Transparency, Stock liquidity and Firm Value in Crisis Period: Evidence from Pakistan Stock Exchange

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Abstract

The primary purpose of the study is to investigate the relationship between information transparency and stock liquidity in Pakistan Stock Exchange (PSX). We also examine other aspects of stock liquidity by considering the impact of extreme market events on stock liquidity and liquidity commonality, and their respective association with transparency and firm value. Data analysis for the study is performed on sample of 40 non-financial firms listed on KSE-100 for the time period of 2010-18. Estimations are carried out using Ordinary Least Squares (OLS) and Generalized Least Squares (GLS) models. The results reveal significant negative relationship between transparency and stock liquidity in PSX. In addition, the results also highlight that variability of the liquidity and extreme market events both decrease the firm value. The findings of the study hold important academic and regulatory implications about financial and regulatory environment, investor behavior and information environment of PSX.

Keywords: Stock liquidity, transparency, firm value, liquidity commonality, crisis period.

1. Introduction

In order to achieve allocative efficiency, a stock market is assumed to create liquidity for traded assets. Handa and Schwartz (1996) reason 'Investors want three things from the markets: liquidity, liquidity and liquidity'. Efficient markets tend to be more liquid providing investors with attractive investment opportunities. A liquid market offers investment opportunities with minimum transaction costs because investors seek compensation for transaction costs along with other risks. Moreover, this also enables firms to obtain financing at lower cost with quick speed to capitalize on growth opportunities (Becker-Blease & Paul, 2006). In addition, various studies have argued that institutional features impact market turnover (Jain, 2005). In particular, liquidity is among central concerns in emerging economies where ample untapped growth opportunities are available. The literature on market microstructure also documents that emerging markets tend to have a lower liquidity as compare to more efficient markets (Fong et al., 2017).

A strand of literature argues that reduced liquidity is among the major drivers of market decline in both developed and emerging markets (Amihud et al., 1990; Chordia et al., 2001; Lesmond, 2005) For instance, Liu et al. (2006) report reduced liquidity in the US stock market following significant economic

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and financial events such as, stock market crash in 1987, the Asian financial crisis in 1997, burst of the high-tech bubble in 2000, 9/11 terrorist attacks, etc. Similarly, Yeyati et al. (2008) indicates that financial turmoil period is linked with high liquidity costs and reduced liquidity in emerging markets. Also, one of the major reasons cited for financial contagion during Global Financial Crisis (GFC) 2007-08 is reduced liquidity of financial assets (Rosch & Kaserer, 2014; Ma et al., 2020). Campello et al., (2011) reason that liquidity problem becomes more pronounced during crisis period because stocks are prone to liquidity freeze and therefore during turmoil periods markets usually experience extreme liquidity issues and credit crunch. In addition, studies have also found that lower liquidity tends to decrease the earnings of the stocks and simultaneously increase the cost of capital (Lipson & Mortal, 2009; Lang & Maffett, 2011).

Another important phenomenon related to stock liquidity is referred as stock liquidity commonality, which means co-movement across stocks' liquidity. Earlier studies have highlighted the crucial role of stock liquidity commonality for market efficiency, asset pricing, portfolio selection and asset allocation (Chordia et al., 2000, 2001, 2011; Acharya & Pedersen 2005; Bhattacharya et al., 2020). Many studies using single and cross country data sets have shown that stock liquidity commonality prevails globally (Karolyi et al., 2012). However, there is relatively less coverage on the determinants of stock liquidity and their consequent impact on stock prices.

In the aftermath GFC, many studies have investigated the role of corporate governance quality on stock liquidity (Ali et al., 2017, 2018; Nadarajah et al., 2018; Biswas, 2020; Zilin et al., 2020, Berglund, 2020; Hunjra et al., 2020). The common findings among the studies unveil that firms with better corporate governance structures and higher level of information transparency tend to have high stock liquidity. More specifically, since transparency is essential for corporate governance, the earlier evidence have also highlighted positive influence of information transparency on stock value and liquidity (Healy & Wahlen, 1999; Bloomfield & Wilks, 2000; Heflin et al., 2005; Dang et al., 2020). Moreover, conventional wisdom suggests that increase level of public information improves market liquidity (Balakrishnan, 2020). In addition, recently the role of information transparency has been widely recognized as lack of transparent information about financial instruments and overvalued financial assets is considered as one of the major reasons for financial turmoil in 2007-08.

Extant evidence entails that earning smoothing, accounting standards, audit choice, market analyst, family holdings, ownership structure, information asymmetry, and governance mechanisms can be indicative measures of transparency (Barth et al., 2008; Lang et al., 2012). Evidence suggests that firms with higher transparency level experience less liquidity volatility and extreme liquidity events (Lang & Maffett, 2011). More importantly, the relationship between transparency and stock liquidity is significantly dependent upon various institutional and firm level factors. Lang et al. (2012) argue that the association between transparency and stock liquidity significantly varies due to country, firm and time period variation factors. Accordingly, the underlying linkages between transparency and institutional quality are not generalizable across stock markets, since markets vary in terms of specific regulations and institutional quality. In view of this, we specifically investigate the impact of information transparency on stock liquidity

in Pakistan Stock Exchange (PSX). The market microstructure of the stock market in Pakistan substantially varies from developed stock markets in many ways. Despite the fact that the market has gone under major regulatory changes to promote market liberalization and integration with global markets, still, the stock market has high ownership concentration, weak governance environment, less developed trading mechanisms and low litigation risk. Keeping all this in view, surprisingly little coverage has been assigned to study the linkages between transparency and stock liquidity in Pakistan. In addition, as an emerging market PSX holds a great potential to attract foreign investment into the economy. Specifically, recently foreign investors seeking high returns and diversification opportunities have fueled stock market growth in Pakistan. For example, back in 2016 aggregate market index offered 47 % annual return to investors and resultantly Pakistan Stock Exchange (PSX) was included in Morgan Stanley's emerging market Index. Thus, in order to fill the theoretical void in the literature, this study aims to study the relationship between transparency and stock liquidity at firm level.

The paper contributes to the literature of information transparency and stock liquidity in Pakistan in several ways. First, we investigate the impact of firm transparency on stock liquidity during extreme market events, such as GFC 2007-08. In past few studies have explored the impact of political news on stock market outcomes in Pakistan, where more pronounced impact of political events is found as compared to economic events (Nazir et al., 2011; Mahmood et al., 2014). However, in this study we do not focus on particular economic and political events rather in accordance with global studies the study unveils the association between transparency and stock liquidity during the period of GFC. Following the similar studies the study uses liquidity skewness and the liquidity black hole as a proxy of extreme market events. Second, the study also examines the impact of transparency on liquidity commonality. In this way study addresses the dearth of literature in emerging markets documenting the corporate governance determinants of stock commonality. Finally, we also investigate the influence of liquidity volatility, extreme market events and liquidity commonality on firm value in Pakistan stock market.

The reminder of the paper is organized as follows: Section 2 reviews the related literature. Section 3 describes the methodology employed in the study. Section 4 presents the analysis and results obtained. The last section concludes the paper with policy implications.

2. Literature Review and Hypothesis Development

2.1: Firm Transparency and Stock Liquidity

Information transparency is considered as a crucial link between corporate governance quality and stock liquidity. Higher information transparency prevents opportunistic and concealing information disclosures. More importantly, information transparency reduces problems related to information asymmetry and adverse selection, thus resulting in increased stock liquidity. A large number of studies have investigated the role of external governance on stock liquidity in different stock markets with varying level of regulatory environments (Bacidore & Sofianos 2002; Brockman & Chung 2003; Chung 2006; Eleswarapu & Venkataraman 2006; Quah et al., 2020; Shyu et al., 2020). However, the focus of this study is on the impact of internal governance mechanisms on stock liquidity. Earlier literature describes

the significant role of auditor's quality, auditing fees, reporting standards, and analyst forecasts on firm transparency. Yu (2005) reason that firms in compliance with big 4 auditors are assumed to be less opaque. The big 4 auditors are assumed to be indicative of higher corporate governance quality and information transparency. Fan and Wong (2005) argue that auditors have significant role in establishing strong corporate governance structure and eliminating agency related problems.

A line of literature supports earning management as a more meaningful measure of the transparency (Barth et al., 2008; M. Lang & Maffett, 2011; M. Lang et al., 2012; Ngo & Varela, 2014; Ajina & Habib, 2020). Review of the literature on earning management reveals two divergent opinions. Firstly, earning management is considered as positive market signal because it allows the managers to smooth earnings to control the extreme variability in cash flows. However, the second view terms it manipulative behavior to retain investors (Takasu & Nakano, 2014). Studies have shown that firms with higher accounting quality and information disclosure report stable earnings management (Barth et al., 2008).

2.2: Stock Liquidity during Extreme Market Events

Earlier research has shown that stock liquidity can be significantly influenced by market liquidity. During GFC 2007-08 stocks became so illiquid that capital markets evaporated overnight (Beardsley et al., 2012; Tran et al., 2018). The crisis period are often referred as extreme market events. The extreme market events imply a situation in which the whole market experiences extreme liquidity constraints (Vayanos, 2004). Normally, investors show restraint to purchase illiquid stocks. On the contrary, investors only prefer to purchase illiquid stocks (Acharya & Pedersen, 2003). In the same way, a number of studies have found that illiquidity caused by information asymmetry can negatively impact stock returns (Paper et al., 2012). .

Review of the earlier literature unveils two proxies employed to capture extreme market events include liquidity skewness and liquidity black hole. Liquidity skewness as proxy of extreme market event is introduced by the work of M. Lang et al. (2011) and M. Lang and Maffett (2011). The notion of liquidity skewness is grounded in the concept of liquidity premia. Vayanos (2004) argues that Investor's preference for return is attributable to the market circumstances. During volatile times, liquidity level for most of the stocks decreases and investor's expectation for higher returns increase. This phenomenon is known liquidity premia where investor's willingness for returns is associated with liquidity volatility of the asset. Secondly, liquidity black hole implies a situation when liquidity evaporates from the market (Morris & Shin, 2004). Liquidity has subsequent impact on investor behavior. In a liquid market, investor can easily trade asset without minimal trading costs. On the contrary, illiquid market compels investors to unwillingly lower the price of stock in case to further sell it. Few studies have shown that liquidity black holes can be associated with the transparency of the stocks and stocks with lower transparency encounter higher liquidity black holes (M. Lang & Maffett, 2011 M. Lang et al., 2012).

2.3: Stock Commonality

A wide range of studies document the determinants of liquidity commonality. A stock's liquidity is vulnerable to market liquidity. Empirical evidence shows that liquidity co-movements are reported to be

higher in countries with poor governance mechanisms (Jin & Myers, 2004). Financial development has a profound influence on commonality of liquidity. Markets with low or moderate investor protection laws experience higher stock commonality (Morck et al., 2000). Commonly, managers distort the earning of firm to give a positive signal in the market. Moreover, managers also reserve a portion of earnings to fund bad times. This manipulation in earnings raises risks about investor rights (Jin & Myers, 2004). Earlier research has also shown that liquidity commonality is more pronounced effects in less-developed financial markets (Jin & Myers, 2004; Chelley-Steeley et al., 2013; Morck et al., 2000). Further, empirical evidence also suggests that apart from governance mechanism, transparency can have pronounced effect on liquidity commonality. The argument is grounded in the notion that transparent stocks are more liquid.

2.4: Hypothesis Formulation

Based on the above discussed review of literature, following research hypotheses are formulated for this study.

H_1: There is significant relationship between the stock transparency and stock liquidity.

H_2: There is significant relationship between stock transparency and extreme market events.

H_3: There is a significant relationship between stock transparency and liquidity commonality.

H_4: The liquidity volatility, commonality of liquidity, and extreme market events have significant negative relationship with firm value.

3. Data and Methodology

3.1:Data

The initial sample of the study comprised of all non-financial companies listed on KSE-100 index (top 100 capitalized firms in PSX). However, the final sample was reduced to 40 non-financial firms because of data availability issues. Since, in most cases the data before 2009 was not available or accessible for firms dropped from the final sample. The study covers the time period of 2005-2018. The sample duration is divided into two parts, where first 5 years (2005 – 2009) are used as the base years and the final construct comprised of last 9 years (2010 – 2018). The data for the financial variables is extracted from annual financial statements and stock prices are obtained from data portal of PSX. We do not report the summary statistics for sake of brevity.

3.2: Variable Definition

In order to verify our four hypotheses, we use five different dependent variables, which are tested separately. Firstly, stock liquidity is defined as the standard deviation of Daily Amihud Price Index (DPI). A large number of studies have used Amihud's DPI because it helps in measuring liquidity of the stock by eliminating the price effect (Amihud, 2000). Following equation drives the Amihud DPI:

$$\frac{|Return|}{(Price)(Volume)} \qquad \textbf{(1)}$$

In equation 1, return refers to the change in the daily returns of the stocks. The change in return is divided by the product of price of stock and the total volume of stock traded on a particular day. In this

way, Amihud DPI is derived for the time period of 2010 to 2018. The annual standard deviation of Amihud's DPI represents stock liquidity for a year. Secondly, two proxies are used to estimate extreme market events. The first measure employed is the liquidity skewness, which is defined as the annual skewness of Amihud's DPI. Highly skewed DPI refers to the condition where the trading costs rise enormously due to illiquidity in the market. Also, liquidity black holes are used as the second proxy to measure extreme market events. Liquidity black hole is measured as the total number of trading days in a year in which the stock DPI was 50 times greater than the market level DPI (Lang & Maffett, 2011). The KSE-100 index is used to proxy aggregate market level. Furthermore, earlier studies (Morck et al., 2000; Jin & Myers, 2004; Karolyi et al., 2009) use R^2 from the following regression equation to proxy of commonality of liquidity:

$$\%\Delta DPI_{i,d} = \alpha_i + \beta_{i1}\, \%\Delta DPI_{m,d-1} + \beta_{i2}\, \%\Delta DPI_{m,d1} + \beta_{i3}\, \%\Delta DPI_{m,d+1} + \varepsilon_{id} \qquad \textbf{(2)}$$

In equation 2 dependent variable is the percentage change in the DPI of stock i on the day d. Regressors include percentage change in the market DPI for previous day, current day and next day respectively.

Finally, the last dependent variable firm value is proxied by Tobin's Q ratio and the ratio is defined in the following equation:

$$\frac{\text{Total Assets} + (\text{Market Value Stock} - \text{Book Value of Stock})}{\text{Total Assets}} \qquad \textbf{(3)}$$

The independent variable transparency is tested using two different measures. Firstly, earning management is used as proxy of transparency (Dechow et al., 1995; Leuz et al., 2003). Earning management is considered as the correlation between accruals and cash flow from operations. Theoretically, managers use accruals for future performances, where negative correlation will depict earning smoothing. Accruals are obtained from the following equation:

$$\text{ACC} = (\Delta CA - \Delta CL - \Delta \text{Cash}) + (\Delta \text{Short Debt} - \text{Depreciation}) \qquad \textbf{(4)}$$

Equation 4 is calculated as change in the current assets minus the change in the current liabilities minus the change in cash in hand which is then added to the difference between the changes in short term debt and depreciation. Further, deducting accruals from net income before extra-ordinary items gives the cash flow from operations. The second proxy used to proxy transparency includes big-4 auditors. It is taken as a dummy variable, where if a firm is audited by the big 4 audit firms it is labeled as 1 otherwise 0. Finally, the control variables used in our empirical model include Leverage (LEV), Market Value (MV), Book value (BV), Firm Size (SIZE) and Loss Frequency (LOSS).

Table 1: Variables and their Constructs

Variables Explanation		
Variable Names	**Abbreviation**	**Measurement**
Dependent variables		
Liquidity Volatility	LIQVOL	Standard Deviation of Annual Daily Amihud Price Index.
Liquidity Skewness	LIQSK	Skewness of Annual Daily Amihud Price Index.
Liquidity Black Holes	LBH	Percentage of Days in a year during which the DPI is 50 times greater than the overall market liquidity.
Commonality of Liquidity	COM	R^2 from regression equation run on annual DPI.
TOBIN Q	TOB	$\dfrac{Total\ Assets + (Market\ Value\ Stock - Book\ Value\ of\ Stock)}{Total\ Assets}$
Independent variables		
Earning Smoothing	EARSMTH	$\dfrac{STD\ ACCRUALS}{STD\ Cash\ Flow\ from\ Operations}$
Big-4 Auditors	BIG	If a firm has BIG-4 Auditors
Control Variables		
Leverage	LEV	$\dfrac{Total\ Assets}{Total\ Liabilites}$
Market Value	MV	Total Ordinary Shares Outstanding x Market Price
Book Value	BV	Total Ordinary Shares Outstanding x Book Price
Size	SIZE	Natural Log of Total Assets
LOSS Frequency	LOSS	Number of years during which stock experiences loss from previous 4 years
Additional Variables		
Net Income Before Extra-Ordinary Items	NIBEI	Net Income Before Interest and Taxes – Depreciation for the Year
Accruals	ACCR	ACC = (ΔCA - ΔCL - ΔCash) + (ΔShort Debt – Depreciation)
Cash Flow from Operations	CFO	NIBEI - Accruals

3.4: Empirical Models

In order to test our proposed hypotheses we formulate our final equations, which are tested using OLS and GLS estimation technique following the earlier studies (M. Lang & Maffett, 2011 M. Lang et al., 2012) and presented as follows:

$$LIQVOL = \alpha_i + \beta_1 EARSMTH + \beta_2\ LEV + \beta_3\ MV + \beta_4 BV + \beta_5\ Size + \beta_6\ LOSS + \varepsilon_{it} \quad \textbf{(5)}$$

$$LIQVOL = \alpha_i + \beta_1 EARSMTH + \beta_2\ LEV + \beta_3\ MV + \beta_4 BV + \beta_5\ Size + \beta_6\ LOSS + \beta_7 DUM\ BIG + \varepsilon_{it} \quad \textbf{(6)}$$

In order to verify our first hypothesis and model the relationship between stock liquidity volatility and transparency, we estimate equation (5) and (6) with stock liquidity volatility as dependent variable. In the first model we take earning smoothing as an independent variable, whereas in the second model earning smoothing and big 4 auditors are taken as predictors. In addition, the control variables in the model include leverage, market value, book value, firm size, and loss frequency. Hausman test is used to decide between random effects and fixed effects[1].

To establish the relationship between stock transparency and extreme market events, we use two proxies of extreme events, which include liquidity skewness and liquidity black holes. Following models are estimated to predict the underlying relationship:

$$\text{LIQSK} = \alpha_i + \beta_1 \text{EARSMTH} + \beta_2 \text{LEV} + \beta_3 \text{MV} + \beta_4 \text{BV} + \beta_5 \text{Size} + \beta_6 \text{LOSS} + \varepsilon_{it} \quad \textbf{(7)}$$

$$\text{LBH} = \alpha_i + \beta_1 \text{EARSMTH} + \beta_2 \text{LEV} + \beta_3 \text{MV} + \beta_4 \text{BV} + \beta_5 \text{Size} + \beta_6 \text{LOSS} + \varepsilon_{it} \quad \textbf{(8)}$$

The third hypothesis of the study tests the association between stock transparency and liquidity commonality. For this purpose, we use R^2 from regression equation (2) as a proxy of liquidity commonality. The below model is employed to establish the relationship:

$$\text{COM} = \alpha_i + \beta_1 \text{EARSMTH} + \beta_2 \text{LEV} + \beta_3 \text{MV} + \beta_4 \text{BV} + \beta_5 \text{Size} + \beta_6 \text{LOSS} + \varepsilon_{it} \quad \textbf{(9)}$$

Finally, to demonstrate the impact of stock liquidity, extreme market events and liquidity commonality on firm value we estimate equation (10). Tobin's Q is employed as proxy of firm value.

$$\text{TOB} = \alpha_i + \beta_1 \text{LIQVOL} + \beta_2 \text{LIQSK} + \beta_3 \text{LBH} + \beta_4 \text{COM} + \beta_5 \text{LEV} + \beta_6 \text{MV} + \beta_7 \text{BV} +$$
$$\beta_8 \text{SIZE} + \beta_9 \text{LOSS} + \varepsilon_{it} \quad \textbf{(10)}$$

4. Results and Discussion

4.1: Correlation Analysis

The correlation matrix is presented in the table 2. The results show negative correlation between income smoothing and liquidity black hole, liquidity volatility, and liquidity skewness. However, we find weak association between earning smoothing and liquidity skewness. The results imply that lower level of the income smoothing results in reduced stock liquidity and extreme market events. On the other hand, we find positive association between income smoothing and liquidity commonality. In addition, we note the co-movement between income smoothing and leverage is negative, which suggests that firms with higher earning management tend to have lower debt. We also observe positive association of earning smoothing with firm size and book value. Finally, we report negative correlation between income

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[1] It is to be noted that we only disclose the results of earning smoothing as proxy of stock transparency in results section because we do not find significant impact of big 4 auditors on stock transparency in any of our models.

smoothing and market value of the firm. The results are somewhat similar to argument of to Leuz et al. (2003) as they suggest that earning management reduces investor confidence.

The results of correlation analysis show negative association between firm performance and liquidity skewness, liquidity commonality and earning management, whereas, positive correlation between firm performance and stock liquidity is noted. In accordance with earlier studies we also observe positive association between stock liquidity volatility and extreme market events (Piccoli et al., 2017a, b)

Table 2: Correlation Matrix

	TOBQ	LBH	LIQV	LIQS	COM	EAR	LEV	MV	BM	Size	LOSS
TOBQ	—										
LBH	0.0607	—									
LIQV	0.1000	0.1440	—								
LIQSK	(0.0543)	(0.3348)	(0.0196)	—							
COM	(0.0753)	(0.0007)	(0.0189)	(0.0251)	—						
EAR	(0.0932)	(0.0205)	(0.2553)	(0.0002)	0.0588	—					
LEV	0.2454	0.4871	0.2586	(0.0958)	(0.0181)	(0.2283)	—				
MV	0.3866	(0.1570)	(0.0488)	(0.1172)	(0.0547)	(0.0294)	(0.1703)	—			
BV	(0.3481)	(0.2741)	(0.7984)	0.1040	0.0236	0.2614	(0.4740)	(0.0042)	—		
SIZE	0.0579	(0.1392)	(0.0862)	0.0689	(0.0260)	0.0532	(0.1694)	0.2034	0.0919	—	
LOSS	(0.1286)	0.1723	0.2002	(0.0630)	(0.0076)	(0.1745)	0.5406	(0.2163)	(0.2363)	(0.1639)	—

Note: Values in parenthesis represent negative relationship.

4.2: Empirical Results and Findings

The table 3 illustrates the results obtained from testing our first hypothesis using OLS and GLS random effects model. Since the Hausman test supported the use of random effects model, we skip the results estimated through GLS Fixed effects model. The estimations clearly reinforce our research hypothesis as we observe significant negative relationship between earning smoothing and stock liquidity in PSX. The results indicate that the insiders' effort to mask the financial performance of the firm negatively affects the stock liquidity. Moreover, higher earning smoothing (low firm transparency) is considered as a negative signal by market participants and reduces the investor confidence.   In consequences, the firm experiences drop in the stock liquidity. The findings of the study are in line with earlier evidence which suggest that higher earning smoothing causes lower liquidity and investor confidence because of heightened information asymmetry (Leuz et al., 2003; Ajina & Habib, 2017). In addition, the findings also somewhat similar to the evidence presented by Lang et al. (2012), which maintains that higher level of transparency reduces stock liquidity volatility. The results also highlight significant negative relationship between stock liquidity volatility and leverage, market value and book value, whereas positive association is noted with loss frequency.

Table 3: Liquidity Volatility and Transparency

LIQVOL	OLS	GLS (RE)
EARSMTH	-.9386**	-.8762**
	(.4758)	(0.6793)
LEV	-2.2867***	-1.881***
	(.4221)	(.7334)
MV	-1.48e-11**	-1.55e-11**
	(0.0000)	(1.02e-11)
BV	-.7112***	-.7829**
	(.0306)	(.0418)
SIZE	-.3043	.1284
	(.8106)	(.8946)
LOSS	*.4065**	.1045
	(.1739)	(.2765)

Note: The table depicts OLS and GLS random effect regression results. The table presents Coefficient values and the robust standard errors in parenthesis. Significance of the relationship is represented by the steric, where, *** indicates $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$ (all of them are two sided).

The table 4 concludes the results related to our second hypothesis[1]. The obtained results confirm our second hypothesis, which means there is significant relationship between stock transparency and extreme market events. Moreover, the results clearly show positive significant relationship between liquidity black holes and earning smoothing. The findings imply that higher level of earning smoothing leads to increased prospects of extreme market events, whereas enhanced transparency helps reduces tail risk in PSX. Our findings follow Lang and Maffett (2011), who also show that increased transparency is positively associated with fewer illiquid extreme market events.

Table 4: Liquidity Black hole and Transparency

LBH	OLS	GLS (FE)
EARSMTH	8.7844*	2.6601*
	(4.6415)	(4.3232)
LEV	33.6864***	26.984***
	(4.1178)	(4.6670)*
MV	-1.14e-10*	-1.08e-10*
	(6.81e-11)	(6.50e-11)
BV	-.4255	.2445
	(.2992)	(.2663)
SIZE	-8.5667	-7.4760
	(7.9065)	(5.6930)
LOSS	-4.0666**	-.8982
	(1.6966)	(1.7600)

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[1] Here, once again our results estimated using OLS and GLS models report lack of significant relationship between liquidity skewness and earning smoothing. Thus, we do not disclose the results in our main findings.

Note: The table includes OLS and GLS fixed effect regression analysis. The table presents coefficient values and the robust standard errors in parenthesis. Significance of the relationship is represented by the steric, where, *** indicates p <0.01, ** p <0.05, and * p<0.10 (all of them are two sided).

The table 5 presents the results of our third hypothesis. The learned results are rather surprising and divergent from the previous international evidence, which suggests that enhanced corporate transparency reduces the stock commonality (Deng et al., 2018). Moreover, liquidity commonality increases in the markets with weak and opaque economic and financial environments (Moshirian et al., 2017). In addition, lack of transparency and opaque information environment causes lower investor confidence and results in higher liquidity commonality. However, our results can be explained by studies that suggest liquidity is time-varying and varies across counties (Rösch & Kaserer, 2014). In particular, Karolyi et al. (2012) also found liquidity commonality is pronounced in markets with large number of international investors and more connected trading activity. In the same way stock market in Pakistan has relatively fewer international investors and less global integration. Also, liquidity commonality in PSX might also be influenced by country specific cultural and behavioral factors.

Table 5: Liquidity Commonality and Transparency

COM	OLS	GLS (FE)
EARSMTH	.0097 (.0107)	.0071 (.0152)
LEV	-.0018 (.0095)	.0014 (.0164)
MV	-1.40e-13 (1.58e-13)	-1.10e-13 (2.29e-13)
BV	.0000 (.0006)	-.0001 (.0009)
SIZE	-.0068 (.0183)	-.0038 (.0200)
LOSS	-.0002 (.0039)	-.0038 (.0061)

Note: The table includes OLS, and GLS, fixed effects regression analysis. The table presents Coefficient values and the robust standard errors in parenthesis. Significance of the relationship is represented by the steric, where, *** indicates p <0.01, ** p <0.05, and * p<0.10 (all of them are two sided).

Table 6: Impact of Liquidity Volatility, Extreme Market Events and Liquidity Commonality on Firm Value

TOB	OLS	GLS (FE)
LIQVOL	-.0129***	-.0075***
	(.0028)	(.0020)
LIQSK	.0014	-.0044*
	(.0034)	(.0026)
LBH	-.0005*	-.0013***
	(.0003)	(.0003)
COM	-.1298	.0026
	(.1256)	(.0932)
LEV	.1181***	.1052***
	(.0242)	(.0268)
MV	2.67e-12***	3.83e-12***
	(3.62e-13)	(3.57e-13)
BV	-.0171***	-.0098***
	(.0025)	(.0021)
SIZE	.0030	-.0434
	(.0410)	(.0308)
LOSS	-.0453***	-.0384***
	(.0089)	(.0094)

Note: The table includes OLS and GLS fixed effects regression analysis. The table presents Coefficient values and the robust standard errors in parenthesis. Significance of the relationship is represented by the steric, where, *** indicates $p < 0.01$, ** $p < 0.05$, and * $p<0.10$ (all of them are two sided).

The table 6 reports the results related to our final hypothesis. First, the findings of the study unveil significant negative relationship between firm value and stock liquidity volatility. The findings replicate the earlier evidence that suggests increased stock transparency reduces stock liquidity volatility (Lang & Maffett, 2011). It can be inferred from the results that when market becomes illiquid, subsequently firm value decreases in PSX. Also, higher level of information transparency eliminates information asymmetries between management and firm outsiders and results in higher stock liquidity. In consequences, enhanced stock liquidity positively influences firm value in PSX. The findings are also

reinforced by the conclusions of Lang et al., (2012), which recommend positive influence of increased stock liquidity on Tobin's Q (firm value). Second, we note from the results significant negative relationship between firm value and extreme market events. The findings showcase the negative influence of illiquid events on firm value. However, our findings show lack of significant association between liquidity skewness on firm value. In addition, once again surprisingly we fail to find significant relationship between firm value and liquidity commonality which can be considered bizarre in view of the findings of earlier evidence.

5. Conclusion

The study aims to estimate the impact of transparency on stock liquidity. In addition, the study also addresses the wider aspects of stock liquidity by considering extreme market events and liquidity commonality and their respective relationship with transparency. Finally, we evaluate the influence of different liquidity features on overall firm value. In accordance with earlier research this study uses auditor choice and earning smoothing as proxies for stock transparency. Stock liquidity is proxied by stock liquidity volatility, liquidity black holes, liquidity skewness and liquidity commonality. Also, Tobin's Q captures the firm value. Estimations are carried out using Ordinary Least Squares (OLS) and Generalized Least Squares (GLS) models.

The findings show earning smoothing and efforts to mask the financial performance of the firm is perceived as a negative signal by investors and portfolio managers. The findings are reinforces by the earlier evidence that argues that higher level of earning smoothing is indicative of less information transparency and weak corporate governance quality. Moreover, our findings do not support the view that earning smoothing provides immense confidence to the investors because market participants perceives smoothing of income as signal of less volatility and stable earnings. Also, our findings reject anecdotal evidence that indicates managers in Pakistan retain a portion of excess returns for future performance through accruals, which gives confidence to investors for investing in such stocks. In addition, earning smoothing is also positively linked with illiquid events, which suggests that higher level of earning smoothing increases the likelihood of extreme market events. However, the second proxy of stock transparency auditor choice fails to establish significant association with stock liquidity. Finally, the findings also highlight the crucial role of stock liquidity measures for the overall firm value in Pakistan stock market because liquidity volatility and extreme market lower firm value.

The findings of the study hold interesting implications for future academic research and regulations. The evidence highlights that in the presence of effective and transparent regulations, stock market in Pakistan can serve as an effective channel to enhance firms' liquidity and value. Moreover, new regulations and mechanisms to promote information transparency increases investors' confidence and subsequently positively impacts market volume and performance. In addition, regulations aiming to improve information environment and corporate transparency can serve as catalyst to attract foreign investors in Pakistan. Finally, considering the corporate culture in Pakistan using auditor choice as a

proxy of information transparency needs to be re-examined since the relationship between transparency and stock liquidity may not be accurately captured through this proxy.

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