corporate governance quality improves stock liquidity.However, the findings of the above-mentioned studies cannot be generalized to Pakistan, because of political, economic and cultural dissimilarities between Pakistan and that of the developed world (Khan, 2016). Further, the corporate governance index of Chung et al. (2010) is composed of 24, while that of Ali et al. (2016) on 17 criteria, whereas, there are 70 provisions in our index, measuring complete obedience to the given governance code, and is, therefore, the first of its kind that examines the impact of corporate governance compliance on stock liquidity.

Stock liquidity in relation to corporate governance is inspected by some studies in developing economies. For instance, Foo and Zain (2010) in Malaysia and Lei et al. (2013) in china explored such relationship between the two variables, but the studies face some serious shortcomings, such as short span of time and small sample size. For example, Lei et al. (2013) is suffered from a limited time period, i.e. 2006-2008, while the study by Foo and Zain (2010) examines the relationship only on cross-sectional data, and thus their results cannot be generalized to the wider economy.In a very recent study, Hussain et al. (2021) investigated the nexus between CG variables and stock liquidity for four emerging countries (Japan, Hong Kong, India, and Pakistan), but failed to find a significant relationship. This study probes the effect of corporate governance obedience on a larger sample of 170 listed firms for a longer period of ten years, i.e. 2007-2016. Furthermore, governance problems are affected by the nature of block

[4] Stock liquidity and share liquidity are used interchangeably

holders(Bebchuk & Weisbach, 2010), therefore, we expect a different governance-stock liquidityrelationship as most firms in Pakistan are owned by families (Bushra & Mirza, 2015).

Another factor affecting stock liquidity is financial crisis[5], which has been the focus of previous studies such as Amihud et al. (1990); Engkuchik and Kaya (2012) andWong and Fung (2001). However, this study intends to examine the relationship for Pakistan due to the following reasons; first, the literature fails to give conclusive evidence, whether stock liquidity is affected positively or negatively during the economic crunch, for instance, Amihud et al. (1990) argue that share liquidity is affected negatively during economic crunch, followed byWong and Fung (2001). While Engkuchik and Kaya (2012) find a positive relationship between stock liquidity and financial crisis.The second motive of the study for examining this relationship is that existing literature(such as Akbar et al., 2017) has documented the global economic crunch as the most severe one, and thus we expect that its impact on share liquidity might be different. Third, unlike the previous studies, this study divides the sample based on CG obedience and operating liquidity, which would add new insight into how the relationship between the financial crisis and stock liquidity is affected by CG obedience and operating liquidity.

The rest of the paper proceeds as follows. Section two reviews the relevant theoretical as well as empirical literature and hypothesizes the stated relationships. Section three plans data collection and methodology. Section four discusses the outcomes of the main and alternative models, while section five concludes the paper

REVIEW OF LITERATURE

Agency theory suggests that the information irregularity problem in modern organizations is due to ownership and control separation, as the shareholders own the firm but do not run it, while the management runs the corporation, but donot own it (Jensen & Meckling, 1976). This gives the entrenched managers, an opportunity to use shareholders wealth for their benefits, in the form of overcompensation, perks and perquisites (Ali et al., 2017) instead of investing it into profitable investment opportunities (Switzer & Wang, 2013). The management then discloses partial information to investors for safeguarding these misappropriations, leading to information asymmetry between the two parties. This opportunistic behavior of ingrained managers creates panic in investors, and they hesitate from investing in the firm, which results in a fall in the share liquidity (Foo & Zain, 2010).

Corporate governance obedienceis a mechanism to safeguard investors' wealth from being expropriated by entrenched managers because it enhances informational transparency. CG codes are intended to encourage firms to disclose internal information with shareholders(Leuz et al., 2003), resultantly investors are secured from adverse selection delinquent(Glosten & Milgrom, 1985). This makes the investors provide more liquidity without any fear and thus liquidity of stocks is improved (Ali et al., 2017). Therefore, we expect that obedience to the governance code increases share liquidity.

Empirically the relationship between CG obedience and stock liquidity has never been examined up to the best of authors' knowledge. However, CG obedience improves the internal governance quality and the empirical literature investigating the nexus between a firm'sinternal governance quality and share liquidity is evident that the relationship is positive. For example, the study by Chung et al. (2010) is the first to examine the impact of corporate governance

[5] economic crunch, economic crisis and financial crisis are used interchangeably

quality on stock liquidity. The study found that the share liquidity of US firms is affected positively by improved governance quality.Ali et al. (2016), followed the study by evaluating this relationship in Australia. The results ofAli et al. (2016)are in line with that of Chung et al. (2010), that corporate governance quality increases the liquidity of Australian stocks.

Researchers in developing economies followed these studies to examine the impact of corporate governance quality on stock liquidity. For example, Foo and Zain (2010) explored the share liquidity of Malaysian firms in connection to firm governance quality and reported positive results. Lei et al. (2013) in China, while Prommin et al. (2014) inspected such relationship in Thailand, and found similar results to those of Chung et al. (2010) and Ali et al. (2016). Conclusively, it is claimed that stock liquidity has a positive relationship with corporate governance quality.

Based on the review of existing literature it is concluded that the nexus between CG obedience and stock liquidity has never been investigated up to the best of the authors' knowledge. However, it is expected that CG obedience may affect the stock liquidity positively by improving governance quality. This relationship is hypothesized below;

H1: governance obedience affects share liquidity positively.

Economic crunch and share liquidity

Economic crunch is the period of high insecurity (Kaya & Engkuchik, 2017), which creates panic among the investors and they withdraw their money from the market. This leaves the market illiquid and due to investors' disappearance, demand for the stocks goes down, resultantly, share liquidity is affected negatively. Empirically, Amihud et al. (1990) were the first to investigate this relationship by examining the liquidity of the US stock market in relation to the financial slack of 1987. The researchers found that the economic crisis negatively affects stock market liquidity. Subsequently, Wong and Fung (2001), explored the impact of the Asian economic crisis 1997 on the stock market of Hong Kong, and found similar results, arguing that the economic crunch negatively affects the stock market liquidity.

Contrary to the above studies, Engkuchik and Kaya (2012), argue that the economic crisis affects stock market liquidity positively, by examining the effect of the Asian economic crisis on Malaysian stock market liquidity. According to them, during an economic crisis, investors leave the market hastily and thus dominate the buyers, which affect the stock market liquidity positively. In another study, Kaya and Engkuchik (2017) reported inconclusive results about the effect of the economic crisis on share liquidity, after examining the liquidity of fifteen stock markets in relation to four economic recessions during 1997-1999. The researchers concluded that the effect of the economic crisis on share liquidity is not uniform for all countries.

The existing literature fails to give conclusive results about the economic crisis-share liquidity relationship. Also, the worldwide economic crisis 2007-2009 is labeled by the literature to be the most severe since the great economicrecession 1930 (Akbar et al., 2017; Akbar et al., 2013). Furthermore, existing studies have examined the impact of economic crises on the liquidity of stock markets, while this study investigates firm-level stock liquidity in relation to economic collapse. It is expected that due to the withdrawal of money by the investors during the economic crunch, the stock liquidity of Pakistani listed firms would be affected negatively. This relationship is hypothesized as below;

H2: Economic crisis affects share liquidity negatively.

The interplay of Governance Quality

Theoretically, the literature is evident that in times of financial crises, the entrenched managers expropriate the wealth of shareholders, because shareholders protection weakens (Tran et al., 2017). The empirical evidence shows that during economic crunchliquidity of the entireequity market is affected negatively(Amihud et al., 1990; Wong & Fung, 2001), because this is the period of high uncertainty (Kaya & Engkuchik, 2017), and no stock remains unaffected. However, we expect that internal governance quality may make a difference, as it ensures transparency and accountability of a firm's financial reports, which will reinstate the investors' trust. Thus we expect that the impact of the economic crisis on share liquidity will not be severe for firms having improved governance. The following hypothesis is developed for examining the impact of governance quality on crisis-stock liquidity relationship;

> H3: Internal corporate governance interferes with economic crisis-stock liquidity relationship.

The interplay of operating liquidity

The effect of an economiccrunch on share liquidity is universal and affects the whole stock market (Amihud et al., 1990; Wong & Fung, 2001) without leaving any stock unaffected. But operating liquidity is important during an economic crisis asaccording toAkbar et al. (2017), the effect of the financial crisis on financial policies is more severe for firms maintaining less operating liquidity due to unavailability of external finance. Financial crisis severely affects short term debt and credit resources, and issuance of equity does not solve the problem (Akbar et al., 2013). The above reasoning is evident in the importance of maintaining a high amount of operating liquidity, which mitigates the risk of bankruptcy during financial shocks.We expect that the negative impact of the economic crisisonshare liquiditymight be less severe for firms maintaining more balance sheet liquidity. This relationship is not examined before,hence the following hypothesis is formulated;

> H4: Operating liquidity affects economic crisis-share liquidity relationship.

DATA AND METHODS

In order to investigate the effect of governance obedience and economic crisis on the share liquidity of Pakistani firms, all non-financial listed corporations from 2007 to 2016 are selected.Financial firms are excluded because of having a different capital structure(Uyar & Kuzey, 2014) and are comparatively more regulated (Khan, 2016). The selection of a firm for inclusion in the sample is subject to the conditions that it needs to remain listed for the whole sample periodand data for the required variables need to be available for the firm. The final sample of the study includes 170 firms.The study period is important for the given motives; first, the global economic crisis period (i.e. 2007-2009) is included.Second, the study includes both the reforms periods (i.e. 2002 and 2012), and third, it comprises an equal number of years (five years from each) from both the reforms periods. The sample is further divided into subsamples based on governance quality and operating liquidity to know the role of both of these variables on the economic crisis-share liquidity relationship.

Following Khan and Rehman (2020) fixed effects regression method is used for investigating the stated relationship between the dependent and independent variables. This model is chosen

because ittackles the problem of undetected heterogeneity (Akbar et al., 2013). Further, the outcomes of the Hausman (1978) test suggests that the FE model is more apposite than the RE model.

Measure of stock liquidity

Stock liquidity is theexplained variable of the study.To measure it, four techniques are utilized, due to data convenience for these four methods.

A. Liquidity Ratio

Liquidity ratio is the most used measure of stock liquidity. Various researchers (such as Amihud et al., 1997; Berkman & Eleswarapu, 1998) have used this measure of stock liquidity. It is calculatedthrough the following formula;

$$\text{Liquidity Ratio} = \frac{\sum_t \text{VOL}_{it}}{\sum_t |R_{it}|}$$

VOL_{it}represents per day trading volume, while $|R_{it}|$ denotes absolute equity returns per day of the companyi in year t. Stock liquidity is directly proportional to the value of Liquidity Ratio.

B. Zero Return Measure

Lesmond et al. (1999) have introduced this measure of stock liquidity, which stated that spread is positively related to the zero return measure of stock liquidity.It is calculated as the ratio ofthe sum of zero return days to total trading days in a business year. The following formula is used;

$$\text{zero}_{it} = \frac{\text{ZR}_{it}}{\text{TD}_{it}}$$

ZR_{it} represents the total number of days having zero return per year, whereas TD_{it} denotes the total number of trading days per year for a company i in year t.Stock liquidity is inversely related to $\text{zero}_{it,}$ as the higher its value, the lower the share liquidity and vice versa.

C. Stock Turn Over

This method of measuring share liquidity is introduced by Datar et al. (1998), which shows how frequently the stock is sold/exchanged. Stock turnover is calculated as the total number of shares traded daily divided by total outstanding shares in a year. The following formula is used for calculating stock turnover;

$$\text{STO}_{it} = \frac{\text{VOL}_{it}}{\text{N}_{it}}$$

The value of STO_{it} is directly proportional to stock liquidity, which means the increasing value of STO_{it} will represent improving stock liquidity and vice versa.

D. Amihud Illiquidity Estimate

This measure is believed as a trustworthy measure of stock liquidity (Amihud, 2002). Amihud illiquidity estimate is measured as the annual average of absolute stock returns per day divided by daily trading volume(Ali et al., 2017). Mathematically it is calculated by the following method;

Notion	Variable Name	Measure

$$ILLIQ_{iy} = \frac{1}{D_{iy}} \sum_{d=1}^{D_{iy}} \frac{|R_{idy}|}{VOLD_{idy}}$$

Stock liquidity has an inverse relationship with $ILLIQ_{iy}$, which means the increased value of $ILLIQ_{iy,}$ represents a decreased value of stock liquidity and vice versa.

Measure of Corporate Governance Obedience

Obedienceof a firm to the code of CG is measured through an index. Literature is evident that CG indices are used by existing studies, (see, for example, Elghuweel et al., 2016; Ntim et al., 2012). Extant literature recommends the use of index instead of individual mechanisms because the index of corporate governance obedience combines all the individual governance mechanisms (Ntim et al., 2012).

For measuring obedience with the CG codes of 2002 and 2012, this study uses a self-made index. Following Khan (2016), 70 governance criteria are combined to formulate the index, divided into five sub-indices. A criterion is “1”, if the firm adapts to it, otherwise “0”. Thus the index ranges from “0”(no compliance) to "70" (full compliance). As soon as the value of the index goes up, the governanceobedience level increases and vice versa.

Control Variables

Four firm-level variables are included for separating the effect of governanceobedienceand economiccrisison share liquidity. Existing literature has found these variables inducing variations in the stock liquidity. For example, Diamond and Verrecchia (1991) argue that the problem of information asymmetry is lower in large-size firms, as they share more information through their financial statements. Hence lesser adverse selection issue leads to higher stock liquidity. Return volatility is also controlled because Ho and Stoll (1981) state that investors demand more returns for holding stocks having volatile returns. This increases the cost for the firms, and thus stock liquidity is affected. Assets tangibility is controlled because their return can be measured easily, which results in improved information transparency, henceforth affects stock liquidity positively (Ali et al., 2017). Leverage increases the firm's financial risk which slowdowns demand for its stock, resultantly, stock liquidity gets affected.

Table 1: Measurement of Variables

ZERO	**Zero return measure**	*Zero return days divided by sum of total trading days per year*
LR	**Liquidity ratio**	*Ratio of trading volume per day to total absolute stock returns per year*
STO	**Stock turnover**	*Total shares traded per day divide by annual outstanding shares*
ILLIQ	**Amihud illiquidity estimate**	*Absolute stock returns divide by daily trading volume averaged over annual trading days*
GI	**Governance index**	*An index which ranges from "0" (no compliance) to "70" (full compliance).*
CR	**Global financial crisis**	*A dummy variable which takes the value of 1 for the crisis period and 0 otherwise.*
SIZE	**Size of firm**	*Log of total firm assets.*
TANG	**Tangibility**	*The ratio of tangible assets to total assets*
RVOL	**Return volatility**	*Standard deviation of share returns per day*
LEVG	**Leverage**	*The ratio of entire firm debt to overall equity*

Statistical Model

The study uses the following regression model for exploring the effect of CG obedience and economic crunch on the stock liquidity of listed Pakistani firms;

$$\text{Stock Liquidity} = \alpha + \beta_1 TANG + \beta_2 SIZE + \beta_3 LEVG + \beta_4 RVOL + \beta_5 GI + \beta_6 CR + \varepsilon_{it} \ldots\ldots\ldots\ldots (1)$$

CR and GI being the two main explanatory variables, whereas RVOL,LEVG,TANG, and SIZE are control variables of the study.

Stock liquidity, being the dependent variable of the study is measured through zero return, amihud illiquidity estimate, liquidity ratio and stock turnover.

RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive statistics are reported in table 2. Mean values of ILLIQ, ZERO, LR and STO are 0.002, 0.209, 4.01 and 0.78, with a standard deviation of 0.002, 0.248. 1.19 and 1.13 respectively. GI has a mean value of 70.78, with 11.70 as the standard deviation. It means that on average compliance with the code of corporate governance is 70.78% throughout the sample period of the study. Among the control variables, leverage has a mean value of 2.04, which means that sampled firms debt is 2.04 times to equity. Assets tangibility has a mean value of 0.46, meaning that on average the sampled firms hold 46% of their assets in tangible form.

Table 2 Descriptive Statistics

Variables	Mean	Median	Max.	Min.	Std. Dev.	N
LR	4.01	3.81	7.20	0.11	1.19	1700
STO	0.78	0.71	7.21	0.00	1.13	1700
ZERO	0.209	0.19	0.99	0.00	0.248	1700
ILLIQ	0.002	0.003	0.009	0.00	0.002	1700
SIZE	9.73	9.67	11.77	7.68	0.73	1700
TANG	0.46	0.46	0.99	0.004	0.224	1700
RVOL	4.60	3.07	213.11	0.00	8.32	1700
LEVG	2.04	1.39	21.57	0.02	2.28	1700
CR	0.30	0.00	1.00	0.00	0.45	1700
GI	70.78	71.00	98.57	11.42	11.70	1700

Correlation Analysis

Table 3 reports Pearson correlation results among variables of the study. GI is positively correlated with LR and STO, which means that corporate governance obedience has a positive correlation with stock turnover and liquidity ratio, whereas it is negatively correlated with ILLIQ and ZERO. Conclusively, the share liquidity of more conformedcompanies is improved. Amongst the control variables, SIZE is positively correlated with different measures of stock liquidity, which shows that stocks of large firms exhibit more liquidity. The correlation between measures of stock liquidity and return volatility is negative, showing that stocks having volatile returns are less liquid.Further, the correlation among independent variables is less than 0.8, showing that there is no multicollinearity problem (Gujarati, 2009).

Table 3 Pearson's Correlation Matrix

	1	2	3	4	5	6	7	8	9	10
LR	1									
STO	0.735*	1								
ZERO	-0.502*	-0.485*	1							
ILLIQ	-0.854*	-0.674*	0.481*	1						
SIZE	0.602*	0.222*	-0.296*	-0.566*	1					
TANG	-0.043	-0.057	0.061	0.077	-0.101	1				
RVOL	-0.258*	-0.183	0.181*	0.293*	-0.255*	0.196*	1			
LEVG	-0.014	-0.031	0.035	0.062	-0.021	0.143*	0.271*	1		
CR	-0.106	-0.279*	0.189*	0.246*	-0.077	0.039	0.139*	0.082	1	
GI	0.277*	0.316*	-0.308*	-0.384*	0.327*	-0.074	-0.148*	-0.089	-0.327*	1

Note: * shows significance at the level of 5%

To select between fixed effects and random effects model, Hausman (1978)test is carried out, the results of which are reported in table 4. This test compares the outcomes of both models. The probability is highly significant showing that outcomes of the fixed effects model are significantly different from outcomes of the random-effects model. In this case, the fixed effects model is favorable, which is therefore used for examining the effect of governance obedience and economic crunch on share liquidity.

Table 4 Hausman Test

Test Summary	**Chi-Sq. Statistic**	**Prob.**
Cross-section random	31.715099	0.0000

Regression Results

This study utilized fixed effects model for investigating the effect of corporate governance obedience and economiccrunch on the share liquidity of Pakistani firms. Regression results for all four models are reported in table 5. R^2 values for LR, STO, ZERO and ILLIQ are 0.88, 0.72, 0.55 and 0.74 respectively, which shows model fitness for all four models.

The results reported reveal that the coefficient of GIfor Liquidity Ratio and Stock Turnover is positive and statistically significant,while its coefficient for the other two models (i.e. Zero Return Measure and Amihud Illiquidity Estimate) is negative and statistically significant. This means that governance obedience positively influencesthe share liquidity of firms listed on thePakistan stock exchange.

Table 5 Main Regression Results

Variables	Model 1 Liquidity Ratio	Model 2 Zero Return Measure	Model 3 Stock Turn over	Model 4 Amihud Illiquidity Estimate
C	2.62*** (3.30)	1.65* (1.93)	-4.52*** (5.73)	7.49*** (5.04)
GI	0.01*** (5.17)	-0.01*** (6.82)	0.024*** (9.68)	- 0.03*** (7.59)
CR	-0.17*** (5.37)	0.15*** (4.49)	-0.36*** (-11.48)	0.54*** (9.23)
LEVG	- 0.73*** (4.72)	0.03*** (7.87)	-0.03*** (4.28)	0.08*** (5.27)
TANG	0.12 (1.74)	-0.19** (2.13)	0.05 (0.70)	-0.04 (0.29)
SIZE	0.09 (1.16)	- 0.21** (2.36)	0.29*** (3.47)	-0.95*** (6.00)

RVOL	-0.01*** (8.79)	0.01*** (6.50)	-0.00*** (4.01)	0.03*** 9.68
R Squared	0.88	0.55	0.72	0.74
F Statistics	52.986 0.000	10.76 0.000	22.47 0.000	26.11 0.000
No. of Observations	1700	1700	1700	1700

*** shows 1%, ** 5%, while * shows 10% significance level

The outcomes of our research study are in line with the notion based on theoretical literature that CG obedience positively affects the stock liquidity through the channel of improved level of governance quality(see, for instance, Ali et al., 2016, 2017; Chung et al., 2010; Lei et al., 2013).

Financial crisis is the second independent variable of our study. The coefficient of CR for liquidity ratio and stock turnover is negative and statistically significant, while it is positive and statistically significant for zero returns and amihud illiquidity estimate. This means that the worldwideeconomiccrunch has negatively affected the share liquidity of companies listed on the Pakistan stock exchange. The findings of this study are in line with those of Amihud et al. (1990) andWong and Fung (2001), which state that economic crunchaffects the share liquidity negatively.However, the results reported by Engkuchik and Kaya (2012) are not supported by our study, which states that economic crunch positively affectsshare liquidity. This might be due to the severe nature of the global economic crisis, as this study examined the global financial crisis, while the study by Engkuchik and Kaya (2012), have examined the impact of the Asian economiccrunch on stock liquidity.

Endogeneity

In order to tackle the issue of endogeneity, the 2SLS model is used. An instrumental approach is adopted and the lag value of GI is used as the instrument variable. Table 6 presents the outcomes of 2SLS and the main model. The results of both the models are presented in a single table to make their comparison easy. Besides some minor alterations in the quality of results for control variables, results of the main independent variable are the same in quality for both the models and therefore, it is concluded that endogeneity has not affected our results greatly.

Table 6 Results based on 2SLS

Dependent Variable:Liquidity Ratio				
Estimation Model	Fixed Effect		Two Stages Least Square	
Variable	Coefficient	t statistics	Coefficient	t statistics
C	2.62***	3.30	2.38***	5.27

GI	0.01***	5.17	0.04***	12.77
CR	-0.17***	5.37	-0.34***	7.78
LEVG	-0.73***	4.72	-0.31***	4.01
TANG	0.12	1.74	0.43***	2.76
SIZE	0.09	1.16	0.69***	6.34
RVOL	-0.01***	8.79	-0.01***	6.84
R Squared	0.88		0.55	
F Statistics	52.986 0.000		25.45 0.000	
No. of Observations	1700		1700	

*** shows 1%, ** 5%, while * shows 10% significance level

For investigating the impact of governance obedience and operating liquidity on the financial crisis-stock liquidity relationship, the sample is divided into subsamples based on governance quality and operating liquidity. Due to the time factor, only one proxy of share liquidity (i.e. liquidity ratio) is used. The results are reported in table 7.

Table 7 Operating Liquidity and Governance compliance Results

	Operating Liquidity Effect		**Governance Obedience Effect**	
Variables	**More Liquid**	**Less Liquid**	**More Governed**	**Less Governed**
C	8.817*** (3.55)	2.849*** (3.28)	3.363** (1.95)	2.185 (1.12)
GI	0.003 (0.73)	0.013*** (5.87)	0.037*** (2.89)	-0.013*** (3.09)
CR	-0.113 (1.35)	-0.160*** (4.65)	-0.063 (0.51)	-0.168*** (3.71)
LEVG	-0.088** (2.41)	-0.033*** (4.00)	-0.024*** (3.12)	-0.034* (1.94)
TANG	-0.755* (1.75)	0.145 (1.68)	0.151 (1.04)	0.098 (0.94)
SIZE	-0.442*	0.057	-0.106	0.214

	(1.70)	(0.62)	(0.72)	(1.01)
RVOL	-0.088**	-0.014***	-0.037***	-0.009***
	(2.07)	(8.69)	(6.90)	(5.39)
No. of Observation	142	1558	1274	426
F. stat	56.13	50.80	48.15	17.48
Prob(F stat:)	0.00	0.00	0.00	0.00

*** shows 1%, ** 5%, while * shows 10% significance level

The results reported reveal that governance obedience and operating liquidity interfere with the economic crisis-share liquidity relationship.Specifically, the results suggest thateconomic crunchnegatively affectsthe share liquidity of thosefirms which maintain low operating liquidity, while its impact on the stock liquidity of firms maintainingmore balance sheet liquidity is statistically insignificant. This supports the notion that the impact of a financial crisis is more severe on firms maintaining less liquidity on their balance sheets(Akbar et al., 2017). Conclusively, operating liquidity shields firms from bankruptcy during the economic crunch.

The results of the subsamples based on governance obedience show that the coefficient of CR for more governed firms is statistically insignificant, while it is significant and negative for less governed firms. It means thateconomiccrunch affects the share liquidity of those firms which are weakly governed, while stock liquidity of well-governed firms shows resilience to financial shocks. The findings of our study oppose the known developed notion, that in times of financial difficulties, shareholders protection becomes weak (Tran et al., 2017) or corporate governance does not work in times of financial crises(Tran, 2020). Thus it is concluded that governance succeeds in reinstating investors trust in times of financial shocks.

CONCLUSION

The findings disclose that obedienceto governance code positively affects the share liquidity. Outcomes support the agency theory that the improved level of corporate governance increases transparency and accountability, which mitigates the information asymmetry problem(Al-Gamrh et al., 2020), hence investors provide more liquidity to the firm and the stock liquidity goes up. The findings further divulge that share liquidity is affected negatively during the economic crunch of 2007-2009. This asserts that financial shocks negatively influence the share liquidity, as investors flee the market in times offinancialshocks due to the fear of huge losses. Outcomes of Amihud et al. (1990) and Wong and Fung (2001) are supported by our study, which claimthat economic crashes of 1987 and 1997 have negatively affected the liquidity of the United States and Hong Kong stock markets respectively.

Furtherfindings of our study reveal that operating liquidity and corporate governance obediencebenefit firms in times of financial shocks. The study supports the notion that unavailability of financial resources increases the bankruptcy risk for firms having a shortage of liquid assets on their balance sheets, however,operating liquidity shields firms from bankruptcy during the crisis period. Similarly, CG compliance makes a difference by shielding stock liquidity from being deteriorated during financial shocks.

The study contributes to the existing literature in the following ways. First, it contributes to the literature on the determinants of stock liquidity as this is the first study to the best of the authors' knowledge, which empirically investigates the impact of CG obedience on stock liquidity. Second, the outcomes regarding the impact of the financial crisis on stock liquidity add new insight from the perspective of a developing economy. Third, the study outcomes enhanced our understanding about the importance of CG obedience and operating liquidity during an economic crunch.

Outcomes of the study have important implications for investors, policymakers, and management. Particularly, it suggests obedience to the code of corporate governance as more complied firms enjoy improved stock liquidity. Also, CG obedience makes the stock liquidity resilient to financial shocks, because the stock liquidity of more complied firms is affected less during the economic crunch 2007-2009. The results also suggest firms hold more balance sheet liquidity so that the liquidity of their stocks may show less flexibility during a financial shock.

Limitations of the study and window for future research

The study investigates the nexus between stock liquidity and two important variables (e.g., CG compliance and financial crisis). The authors have made tireless efforts to fill the prevailing gap in the literature; nevertheless, there are still some loopholes, which the impending researchers may fill.

First, the sample size of the study is limited due to the unavailability of the required data. In future, a larger sample may be used which would increase the generalizability of the results. Second, the study uses a self-made index for measuring CG compliance, the validity and reliability of which is questionable. Therefore, future studies may use objective indices made by independent professional organizations, which would not only solve the above-mentioned issues but would also make the results of this study more vigorous.

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