CAPITAL UNIVERSITY OF SCIENCE AND TECHNOLOGY, ISLAMABAD

Flattening of the Covid-19 Curve Stock Market Return and Liquidity: An Evidence from Pakistani Stock Exchange

by

Shahid Abbas

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I want to dedicate this thesis to my parents, respected teachers, friends and family for their love, support and care.

CERTIFICATE OF APPROVAL

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(Shahid Abbas)

Abstract

This study aims to evaluate the impact of flattening of COVID-19 curve on stock market returns and liquidity at firm level by using daily data of COVID-19 cases and deaths. The sample consists of KMI-30 and KSE-30 index companies for the period of January 1, 2020 to May 31, 2021. Traditional regression analysis and panel data analysis is used to study the link between the variables of interest. These results of flattening of the curve are important in as controlling trend in epidemic boosts investors' confidence in the stock market. The findings of the study are the COVID-19 has a significant negative impact on stock market returns and stock market liquidity. Random effect model provides that the returns and liquidity in Pakistan's stock market are directly (inversely) related to the declining (ascending) curve of coronavirus-related deaths and cases. The influence of flattening of the COVID curve at the company and market levels is in line with theory. When the number of cases and deaths increases the stock market returns and liquidity decreases and vice versa. Volatility has significant impact on certain companies. Big companies have generally higher return and higher liquidity. Keeping in view the above pattern, investors, portfolio managers and risk managers can devise polices for resource and risk allocation respectively during pandemic period.

Keywords: Flatten the curve, COVID-19, returns, liquidity, KMI-30, KSE-30

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Abbreviations

ABOT	Abbott Laboratories
AMZN	Meezan Bank Limited
ATRL	Attock Refinary Limited
BAFL	Bank Alfalah Limited
BAHL	Bank Alhabib Limited
CHRC	Cherat Cement Company
DAWH	Dawood Hercules
DGKH	D.G.Khan Cement Company
EFER	Engro Fertilizer Company Limited
ENGRO	Engro Corporation
EPCL	Engro Polymer and Chemicals
FAUF	Fauji fertilizer Company Limited
FCCL	Fauji Cement Company Limited
GHIN	Ghandhara Industry Limited
GLAX	Glaxo Smith Kline
HATC	Honda Atlas Car(Pakistan)
HBL	Habib Bank Limited
HPWR	Hub power Company Limited
ICI	I.C.I Pakistan Limited
INIT	International Industries Limitd
INTE	International Steels Limited
KELE	K-Electric Limited
KMI	Karachi Meezan Islamic
KOHC	Kohat Cement Limited

KOTA	Kot Addu Power
KSE	Karachi Stock Exchange
LUCK	Lucky Cement Limited
MAC	Moving Average of Cases
MAD	Moving Average of Deaths
MCB	Muslim Commercial Bank
MGAS	Mari Petroleum Gas
MILM	Millat Tractors Limited
MPLF	Maple Leaf Cement Factory
NISM	Nishat Mills Limited
OGDC	Oil and Gas Development
PACK	Packages Limited
PION	Pioneer Cement Limited
PKEL	Pakistan Electric Limited
PKOL	Pakistan Oil Field
PPL	Pakistan Petroluim Limited
PSO	Pakistan State Oil
SARS	Severe Acute Respiratory Syndrome
SEAR	The Searl Company Limited
SUIN	Sui Northern Gas Pilpe Lines
SYSE	System Limited
TRGP	TRG Pakistan
UBL	United Bank Limited
UNITY	Unity Food Limited

Chapter 1

Introduction

The coronavirus pandemic (COVID-19) has the potential to be the greatest economic shock in the last 100 years, affecting not only developed but also developing and emerging countries (Hevia and Neumeyer 2020). The recent coronavirus outbreak has influenced media and news debates in addition to having an unparalleled economic and societal impact. The occurrence of waves can be shown in a review of pandemic cases. In cycles, the number of cases rises and falls. In one period, the greater rate of the case and causality increase appears, whereas the curve flattens in the other. The media has debated and discussed "flattening the curve" of disease spread. "Flattening the curve" has also been used to analyze governments' and public health authorities' performance in controlling the pandemic (The Economist 2020). Flatten the curve is a statistical line graph which show that when number of cases and deaths increases government, people and investors feel fear and government impose restrictions on movement and business (Haroon & Rizvi, 2020)

To slow the spread of COVID-19 and flatten the death and infection curves, several different policies have been implemented, including social distancing, the mandatory wearing of masks in public, restrictions on internal and international travel, border closures, stay-at-home requirements, and gathering size restrictions. These restrictions have a significant impact on the tourist and hotel business, which already has low-profit margins. The pandemic may bring the worldwide tourist and hotel sector to a total stop. (Chen, Demir, Gomez, & Zaremba, 2020)

Major events always have an impact on the stock market (Haque & Sarwar, 2013; Waheed, Wei, Sarwar, & Lv, 2018). However, when the virus spreads globally, it begins to affect companies, which is reflected in worldwide financial markets. Some studies have looked at the impact of COVID-19 on developed stock returns (Al-Awadhi, Al-Saifi, Al-Awadhi, & Alhamadi, 2020; Kowalewski & Piewanowski, 2020), and found that the Hang Seng index and Shanghai stock exchange, as well as the US and European stock markets, all have negative returns. (Waheed, Sarwar, Sarwar, & Khan, 2020)

On March 12, 2020, the WHO announced the COVID-19 as a pandemic. As per statistics on 31, May 2021 the total reported cases are 172,743,078 and total deaths are 3,684,739 reported across the world. In Pakistan the first case of COVID-19 is reported on February 26, 2020, which this figure has crossed 13,000, till conducting the study. However, the recovery rate is better as compared to other countries, like Italy, France, and United States. Scientists from around the world stress the importance of the study to deal with this outbreak and plan for future outbreaks of this nature (WHO, R&D Blueprint, 2020). COVID-19 has impacted all aspects of society, halting consumption, manufacturing, travel, tourism, the banking sector, and recreational activities. COVID-19, like previous health disasters such as the Ebola virus in West Africa and the Middle East Respiratory Syndrome (MERS) in the Republic of Korea, has had far-reaching socio-economic effects on population health, social dynamics, and public health, with long-term implications Ellahi, N., & Ahmad, N. (2021)

During the COVID-19 crisis, global market indexes are observed extremely volatile (David et al., 2021). Liquidity in emerging stock markets Haroon and Rizvi, (2020) and bond markets decreases as the coronavirus spreads Gubareva. (2020). The coronavirus outbreaks in the United States have had little effect on market liquidity Just and Echaust. (2020). The focus of this research is on the relationship dynamics between liquidity and market returns in the Pakistani stock market. The United States is one of the bad effect countries by the coronavirus, this research looks into how pandemic uncertainty affects the connection dynamics between liquidity and market returns. Market liquidity is one of the most important factors in determining the performance of financial markets. Both academics and investors

may be interested in the liquidity risk, as it has a direct influence on a trader's actions Guijarro et al., (2019). In the financial markets, market liquidity is a priced risk factor Le & Gregorious, (2020). According to research, market liquidity decreases during times of financial instability Schnabel and Shin,(2004), Severo, (2012) Saleemi, (2014). The purpose of this study is to see if liquidity can be used as a predictor of stock market returns during the current pandemic-related uncertainty (Saleemi, 2021)

Various epidemics throughout the world reflect an impact on the stock market's performance, returns, and liquidity. Studies on the influence of pandemics and outbreaks on this issue have been conducted over time. The impact of the Arab Spring and the Ebola virus on African equities markets are studied by Giudice and Paltrinieri (2017). They discover that Ebola and the Arab Spring have a significant impact on fund flows, fund efficiency control, costs, and market returns. The influence of the Ebola virus on the stock market and economic development is also examined by Ellahi, & Ahmad, (2021).

The current study examines the relationship between market liquidity and returns during the COVID-19 epidemic. The emergence of COVID-19 has heightened investor concerns about market liquidity. According to previous studies, there is a major shortage of market liquidity during periods of financial market uncertainty (Pastor and Stambaugh, (2003); Chordia et al., (2005). As the present study aims to better understand market liquidity during the COVID 19 epidemic and how it affects stock market returns. The most industries experience a great level of uncertainty. Market liquidity has decreased, which has a negative impact on market returns. (Tahat & Ahmed, 2020)

The capability to trade a large number of stocks at a low cost in a short period is known as stock liquidity Holden, Jacobsen, and Subrahmanyam (2014). In financial economics, the relationship between liquidity and firm value has attracted much interest from a variety of angles Cheung, Chung, and Fung (2015); Fang, Noe, and Tice (2009); Fang, Tian, and Tice (2014). Stock liquidity is a direct reflection of capital market transaction activity and is essential to the capital market's continued existence. The influence of stock liquidity on company value has been studied in many ways in the past. According to agency theory, increased

stock liquidity improves major shareholders' supervision of management, allowing managers to make more value-enhancing business choices. The credible threat of exit based on private knowledge by a major stakeholder can eliminate conflicts of interest between management and shareholders Admati and Pfleiderer (2009). Firms with liquid stocks perform better, according to Fang, Noe, and Tice (2009), because liquidity enhances market price information, content, and performance-sensitive managerial incentives. Cheung , Chung, and Fung (2015) show that stock liquidity has a significant impact on company value and is favorable to stronger corporate governance via institutional ownership in the face of agency issues. Fang, Tian, and Tice (2014) The short-termism hypothesis, on the other hand, claims that increased liquidity might attract more transitory institutional investors with short investment horizons who are too concerned with the firm's short-term success Chang, Chen, and Zolotoy (2017) Short-termism is induced by high stock liquidity, which enhances managers' ex-ante incentives to cover up negative news. The exit of transitory institutions is facilitated by high liquidity, which increases ex-post stock price reactions to negative news releases, reducing firm value (Zhang, Gao, & Li, 2021)

The Coronavirus affect the efficiency of firms Choi, (2020); Kapoor et al., 2021; Njindan Iyke, (2020); Phan & Narayan, (2020). Many firms have faced many challenges and losses, including supply disruptions, raw material shortages, transportation issues, and decreased demand, all of which can have a major effect on a company's efficiency and profitability Bartik et al., (2020); Hagerty & Williams, (2020). Exports in Pakistan have decreased by 50% as a result of strict quarantine policies, resulting in a 2.2 percent reduction in real GDP growth Junaidi, (2020). Due to tight lockdown policies, the firms are unable to operate. After the lockdown, 2650 industries in Sindh province stop operating, affecting 5 million poor people and 4 million employees in Punjab and Sindh regions (Imran, Saleem, & Rehman, 2021)

Another contribution to the study is that the study explains the phenomenon of conventional and Islamic stocks, although conventional and Islamic stocks are very different. Following Islamic philosophy, Islamic stocks are formed based on certain ethical and legal limitations. As a result, one of the most essential factors

to consider while establishing Islamic stock indexes is that the firm is not involved by any non-sharia laws. As a result, alcohol manufacturing and gambling, as well as standard financial contracts based on interest, should not be included in the Islamic stock index (Ho et al., 2014). In other words, these funds do not incorporate investment instruments from firms that engage in activities banned by Islam, such as interest revenue or the manufacture of alcoholic drinks. The main reason for this is that investors who prefer Islamic equities for religious reasons do not want to incorporate investment instruments from companies that do not follow sharia regulations in their portfolios (Tuna, 2019). However, there are no restrictions on investment instruments of firms that contain returns that are banned by sharia laws in conventional stock markets. As a result, this distinction applies to both investing tools and investor profiles (Tuna, 2021)

1.1 Theoretical Background

1.1.1 Efficient Market Hypothesis

Global pandemics cause stock markets all around the world to respond. Stock markets, according to the Efficient Market Hypothesis, react to the arrival of new information, whether it is favorable or unfavorable. In both situations, the cash flows from the equity market result in high or low returns, depending on the implications of the new information. Financial markets react to new information, and pandemics like as SARS, COVID-19, and also have a greater effect on financial markets. Stock markets all around the globe are linked with each other. Because of the depth of the financial markets, fluctuations may be seen clearly.

Security prices quickly respond to new information in a well-functioning capital market. The Efficient Market Hypothesis states that securities prices should be an impartial reflection of all easily accessible information at any given time and that the return obtained should relate to their risk assessment. Theoretical and practical research on EMH provides mixed results. Efficient Market Hypothesis (EMH), one of the most famous and influential of modern financial theories, assumes that all relevant information is rapidly incorporated in security prices as

released. There are three types of efficient market hypothesis: weak, semi-strong, and strong. (Naseer & Tariq, 2015)

The weak form says that prices of stocks are predicted on the historical prices, semi strong form says that in the stock prices the publicly available information are reflected already and strong form says that the relevant information while it is public or private is reflected in the stock process.

1.2 Gap Analysis

During the COVID-19 period, the shock in the equity markets is observed across globe. So there is a need to find the impact of this current pandemic on the stock market. Earlier studies Ellahi, N., & Ahmad, N. (2021) have been done to monitor the effect of pandemic on stock prices but little work has been conducted the effect of the coronavirus on both stock prices and volatility. However, the impact of COVID-19 on liquidity at the firm level is missing. This study covers equity prices and liquidity at the firm level. This study will help investors and traders to develop an understanding of the impacts of the pandemic on market behavior

1.3 Research Questions

- Do the flattening curve influence equity markets' return and liquidity?
- Do volatility influence stock return and liquidity conventional and sharia complaint stocks?
- Do firms size influence returns and liquidity?

1.4 Objectives of the Study

- To provide insight into the impact of the flattening curve on returns and liquidity in conventional and sharia compliant stocks.

- To investigate the link between volatility and stock returns and liquidity in sharia complaint stocks.
- To explore the impact of size on return and liquidity in conventional and sharia complaint stocks.

1.5 Significance of Study

Because of their expanding relevance and considerable differences in terms of institutional and regulatory environments across firms and industries, this study focuses on Pakistani markets. This study examines that impact of COVID-19 flattening curve across firm and market level. These findings try and figure out if flattening the curve has a significant impact on investor confidence in the stock market. The assumption that a positive effect will have a positive impact on market liquidity, which is understandable given macroeconomic and investment conditions.

This study contributes to the literature on the effect on stock prices and liquidity. It further explains that the impact on returns of large firms may be significantly different than small firms. It further provides insight about the impact on shariah-compliant while on more conservative and risk averse in compliant to conventional securities.

The present study has important policy implications for market players who want to better understand stock market behavior during the crisis. Furthermore, policy-makers will benefit from developing effective financial policy responses to COVID-19. This study changes the researcher's viewpoint to a company-level channel, demonstrating the impact of COVID-19 on firm performance and suggesting policy in returns.

In sum, this research examines the economic impact on Sharia compliant stocks and has significant implications for Islamic equities markets. As a result, this research supports previous research that claims Islamic equities markets can outperform conventional equity markets during a crisis this may be helpful.

1.6 Plan of Study

This study is organized into 5 chapters. The first chapter covers the introduction, Theoretical Background, Gap analysis, Research Questions, Objective of the study and significance of the study. The second chapter describes the literature review regarding past studies on the relationship returns, liquidity, size of firm, and COVID-19 pandemic. The second portion is stock liquidity, volatility, size of firm, and COVID-19 pandemic, on Shariah and non- Shariah stocks and at the end hypothesis of the study. Chapter 3 contains the definition of variables and methodology and which have been employed including Regression model and panel data techniques Random and Fixed effect. Fourth chapter consists of results and discussions. In fifth chapter conclusion, recommendations and future direction of the study are presented.

Chapter 2

Literature Review

The literature review is categorized into seven parts. In first part the effect of COVID-19 on stock return. Second part is the impact of volatility on stock return. Third part is impact of size of company on stock return. Fourth part is the impact of COVID-19 on liquidity of the stock mark. The fifth section discusses the influence of stock market volatility on liquidity. Sixth part is the impact of size of the company on liquidity of the stock markets. Last part is impact of COVID-19 on Shariah-compliant securities.

2.1 The Impact of COVID-19 on Stock Returns

Khan, K., Zhao, H., Zhang, H., Yang, H., Shah, M. H., & Jahanger, A. (2020) look at the impact of the COVID-19 pandemic on the financial markets of sixteen different countries. The daily closing value of each of these indexes is taken for the period 09 April 2019 to 03 April 2020. The study's results are estimated using a combination of pooled OLS regression, conventional t-test, and Mann-Whitney test. The study construct a COVID-19 new case and stock return weekly panel data. The growth rate of weekly new cases of COVID-19 is shown to be a negative predictor of stock market return in a pooled OLS estimate. However, after human-to-human transmissibility is confirmed, all stock market indexes in the short- and long-event window responded negatively to the news. After that, the returns on these countries' major stock indexes during the COVID-19 epidemic period are

compared to returns during the non-COVID era. The studies show that in the early phases of the epidemic, investors in these countries are unconcerned about COVID-19 news.

Polemis & Soursou, (2020) Examine the impact of the COVID-19 outbreak on the stock returns of 11 Greek energy companies. Diverging from the event day, on the other hand, causes the bad impacts to fade away. This information is taken from the Athens Stock Exchange (ASE), which provides daily information on stock closing prices. For the period of December 2, 2019, to July 2, 2020, it have daily data for the stock prices of Greek energy listed companies as well as the market index. For each firm and the stock index, it use 141 observations, for a total of 1692 observations in the sample. The market model is based on the rational expectations theory and the market efficiency hypothesis regarding investor behavior. It find that the pandemic crisis had an impact on stock performance. The lockdown-proxies event has a significant impact on returns. Overall, our findings support the market efficiency hypothesis, which suggests that divergence from the long-run equilibrium settles quickly, while rational expectations theory explains the downward shifts during the preannouncement period and on the event day in the case of negative abnormal returns.

AlAli, (2020) Uses event study analysis, to look at the impact of the stock market returns of the five main Asian stock markets have been impacted by the World Health Organization (WHO) announcing COVID-19 a global pandemic. The five largest Asian stock markets by daily returns are used in this study. All information obtained, except for the Morgan Stanley all-country world stock index (MSCI), covers the period March 4th, 2019 to April 22nd, 2020. According to the findings of this study, the WHO announcement has a significant negative impact on stock market returns on major Asian stock exchanges.

Al-Awadhi, Al-Saifi, Al-Awadhi, & Alhamadi, (2020) Conduct a study aimed at whether contagious the stock market performance is affected by viruses. It uses panel data regression analysis to evaluate the effect of the corona virus, a contagious infectious disease, on the Chinese stock market as a natural experiment. From January 10 to March 16, 2020, it uses data from firms in the Hang Seng Index and the Shanghai Stock Exchange Composite Index. Stock prices, market

capitalization, and market-to-book ratio for the period in question were gathered from Bloomberg (1,579 stocks and 78,252 observations). It shows that the COVID-19 contagious infectious disease outbreak in China correlates negatively with stock market returns by studying all stocks in both Index during the outbreak. According to the data, daily growth in total confirmed cases and total deaths affected by COVID-19 have a significant negative impact on global stock returns.

Farooq , Nasir , Bilal , & Quddoos , (2021) Under the COVID-19 situation, examines the abnormal returns of 958 insurance firms from Australia, Canada, Germany, the United States, the United Kingdom, Brazil, India, and Indonesia. The impacts of COVID-19 on stock returns in the short and long term are examined in this study using the event study technique. It extracts daily stock price data of all selected firms from 1 January 2019 to 15 April 2020. On average, 325 trade days are covered over this period. A GARCH model is used to determine the predicted returns, from 1 January 2019 until fifteen days before the first corona case is recorded in the respective country COVID-19 has a negative influence on overall returns, especially for insurance companies in developing countries, according to the findings.

Khan, Elahi , Ullah , & Khattak , (2021) investigate the effect of Covid-19 on the stock returns of three Pakistani indices: the KSE-100 index, the KSE-30 index, and the KMI-30 index. It uses an event research technique to look at how the Covid-19 epidemic affected stock returns by the firm. The study uses a 61-day event window, which included the event date, and a 160-day estimate period. The average adjusted return rate model, the market index adjusted return rate model, and the market model are the three major models for determining abnormal returns. The KSE-100, KSE-30, and KMI-30 indexes make up the sample. From February 27, 2019, to June 30, 2020, is the time frame. Individual stock prices are obtained and indices data is obtained from the SCS trading website. According to the study, Covid-19 has an unfavorable significant influence on stock returns in the post-event period. In the post-event window, the stock returns indicate a significant negative correlation. The pandemic has a significant negative influence on Pakistan's stock returns, as indicated by the KSE-100, KSE-30, and KMI-30 indices. In the post-event timeframe, all three indices has a significant negative

reaction.

Goker, Eren, & Karaca, (2020) The purpose of this study is to see how the COVID-19 outbreak has impacted the outcomes of the Borsa Istanbul sector index. COVID-19 first debuted in December 2019 in Wuhan, China, and rapidly spread to a number of countries. On March 11, 2020, the World Health Organization officially declared the COVID-19 outbreak a global pandemic, restricting both national and international economic and financial mobility. This has an immediate impact on the banking and real estate sectors. The data is analyzed using the "Event Study" method. The market model is one of the most popular of these types. This analysis demonstrates the impact of the pandemic on a sector-by-sector basis from this point of view. The event research at BIST looks at data from 26 different industries. The Sports, Tourism, and Transportation sectors lose the most money, though the abnormal return rates vary depending on the event timeframe.

2.2 The Impact of Volatility on Stock Returns

Lockwood & Linn, (1990) during the period 1964-1989, the variation of hourly market returns was studied. Return volatility declines from the opening hour until early afternoon and then rises, with intraday volatility being much higher than overnight volatility. Market variance has also changed significantly over time, rising after the NASDAQ was established in 1971, rising after stock options trading began in 1973, falling after fixed commissions were eliminated in 1975, rising after stock index futures trading began in 1982, and falling after stock index futures margin requirements increased in 1988. Hourly intraday return variations are diverse and ordered, declining from the opening hour until early afternoon and rising subsequently, according to the findings. Market volatility is also much significantly greater during intraday than overnight times, according to the findings. The results are unaffected by the sample period being divided into different market systems. During the pre-Nasdaq, Options, and Commissions periods, the market return variance is much larger for open-to-open than close-to-close periods, but it is significantly lower for open-to-open versus close-to-close times during the

Futures period.

Ahmad & Zaman , (1999) investigates the nature of the risk-return connection at the Karachi Stock Exchange. The study is carried out for the whole market and its many sectors, and it is focused on daily and monthly data from July 1992 to March 1997. The level of monthly volatility in returns is also estimated using daily data. The study covers the whole market, as well as its 11 sectors and four sub-divisions in the financial sector. The findings indicate that the average rates of return contain a risk premium. Furthermore, a rise in overall market volatility is seen as an indication of increased risk in specific industries. The findings reveal that information about market emotions is widely shared, implying that trading activities are highly successful. First, the Karachi Stock Exchange's trading operations are based on logical selections, since typical rates of return are seen to contain a risk premium in the face of heightened volatility. Second, when the overall market's volatility increases, the rates of return in particular sectors move upward as well. That is, higher volatility in the overall market is seen as a signal for increased risk in specific sector investing. Finally, market mood information is promptly distributed and widely disseminated across the market. As a consequence, the market's rising or declining tendency is generally distributed throughout.

Kenourgios , Samitas , & Papathanasiou, (2005) The day of the week's influence on the Athens Stock Exchange (ASE) General Index is investigated in this study during a ten-year period separated into two sub periods: 1995-2000 and 2001-2004. For the first sub period, five main indexes are examined, including Banking, Insurance, and Miscellaneous, as well as the FTSE-20 and FTSE-40 for the second part of the session. We test for the existence of day of the week variation in both return and volatility equations using a conditional variance approach that builds on early studies on the Greek stock market. The day of the week impact is present for the investigated indices of the developing ASE for the period 1995-2000 when using the GARCH (1,1) specification alone for the return equation and the Modified-GARCH (1,1) specification for both the return and volatility equations. However, over the years 2001-2004, this stock market anomaly appears to decrease power and importance in the ASE, which might be related to Greek entrance into

the Eurozone and market upgrading to the developed. The significantly highest and lowest volatility appears to be spit among indices, with the general index (1995-2000) having significantly higher volatility on Mondays and the bank index (1995-2000) having significantly lower volatility on Fridays, while the FTSE-40 and miscellaneous indices have significantly lower volatility on Fridays and Tuesdays, respectively (although very close to zero).

Mubarik & Javid, (2009) Investiage the relationship between trading volume, returns, and volatility in the Pakistani market. The ARCH and GARCH-M models are used to examine the relationship between return, volatility, and volume. The findings show that market and individual stock returns show evidence of first order autocorrelation. The Granger Causality test indicate that the market return and volume have a feedback connection. In the case of individual stock returns, however, the data suggests that more stocks cause volume than volume causes returns. The mean equation indicates that there is significant first-order autocorrelation. When trading volume is included in the variance equation of the GARCH-M model, the empirical findings reveal that trading volume and return volatility have a significant interaction. Previous empirical research by Doe et al. (2008) for the Asia Pacific market, Baklaci and Kasman (2003) for the Turkish market, and Mustafa and Nishat (2006) for the Pakistani market supports these findings.

Onali , (2020) examine the impact of Covid-19 confirmed cases and deaths on the US stock market (Dow Jones and S&P500 indexes), considering changes in trading volume, volatility expectations, and daily impacts with the exception of the number of reported cases in China, the findings, which are based on a GARCH(1,1) model and data from April 8, 2019, to April 9, 2020, suggest that changes in the number of cases and deaths in the United State and six other countries hit hard by the pandemic crisis. There is evidence that the Dow Jones and S&p P500 returns have a positive impact on conditional heteroscedasticity. The number of reported deaths in Italy and France has a negative influence on stock market returns but a positive impact on VIX returns, according to VAR models. Finally, Markov-Switching models show that the VIX's negative impact on stock market returns had increased thrice by the end of February 2020.

Tomal, (2021) aims to look at how different COVID-19 pandemic waves affect real estate stock returns and volatility in established (US, Australia), developing (Turkey, Poland), and frontier (Morocco, Jordan) economies. The pandemic epidemic had a modest influence on real estate business stocks, according to research employing the GJR-GARCHX model. Only the first pandemic wave in the United States resulted in a drop in stock returns. During the second and third waves, this was also the situation in Poland and Jordan. Furthermore, in the aftermath of the epidemic, the Polish financial market has seen an increase in the volatility of stock returns. The first period covers the first coronavirus wave, which occurred from March 2020 to September 2020, while the second period covers the second and third waves of the pandemic, which occurred from October 2020 to April 2021. The impact of the pandemic is seen most clearly in the financial markets of the United States and Poland, where a rise in cases resulted in lower stock returns and greater volatility in the latter country. Only Poland and Jordan, however, exhibited a negative association between the number of daily cases and the dependent variable during the second and third waves of infections

Farid, Ashraf, & Khan , (1995) Examine the impact of trade on stock price volatility at the Karachi Stock Exchange (KSE). The findings clarify the process behind the rise and fall of stock values on the Karachi stock exchange. Ten firms are picked at random from the hundred listed on the KSE-100 Index to investigate the impact of trading volume on stock price volatility. The KSE-100 Index is the most commonly used measure of Karachi's equity market performance, and it represents almost all of the Karachi Stock Exchange's top firms. From the available statistics for the first six months of 1994, the average daily turnover of each selected company's shares is estimated.

Each company's average turnover is represented as a percentage of its total number of shares and is used to determine the volume of trading for each of those firms. The closing prices of each company's shares at the end of each week from January 1994 is used to estimate the model's parameters. Stock price volatility is shown to be greater. It change from a low of 26% each year to a high of 51% per year. During the first half of 1994, the volume of trade, the expected rate of return, and the volatility of stock prices all have a strong relationship. indicating that the

dominating tendency at the Karachi Stock Exchange was to invest in shares only for short-term profits. The majority of investors by while the market is rising and sold when it is dropping. In other words, many investors appear to follow their own portfolio insurance strategies, whether consciously or subconsciously. This trend has contributed significantly to the increase in stock return volatility over the study period.

Tan & Khan , (2010) uses the daily stock price index from 1998:09 to 2009:12 to examine the existence of long memory in the Malaysian stock market. To solve this issue, many ARFIMA-G (ARCH)-type models have been considered, leading to various significant conclusions. To begin with, the long memory feature is present in both return and volatility, with and without the crisis impact. Second, stock volatility is shown to have a significant leverage effect, especially when the impact of the crisis is included. In comparison to the previous times under investigation, this means that volatility responds more to negative news than to positive news. Finally, the Student-t distribution outperforms the other G(ARCH)-type models with different innovation distributions when it comes to long memory volatility processes. In conclusion, the ARFIMAFIAPARCH model is shown to be the best technique for expressing stylized facts of stock return and volatility in Malaysia. The leverage effect was supported by this investigation due to the substantial asymmetry parameter. Stock volatility, in particular, is shown to have a large leverage effect, especially when the impact of the crisis is included.

Berument & Dogan, (2012) examines the link between stock market returns and volatility using US daily returns from May 26, 1952, through September 29, 2006. The data given here does not support the notion that the return-volatility connection exists and is constant every day of the week. The equal and value-weighted indexes of the NYSE (New York Stock Exchange), S&P500 (Standard & Poor's 500), NASDAQ (National Association of Securities Dealers Automated Quotations), and AMEX (the American Stock Exchange), as well as the DOW Dow Jones Industrial Average equal-weighted indexes, were used in this study. We find results that are consistent with the prior study when we apply the EGARCH specification to estimate volatility under the assumption that each market's return-volatility connection is consistent throughout the week.

Derbali, A., & Hallara, S, (2016) the effect of the day of the week on the return and volatility of the Tunisian stock exchange index (TUNINDEX) is investigated empirically in this study. During the period 31 December 1997 to 07 April 2014, three multivariate general autoregressive conditional heteroscedasticity models (GARCH (1,1) were used. Furthermore, we discover that Tuesday has a significant and unfavorable impact on the TUNINDEX return and volatility. In the instance of the Tunisian stock market index, we can also see how volatility persists.

Abbas, Bashir, Wang, Zebende, & Ishfaq, (2019) investigates the link between stock market returns and volatilities and macroeconomic fundamentals, based on monthly data from M7 in 1995 to M6 in 2015. The study use, the Diebold and Yilmaz (2012) spillover index technique in the generalized VAR framework for this. The overall spillover index empirical data for China show no significant variations in the return and volatility connectivity between stock market and macroeconomic factors. From the stock market to macroeconomic factors, the directional return and volatility spillover effect is significantly greater. The return and volatility spillovers in either direction change significantly after the global financial crisis of 2008. This study's findings are relevant for investors and policymakers interested in the link between China's stock market and macroeconomic issues in terms of return and volatility.

Iqbal , Manzoor, & Bhatti, (2021) examine the impact of COVID-19 on the volatility of Australian stock returns, as well as the impact of both bad and good news (shocks), is investigated in this study, It examines the unbalanced pattern of shocks as well as the effect of leverage on volatility. The study uses a generalized autoregressive conditional heteroskedasticity (GARCH) model to reflect asymmetry and economic leverage, and the exponential GARCH (EGARCH) model to further expand the investigation. News regarding COVID-19's negative impact on Australia's health system and economy is classified as bad news, whereas news about monetary and fiscal stimulus measures undertaken by the government is classified as good news. The index is considered as a proxy for the Australian stock market, and value-weighted ASX-200 equities returns from January 27 to December 29, 2020 are used. The research findings show that the EGARCH

model reflects asymmetry and leverage better than the GARCH model in predicting the volatility of Australian stock returns. The EGARCH model with volatility equation without news, on the other hand, exhibits a greater (smaller) leveraging influence of negative (positive) shocks on conditional volatility when compared to its variation with news. For GARCHX (1,1) and EGARCH(1,1) with News (negative news) parameters, bad news has also enhanced the volatility of Australian stock returns.

Rakshit & Neog, (2021) examine how stock market returns and volatility are affected by exchange rate volatility, oil price returns, and COVID-19 occurrences in a few developing market nations. Furthermore, the performance of emerging markets during the COVID epidemic is compared to that of developing markets prior to the pandemic and during the global financial crisis. Using arbitrage pricing theory, the author investigates the risk-return link between risk-based factors (exchange rate volatility and corona virus incidence) and stock market returns.

Using the exponential generalised autoregressive conditional heteroskedasticity model, the study captures the asymmetric volatility spillover from stock markets to foreign currency markets and vice versa. Exchange rate volatility has a negative and severe impact on market returns in Brazil, Chile, India, Mexico, and Russia during the coronavirus pandemic. The authors discover a positive relationship between oil price and stock market returns in all of the economies investigated when it comes to the impact of oil price returns. During the pandemic's initial stages. The stock markets of Russia, India, Brazil, and Peru are more volatile than they were during the Great Recession. The results indicate that, while the mean values of stock market returns did not change significantly between the pandemic and the GFC period, stock market returns in the studied emerging economies became much more volatile during the pandemic. In terms of the impact of fake news and media hype, it has been observed that the occurrence of media hype and fake news has a positive impact on market volatility in some emerging economies.

2.3 The Impact of Size of the Company on Returns

Al-Awadhi, Al-Saifi , Al-Awadhi , & Alhamadi, (2020) looks at whether contagious infectious infections have an affect on stock market performance. It use, panel data regression analysis to evaluate the impact of the corona virus, a contagious infections, on the Chinese stock market as a natural experiment. The results reveal that COVID-19's daily increase in total cases reported and total deaths has a significant negative impact on stock returns for all companies. Panel data regression, according to Baltagi (2008) and Hsiao (2014), minimizes estimation bias and multicollinearity, accounts for individual variability, and uncovers the time-varying connection between dependent and independent variables. To assess the relative performance of equities with COVID-19 while adjusting for firm-specific variables, This study use, panel analysis.

From January 10 to March 16, 2020, it use data from companies in the Hang Seng Index and the Shanghai Stock Exchange Composite Index. Stock prices, market capitalization, and market-to-book ratio for the period in question are gathered from Bloomberg (1,579 stocks and 78,252 observations). Finally, the influence of the COVID-19 epidemic on big and small market capitalization stocks' stock market performance is examined. They use a dummy variable with a value of one of the stocks in the large 50th percentile and zero if it is not. The findings of panel data tests with a market capitalization dummy variable indicate that high market capitalization equities have a considerably greater negative impact on returns than small market capitalization companies.

Wong ,(1989) investigates the empirical relationship between firm size and stock performance on the Singapore Stock Exchange. The findings show that small-company equities have outperformed large-company stocks in terms of returns, and that the firm size impact remains substantial when risk-adjusted returns are adjusted for earnings/price (E/P) ratio differences. The information for this study came from three different places. Small SES firms' common stock looks to have earned higher returns than large SES companies' common stock. The SES Companies' Handbooks included the appropriately adjusted profits per share for each of the financial years ending December 1974 through 1985, as well as the number of shares outstanding at the end of each year. Misspecification of the two-parameter CAPM model might be a better explanation.

Kumar & Sehgal , (2004) explain the relationship between specified firm features and common stock returns . Using both market-based and non-market-based measures of firm size, The empirical data suggest that the Indian stock market has a large size effect. When the EIP ratio is utilized as a proxy for relative suffering, it also reveals a weak value effect on stock returns. The relation between firm size and common stocks return is known as the size impact (sometimes known as the small firm effect). It indicates that the stocks of a small company should outperform the stocks of large companies. The following factors contribute to the size effect: (1) small companies are often undervalued by investors. (2) they are under-researched (3) they have less liquidity, so their betas are generally underestimated, (4) they have focused management ownership, (5) they do not have diversified operations, and (6) they have weak management, a less committed customer base, high labour turnover, and poor technology, among other things. From July 1989 to March 1999, the data includes "adjusted month-end share prices" for 364 firms. The CRISIL500 list includes the sample securities. CRISIL-500 is an Indian broad-based market index that includes firms of various sizes and trading activity and includes 97 sectors. Using the well-known market model equation, researchers regressed the excess portfolio returns on the excess returns for the market factor.

Leledakis, Davidson , & Smith , (2004) According to this study, the well-known size effect, in which firms with lower equity capitalizations consistently produce higher stock returns on average, is unrelated to a general association between expected stock return and actual firm size. The data from the London Stock Exchange supports Berk's (1997) findings for US data and Garza-Gómez et alfindings .'s for Japanese data, but we do not find that non-market value size variables are important in explaining returns on a univariate basis in the latter case. This study analyzed a large sample of UK stocks as well as a number of techniques, including one- and two-dimensional categorization, cross-sectional regression, and the SUR (Seemingly Unrelated Regression) tool. We then show that the negative relationship between market equity and stock performance is mostly due to tiny, highly leveraged enterprises.

Haq & Rashid, (2014) conduct studies into the Pakistani market, there is a link between firm size and excess stock returns. According to the size of the market

capitalization, total assets, and sales, empirical studies have supported a set of ten portfolios, and examine yearly stock returns using sorting and the Fama & Macbeth model for the years 2007 to 2011. The sample for this study consist of 50 firms that are part of the KSE 100 index between 2007 and 2011. The study's findings show a significant size impact, with smaller firms or size portfolios having higher average yearly excess returns than larger firms or size portfolios during the study period. Smaller firms generate considerably higher excess returns than larger firms, according to research findings.

The findings have significant implications for mutual fund managers, financial analysts, and small investors who are always on the lookout for market-beating trading methods. On stock returns, there is a size effect that is significant. The size impact data in the Pakistani stock market raises major doubts about market efficiency. Extraordinary gains can be obtained by adopting a size-based investing strategy, implying that the selected market is efficient since accessible to the general public data, i.e., firm size, can be utilized to obtain better returns.

Mazviona & Nyangara , (2014) conducts the study to look at the link between company size and stock returns for companies that are listed on the Zimbabwe Stock Exchange (ZSE) between June 2009 and July 2013. With some changes, the researcher used Banz's regression model from 1981. The regression is based on portfolios that have been created using market capitalization as the basis. Portfolios are built by placing stocks in increasing order of market capitalization, with no more than 5 securities per portfolio. The sample period begins in 2009 when the Zimbabwean government demonetized the Zimbabwean currency and replaced it with a basket of foreign currencies as legal money. Data previous to 2009 is additionally skewed due to hyperinflation and so is incorrect. The sample size includes 64 companies listed on the ZSE, 60 of which are industrial and 4 of which are mining. At the 5% level of significance, we find that the predicted coefficient for the company size component is not significant. As a result, over the period June 2009 to July 2013, company size has a positive but insignificant significant impact on stock returns for companies listed on the ZSE. Larger firms on the ZSE, contrary to normal empirical results, have greater risk-adjusted returns than smaller firms.

Farhan & Sharif, (2015) examine the influence of firm size on stock returns a time variation factor of January and July. In general, the existing literature indicates a link between firm size and stock returns. Risk-adjusted returns are greater for a smaller firm. This research focused on companies from the Karachi Stock Exchange's (KSE) four key manufacturing sectors: automobiles and parts, constructions and materials, oil and gas, and pharmaceuticals, and Biotech. The study examine monthly data from January 2007 to June 2013, KSE-100 index values, and market capitalization as the key factors. The results show that firm size is negatively and significantly linked to stock returns, while the July effect is positively and significantly connected to firm returns, using Ordinary Least Square (OLS) and Fixed-effect regression methods. In general, these findings are inconsistent with past research.

Handayani, Farlian, & Ardian, (2019) study the impact of company size and market risk on the stock return of Indonesian high-reliability firms. The firms in the samples are those that are listed on the LQ45 during 2015 and 2017. A total of 45 firms and 196 observations have been chosen. The data is extracted from financial reports and examined using the common effect model and the Chow test in the regression for panel data technique. The results of this study show that firm size has an impact on stock returns, but the market risk has no impact on blue-chip stock returns. The findings of this study are aimed to aid investors in making informed judgments about investing in blue-chip Indonesian firms. Based on the hypothesis test and discussion, it can be determined that the company size has a positive impact on the stock return of the businesses listed on LQ 45 between 2015 and 2017. During the period 2015-2017, market risk had no impact on the stock returns of the businesses listed on LQ 45. During the years 2015-2017, firm size and market risk both had an impact on the stock returns of listed firms on LQ 45.

Neukirchen, Engelhardt, Miguel, & Posch, (2021) look into the relationship between firm efficiency and stock performance. During the market crash, more efficient firms reflect cumulative returns that are at least 9.44 percentage points higher. A long-short portfolio of efficient and inefficient firms would have generated a 3.53 percent weekly return on average. Overall, research findings

demonstrate that business efficiency explains a large portion of stock returns during the crisis. Compustat/Capital IQ provides us with financial and accounting data for 884 US companies. Financial firms and corporations with a stock price of less than $5 per share are excluded. As the main dependent variables in baseline regression, researchers used the period from February 3, 2020, to March 23, 2020, the so-called "collapse period" as specified by Fahlenbrach et al. (2020). To verify the validity of our results, it use, weekly returns in Fama-Macbeth (Fama and MacBeth, 1973) and Fixed Effects (FE) regressions.

Finally, studies discover that firm efficiency explains a significant portion of stock returns during the COVID-19 epidemic. In fact, in terms of cumulative returns, highly efficient businesses beat inefficient ones by at least 9.44 percentage points. This shows that investors preferred companies that made better use of their resources, resulting in more promising future cash flows and a decreased chance of corporate default.

Naidu, D., & Ranjeeni, K. (2021) the following findings are based on an event study approach and a sample of 478 companies listed on the Australian Securities Exchange. First, fear of the coronavirus had a big and negative impact on the returns of several sectors, as well as small, medium, and large-cap companies. Second, fear of the coronavirus was a factor in the Australian stock market's return drift. Our findings imply that investors underreacted to fears about the coronavirus, and that this underreaction was seen across a variety of industries and firm sizes.

Investors who used a short selling strategy for equities that had significant unfavourable effects from the coronavirus concern and post-event return drift would have made profits ranging from 2.14 percent to 13.81 percent, according to our findings. Robustness tests with longer event windows back up the major findings. Furthermore, we uncover evidence of stock market reversals, particularly following Australia's first stimulus payout. Large enterprises and the information technology industry, on the other hand, were the first to see a turnaround in returns a few days after the second stimulus package was announced and lockdown began, but before the first stimulus payment was issued.

2.4 The Impact of COVID-19 on Stock Market Liquidity

Haroon & Rizvi, (2020) this research focuses on the influence of two parts of the COVID-19 epidemic on liquidity in emerging equity markets, real human costs, and government intervention. Based on a sample of 23 emerging countries from three regions, the findings suggest that a declining (increasing) trend in the number of confirmed coronavirus cases is associated to improving (deteriorating) liquidity in financial markets. As a result, the researchers examined WHO data from January 1, 2020, to April 30, 2020, when the number of COVID-19 cases worldwide increased from zero to almost three million. To explore the connection between curve flattening and market liquidity, it uses panel regressions with robust standard errors. Every model includes country fixed effects to account for each country's distinct features. It also reflect that government actions that restrict movement and businesses are linked to increased liquidity. The findings imply that a flattening of the coronavirus infection curve reduces investor uncertainty.

Farzami, Allen, Alexander, & Sehrish, (2021) This study evaluate the effect of the COVID pandemic on the liquidity interlinkages of US industrial groupings. It use a lead-lag liquidity network technique to look at liquidity interrelationships that go beyond immediate spillover effects. From January 1, 2012, through July 17, 2020, a sample of all companies included on the S&P 500 Index is taken, with rise and fall taken from the Compustat Capital IQ database. It use Amihud's liquidity metric to calculate stock liquidity (2002). This measure is commonly used to capture liquidity's risk and consistency in a systematic way. It's the daily ratio of absolute stock return to dollar volume, and it's based on the idea of a liquid market is one that allows for trading with the smallest amount of money of price effect. It shows that throughout the pre-COVID period, sectors differed in their liquidity connections, with some being more connected than others. It also show that COVID's crisis has a favorable sign on the liquidity network, with all parts being more linked than these were before to COVID. The impact varies by industry, Telecommunication services are the least affected, whereas energy are the most affected.

Umar, Rubbaniy, & Rizvi, (2021) This study looks into the impact of Covid-19 on stock market liquidity in China and four of the pandemic's badly countries. The results of our GARCH analysis show that news of the outbreak wreaked havoc on stock market liquidity in all of the sampled countries, using daily data for stock market liquidity from July 1, 2019, to July 10, 2020, as well as data for new cases and deaths from December 31, 2019, to July 10, 2020. I show that for all nations studied, inflation caused by brief liquidity shocks quickly returns to the long-term trend, implying that the liquidity shocks caused by Covid19 were only temporary. There is no short-term correlation between Covid-19 new cases or deaths and illiquidity, according to our VAR study. There is no long-term link between Covid-19 and stock market lack of liquidity since the series are not integrated at the same level, indicating that there is no evidence of Covid-19's influence on stock market liquidity.

Ellahi, Rehman, Sulehri, Ahmad, & Qureshi, (2021) states that since the world has entered the second wave of COVID 19, there has been little empirical research on the outbreak and its influence on stock market returns and liquidity. From December 2019 to October 2020, the study examine the data through panel regression models. This research attempts to close the gap by determining the impact of the COVID 19 epidemic on stock market returns, as well as the link between market liquidity and Pakistan's stock market returns. Corona virus spread has a significantly negative impact on daily returns and liquidity.

Chebbi, Ammer, & Hameed, (2021) examine the impact of the COVID-19 pandemic on the stock liquidity of S&P 500 companies by using daily statistics on the percentage of COVID-19 diseases and deaths indicated (ECDC). The final sample comprises 87026 observations of 500 companies from January 1 to December 31, 2020. The regression results indicate a strong negative relationship between COVID-19 and stock liquidity (as evaluated by a daily rise in the number of cases and deaths), suggesting that the COVID-19 pandemic reduces company liquidity.

Foley, S., Kwan, A., Philip, R., & Odegaard, B. A. (2021) The COVID-19 pandemic resulted in some of the largest and most rapid market disruptions in contemporary history. Liquidity quickly evaporated in a coordinated pace across global markets throughout the outbreak. The model use as difference in difference

regression. We show that during the pandemic, a sharp increase in margin needs is linked to the exit of global liquidity providers. Due to the binding nature of rising capital limits, these effects are concentrated in securities most vulnerable to high-frequency market makers.

2.5 The Impact of Volatility on Liquidity

Broto & Lamas, (2020) This study Evaluating the market liquidity resilience of US Treasuries, or the capability of liquidity to absorb shocks, is critical for financial stability. Due to the use of the liquidity level, the traditional resilience metric has limits. We offer a novel complement to the analysis resilience based on the liquidity volatility method. We focus on the connection between returns volatility and liquidity volatility for this aim, which is a relatively unexplored field. For the 10-year bond returns and five liquidity indicators from January 2003 to June 2016, we use a bivariate conditional correlation (CC-) GARCH model to examine persistence and spillovers between these variables in a parsimonious fashion. We find that after the crisis, liquidity and return volatility spillovers are larger, feedback loops are more frequent, and volatility persistence is lower, all of which are consistent with weaker resilience. Our findings assist to explain recent periods of significant market volatility.

Baig , Butt , Haroon , & Rizvi, (2020) study the impact of the COVID-19 pandemic on the microstructure of US equity markets. It explain the liquidity and volatility dynamics, in particular, using indices that reflect several aspects of the epidemic. These findings show that an increase in confirmed coronavirus cases and deaths is linked to a significant increase in market illiquidity and volatility. Declining sentiment, as well as the imposition of limitations and lockdowns, contributes to the degradation of market liquidity and stability. Researchers get their information from five different places. Thomson Reuters DataStream provides stock market data for the S&p 500 member stocks. The final data is a firm-day panel that includes all of the S&p 500 index's member stocks from January 13th to April 17th, 2020. The research is based on regression models that have been used in previous investigations (e.g. Blau, 2017; Blau, 2018a). The findings show that

an increase in confirmed coronavirus cases and deaths is linked to a considerable decrease in market liquidity and stability. Similarly, public fear and the imposition of restrictions and lockdowns appear to be contributing factors to market illiquidity and volatility.

Just & Echaustb, (2020) examine the relationship between the S&P500's return and three market indices: implied volatility, implied correlation, and liquidity. It also considers market volatility and short-term correlations between total confirmed cases and death in twelve countries.. To discover the structural split between stock market returns and important stock market indicators, it use a two-regime Markov switching model. This information is for the period June 3, 2019, to June 12, 2020. To provide a suitably long-term time series for model estimation, it use data from the previous year. Returns have a strong relationship with implied volatility, according to the study, suggested association exists, but not with liquidity.. The findings point to Italy's unique role in crisis transmission.

Ftiti, Ameur, & Louhichi, (202) state that the COVID-19 epidemic creates a wide range of news stories that have an impact on the economy and financial systems. There have been no studies that have looked at the impact of such news on financial markets. The impact of non-fundamental news about the COVID-19 epidemic on liquidity and return volatility is examined in this study. Focusing on extreme events, it uses quantile regression on daily data from December 31, 2019, to April 7, 2020, when China's lockdown limitations are restored. Non-basic news, such as the number of deaths and cases linked to the COVID-19, increased stock market volatility and decreased stock market liquidity, raising overall risk, but fundamental macroeconomic news remained relatively immaterial for the stock market. To evaluate the severity of the COVID-19 crisis in China, it develop new metrics of health news data based on the number of new confirmed coronavirus cases and the growth in the disease's death rate. It discovered that the crisis hurt the Shanghai market by increasing price volatility and decreasing liquidity levels.

Jawadi, Cheffou, Jawadi, & Ameur, (2021) examines the financial markets across the world that has been influenced by the coronavirus epidemic. The United States, among other nations, has been hit hard by the epidemic, with nearly 605,000 deaths. The data comes from Bloomberg and includes the years 4

January 2000 to 14 January 2021. To minimize further change risk, the stock indexes use closing prices stated in US dollars. The influence of COVID-19 on the liquidity and volatility of the US conventional and Islamic stock indices is investigated in this study to determine their efficiency in both linear and non-linear frameworks. Furthermore, it discover that Islamic securities are no more resistant to the epidemic than conventional securities. It use COVID-19 statistics and various financial market data (stock prices and trading volumes). To determine different types of coronavirus effects, it use robust linear and nonlinear regressions before and during the pandemic to specify liquidity and volatility differently, compute the speed of COVID-19 transmission, and use robust linear and nonlinear regressions before and during the pandemic.

Both liquidity and volatility (regardless of the proxy used) show significant time fluctuation, according to the study. Second, it find that variations in contamination and death rates connected to the pandemic have been nonlinearly driving market trading, liquidity, and volatility, implying a strong stock market reaction to exogenous news about the coronavirus epidemic and market inefficiency. It is critical to consider this dependence when forecasting stock market movements. Furthermore, we show that Islamic funds are no more resilient to the epidemic than conventional securities.

Umar, Rubbaniy, & Rizvi, (2021) examines the influence of Covid-19 on stock market liquidity in China and four of the pandemic's worst-affected countries. Using daily data for stock market illiquidity from July 1, 2019, to July 10, 2020, as well as data for new cases and deaths from December 31, 2019, to July 10, 2020, the results of GARCH analysis show that news of the outbreak on stock market liquidity in all of the sampled countries. The findings of GARCH study reveal that illiquidity and volatility increased in response to the Covid-19 breaking news, but the negative impact on stock market liquidity is short-lived, as liquidity quickly returned to normal.

Further research reveals that the illiquidity and Covid-19 series are not linked at the same level, implying that there is no longer any link between Covid-19 incidence and stock market liquidity. The VAR analysis also reveals that there is no short-run connection between these two data.

2.6 The Impact of Firm Size on Stock Market Liquidity

Audretsch & Elston, (2002) investigates the relationship between liquidity restrictions for German companies of varying sizes, as well as investing behavior. The Bonn Database is a new source of information that tracks the financial performance of 719 German companies from 1961 to 1989. The Q Theory of Investment Model is used in this study. The findings show that medium-sized firms are more liquidity constrained in their investment behavior than the smallest or largest firms in the study, indicating that the unique German infrastructure designed to help small businesses has succeeded in alleviating such liquidity constraints to some extent. The findings also support the idea that the emergence of In the 1980s, the German stock markets were dominated by competitiveness and globalism, which increased access. to financing for certain types of businesses. The results of the study show that this is only true for some firms, implying a more complicated link between firm size and liquidity constraints. Smaller companies face less liquidity restrictions, owing to Germany's unique institutional system, which offers long-term and competitively priced funding to smaller companies. The hypothesis that Germany's institutional finance system can prevent the impact of liquidity restrictions on medium-sized firms, which experienced the most severe liquidity constraints in the research, is not supported by data.

Alnaif, (2014) using data from 100 shareholding firms that represent the Amman Stock Exchange (ASE) index conduct a study that intends to analyze the factors impacting stock liquidity. Firm size and profits per share (EPS) have a significant positive impact on stock liquidity proxies, according to the results of a fixed-effects regression model. While the profitability of the company has a significant negative impact. The data, on the other hand, show that stock dividends and the firm's leverage ratio have no statistically significant influence.

Cheung, W. M., Chung, R., & Fung, S. (2015) Using the Real Estate Investment Trust (REIT) as a model, this study investigates the implications of stock liquidity on business value and corporate governance. The REIT industry's distinctive characteristics, such as investment structure homogeneity, a high payout

requirement, and the importance of institutional investors, show the favourable impact of stock liquidity on company value through corporate governance. We use a difference-in-differences test based on the propensity score matching estimator to address the endogeneity problem. As evaluated by Tobin's Q, the conclusion reveals that REIT stock liquidity has a causal and positive effect on business value. Importantly, through the route of institutional ownership, REIT stock liquidity promotes improved corporate governance. Institutional ownership of REIT stocks rises as REIT stock liquidity rises, especially among active monitors and institutional investors with multi-firm ownership in their REIT portfolios.

Ali & Hashmi, (2018) use a sample size of 84 non-financial companies listed on the Karachi Stock Exchange to evaluate the influence of institutional ownership on stock liquidity (KSE). The data is collected for the period 2005 to 2014. In this study, stock liquidity is measured using the turnover ratio, while institutional ownership is determined by dividing the number of shares held by institutions by the total number of outstanding shares. When institutions possess a large percentage of a company, the degree of stock liquidity in Pakistani-listed companies grows significantly, according to the fixed-effect model. The study also find that bank and investment company ownership is positively related to liquidity, but the connection between insurance company ownership and stock liquidity is insignificant. Many institutional investors, but not all, have a beneficial role in improving stock liquidity in the Pakistani capital market. The findings of this study are significant for dealers, traders, and brokers since they can help investors allocate resources more efficiently.

Sidhu , (2018) investigate the correlation between leverage and stock market liquidity among Indian companies in the S&P BSE 500 Index. The relationship is investigated using a fixed-effects panel regression model. The empirical findings support the stock market liquidity implications of leverage, i.e., a lower level of debt leads to a higher level of firm stock market liquidity. The empirical findings show that stock market liquidity, as evaluated by the Amihud measure, is negatively related to company leverage.

Zhang, Gao, & Li, (2021) study the impact of stock liquidity on firm value during the COVID-19 epidemic. This study use data from Chinese A-share listed firms

to determine the firm value of Cumulative Abnormal Returns and stock liquidity using the Amihud illiquidity technique. All control variables are taken from the 2019 annual financial statements of the firm. It use the market model to predict normal returns with daily returns from 210 working days to 10 working days before the event date (January 20, 2020): March 14, 2019, to January 3, 2020, in the event research. With an event window extending from January 24 to February 02, 2020, it acquire anomalous returns and CARs. The study indicate that there are strong negative relationships between stock liquidity and firm value in the first three days of the COVID-19 epidemic, but significant positive relationships in the days following. These negative relationships are even more significant in severely impacted regions, small firms, and non-state-owned firms.

2.7 The Impact of COVID-19 on Shariah Compliant Stocks with Conventional Stocks

Erdogan, Gedikli, & Cevik, (2020) look at how Islamic and Traditional stock markets reacted to the Covid-19 epidemic in Turkey. The DCC-GARCH technique is used for a sample period from February 10, 2011, to September 2, 2020. The empirical findings show that Islamic stock markets in Turkey are more stable to the global Covid-19 epidemic than the conventional stock market. Based on these findings, Turkey should take efforts to encourage the growth of the Islamic financial system to have a more stable financial system.

Nomran & Haron, (2021) evaluate the influence of the COVID-19 epidemic on Islamic vs conventional stock market performance, this study uses sample t-tests and panel pooling OLS regression. The research is based on daily data from 15 countries from September 1, 2019, to April 30, 2020, which includes two main periods and four sub-periods. The findings show that from mid-April 2020, Islamic indices' returns began to be positive rather than negative, but conventional indices' returns remained negative throughout the periods. Furthermore, the findings indicate that COVID-19 has a negative and statistically significant influence on the performance of both stock indices. Nonetheless, the influence on Islamic indexes is weak, whereas it is strong on conventional indices. The data show that

Islamic stock markets outperform conventional ones before and during COVID-19 and that the impact of the pandemic on stock markets is less severe for Islamic indices.

Hassan, chowdhury, Balli, & Hasan, (2021) study the effect of the COVID-19 on Islamic equities markets. The indiscriminate impact of the extraordinarily large-scale downturn throughout the markets is an indication of a discriminatory impact. Asian Islamic markets, to some extent, outperform their European counterparts. Asian markets, both Islamic and non-Islamic, are recovering faster than the rest of the world, including the Middle East and Africa, Europe, and America. A greater return tends to lead to a smaller maximum loss, but increased volatility appears to lead to a higher maximum drawdown. Despite the large-scale decline, a few markets post positive returns, with Islamic markets outperforming their counterparts in a variety of ways. Because of their large interlinkages, traditional markets react uniformly to the COVID-19 aftershock. These findings support the notion that Islamic markets are more resilient during times of crisis.

Tuna, (2021) conduct a study with the goal of this research is to see whether the news about the COVID-19 epidemic can be used as a forecast in financial markets. For this study, index values from 11 distinct sectors in traditional and Islamic stock markets, as well as index values obtained from COVID-19 deaths, COVID-19 cases, and health information, were examined. Google search volume (G.S.V.) information captured from Google trend is used to create news variable indices. The study uses daily data from March 19, 2020, to July 27, 2020, for a total of 25 index values. In this investigation, regression analysis is employed. In all sectors of both conventional and Islamic financial markets, COVID-19 deaths, COVID-19 cases, and health news utilised as predictors outperformed historical return values, according to the findings. Furthermore, Islamic stock markets respond positively to the COVID-19 outbreak news than traditional stock markets. As a result, in Islamic financial markets, COVID-19 deaths, COVID-19 cases, and health news can be used as effective predictors.

Hasan, M. B., Mahi, M., Hassan, M. K., & Bhuiyan, A. B. (2021) From a worldwide context, researchers investigate the impact of the COVID-19 epidemic on Islamic and conventional stock markets. Researchers also look at how Islamic and

mainstream stock markets interact. In this study, the Dow Jones Index and the FTSE Index are compared as two comparable pairs of conventional and Islamic stock indices. Our findings show that the pandemic causes identical volatility in both stock markets, using Wavelet-based multi-timescales algorithms on daily data from 21st January to 27th November 2020. Our data also indicate that the two markets are closely linked and tend to move in lockstep over the course of our study period, refuting the decoupling concept of the Islamic stock market from the conventional market. The Shariah screening method, on the other hand, does not protect Islamic stock markets against financial disasters. Our results show that, in times of economic uncertainty, investors should be aware that Islamic stocks' conservative qualities may not make them a superior investment option.

2.8 Hypothesis of Study

This study develops the following hypothesis:

H1: Flattening of the COVID curve has positive impact on returns.

H2: The stock volatility has significant impact on stock returns.

H3: The firm size has positive impact on stock returns.

H4: The Liquidity has positive impact on stock returns.

H5: Flattening of the COVID curve has positive impact on liquidity.

H6: The stock volatility has negative impact on market liquidity.

H7: The firm size has positive impact on market liquidity.

H8: The return has positive impact on market liquidity.

Chapter 3

Data Description and Methodology

This chapter covers the details of variables and used in the study along with the sample size , sample period and methodology used to investigate the impact of flattening of COVID curve on return and liquidity of stock market.

3.1 Population and Sample of the Study

The population of the study consists of firms listed at Pakistan stock exchange. The sample consists on firms studied included KSE 30 and KMI 30 index of Pakistan stock exchange. This study use daily data to examine the stock market return and liquidity. The sample period of the study is January1, 2020, to May 31, 2021. Due to the COVID cases that were reported on December 31, 2019. Like a reason, we chose the January 1, 2020 as a sample.

3.2 Variables

The detail of dependent and independent variables as under.

Return

Return is dependent variable of the study. It is measured on the assumption

compounded continously. The formula for return as under.

$$R = ln\frac{P_t}{P_{t-1}}$$

Liquidity

Liquidity is another dependent variable of the study. The spread between the index's high and low prices as a percentage of the opening price is used to estimate liquidity.

$$Liquidity = (Highprice - Lowprice)/openingprice$$

Volatility

Volatility is an independent variable of the study. Daily volatility is calculated using GARCH.

Size of the Company

Size is another independent variable of the study. It is measured by number of shares of the company multiply with market price per share.

$$SizeoftheCompany = Noofshare \times MPS$$

COVID Cases Curve

COVID cases are another study's independent variable. The COVID cases curve, which is calculated as the percentage change of the 7-day moving average of reported COVID cases, is used to measure it. The curve flattens as it decreases and approaches zero.

COVID Deaths Curve

The flattening of the death curve is measured by using moving average of 7 days.

3.3 Data Collection

For this study, secondary data is collected from various website. The daily closing price of KSE 30 and KMI 30 index data has been obtained from investing.com. The data of number of shares obtained from PSX (Pakistan stock exchange) data portal. The information of COVID-19 cases has been obtained from the official portal of government of Pakistan regarding COVID-19.

3.4 Methodology

This section presents the econometric model used to explore the impact of COVID curve flattening on market returns and liquidity.

3.4.1 Econometric Model

The impact of COVID-19 on return and liquidity is estimated by using regression model.

$$\text{R}eturn_t = \beta_0 + \beta_1 Vol_{it} + \beta_2 Cases_t + \beta_3 Size_{it} + \beta_4 Liquidity_{it} + \varepsilon \tag{3.1}$$

$$Liquidity_t = \beta_0 + \beta_1 Vol_{it} + \beta_2 Cases_t + \beta_3 Size_{it} + \beta_4 \text{R}eturns_{it} + \varepsilon \tag{3.2}$$

The regression model show that the average changes in the dependent variables, due to changes in the independent variables. In this study there are two types of working performed. (1) Company specific working. (2) Market specific working. First we performed Company specific and then Market specific. Whereas;

R : Stock return

Liq : Liquidity of the stock market

Vol : is the volatility

Case: COVID cases

Size: is the market capitalization of the company

ε: error term of the equation

β: Beta measure the change of any variable

β_0: is the intercept

I : The cross section of country

t : The time series (Time frame)

The flattening of the cases curve is measured by using moving average of 7 days.

The study also uses panel data analysis to study the impact of COVID cases on market return and liquidity of index in KSE 30 and KMI 30. The panel data analysis fixed effect model, random effect model and common constant model. The model is explain as:

$$Y_{it} = \alpha_i + \beta_1 X1_{it} + \beta_2 X2_{it} + ... + +\beta_k Xk_{it} + \mu_{it}$$

First we apply Random effect model and apply hauseman test and "P" value is significant then we go to panel option and apply Fixed effect model and and apply likelihood test and "P" value is significant it means < 0.05 we decide Fixed effect model is appropriate

Random Effect Model

A random-effects model is an alternative method of estimating a model. The difference between fixed effects and random effects is that the latter considers the constants for each section as random parameters rather than fixed ones. Hence the variability of the constant for each section comes from the fact that:

$$a_1 = a + v_i$$

Where vi is a standard random variable with a mean of zero.

The appropriate model is chosen on the basis of Hausman test or likelihood F test.

First we apply Random effect model then apply houseman test and "P" value is insignificant it means > 0.05 then Random Effect model is appropriate. The robustness of the result is also tested by using deaths on measured of COVID.

The flattening of the curve is measure by moving average. The model standard is under:

$$\text{Return}_t = \beta_0 + \beta_1 Vol_{it} + \beta_2 Deaths_t + \beta_3 Size_{it} + \beta_4 Liquidity_{it} + \varepsilon \tag{3.3}$$

$$Liquidity_t = \beta_0 + \beta_1 Vol_{it} + \beta_2 Deaths_t + \beta_3 Size_{it} + \beta_4 \text{Returns}_{it} + \varepsilon \tag{3.4}$$

The study also uses panel data analysis to study the impact of COVID deaths on market return and liquidity of index in KSE 30 and KMI 30. The panel data analysis fixed effect model, random effect model and common constant model. In the fixed effects method, the constant is treated as a group (section)-specific. This means that the model allows for different constants for each group (section). So the model is similar to that of before. The fixed effects estimator is also known as the least-squares dummy variables (LSDV) estimator because, to allow for different constants for each group, it includes a dummy variable for each group.

To understand this better consider the following model:

$$Y_{it} = \alpha_i + \beta_1 X1_{it} + \beta_2 X2_{it} + ... + +\beta_k Xk_{it} + \mu_{it}$$

First we apply Random effect model and apply hauseman test and "P" value is significant then we go to panel option and apply Fixed effect model and and apply likelihood test and "P" value is significant it means < 0.05 we decide Fixed effect model is appropriate

3.4.2 Random Effect Model

A random-effects model is an alternative method of model estimation. The distinction between fixed effects and random effects is that the latter considers each section's constants as random parameters instead of fixed ones. As a result, the constant's variability varies based on the section:

$$a_1 = a + v_i$$

Where vi is a standard random variable with a mean of zero. The appropriate model is chosen on the basis of Hausman test or likelihood F test. First we apply Random effect model then apply houseman test and "P" value is insignificant it means > 0.05 then Random Effect model is appropriate.

Chapter 4

Data Analysis and Discussion

This chapter provides the results of impact of COVID -19 on stock market return and liquidity: evidence from Pakistani stock exchange through various tests.

4.1 Descriptive Statistics

Descriptive statistics is used to find out how data behaves statistically. It includes three things i.e. location of the data, measure of central tendency, and measure of dispersion. Location of the data can be observed by looking at the kurtosis and skewness of the data. Along with mean and standard deviation the maximum, minimum, skewness and kurtosis are all observed in Table 4.1 The Table 4.1 explains behavior of data about all variables of the research model from the period of 26 February 2020 to 31 May 20201.

Measure of the central tendency can be seen by mean and median. The standard deviation of the data shows the average risk per day which is measure of dispersion. Descriptive statistics is based on the assumption of the COVID period start from 26 February 2020 to 31 May 2021 of KSE 30 and KMI 30 index of Pakistani stock exchange.

4.1.1 Descriptive Statistics (KSE30)

Table 4.1 show that descriptive statistics of all variables which are used in this study. The results of the table show that the average return of 0.17% of KSE 30

TABLE 4.1: Descriptive Statistics for KSE 30 Index (February 26, 2020 to May 31, 2021)

	Returns	**Liquidity**	**Size**	**Volatility**	**MAC**	**MAD**
Mean	0.0017	0.0355	11.0603	0.0007	0.0571	0.0416
Maximum	0.1035	1.0477	13.2398	0.0043	1.8253	1.5000
Minimum	-0.1246	-0.5925	7.8035	4.35E-05	0.0012	0.000
Std. Dev.	0.028	0.0552	1.0689	0.0006	0.1563	0.1251
Skewness	0.1403	10.2416	-0.063	1.7365	6.5695	7.4851
Kurtosis	4.6118	199.5614	2.3926	6.2053	61.4032	73.9405
Jarque-Bera	1040.43	15179747	149.5533	8681.648	1392814	2043087
Probability	0.000	0.000	0.000	0.000	0.000	0.000

index. The maximum return of the day is 10.35%. It means the highest return of the day of KSE 30 index. The maximum loss is -12.46% per day. Average variation is 2.80%. Return is positively skewed 0.140 indicating the higher return. The kurtosis 4.611 value is more than 3 of return data which means the behavior is leptokurtic, so we conclude that data is peaked in nature. Jarque-Bera and probability of the return of the data is significant which show that the data is not normal.

The average liquidity is0.0 355 for KSE 30 index. The maximum liquidity of the KSE 30 index is 1.047.The minimum liquidity is -0.592. Minimum of the liquidity is the of the liquidity in KSE 30 index. Average variation of the liquidity is 0.055. Liquidity is positively skewed 10.24. Kurtosis 199.56 value is more than 3 of liquidity data which means the behavior of the data is leptokurtic. So we conclude that data is peaked in nature. Jarque-Bera and probability of the liquidity of the data is significant which show that the data is not normal. The average size 11.06 of KSE 30 index. It means average trading of the companies in KSE 30 index. The maximum size is 13.23 which show that the maximum companies are trading in KSE 30 index during COVID-19 period. The minimum 7.80. The average variation of the size is 1.068. Size of the data is negatively skewed -0.063 of KSE 30 index.

Kurtosis 2.39 value is less than 3 of data which means the behavior of the data is flat in nature. Jarque-Bera and probability of the size of the data is significant which show that the data is not normal. The average volatility is 0.07% of KSE 30 index and maximum volatility is 0.43%.It shows the highest volatility in COVID

period of KSE 30 index. Minimum volatility of the data is 0.0004. The average variation of the volatility 0.061%. It means the change of volatility in KSE 30 index. Volatility is positively skewed 1.736% of the data. Kurtosis 6.20 value is more than 3 of data which means the behavior of the data is peak in nature. Jarque-Bera and probability of the volatility of the data is significant which show that the data is not normal. The average cases is 0.0 571 and maximum casas 1.825 and minimum casas is 0.0012 of total cases of COVID-19.

The average variation of the cases is 0.156 it means the change in number of cases. Cases have positively 6.569 skewed of the data. Kurtosis 61.40 value is more than 3 of data which means the behavior of the data is peak in nature. Jarque-Bera and probability of the cases of the data is significant which show that the data is not normal. The average deaths of COVID data is 0.0416 of total deaths. The maximum number of death of COVID 1.500 and minimum number of deaths of COVID is 0.0000 of total deaths of COVID. The average variation of number of deaths is 0.125 it means change in total deaths of COVID. Death has positively 7.48 skewed of the death data. Kurtosis 73.94 value is more than 3 of data which means the behavior of the data is peak in nature. Jarque-Bera and probability of the deaths of the data is significant which show that the data is not normal.

4.1.2 Descriptive Statistics (KMI 30)

Table 4.2 shows that descriptive statistics of all variable which are used in this study. The results of table show that the average return is 0.16% of KMI 30 index of Pakistani stock exchange. The maximum return earned in a day is 11.94%. It show that the highest value of the returns of the data. The maximum loss is -11.7% of the data which show that the loss in returns. The average variation is 0.0272 in the return data. It means the change in the return. The return is positively skewed indicating the higher positive returns. The kurtosis 4.600 value is more than 3 of returns which means the behavior is leptokurtic for KMI 30 index return, so we conclude that data is peaked in nature. Jarque-Bera and probability of the return data is significant which show that the data is not normal. The average liquidity per day is 0.0351 for KMI 30 index. Maximum liquidity is 1.0477 and minimum -0.5925 loss of the liquidity in a day.

TABLE 4.2: Descriptive Statistics of KMI 30

	Returns	**Liquidity**	**Size**	**Volatility**	**MAC**	**MAD**
Mean	0.0016	0.0351	10.9686	0.00071	0.0576	0.0421
Maximum	0.1194	1.0477	13.2398	0.00395	1.8253	1.8253
Minimum	-0.117	-0.5925	8.7522	7.63E-05	0	0
Std. Dev.	0.0272	0.055	0.9531	0.0005	0.1579	0.1263
Skewness	0.1494	10.3847	0.5207	2.0313	6.3949	7.4559
Kurtosis	4.6002	203.077	2.7007	7.93511	58.3477	73.7378
Jarque-Bera	1030.166	15727983	456.4741	15883.08	1254345	2031471
Probability	0	0	0	0	0	0

The average variation of the liquidity is 0.0550. It means the liquidity change a day of KMI 30 index. Liquidity is positively skewed 10.3847 which show the liquidity is higher. The kurtosis 203.077 value is more than 3 of returns which means the behavior is leptokurtic for KMI 30 index liquidity, so we conclude that data is peaked in nature. Jarque-Bera and probability of liquidity of the data is significant which show that the data is not normal. The average size is 10.96866 of the KMI 30 index of Pakistani stock exchange. The maximum average of the size is 13.239 which show the highest figure during the COVID-19 period. The minimum size is 8.752. The average variation of the size is 0.953. The size of the company is positively skewed 0.520. Kurtosis of the size of the data is flat because the figure of the size of the data is less than 3. Jarque-Bera and probability of the size of the data is significant which show that the data is not normal. The average volatility is 0.071% of returns and liquidity of day of KMI 30 index. The maximum volatility is 0.395%. It shows the highest volatility in COVID period of KMI 30 index. The minimum volatility is 0.0007%. The average variation of the volatility is 0.055%. The data of the volatility is positively skewed 2.0313. The kurtosis 7.935112 value is more than 3 of volatility which means the behavior is leptokurtic so we conclude that data is peaked in nature. Jarque-Bera and probability of the volatility data is significant which show that the data is not normal. The average cases of the data are 0.0576. The maximum data of cases is 1.825 which show the moving average of cases is high. The minimum cases 0.000 which shows the cases is low. The average variation of cases is 0.157 is change in the moving average of cases per day. The data of the cases is positively skewed 6.394. The kurtosis 58.84 value is more than 3 of cases which means the behavior is leptokurtic, so we conclude that data is

peaked in nature. Jarque-Bera and probability of the volatility data is significant which show that the data is not normal. The average of the death is 0.0421of the data. The maximum of the death is 1.825 which shows the per day increasing in death. The minimum is 0.0000% which shows no deaths. The average variation of the MAD is 0.1263. The data of death is positively skewed 7.455. The kurtosis 73.73 value is more than 3 of death which means the behavior is leptokurtic, so we conclude that data is peaked in nature. Jarque-Bera and probability of the death data is significant which show that the data is not normal.

4.2 Impact of Flattening of COVID-19 Cases Curve on Return of KSE 30 Companies

This section explores the impact of liquidity, size, volatility, and COVID cases on returns of companies included in KSE 30 and KMI 30.

4.2.1 Impact of Flattening of COVID-19 Cases Curve on Return of KSE 30 Companies

Table 4.3.1: Impact of Flattening of COVID-19 Cases Curve on Return of KSE 30 Companies

Company	Coefficient	Liquidity	Size	Volatility	MAC	F-Statistics	Adjusted R-squared
AMZN	-0.024	0.3360*	0.0016	-3.4569	-0.0472*	11.93	0.1236
	(0.0676)	(0.0768)	(0.0057)	(2.8227)	(0.0092)		
ATOR	-0.001	-0.0417	0.0008	1.1874	-0.0304*	1.3572	0.0045
	(0.0615)	(0.1083)	(0.0063)	(3.1833)	(0.0152)		
BAFL	-0.411*	0.3567*	0.0367*	-2.218	-0.0517*	11.68	0.1215
	(0.1847)	(0.0791)	(0.0167)	(2.692)	(0.0109)		
BAHL	-0.164	0.2264*	0.0144	-2.499	-0.0418*	8.809	0.0915
	(0.1159)	-0.074	(0.0103)	(4.292)	(0.0095)		
CHRC	0.104	0.2666*	-0.0107	-1.915	-0.0389*	4.193	0.0395
	(0.0833)	(0.0879)	(0.008)	(4.533)	(0.014)		
DAWH	-0.490*	0.1162	0.0440*	10.91*	-0.0535*	12.16	0.1259
	(0.1837)	(0.0634)	(0.0167)	(4.552)	(0.0081)		
DGKH	0.03	0.0054	0.0027	6.692	-0.0301*	2.297	0.0164
	(0.1286)	(0.0845)	(0.0118)	(4.164)	(0.0121)		
ENDR	0.862*	0.4082*	0.0755*	-2.392	-0.0251*	12.56	0.1299
	(0.2357)	(0.0727)	(0.0207)	(3.944)	(0.0068)		
FAUF	-0.879*	0.2357*	0.0740*	7.954*	-0.0288*	11.35	0.1178
	(0.2757)	(0.0834)	(0.0232)	(3.131)	(0.0068)		
GHIN	0.063	0.01721	-0.0073	0.477	-0.0658*	4.793	0.0466
	(0.05)	(0.1048)	(0.00528)	(3.927)	(0.0163)		

The table 4.3.1 and 4.3.2 results indicates that the flattening of COVID cases curve has significant negative impact on returns of AMZN, ATOR, BAFL, BAHL,CHRC, DAWH, DGKH,ENDR, FAUF, GHIN,HPWR, INIT,KOTA,LUCK,MAGS, MPLF, OGDC, POIN, PKEL, PKOL,PPL PSO, SEAR, SYSE, TRGP,UBL and UNITY

TABLE 4.3.2: Impact of Flattening of COVID-19 Cases Curve on Return of KSE 30 Companies

Company	Coefficient	Liquidity	Size	Volatility	MAC	F-Statistics	Adjusted R-squared
HBL	-0.103	0.4102*	0.008	-9.398*	0.0466*	20.49	0.201
	(0.098)	(0.0682)	(0.008)	(3.062)	(0.0074)		
HPWR	0.561*	0.4443*	0.0476*	-0.8158	-0.0523*	13.45	0.1384
	(0.2206)	(0.0885)	(0.019)	(4.829)	(0.00916)		
INIT	-3.24*	-0.0051*	0.3499*	14.22*	-0.0223*	16.13	0.1633
	(0.4681)	(0.0007)	(0.0501)	(4.234)	(0.0115)		
KOTA	0.01	0.2647*	-0.002	8.32*	-0.0546*	10.55	0.1097
	(0.0667)	(0.0881)	(0.0065)	(4.354)	(0.0109)		
LUCK	0.066	0.5437*	-0.0058	-9.717*	-0.0521*	16.99	0.171
	(0.0741)	(0.0845)	(0.006)	(3.068)	(0.0089)		
MCB	-0.388*	0.2234*	0.0313*	3.615	0.0483*	11.78	0.1221
	(0.187)	(0.0709)	(0.0152)	(4.147)	(0.0075)		
MAGS	-0.112	0.3433*	0.0086	1.831	-0.0475*	11.66	0.1209
	(0.1518)	(0.0724)	(0.0124)	(4.028)	(0.0093)		
MPLF	0.007	0.2308*	0.0011	1.026	-0.0398*	3.856	0.0355
	(0.1008)	(0.889)	(0.0093)	(4.833)	(0.0122)		
NISM	0.126	0.2094*	0.01157	2.464	0.0496*	6.715	0.0688
	(0.1332)	(0.0961)	(0.0125)	(5.115)	(0.0105)		
OGDC	-0.805*	0.0865	0.0613*	12.39*	-0.0476*	7.123	0.0732
	(0.2484)	(0.0936)	(0.0189)	(4.571)	(0.0098)		
POIN	0.211*	0.2090*	-0.0208*	-4.976	-0.0667*	5.994	0.0605
	(0.0684)	(0.0844)	(0.0066)	(4.598)	(0.0157)		
PKEL	0.043	0.0549	-0.0042	-1.4576	-0.0332*	1.7848	0.01
	(0.1007)	(0.0939)	(0.0102)	(4.341)	(0.0136)		
PKOL	-0.0342	0.2818*	0.0023	-1.7251	-0.0390*	6.7823	0.0694
	(0.1777)	(0.1014)	(0.0134)	(3.1842)	(0.0091)		
PPL	0.6525*	0.2918*	0.0519*	4.844	-0.0550*	9.3072	0.0968
	(0.2353)	(0.0999)	(0.0188)	(4.8485)	(0.0101)		
PSO	0.073	0.3271*	-0.0066	-5.6014	-0.0491*	8.385	0.087
	(0.1037)	(0.0917)	(0.0089)	(4.8286)	(0.0104)		
SEAR	0.0547	0.3994*	0.0054	-9.3791*	-0.0302*	6.1976	0.0628
	(0.12)	(0.0901)	(0.0109)	(4.504)	(0.0113)		
SYSE	0.023	0.3903*	-0.0029	-1.7645	-0.0453*	9.8355	0.1023
	(0.0428)	(0.0829)	(0.0039)	(4.3416)	(0.0123)		
TRGP	0.03	0.0313	-0.0023	1.6867	-0.0609*	3.2091	0.0277
	(0.0391)	(0.1177)	(0.0036)	(6.2326)	(0.0177)		
UBL	-0.188	0.1991*	0.0156	-3.2741	-0.0448*	8.1724	0.0847
	(0.1492)	(0.0806)	(0.0125)	(3.5358)	(0.0098)		
UNITY	-0.024	0.2552*	0.0014	4.997	-0.0572*	6.7287	0.0688
	(0.0435)	(0.0917)	(0.0042)	(6.5443)	(0.0135)		

of KSE 30 index. Significant negative results show that when number of cases

increases the return decreases, because fear and uncertainty exist in the market. Fear information change the investor's decision, so market reports low returns. And the flattening of COVID cases curve has significant positive impact on returns of HBL, MCB, and NISM of KSE 30 index because these companies are stable as people are more oriented about these companies, so these companies has positive returns.

The volatility has significant negative impact on returns of HBL, LUCK, and SEAR. Increase in volatility is indicator of high uncertainty which forces the investor to wait and see and reduce its trading in the market. It has significant positive impact on DAWH, FAUF, INIT, and OGDC. The results indicate that when buying process in bullish trend the volatility has positive impact on returns. The link is fear information and is it constant across industries.

Size has significant negative impact on returns of POIN, because the large firms which are stable and have relatively low growth rate earn low returns. And size has significant positive impact on returns of BAFL, DAWH, ENDR, FAUF, HPWR, INIT MCB, OGDC and PPL. It means big and stable firms are more traded in the market. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The size of few companies including AMZN, ATOR, BAHL, CHRC, DGKH, GHIN, HBL, KOTA, LUCK, MAGS, MPLF, NISM, PKEL, PKOL, PSO, SEAR SYSE TRGP UBL and UNITY has insignificant impact on returns.

The liquidity has significant impact on returns of AMZN, BAFL, BAHL, CHRC, ENDR, FAUF, HBL, HPWR, INIT, KOTA, LUCK, MCB, MAGS, MPLF, NISM, POIN, PKOL, PPL, PSO, SEAR, UBL and UNITY. The coefficient is positive for all above companies except INIT. The positive sign indicate that increase in liquidity indicates the bullish trend in market due to presence of buyer in the market. The result for INIT indicates the selling pressure or bearish trend in the market. Therefore it can be said that liquidity is an important indicator for return.

The figures which are in brackets are standard error. Furthermore, results indicate that the value of the F-statistics is more than 2. So model is correctly specified and model is valid. Excluding only one company which are Pak-Electric limited. Explanatory power of the model 4% to 17%. The high explanatory power is

observed in HBL 20%, Lucky Cement 17%, international Steel limited 16% and hub Power Company limited 13%. The low explanatory power is observed in Pak-Electric limited 1% and DGK Cement is 1%. Companies' explanatory power is generally low.

4.2.2 Impact of Flattening of COVID-19 Deaths Curve on Returns of KSE 30 Companies

TABLE 4.4.1: Impact of Flattening of COVID-19 Deaths Curve on Returns of KSE 30 Companies

Company	Coefficient	Liquidity	Size	Volatility	MAD	F-Statistics	Adjusted R-Squared
AMZN	-0.082 (0.0708)	0.3137*)0.0801	0.0067 0.006	-11.650* 3.3471	0.0239 0.0152	5.6978	0.0571
ATOR	0.02 (-0.0616)	-0.0591 (-0.1073)	-0.0016 (-0.0064)	3.2049 (-3.284)	-0.0563* (-0.0206)	2.231	0.0156
BAFL	-0.1547 (0.1836)	0.3670* (0.0818)	0.0134 (0.0167)	-9.8976* (3.6209)	0.0181 (0.0186)	5.9796	0.0607
BAHL	-0.316* (0.1244)	0.1837* (0.0763)	0.0283* (0.0111)	-17.183* (4.0115)	0.0384* (0.0122)	6.3407	0.0644
CHRC	0.07 (0.077)	0.2039* (0.0887)	-0.0075 (0.0074)	3.6428 (4.8722)	-0.0607* (0.018)	5.135	0.0506
DAWH	-0.365 (0.2156)	0.0241 (0.0668)	0.033 (0.0196)	3.9584 (5.2777)	-0.0109 (0.0128)	1.4949	0.0063
DGKH	-0.019 (0.1203)	-0.0023 (0.0822)	0.0015 (0.011)	12.115* (4.2782)	-0.0664* (0.0159)	5.114	0.0504
ENDR	-1.057* (0.2392)	0.3158* (0.0742)	0.0929* (0.021)	-10.021* (4.455)	0.0261* (0.0109)	10.35	0.1077
FAUF	-1.42* (0.2631)	0.0979 (0.0821)	0.1201* (0.0222)	1.9297 (3.514)	0.0392* (0.0102)	10.5	0.1092
GHIN	0.034 (0.051)	0.1209 (0.1082)	-0.0042 (0.0054)	2.62 (4.236)	-0.0583* (0.224)	2.409	0.0178
HBL	-0.095 (0.1114)	0.3643* (0.0724)	0.0074 (0.0092)	-17.23* (3.34)	0.0039 (0.0109)	9.518	0.099
HPWR	-0.511* (0.2588)	0.3154* (0.0903)	0.0436* (0.0223)	-3.563 (5.675)	-0.0112 (0.0152)	4.934	0.0483
INIT	-3.28* (0.4879)	-0.0051* (0.0007)	0.3542* (0.0522)	14.87* (4.389)	-0.0161 (0.0171)	15.28	0.1556
KOTA	-0.079 (0.0684)	0.2086* (0.0906)	0.0067 (0.0067)	9.082 (4.834)	0.0226 (0.0153)	4.605	0.0444
LUCK	0.003 (0.077)	0.4283* (0.0896)	-8.85E (0.0062)	-8.752* (3.932)	-0.0245 (0.0144)	8.389	0.087
MCB	-0.277 (0.1972)	0.1072 (0.0737)	0.0226 (0.016)	-11.32* (5.11)	0.0293* (0.0133)	2.676	0.0211
MAGS	-0.329* (0.1565)	0.3011* (0.0753)	0.0265* (0.0128)	0.707 (4.487)	-0.0073 (0.0141)	4.915	0.048
MPLF	-0.027 (0.0974)	0.1374 (0.0877)	0.0019 (0.0089)	8.254 (5.323)	-0.0593* (0.0168)	4.329	0.0411
NISM	-0.051 (0.1365)	0.0979 (0.0991)	0.0044 (0.0129)	7.542 (5.95)	-0.0599* (0.0174)	4.084	0.0383

The Table 4.4.1 and 4.4.2 results indicates that the flattening of COVID deaths curve has significant negative impact on returns of ATOR, CHRC, DGKH, GHIN, MPLF, NISM, POIN, PKEL, SYSE, TRGP and UNITY of KSE 30 index. Significant negative results show that when number of deaths increases the return decreases, because fear and uncertainty exist in the market. Fear information change the investor's decision, so market reports low returns. However, market is negatively influenced by the pandemic. And the flattening of COVID deaths curve has significant positive impact on returns of BAHL, ENDR, FAUF, MCB, and PKOL of KSE 30 index, because when number of deaths decreases the return increases due to reverse movement of deaths. Few companies including AMZN, BAFL, DAWH, HBL, HPWR, INIT, KOTA, LUCK, MAGS, OGDC, PPL, PSO, SEAR and UBL has insignificant impact on returns.

TABLE 4.4.2: Impact of Flattening of COVID-19 Deaths Curve on Returns of KSE 30 Companies

Company	Coefficient	Liquidity	Size	Volatility	MAD	F-Statistics	Adjusted R-Squared
OGDC	-0.547* (0.2522)	0.01 (0.0976)	0.0417* (0.0192)	5.507 (4.855)	-0.0061 (0.0145)	1.262	0.0033
PION	0.125* (0.0638)	0.0946 (0.0884)	-0.0125* (0.0061)	1.436 (5.256)	-0.0604* (0.0211)	3.516	0.0314
PKEL	0.062 (0.1002)	-0.0311 (0.0949)	-0.0063 (0.0102)	4.479 (4.936)	-0.0599* (0.0198)	2.584	0.02
PKOL	-0.329 (0.1896)	0.2211* (0.1042)	0.0249 (0.0144)	-6.585* (3.18)	0.0349* (0.0132)	3.878	0.0358
PPL	-0.336 (0.2441)	0.2159* (0.1056)	0.0268 (0.0195)	-5.736 (5.103)	0.0004 (0.015)	1.742	0.0094
PSO	-0.048 (0.1086)	0.2656* (0.0944)	0.0041 (0.0094)	-10.19* (5.1830)	-0.0026 (0.0146)	2.698	0.0214
SEAR	-0.065 (0.1179)	0.3697* (0.0907)	0.0056 (0.0107)	-10.11* (4.701)	-0.0067 (0.0146)	4.367	0.0416
SYSE	-0.006 (0.0418)	0.3906* (0.0842)	-0.0003 (0.0038)	0.6437 (4.848)	-0.0425* (0.0169)	7.861	0.0813
TRGP	0.01 (0.0385)	-0.0281 (0.1204)	-0.0009 (0.0036)	5.992 (6.849)	-0.0616* (0.0241)	1.886	0.0113
UBL	0.015 (0.1575)	0.1698* (0.0837)	-0.0013 (0.0132)	-9.409* (3.682)	-0.0089 (0.0141)	2.916	0.0241
UNITY	-0.054 (0.0439)	0.2070* (0.0926)	0.0041 (0.0043)	9.007 (7.34)	-0.0448* (0.0191)	3.568	0.032

The volatility has significant negative impact on returns of AMZN, BFAL, BAHL, ENDR, HBL, LUCK, MCB, PKOL, PSO, SEAR, and UBL. Increase in volatility is indicator of high uncertainty which forces the investor to wait in see and reduce its trading in the market. It has significant positive impact on INIT and DGKH.

The results indicate that the bullish trend of buying is positive impact on returns. The link is fear information and is it constant across industries.

Size has significant positive impact on returns of BAHL, ENDR, FAUF, HPWR, INIT, MAGS, OGDC and PION. It means big and stable firms are more traded in the market. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The size of few companies including AMZN, ATOR, BAHL, CHRC, DGKH, GHIN, HBL, KOTA, LUCK, MCB, MPLF, NISM, PKEL, PKOL, PPL, PSO, SEAR, SYSE, TRGP, UBL and UNITY has insignificant impact on returns.

The liquidity has significant positive impact on returns of AMZN, BAFL, BAHL, CHRC, ENDR, HBL, HPWR, KOTA, LUCK, MAGS, PKOL, PPL, PSO, SEAR, SYSE, UBL and UNITY. The coefficient is positive for all above companies except INIT. The positive sign indicate that increase in liquidity indicates the bullish trend in market due to presence of buyer in the market. The result for INIT indicates the selling pressure or bearish trend in the market. Therefore it can be said that liquidity is an important indicator for return.

The figures which are in brackets are standard error. Furthermore, results indicate that the value of the F-statistics is more than 2. So model is correctly specified and model is valid. Excluding only four companies. Explanatory power of the model 1% to 15%. The high explanatory power is observed in international Steel limited 15% , ENDR 10% and FAUF 10%. The low explanatory power is observed in TRGP 1%, UBL 2% and UNITY 3%. Companies' explanatory power is generally low.

4.2.3 Impact of Flattening of COVID-19 Cases Curve on Returns of KMI 30 Companies

In Table 4.5 Impact of flattening of COVID cases curve on returns of sharia compliant index in KMI 30 is examine. There are total 30 companies, 13 companies are sharia compliant and 17 companies are also sharia compliant but these are common in KSE 30. The discussion of 17 companies which are common in both KSE 30 and KMI 30 are discussed above. Furthermore, the elaborations of 13

TABLE 4.5: Impact of Flattening of COVID-19 Cases Curve on Returns of KMI 30 Companies

Company	Coefficient	Liquidity	Size	Volatility	MAC	F-Statistic	Adjusted R-squared
ABOT	0.151 0.093	0.5307* (0.0628)	-0.0143 (0.0081)	-4.8268 (6.4267)	-0.0567* (0.0091)	24.6	0.234
EGCH	-1.6248* (0.3375)	0.2047* (0.084)	0.1342* (0.0279)	7.7868* (2.8502)	-0.0340* (0.0074)	11.33	0.1176
EPCL	-0.0016 (0.0705)	0.2378* (0.0819)	-0.0002 (0.0066)	-1.0419 (4.2719)	-0.0377* (0.0111)	4.828	0.047
FAUF	0.0377 (0.1138)	0.3446* (0.0826)	-0.0042 (0.011)	-4.4391 (3.3122)	-0.0311* (0.0103)	5.956	0.0601
GLAX	-0.4045* (0.1687)	0.2767* (0.0754)	0.0365* (0.0154)	-3.7067 (2.8621)	-0.0192* (0.0077)	6.471	0.0659
HATC	-0.0434 (0.0853)	0.2110* (0.0882)	0.0034 (0.0079)	2.4376 (4.8109)	-0.0307* (0.0119)	3.764	0.0344
ICI	-0.23 (0.1629)	0.3699* (0.0748)	0.0197 (0.0145)	5.9933 (4.4219)	-0.0438* (0.0089)	12.54	0.1296
INIT	0.0366 (0.0573)	0.3195* (0.0889)	-0.0039 (0.0057)	-6.3552 (5.0179)	-0.0428* (0.0116)	6.0674	0.0613
KELE	-0.0353 (0.1441)	0.4218* (0.0754)	0.0029 (0.0124)	-16.353* (6.5912)	-0.0382* (0.0103)	10.37	0.1079
KOHC	0.0451 (0.1136)	0.1817* (0.0823)	-0.0046 (0.0106)	1.5009 (3.6579)	-0.0332* (0.0139)	2.8573	0.0234
MILM	-0.0332 (0.0712)	0.3093* (0.0784)	0.0025 (0.0065)	4.9611 (3.9818)	-0.03395* (0.0088)	9.3438	0.0971
PACK	0.0394 (0.0742)	0.1773* (0.0821)	-0.004 (0.0069)	3.6911 (4.2921)	-0.0490* (0.0099)	6.91	0.0708
SUIN	-0.1901 (0.1102)	0.1344 (0.097)	0.0182 (0.0105)	-1.2301 (3.3864)	-0.0513* (0.0114)	5.9996	0.0606
ATOR	-0.001 (0.0615)	-0.0417 (0.1083)	0.0008 (0.0063)	1.1874 (3.1833)	-0.0304* (0.0152)	1.3572	0.0045
AMZN	-0.024 (0.0676)	0.3360* (0.0768)	0.0016 (0.0057)	-3.4569 (2.8227)	-0.0472* (0.0092)	11.93	0.1236
CHRC	0.104 (0.0833)	0.2666* (0.0879)	-0.0107 (0.008)	-1.915 (4.533)	-0.0389* (0.014)	4.193	0.0395
DGKH	0.03 (0.1286)	0.0054 (0.0845)	0.0027 (0.0118)	6.692 (4.164)	-0.0301* (0.0121)	2.297	0.0164
ENDR	0.862* (0.2357)	0.4082* (0.0727)	0.0755* (0.0207)	-2.392 (3.944)	-0.0251* (0.0068)	12.56	0.1299
INIT	-3.24* (0.4681)	-0.0051* (0.0007)	0.3499* (0.0501)	14.22* (4.234)	-0.0223* (0.0115)	16.13	0.1633
LUCK	0.066 (0.0741)	0.5437* (0.0845)	-0.0058 (0.006)	-9.717* (3.068)	-0.0521* (0.0089)	16.99	0.171
MAGS	-0.112 -0.1518	0.3433* -0.0724	0.0086 -0.0124	1.831 -4.028	-0.0475* -0.0093	11.66	0.1209
MPLF	0.007 (0.1008)	0.2308* (0.889)	0.0011 (0.0093)	1.026 (4.833)	-0.0398* (0.0122)	3.856	0.0355
NISM	0.126 (0.1332)	0.2094* (0.0961)	0.01157 (0.0125)	2.464 (5.115)	0.0496* (0.0105)	6.715	0.0688
OGDC	-0.805* (0.2484)	0.0865 (0.0936)	0.0613* (0.0189)	12.39* (4.571)	-0.0476* (0.0098)	7.123	0.0732
PKEL	0.043 (0.1007)	0.0549 (0.0939)	-0.0042 (0.0102)	-1.4576 (4.341)	-0.0332* (0.0136)	1.7848	0.01
PKOL	-0.0342 (0.1777)	0.2818* (0.1014)	0.0023 (0.0134)	-1.7251 (3.1842)	-0.0390* (0.0091)	6.7823	0.0694
PPL	0.6525* (0.2353)	0.2918* (0.0999)	0.0519* (0.0188)	4.844 (4.8485)	-0.0550* (0.0101)	9.3072	0.0968
PSO	0.073 (0.1037)	0.3271* (0.0917)	-0.0066 (0.0089)	-5.6014 (4.8286)	-0.0491* (0.0104)	8.385	0.087
SEAR	0.0547 (0.12)	0.3994* (0.0901)	0.0054 (0.0109)	-9.3791* (4.504)	-0.0302* (0.0113)	6.1976	0.0628
UNITY	-0.024 (0.0435)	0.2552* (0.0917)	0.0014 (0.0042)	4.997 (6.5443)	-0.0572* (0.0135)	6.7287	0.0688

companies of KMI 30 index are given below:

Results shows that the flattening of COVID cases curve has significant negative impact on returns of all 13 companies. Significant negative results show that when number of cases increases the return decreases, because fear and uncertainty exist in the market. Fear information change the investor's decision, so market reports low returns.

The volatility has significant negative impact on returns of KELE. Increase in volatility is indicator of high uncertainty which forces the investor to wait in see and reduce its trading in the market. It has significant positive impact on EGCH. The results indicate that the link is fear information and is it constant across industries. Other 11 companies has insignificant impact on returns which are ABOT, EGCH, EPCL, FAUF, GLAX, HATC, ICI, INIT, KOHC, MILM,PACK and SUIN.

Size has significant positive impact on returns of EGCH and GLAX. It means big and stable firms are more traded in the market. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The size of few companies including ABOT, EPCL, FAUF, HATC, ICI, INIT, KELE, KOHC, MILM,PACK and SUIN has insignificant impact on returns.

The liquidity has significant positive impact on returns of all 13 companies of KMI 30 index. The coefficient is positive for all above companies except SUIN. The positive sign indicate that increase in liquidity indicates the bullish trend in market due to presence of buyer in the market. The result for SUIN indicates the selling pressure or bearish trend in the market. Therefore it can be said that liquidity is an important indicator for return.

The figures which are in brackets are standard error. Furthermore, results indicate that the value of the F-statistics is more than 2. So model is correctly specified and model is valid. Explanatory power of the model lies between 2.3% to 23%. The high explanatory power is observed in three companies which are ABOT 23%, ICI 12% and EPCL 4%. The minimum explanatory power is observed in three companies which are KOHC 2.3%, HATC 3.4% and EPCL 4.7%. The explanatory power of other company less between than two groups.

4.2.4 Impact of Flattening of COVID-19 Deaths Curve on Returns of KMI 30 Companies

Results in Table 4.6 show that the flattening of COVID deaths curve has significant negative impact on returns of FAUF, HATC, ICI, INIT, KOHC, MILM, PACK and SUIN. Significant negative results show that when number of cases increases the return decreases, because fear and uncertainty exist in the market. Fear information change the investor's decision, so market reports low returns. And the flattening of COVID deaths curve has significant positive impact on return of only one company of KMI 30 index that is EGCH, because when number of deaths decreases the return increases due to reverse movement of deaths. Few companies including ABOT, EPCL, GLAX, and KELE has insignificant impact on returns.

The volatility has significant negative impact on returns of KELE. Increase in volatility is indicator of high uncertainty which forces the investor to wait in see and reduce its trading in the market. It has significant positive impact on MILM. The results indicate that the link is fear information and is it constant across industries. Other 11 companies has insignificant impact on returns which are ABOT, EGCH, EPCL, FAUF, GLAX, HATC, ICI, INIT, KOHC, PACK and SUIN.

Size has significant positive impact on returns of EGCH, ICI and GLAX. It means big and stable firms are more traded in the market. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The size of few companies including ABOT, EPCL, FAUF, HATC, INIT, KELE, KOHC, MILM,PACK and SUIN has insignificant impact on returns.

The liquidity has significant positive impact on returns of 8 companies of KMI 30 index including ABOT, EPCL, FAUF, GLAX, ICI, INIT, KELE, and MILM. The positive sign indicate that increase in liquidity indicates the bullish trend in market due to presence of buyer in the market. Therefore it can be said that liquidity is an important indicator for return.

The figures which are in brackets are standard error. Furthermore, results indicate that the value of the F-statistics is more than 2. So model is correctly specified

TABLE 4.6: Impact of Flattening of COVID-19 Deaths Curve on Returns of KMI 30 Companies

Company	Coefficient	Liquidity	Size	Volatility	MAD	F-Statistic	Adjusted R-squared
ABOT	-0.1620* 0.0821	0.4710* (0.056)	0.0133 (0.0072)	8.7947 (6.6923)	-0.0137 (0.0111)	13.78	0.1419
EGCH	-1.8621* (0.3542)	0.0895 (0.0823)	0.1541* (0.0293)	1.208 (3.2744)	0.0310* (0.012)	7.5128	0.0775
EPCL	-0.056 (0.0708)	0.2148* (0.0832)	0.005 (0.0066)	-4.4487 (4.8267)	-0.0027 (0.0165)	1.8795	0.0112
FAUF	-0.0125 (0.113)	0.2812* (0.0822)	0.0006 (0.0109)	-1.9647 (3.6543)	-0.0314* (0.0148)	4.7564	0.0462
GLAX	-0.4183* (0.1725)	0.2457* (0.0749)	0.0378* (0.0157)	-4.4532 (3.1629)	-0.0084 (0.0118)	4.9669	0.0486
HATC	-0.0138 (0.0847)	0.1552 (0.0882)	0.0004 (0.0078)	7.4454 (4.9538)	-0.0574* (0.0168)	5.08	0.05
ICI	-0.3291* (0.168)	0.3313* (0.0766)	0.0285* (0.0149)	8.0992 (5.0628)	-0.0332* (0.0146)	7.4281	0.0765
INIT	0.0039 (0.0579)	0.2605* (0.0894)	-0.0006 (0.0057)	-4.6468 (5.5691)	-0.0335* (0.0166)	3.6176	0.0326
KELE	-0.211 (0.1579)	0.3346* (0.0794)	0.0184 (0.0137)	-18.9618* (7.4056)	0.0096 (0.0179)	6.7316	0.0688
KOHC	0.0252 (0.1067)	0.0872 (0.085)	-0.0027 (0.01)	5.9846 (3.9507)	-0.0625* (0.0187)	4.2366	0.04
MILM	-0.1219 (0.0685)	0.2762* (0.0796)	0.0105 (0.0062)	9.6938* (4.3061)	-0.0304* (0.0123)	5.6651	0.0567
PACK	-0.0134 (0.0795)	0.1078 (0.0843)	0.0009 (0.0074)	3.8918 (4.612)	-0.0317* (0.0144)	2.039	0.0132
SUIN	-0.0513 (0.1093)	0.0805 (0.1018)	0.0048 (0.0104)	-1.41533 (3.9236)	-0.0334* (0.017)	1.9137	0.0116
ATOR	-0.082 (0.0708)	0.3137* (0.0801)	0.0067 (0.006)	-11.650* (3.3471)	0.0239 (0.0152)	5.6978	0.0571
AMZN	0.02 (0.0616)	-0.0591 (0.1073)	-0.0016 (0.0064)	3.2049 (3.284)	-0.0563* (0.0206)	2.231	0.0156
CHRC	0.07 (0.077)	0.2039* (0.0887)	-0.0075 (0.0074)	3.6428 (4.8722)	-0.0607* (0.018)	5.135	0.0506
DGKH	-0.019 (0.1203)	-0.0023 (0.0822)	0.0015 (0.011)	12.115* (4.2782)	-0.0664* (0.0159)	5.114	0.0504
ENDR	-1.057* (0.2392)	0.3158* (0.0742)	0.0929* (0.021)	-10.021* (4.455)	0.0261* (0.0109)	10.35	0.1077
INIT	-3.28* (0.4879)	-0.0051* (0.0007)	0.3542* (0.0522)	14.87* (4.389)	-0.0161 (0.0171)	15.28	0.1556
LUCK	0.003 (0.077)	0.4283* (0.0896)	-8.85E (0.0062)	-8.752* (3.932)	-0.0245 (0.0144)	8.389	0.087
MAGS	-0.329* -0.1565	0.3011* -0.0753	0.0265* -0.0128	0.707 -4.487	-0.0073 -0.0141	4.915	0.048
MPLF	-0.027 (0.0974)	0.1374 (0.0877)	0.0019 (0.0089)	8.254 (5.323)	-0.0593* (0.0168)	4.329	0.0411
NISM	-0.051 (0.1365)	0.0979 (0.0991)	0.0044 (0.0129)	7.542 (5.95)	-0.0599* (0.0174)	4.084	0.0383
OGDC	-0.547* (0.2522)	0.01 (0.0976)	0.0417* (0.0192)	5.507 (4.855)	-0.0061 (0.0145)	1.262	0.0033
PKEL	0.062 (0.1002)	-0.0311 (0.0949)	-0.0063 (0.0102)	4.479 (4.936)	-0.0599* (0.0198)	2.584	0.02
PKOL	-0.329 (0.1896)	0.2211* (0.1042)	0.0249 (0.0144)	-6.585* (3.18)	0.0349* (0.0132)	3.878	0.0358
PPL	-0.336 (0.2441)	0.2159* (0.1056)	0.0268 (0.0195)	-5.736 (5.103)	0.0004 (0.015)	1.742	0.0094
PSO	-0.048 (0.1086)	0.2656* (0.0944)	0.0041 (0.0094)	-10.19* (5.1830)	-0.0026 (0.0146)	2.698	0.0214
SEAR	-0.065 (0.1179)	0.3697* (0.0907)	0.0056 (0.0107)	-10.11* (4.701)	-0.0067 (0.0146)	4.367	0.0416
UNITY	-0.054 (0.0439)	0.2070* (0.0926)	0.0041 (0.0043)	9.007 (7.34)	-0.0448* (0.0191)	3.568	0.032

and model is valid. The Explanatory power of the model lies between 1% to 14%. The high explanatory power is observed in these top three companies which are ABOT 14%, EGCH 7.75% and ICI 7.65%. The minimum explanatory power is observed in these three low companies which are EPCL 1.12%, SUIN 1.16% and PACK 1.32%. The explanatory power is generally low.

4.2.5 Flattening of COVID-19 Cases Curve on Stock Market Returns of KSE 30 Index

This study further examines the impact of COVID cases on return of KSE 30 companies in panel data setting. The appropriate model is selected on the basis of Hausman test. The results of Hausman test are reported below.

Table 4.7: Correlated Random Effects - Hausman Test

Test Summary	**Chi-Sq. Statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random	4.1368	4	0.3878

The presence of insignificant results indicates that Random Effect model is appropriate. The results of Random Effect model are reported on table 4.8.

Table 4.8: Flattening of COVID-19 Cases Curve on Stock Market Returns of KSE 30 Index

KSE 30 index	**Coefficient**	**Liquidity**	**Size**	**Volatility**	**Cases**	**F-Statistics**	**Adjusted R-Squared**
Random Effect Model	0.007* (0.0036)	-7.19E06 (2.13E05)	-0.0005* (0.0003)	3.475* (0.5581)	-0.0400* (0.0019)	114.4	0.0464

The figure in the bracket is standard error

The results indicated that flattening the COVID cases curve has significant negative impact on returns. As moving average of COVID cases increase, the return of the market decreases. The COVID cases reduction leads to increase in return. However, market is negatively influenced by pandemic. According to Al-Awadhi , Al-Saifi , Al-Awadhi , & Alhamadi, (2020) the findings of panel data tests with a market capitalization dummy variable indicate that high market capitalization equities have a considerably greater negative impact on returns than small market capitalization companies. The high volatility increases returns which is in line

with high risk and high return. Phenomenon the size has significant negative impact on return indicating that the large firms which are stable and have relatively low growth rate earn low returns. In comparison to the small firms who generally have higher growth opportunities. Then results are in line with size anomaly. No significant impact of liquidity is observed in return of KSE 30 companies.

4.2.6 Flattening of COVID-19 Deaths Curve on Stock Market Returns of KSE 30 Index

The impact of COVID deaths on return of KSE 30 companies in panel data setting. The appropriate model is selected on the basis of Hausman test. The results of Hausman test are reported below.

Table 4.9: Correlated Random Effects - Hausman Test

Test Summary	**Chi-Sq. Statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random	9.1376	4	0.0578

The presence of insignificant results indicates that Random Effect model is appropriate. The results of Random Effect model are reported on table 4.9

Table 4.10: Flattening of COVID-19 Deaths Curve on Stock Market Returns of KSE 30 Index

KSE 30 index	**Coefficient**	**Liquidity**	**Size**	**Volatility**	**Deaths**	**F-Statistics**	**Adjusted R-Squared**
Random Effect Model	0.0076* (0.0037)	-2.87E-06 (2.17E-0)	-0.0006* (0.0003)	2.6128* (0.6108)	-0.0247* (0.0026)	26.27	0.0107

The figure in the bracket is standard error

The results indicate that flattening of COVID deaths curve has significant negative impact on returns. As moving average of COVID deaths increase, the return of the market decreases. The COVID deaths reduction leads to increase in return. According to Khan, Elahi , Ullah , & Khattak , (2021) The pandemic has a significant negative influence on Pakistan's stock returns, as indicated by the KSE-100, KSE-30, and KMI-30 indices. In the post-event timeframe, all three indices has a significant negative reaction. However, market is negatively influenced by the pandemic.The high volatility increases returns which is in line with high risk

and high return. Phenomenon the size has significant negative impact on return indicating that the large firms which are stable and have relatively low growth rate earn low returns. In comparison to the small firms who generally have higher growth opportunities. Then results are in line with size anomaly. No significant impact of liquidity is observed in return of KSE 30 companies.

4.2.7 Flattening of Covid-19 Cases Curve on Stock market Returns of KMI 30 Index

The impact of COVID cases on return of KMI 30 companies in panel data setting. The appropriate model is selected on the basis of likelihood test. The results of likelihood are reported below. The presence of significant results indicates that

Table 4.11: Redundant Fixed Effects Tests

Effects Test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	36.779406	-299,295	0.0000
Cross-section Chi-square	1013.412166	29	0.0000

Fixed Effect model is appropriate. The results of Fixed Effect model are reported on table 4.12

Table 4.12: Flattening of Covid-19 Cases Curve on Stock market Returns of KMI 30 Index

KSE 30 index	**Coefficient**	**Liquidity**	**Size**	**Volatility**	**Cases**	**F-Statistics**	**Adjusted R-Squared**
Fixed Effect Model	0.026* (0.0107)	0.0002* (6.16E05)	-0.0005 (0.0009)	15.65* (0.4421)	0.0135* (0.0013)	162.18	0.3631

The figure in the bracket is standard error

The results indicate that flattening of COVID cases curve has significant impact on returns. As moving average of COVID cases increase, the return of the market decreases. The COVID cases reduction leads to increase in return. However, market is positively influenced by the pandemic. The high volatility increases returns which is in line with high risk and high return. Phenomenon the size has negative impact on return indicating that the large firms which are stable

and have relatively low growth rate earn low returns. In comparison to the small firms who generally have higher growth opportunities. Then results are in line with size anomaly. Significant impact of liquidity is observed in return of KMI 30 companies. Liquidity increases it means buyers and sellers are present in the market.

4.2.8 Flattening of Covid-19 Deaths Curve on Stock Market Returns of KMI 30 Index

The impact of COVID deaths on return of KMI 30 companies in panel data setting. The appropriate model is selected on the basis of likelihood test. The results of likelihood are reported below.

Table 4.13: Redundant Fixed Effects Tests

Effects Test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	34.861643	(29,9295)	0.0000
Cross-section Chi-square	963.204607	29	0.0000

The presence of significant results indicates that Fixed Effect model is appropriate. The results of Fixed Effect model are reported on table 4.214 The results show

Table 4.14: Flattening of Covid-19 Deaths Curve on Stock market Returns of KMI 30 Index

KSE 30 index	**Coefficient**	**Liquidity**	**Size**	**Volatility**	**Deaths**	**F-Statistics**	**Adjusted R-Squared**
Random Effect Model	0.054* (0.0108)	0.0002* (6.19E05)	-0.0031* (0.0009)	16.75* (0.4836)	-5.55E0 (0.0019)	157.41	0.3562

The figure in the bracket is standard error

that flattening of COVID deaths curve has negative impact on returns. As moving average of COVID deaths increase, the return of the market decreases. The COVID deaths reduction leads to increase in return. However, market is negative influenced by the pandemic. The high volatility increases returns which is in line with high risk and high return. Phenomenon the size has significant negative impact on return indicating that the large firms which are stable and have relatively low growth rate earn low returns. In comparison to the small firms who generally

have higher growth opportunities. Then results are in line with size anomaly. Significant impact of liquidity is observed in return of KMI 30 companies. Liquidity increases it means buyers and sellers are present in the market.

4.3 Impact of COVID on Liquidity of Companies Included in KSE 30 and KMI 30 Index.

This section explores the impact of returns, size, volatility, and COVID cases on liquidity of companies included in KSE 30 and KMI 30.

4.3.1 Impact of Flattening of COVID-19 Cases Curve on Liquidity of KSE 30 Companies

Table 4.15 shows that the impact of flattening of COVID cases curve has significant positive impact on liquidity of DAWH, DGKH, ENGR, FAUF, HBL, HPWR, INTE, KOTA, LUCK, MCB, MAGS, MPLF, NISM, OGDC, POION, PKEL, PPL, PSO, UBL and UNITY. Significant positive results shows that the when number of cases increases return decreases, so liquidity also decreases. Remaining other companies of KSE 30 index including AMZN, ATOR, BAFL, BAHL, CHRC, GHIN, PKOL, SEAR, SYSE and TRGP has insignificant impact on market liquidity.

Volatility has significant positive impact on liquidity of all companies including in KSE 30 index except only SEAR Company that has insignificant impact on liquidity. When risk and uncertainty decreases returns increases, so liquidity increases in the market and vice versa.

Size has significant negative impact on liquidity of ENGR and PKOL, because the large firms which are stable and have relatively low growth rate earn low returns. And size has significant positive impact on liquidity of ATOR, BAFL, INTE and KOTA. It means big and stable firms are more traded in the market. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The size of few companies including AMZN, BAHL, CHRC, DAWH, DGKH, FAUF, GHIN, HBL, HPWR, MCB, LUCK, MAGS,

TABLE 4.15: Impact of Flattening of COVID-19 Cases Curve on Liquidity of KSE 30 Companies

Company	Coefficient	Returns	Size	Volatility	MAC	F-Statistic	Adjusted R-squared
AMZN	0.092 0.0485	0.1748* (0.04)	-0.006 (0.0041)	15.29* (1.844)	0.0106 (0.0069)	36.17	0.3121
ATOR	-0.058 (0.0322)	-0.0116 (0.0301)	0.0090* (0.0033)	14.16* (1.471)	0.0127 (0.008)	25.88	0.243
BAFL	-0.309* (0.1292)	0.1751* (0.0388)	0.0302* (0.0117)	14.76* (1.688)	0.0057 (0.0079)	32.21	0.2878
BAHL	0.173* (0.0879)	0.1310* (0.0428)	-0.0143 (0.0078)	27.66* (2.859)	0.0054 (0.0074)	43.02	0.3516
CHRC	-0.003 (0.0534)	0.1094* (0.036)	0.0027 (0.0051)	18.20* (2.712)	0.0104 (0.0091)	21.96	0.2129
DAWH	0.143 (0.1665)	0.0935 (0.0509)	-0.0109 (0.0151)	16.51* (4.01)	0.0369* (0.0007)	17.75	0.1777
DGKH	0.064 (0.0869)	0.0025 (0.0386)	-0.004 (0.0079)	18.76* (2.617)	0.0219* (0.0082)	35.88	0.3103
ENGR	0.661* (0.1762)	0.2285* (0.0407)	-0.0572* (0.0155)	20.67* (2.706)	0.0221* (0.005)	65.65	0.4548
FAUF	0.158 (0.1893)	0.1078* (0.0381)	-0.0123 (0.0159)	18.28* (1.868)	0.0231* (0.0045)	89.48	0.533
GHIN	0.055* (0.027)	0.0506 (0.0308)	-0.0031 (0.0028)	15.72* (1.932)	0.0031 (0.0091)	22.23	0.215
HBL	0.125 (0.0773)	0.2571* (0.0428)	-0.0087 (0.0063)	20.23* (2.173)	0.0219* (0.0061)	44.12	0.3575
HPWR	0.089 (0.1382)	0.1711* (0.0341)	-0.0062 (0.0119)	20.87* (2.749)	0.0326* (0.0056)	41.43	0.3428
INTE	-644.33* (5.816)	-28.37* (3.91)	69.21* (0.52)	3125.49* (264.68)	1.6793* (0.8583)	5888.14	0.987
KOTA	-0.116* (0.0421)	0.1082* (0.036)	0.0131* (0.0041)	22.18* (2.497)	0.0203* (0.0072)	29.54	0.2691
LUCK	-0.016 (0.047)	0.2189* (0.034)	0.0026 (0.0038)	18.51* (1.671)	0.0272* (0.0057)	77.19	0.4957
MCB	-0.017 (0.1493)	0.1404* (0.0446)	0.0028 (0.0121)	23.01* (3.018)	0.0288* (0.0061)	45.12	0.3627
MAGS	0.15 (0.1154)	0.1993* (0.042)	-0.0105 (0.0094)	14.11* (2.963)	0.0250* (0.0073)	27.4	0.2541
MPLF	0.018 (0.0641)	0.0933* (0.0359)	0.0003 (0.0059)	17.55* (2.905)	0.0291* (0.0077)	29.87	0.2714
NISM	0.08 (0.0785)	0.0728* (0.0334)	-0.0051 (0.0074)	11.95* (2.94)	0.0144* (0.0063)	15.46	0.1572
OGDC	0.204 (0.1536)	0.0322 (0.0348)	-0.0144 (0.0117)	15.79* (2.672)	0.0214* (0.0061)	34.76	0.3034
PION	0.033 -0.0465	0.0938* -0.0379	-0.0005 -0.0045	13.37* -2.989	0.0292* -0.0107	16.93	0.1705
PKEL	0.026 (0.0612)	0.0203 (0.0347)	-0.0004 (0.0062)	19.03* (2.406)	0.0170* (0.0083)	28.46	0.2616
PKOL	0.315* (0.0972)	0.0872* (0.0314)	-0.0227* (0.0073)	11.00* (1.656)	0.0079 (0.0052)	49.39	0.3844
PPL	0.019 (0.1339)	0.0928* (0.0318)	-0.0146 (0.0107)	18.67* (2.522)	0.0187* (0.0058)	39.37	0.3311
PSO	-0.06 (0.0633)	0.1219* (0.0341)	0.0067 (0.0054)	20.55* (2.71)	0.0221* (0.0065)	30.94	0.2787
SEAR	0.085 (0.0736)	0.1508 (0.034)	-0.006 (0.0066)	20.06 (2.54)	0.0212 (0.0069)	36.58	0.3146
SYSE	0.052 (0.0283)	0.1729* (0.0367)	-0.0025 (0.0026)	15.89* (2.744)	-0.0038 (0.0083)	17.35	0.1742
TRGP	-0.002 (0.019)	0.0073 (0.0277)	0.0023 (0.0017)	18.24* (2.841)	0.0029 (0.0087)	10.39	0.1136
UBL	-0.049 (0.1049)	0.0981* (0.0397)	0.0058 (0.0087)	18.40* (2.251)	0.0165* (0.007)	32.69	0.2902
UNITY	0.028 (0.0267)	0.0967* (0.0347)	-0.001 (0.0026)	39.95* (3.792)	0.0246* (0.0084)	18.15	0.1812

MPLF, NISM, OGDC, PION, PKEL, PPL, PSO, SEAR, SYSE, TRGP, UBL and UNITY has insignificant impact on liquidity.

Returns has significant negative impact on liquidity of INTE. Significant negative results show that when number of cases increases the return decreases as well as liquidity decreases, because fear and uncertainty exist in the market. Fear information change the investor's decision, so market reports lower liquidity. And the flattening of COVID cases curve has significant positive impact on liquidity of AMZN, BAFL, BAHL, CHRC, ENGR, FAUF, HBL, HPWR, KOTA, LUCK, MCB MAGS, MPLF, NISM, PION, PKOL, PPL, PSO, SYSE, UBL and UNITY of KSE 30 index because these companies are stable as people are more oriented about these companies, so these companies has positive returns and market has high liquidity.

The figures which are in brackets are standard error. Value of F-statistics of KSE 30 companies is significant. Results show that the value of F-statistics is greater than 2 it means KSE 30 companies' model is correctly specified and valid. Explanatory power of the model 11% to 98% is minimum and maximum figures. The highest explanatory power is observed in three top companies which are International Steel limited 98%, Fauji Fertilizer Company 53% and Lucky Cement 49%. The minimum explanatory power is observer in these three low companies which are TRG Pakistan 11%, Nishat Mills 15% and System limited 17%.

4.3.2 Impact of Flattening of COVID-19 Deaths Curve on Liquidity of KSE 30 Companies

Table 4.16 shows that the impact of flattening of COVID deaths curve has significant negative impact on liquidity of CHRC, GHIN, LUCK, NISM, POIN, PKEL and TRGP. Significant negative results show that when number of deaths increases the return decreases, because fear and uncertainty exist in the market. Fear information change the investor's decision, so market reports low returns as well as low liquidity. However, market is negatively influenced by the pandemic. And flattening of COVID deaths curve has significant positive impact on liquidity of BAHL, DAWH, ENGR, FAUF, INTE, MGAS, OGDC, PKOL, PPL, SEAR, and

TABLE 4.16: Impact of Flattening of COVID-19 Deaths Curve on Liquidity of KSE 30 Companies

Company	Coefficient	Returns	Size	Volatility	MAD	F-Statistic	Adjusted R-squared
AMZN	0.087 0.0491	0.1523* (0.0388)	-0.0055 (0.0041)	14.31* (2.228)	0.0154 (0.0106)	36.09	0.3116
ATOR	-0.0381 (0.0327)	-0.0167 (0.0304)	0.0068* (0.0033)	14.43* (1.544)	0.0008 (0.0111)	25.06	0.2369
BAFL	-0.332* (0.1233)	0.1689* (0.0376)	0.0321* (0.0112)	16.10* (2.309)	-0.0057 (0.0126)	31.98	0.2869
BAHL	0.09 (0.0931)	0.0101* (0.042)	-0.0065 (0.0083)	24.98* (2.711)	0.0242* 0.0091	45.56	0.3651
CHRC	0.057 (0.0491)	0.0831* (0.0361)	-0.0033 (0.0047)	21.16* (2.869)	-0.0304* (0.0116)	23.75	0.2269
DAWH	-0.194 (0.1849)	0.0176 (0.0488)	0.0198 (0.0168)	16.00* (4.424)	0.0388* 90.010	14.64	0.1496
DGKH	0.013 (0.0832)	-0.0011 (0.0397)	-0.0103 (0.0076)	17.91* (2.831)	0.0135 (0.0113)	33.82	0.2975
ENGR	0.636* (0.1809)	0.1766* (0.0415)	-0.0549* (0.0159)	17.99* (3.197)	0.0275* (0.0081)	62.28	0.4415
FAUF	0.357 (0.1901)	0.0472 (0.0396)	-0.0291 (0.016)	17.33* (2.231)	0.0174* (0.0072)	79.5	0.5032
GHIN	0.094* (0.0263)	0.0335 (0.03)	-0.0076* (0.0028)	17.73* (1.99)	-0.0358* (0.0117)	25.18	0.2378
HBL	0.007 (0.0845)	0.2096* (0.0416)	-0.0043 (0.0069)	22.05* (2.321)	0.0113 (0.0082)	39.99	0.3347
HPWR	0.142 (0.1615)	0.1215* (0.0347)	-0.0109 (0.0139)	27.33* (3.159)	-0.0078 (0.0094)	30.21	0.2737
INTE	-648.29* (5.5395)	-26.66* (3.8024)	69.62* (0.5275)	2621.0* (283.21)	5.5780* (1.191)	6223.4	0.9877
KOTA	-0.07 (0.0427)	0.0815* (0.0354)	0.0085* (0.0041)	24.00* (2.719)	-0.0029 (0.0096)	26.89	0.2504
LUCK	0.051 (0.0474)	0.1630* (0.034)	-0.0029 (0.0038)	24.47* (2.008)	-0.0271* (0.0088)	71.12	0.475
MCB	-0.179 (0.1524)	0.0639 (0.044)	0.0162 (0.0124)	24.74* (3.718)	0.0200* (0.0103)	38.46	0.3258
MAGS	0.192 (0.116)	0.1647* (0.0412)	-0.1394 (0.0095)	12.61* (3.239)	0.0244* (0.0104)	25.36	0.2391
MPLF	0.116 (0.0628)	0.0578 (0.0379)	-0.0089 (0.0058)	21.55* (3.24)	-0.0208 (0.0111)	26.36	0.2466
NISM	0.104 (0.0784)	0.0324 (0.0328)	-0.0078 (0.0074)	19.07* (3.258)	-0.0321* (0.01)	16.94	0.1706
OGDC	0.046 (0.1487)	0.0034 (0.0334)	-0.0022 (0.0113)	14.85* (2.718)	0.0324* (0.0083)	35.79	0.3098
PION	0.143* -0.0406	0.0393 -0.0367	-0.0120* -0.0039	19.89* -3.193	-0.0626* -0.0133	21.3	0.2075
PKEL	0.135* (0.0598)	-0.0112 (0.0343)	-0.0119* (0.0061)	24.65* (2.619)	-0.0445* (0.0118)	31.83	0.2846
PKOL	0.261* (0.1026)	0.0655* (0.0309)	-0.0186* (0.0078)	10.90* (1.628)	0.0153* (0.0072)	50.26	0.3886
PPL	-0.0134 (0.1315)	0.0623* (0.0305)	0.0022 (0.0105)	18.20* (2.542)	0.0271* (0.0079)	39.95	0.3344
PSO	-0.038 (0.0649)	0.0948* (0.0337)	0.0049 (0.0056)	21.21* (2.871)	0.0155 (0.0087)	28.1	0.2591
SEAR	0.133 (0.0719)	0.1390* (0.0341)	-0.0103 (0.0065)	19.71* (2.677)	0.0173* (0.0089)	34.56	0.3021
SYSE	0.058* (0.0272)	0.1618* (0.0362)	-0.0031 (0.0025)	17.57* (3.0185)	-0.0156 (0.0112)	17.88	0.1788
TRGP	0.019 (0.0182)	-0.0063 (0.0271)	-0.0001 (0.0017)	21.96* (3.002)	-0.0348* (0.0114)	13.57	0.1395
UBL	-0.205* (0.1061)	0.0779* (0.0388)	0.0189* (0.0089)	17.64* (2.311)	0.0255* (0.0094)	33.33	0.2944
UNITY	0.05 (0.0267)	0.0774* (0.0346)	-0.0032 (0.0026)	25.10* (4.266)	0.0062 (0.0118)	15.69	0.1594

UBL. Significant positive results shows that the when number of cases increases return decreases, so liquidity also decreases. Remaining other companies of KSE 30 index including AMZN, ATOR, BAFL, DGKH, HBL, HPWR, KOTA, MCB, MPLF, PSO, SYSE and UNITY has insignificant impact on market liquidity. Volatility has significant positive impact on liquidity of all companies including in KSE 30 index. When risk and uncertainty decreases returns increases, so liquidity increases in the market and vice versa.

Size has significant negative impact on liquidity of GHIN, ENGR, POIN, PKEL, and PKOL because the large firms which are stable and have relatively low growth rate earn low returns. And size has significant positive impact on liquidity of ATOR, BAFL, INTE, KOTA and UBL. It means big and stable firms are more traded in the market. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The size of few companies including AMZN, BAHL, CHRC, DAWH, DGKH, FAUF, HBL, HPWR, MCB, LUCK, MAGS, MPLF, NISM, OGDC, PPL, PSO, SEAR, SYSE, TRGP and UNITY has insignificant impact on liquidity.

A return has significant negative impact on liquidity of INTE and TRGP. Significant negative results show that when number of cases increases the return decreases as well as liquidity decreases, because fear and uncertainty exist in the market. Fear information change the investor's decision, so market reports lower liquidity. The returns has significant positive impact on liquidity of AMZN, BAFL, BAHL, CHRC, ENGR, HBL, HPWR, KOTA, LUCK, MAGS, PKOL, PPL, PSO, SEAR, SYSE, UBL and UNITY of KSE 30 index because these companies are stable as people are more oriented about these companies, so these companies has positive returns and market has high liquidity.

The figures which are in brackets are standard error. Results show that the value of F-statistics is greater than 2 it means KSE 30 companies' model is correctly specified and valid. Explanatory power of the model 13% to 50% is minimum and maximum figures. The highest explanatory power is observed in three top companies which are Fauji Fertilizer Company 50%, Lucky Cement 47% and Engro Fertilizer limited 44%. The minimum explanatory power is observer in these three low companies which are TRG Pak 13%, Unity food 15 and System limited 17.

4.3.3 Impact of Flattening of COVID-19 Cases Curve on Liquidity Of KMI 30 Companies

In table 4.17 Impact of flattening of COVID cases curve on liquidity of sharia compliant index in KMI 30 is examine. There are total 30 companies, 13 companies are sharia compliant and 17 companies are also sharia compliant but these are common in KSE 30. The discussion of 17 companies which are common in both KSE 30 and KMI 30 are discussed above. Furthermore, the elaborations of 13 companies of KMI 30 index are given below:

Results shows that the flattening of COVID cases curve has significant positive impact on liquidity of ABBT, EGCH, EPCL, FAUF, GLAX, ICI, INIT, KELE, MILN, and PACK. Significant positive results shows that the when number of cases increases return decreases, so liquidity also decreases. Volatility has significant positive impact on liquidity of all companies including in KMI 30 index. When risk and uncertainty decreases returns increases, so liquidity increases in the market and vice versa.

Size has significant negative impact on liquidity of EGCH and MILN, because the large firms which are stable and have relatively low growth rate earn low returns. And size has significant positive impact on liquidity of FAUF and KELE. It means big and stable firms are more traded in the market. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The size of few companies including ABBT, EPCL, GLAX, HATC, ICI, INIT, KOHC, PACK and SUIN has insignificant impact on returns.

The return has significant positive impact on liquidity of all 13 companies of KMI 30 index except SUIN. The coefficient is positive for all above companies except SUIN. The positive sign indicate that increase in liquidity indicates the bullish trend in market due to presence of buyer in the market. The result for SUIN indicates the selling pressure or bearish trend in the market. Therefore it can be said that liquidity is an important indicator for return.

The figures which are in brackets are standard error. Value of F-statistics of KMI 13 companies is significant. Results show that the value of F-statistics is

greater than 2 it means KMI 13 companies' model is correctly specified and valid.

TABLE 4.17: Impact of Flattening of COVID-19 Cases Curve on Liquidity Of KMI 30 Companies

Company	Coefficient	Returns	Size	Volatility	MAC	F-Statistic	Adjusted R-squared
ABBT	0.041 0.0766	0.3572* (0.0422)	-0.0018 (0.0067)	11.16* (5.238)	0.0394* (0.0076)	36.99	0.3178
EGCH	0.538* (0.2337)	0.0928* (0.0381)	-0.0433* (0.0193)	14.43* (1.758)	0.0282* (0.0049)	77.48	0.4966
EPCL	0.023 (0.0485)	0.1126* (0.0388)	0.0001 (0.0045)	18.15* (2.75)	0.0154* (0.0077)	21.2	0.2067
FAUF	-0.132 (0.0762)	0.1559* (0.0374)	0.0149* (0.0073)	20.30* (1.909)	0.0266* (0.0069)	49.57	0.3852
GLAX	-0.09 (0.1262)	0.1522* (0.0415)	0.0099 (0.0115)	14.39* (1.95)	0.0212* (0.0056)	29.59	0.2695
HATC	0.022 (0.0547)	0.0870* (0.0363)	-3.81 (0.005)	20.60* (2.857)	0.0102 (0.0077)	20.1	0.1977
ICI	0.014 (0.12)	0.1996* (0.0404)	0.0008 (0.0106)	7.770* (3.227)	0.0223* (0.0066)	12.72	0.1313
INIT	-0.006 (0.0361)	0.1267* (0.0352)	0.0028 (0.0035)	21.99* (2.908)	0.0236* (0.0073)	25.58	0.2408
KELE	-0.259* (0.103)	0.2199* (0.0393)	0.0235* (0.0088)	33.66* (4.405)	0.0405* (0.0072)	31.47	0.2822
KOHC	-0.105 (0.0779)	0.0861* (0.039)	0.0121 (0.0073)	19.27* (2.264)	0.0143 (0.0096)	33.69	0.2966
MILM	0.124* (0.0501)	0.1564* (0.0396)	-0.0096* (0.0045)	7.470* (2.806)	0.0194* (0.0063)	16	0.1621
PACK	0.093 (0.051)	0.0846* (0.0391)	-0.0066 (0.0047)	13.77* (2.861)	0.0193* (0.007)	18.26	0.1822
SUIN	0.097 (0.0647)	0.0463 (0.0334)	-0.0071 (0.0062)	13.74* (1.8269)	0.0056 (0.0069)	19.73	0.1946
ATOR	-0.058 (0.0322)	-0.0116 (0.0301)	0.0090* (0.0033)	14.16* (1.471)	0.0127 (0.008)	25.88	0.243
AMZN	0.092 (0.0485)	0.1748* (0.04)	-0.006 (0.0041)	15.29* (1.844)	0.0106 (0.0069)	36.17	0.3121
CHRC	-0.003 (0.0534)	0.1094* (0.036)	0.0027 (0.0051)	18.20* (2.712)	0.0104 (0.0091)	21.96	0.2129
DGKH	0.064 (0.0869)	0.0025 (0.0386)	-0.004 (0.0079)	18.76* (2.617)	0.0219* (0.0082)	35.88	0.3103
ENGR	0.661* (0.1762)	0.2285* (0.0407)	-0.0572* (0.0155)	20.67* (2.706)	0.0221* (0.005)	65.65	0.4548
INTE	-644.33* (5.816)	-28.37* (3.91)	69.21* (0.52)	3125.49* (264.68)	1.6793* (0.8583)	5888.14	0.987
LUCK	-0.016 (0.047)	0.2189* (0.034)	0.0026 (0.0038)	18.51* (1.671)	0.0272* (0.0057)	77.19	0.4957
MAGS	0.15 -0.1154	0.1993* -0.042	-0.0105 -0.0094	14.11* -2.963	0.0250* -0.0073	27.4	0.2541
MPLF	0.018 (0.0641)	0.0933* (0.0359)	0.0003 (0.0059)	17.55* (2.905)	0.0291* (0.0077)	29.87	0.2714
NISM	0.08 (0.0785)	0.0728* (0.0334)	-0.0051 (0.0074)	11.95* (2.94)	0.0144* (0.0063)	15.46	0.1572
OGDC	0.204 (0.1536)	0.0322 (0.0348)	-0.0144 (0.0117)	15.79* (2.672)	0.0214* (0.0061)	34.76	0.3034
PKEL	0.026 (0.0612)	0.0203 (0.0347)	-0.0004 (0.0062)	19.03* (2.406)	0.0170* (0.0083)	28.46	0.2616
PKOL	0.315* (0.0972)	0.0872* (0.0314)	-0.0227* (0.0073)	11.00* (1.656)	0.0079 (0.0052)	49.39	0.3844
PPL	0.019 (0.1339)	0.0928* (0.0318)	-0.0146 (0.0107)	18.67* (2.522)	0.0187* (0.0058)	39.37	0.3311
PSO	-0.06 (0.0633)	0.1219* (0.0341)	0.0067 (0.0054)	20.55* (2.71)	0.0221* (0.0065)	30.94	0.2787
SEAR	0.085 (0.0736)	0.1508 (0.034)	-0.006 (0.0066)	20.06 (2.54)	0.0212 (0.0069)	36.58	0.3146
UNITY	0.028 (0.0267)	0.0967* (0.0347)	-0.001 (0.0026)	39.95* (3.792)	0.0246* (0.0084)	18.15	0.1812

Explanatory power of the model 13% to 49% is minimum and maximum figures. The highest explanatory power is observed in three top companies which are 49% Engro Corporation, Fauji Cement Company limited 38% and Abbot Liberties 31%. The minimum explanatory power is observer in these three low companies which are ICI Pakistan limited 13%, Millat tractors limited 16% and packages limited 18%.

4.3.4 Impact Of Flattening Of COVID-19 Deaths Curve On Liquidity Of KMI 30 Companies

In table 4.18 results shows that the impact of flattening of COVID deaths curve has significant negative impact on liquidity of HATC, KOHC and SUIN. Significant negative results show that when number of deaths increases the return decreases, because fear and uncertainty exist in the market. Fear information change the investor's decision, so market reports low returns as well as low liquidity. However, market is negatively influenced by the pandemic. And the flattening of COVID deaths curve has significant positive impact on liquidity of KELE. Significant positive results shows that the when number of cases increases return decreases, so liquidity also decreases.

Remaining other companies of KMI 30 index including ABBT, EGCH, EPCL, FAUF, GLAX, ICI, INIT, MILN and PACK has insignificant impact on market liquidity. Volatility has significant positive impact on liquidity of all companies including in KMI 30 index except ABBT, as this company has insignificant impact on market liquidity. When risk and uncertainty decreases returns increases, so liquidity increases in the market and vice versa.

Size has significant negative impact on liquidity of ABBT, EGCH and PACK, because the large firms which are stable and have relatively low growth rate earn low returns. And size has significant positive impact on liquidity of KELE. It means big and stable firms are more traded in the market. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The size of few companies including EPCL, FAUF, GLAX, HATC, ICI, INIT, KOHC and SUIN has insignificant impact on returns.

TABLE 4.18: Impact Of Flattening Of COVID-19 Deaths Curve On Liquidity Of KMI 30 Companies

Company	Coefficient	Returns	Size	Volatility	MAD	F-Statistic	Adjusted R-squared
ABBT	0.265* 0.0649	0.3064* (0.0427)	-0.0215* (0.0057)	2.323 (5.4111)	0.0107 (0.009)	28.36	0.2615
EGCH	0.512* (0.2545)	0.0429 (0.0395)	-0.0411* (0.021)	18.30* (2.013)	0.0019 (0.0084)	62.66	0.4431
EPCL	0.04 (0.0481)	0.0991* (0.0384)	-0.0014 (0.0045)	18.78* (3.103)	0.0075 (0.0112)	20.09	0.1976
FAUF	0.023 (0.077)	0.1308* (0.0382)	-0.0002 (0.0074)	23.02* (2.1178)	-0.0133 (0.0101)	44.37	0.3588
GLAX	-0.092 (0.1304)	0.1380* (0.0421)	0.0102 (0.0119)	15.99* (2.195)	0.0116 (0.0083)	25.57	0.2407
HATC	0.096 (0.0543)	0.0644 (0.0366)	-0.007 (0.005)	22.19* (2.942)	-0.0231* (0.0109)	20.95	0.2047
ICI	0.067 (0.1224)	0.1738* (0.0401)	-0.0037 (0.0109)	7.764* (3.655)	0.0126 (0.0106)	9.98	0.1038
INIT	0.041 (0.0364)	0.1034* (0.0355)	-0.0022 (0.0036)	25.41* (3.198)	-0.0083 (0.0105)	22.46	0.2169
KELE	-0.398* (0.1084)	0.1638* (0.0388)	0.0365* (0.0093)	20.49* (5.104)	0.0730* (0.0118)	33.64	0.2963
KOHC	0.025 (0.0716)	0.0392 (0.0382)	-0.0003 (0.0067)	23.56* (2.2944)	-0.0605* (0.0123)	41.49	0.3432
MILM	0.173* (0.0475)	0.1369* (0.0394)	-0.0140* (0.0043)	5.781* (3.039)	0.0121 (0.0087)	13.83	0.142
PACK	0.180* (0.0527)	0.0492 (0.0385)	-0.0148* (0.0049)	16.76* (2.968)	-0.0155 (0.0098)	16.77	0.1691
SUIN	0.09 (0.0611)	0.0253 (0.032)	-0.0066 (0.0058)	17.70* (1.954)	-0.0344* (0.0094)	23.71	0.2266
ATOR	0.087 (0.0491)	0.1523* (0.0388)	-0.0055 (0.0041)	14.31* (2.228)	0.0154 (0.0106)	36.09	0.3116
AMZN	-0.0381 (0.0327)	-0.0167 (0.0304)	0.0068* (0.0033)	14.43* (1.544)	0.0008 (0.0111)	25.06	0.2369
CHRC	0.057 (0.0491)	0.0831* (0.0361)	-0.0033 (0.0047)	21.16* (2.869)	-0.0304* (0.0116)	23.75	0.2269
DGKH	0.013 (0.0832)	-0.0011 (0.0397)	-0.0103 (0.0076)	17.91* (2.831)	0.0135 (0.0113)	33.82	0.2975
ENGR	0.636* (0.1809)	0.1766* (0.0415)	-0.0549* (0.0159)	17.99* (3.197)	0.0275* (0.0081)	62.28	0.4415
INTE	-648.29* (5.5395)	-26.66* (3.8024)	69.62* (0.5275)	2621.0* (283.21)	5.5780* (1.191)	6223.4	0.9877
LUCK	0.051 (0.0474)	0.1630* (0.034)	-0.0029 (0.0038)	24.47* (2.008)	-0.0271* (0.0088)	71.12	0.475
MAGS	0.192 -0.116	0.1647* -0.0412	-0.1394 -0.0095	12.61* -3.239	0.0244* -0.0104	25.36	0.2391
MPLF	0.116 (0.0628)	0.0578 (0.0379)	-0.0089 (0.0058)	21.55* (3.24)	-0.0208 (0.0111)	26.36	0.2466
NISM	0.104 (0.0784)	0.0324 (0.0328)	-0.0078 (0.0074)	19.07* (3.258)	-0.0321* (0.01)	16.94	0.1706
OGDC	0.046 (0.1487)	0.0034 (0.0334)	-0.0022 (0.0113)	14.85* (2.718)	0.0324* (0.0083)	35.79	0.3098
PKEL	0.135* (0.0598)	-0.0112 (0.0343)	-0.0119* (0.0061)	24.65* (2.619)	-0.0445* (0.0118)	31.83	0.2846
PKOL	0.261* (0.1026)	0.0655* (0.0309)	-0.0186* (0.0078)	10.90* (1.628)	0.0153* (0.0072)	50.26	0.3886
PPL	-0.0134 (0.1315)	0.0623* (0.0305)	0.0022 (0.0105)	18.20* (2.542)	0.0271* (0.0079)	39.95	0.3344
PSO	-0.038 (0.0649)	0.0948* (0.0337)	0.0049 (0.0056)	21.21* (2.871)	0.0155 (0.0087)	28.1	0.2591
SEAR	0.133 (0.0719)	0.1390* (0.0341)	-0.0103 (0.0065)	19.71* (2.677)	0.0173* (0.0089)	34.56	0.3021
UNITY	0.05 (0.0267)	0.0774* (0.0346)	-0.0032 (0.0026)	25.10* (4.266)	0.0062 (0.0118)	15.69	0.1594

The return has significant positive impact on liquidity of ABBT, EPCL, FAUF, GLAX, ICI, INIT, KELE, and MILN. The coefficient is positive for all above companies except SUIN. The positive sign indicate that increase in liquidity indicates the bullish trend in market due to presence of buyer in the market. Remaining other companies of KMI 30 index including EGCH, HATC, KOHC, EPCL, PACK and SUIN has insignificant impact on market liquidity.

The figures which are in brackets are standard error. Value of F-statistics of KMI 13 companies is significant. Results show that the value of F-statistics is greater than 2 it means KMI 13 companies' model is correctly specified and valid. Explanatory power of the model 10% to 44% is minimum and maximum figures. The highest explanatory power is observed in three top companies which are Engro Corporation 44%, Fauji Cement Company 35%, Kohat Cement 34%. The minimum explanatory power is observer in these three low companies which are ICI Pakistan limited 10%, Millat Tractors 14% and Packages limited 16%.

4.3.5 Flattening of COVID-19 Cases Curve on Stock Market Liquidity of KSE 30 Index

The study further extend the work by investigating the impact of flattening of COVID cases curve on liquidity of KSE 30 companies in panel data setting. The appropriate model is chosen using Hausman test. The results of Hausman test are reported below.

Table 4.19: Random Effects - Hausman Test

Test Summary	**Chi-Sq. Statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random	2.177153	4	0.7032

The presence of insignificant results indicates that Random effect model is appropriate. The results of Random effect model are reported table 4.20

The results indicating that the flattening of COVID cases curve has significant negative impact on market liquidity. Increase COVID cases market liquidity decrease. The fear of COVID cases creates uncertainty so buyer and seller reduce the transaction in the market. This fear information the decision of investor is

Table 4.20: Flattening of COVID-19 Cases Curve on Stock Market Liquidity of KSE 30 Index

KSE 30 index	Coefficient	Returns	Size	Volatility	Cases	F-Statistics	Adjusted R-Squared
Random Effect Model	-16.27* (2.926)	-1.705 (1.1904)	1.710* (0.1257)	-216.20* (73.76)	-0.4708* (0.2365)	72.85	0.0297

The figure in the bracket is standard error

change about trading. The volatility has also significant negative impact on liquidity indicating that volatility increase leads to decrease in liquidity. Increase in volatility is indicator of high uncertainty which forces the investor to wait in see and reduce its trading in the market.

Size has significant positive impact on liquidity. It means big and stable firms are more traded in the market. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The link between return and liquidity is insignificant indicating that higher return do not motivating investor to jump in and trade. They may considered that higher return are indicating stock miss pricing so it better to wait.

4.3.6 Flattening of COVID-19 Deaths Curve on Stock Market Liquidity of KSE 30 Index

The impact of flattening of COVID deaths curve on liquidity of KSE 30 companies in panel data setting. The appropriate model is chosen using Hausman test. The results of Hausman test are reported below.

Table 4.21: Correlated Random Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.248026	4	0.6902

The presence of insignificant results indicates that Random effect model is appropriate. The results of Random effect model are reported table 4.22.

The results indicating that the flattening of COVID deaths has no impact on market liquidity. When numbers of COVID cases increases the people early response in the market on the basis of efficient market hypothesis theory. The volatility

TABLE 4.22: Flattening of COVID-19 Deaths Curve on Stock Market Liquidity of KSE 30 Index

KSE 30 index	Coefficient	Returns	Size	Volatility	Deaths	F-Statistics	Adjusted R-Squared
Random Effect Model	-16.70* (2.928)	-1.278 (1.169)	1.749* (0.1266)	-236.93* (81.16)	-0.1998 (0.3273)	71.92	0.0295

The figure in the bracket is standard error

has also significant negative impact on liquidity indicating that volatility increase leads to decrease in liquidity. Increase in volatility is indicator of high uncertainty which forces the investor to wait in see and reduce its trading in the market.

Size has significant positive impact on liquidity. It means big and stable firms are more traded in the market. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The link between return and liquidity is insignificant indicating that higher return do not motivating investor to jump in and trade. They may considered that higher return are indicating stock miss pricing so it better to wait.

4.3.7 Flattening of COVID-19 Cases Curve on Stock Market Liquidity of KMI 30 Index

The impact of flattening of COVID cases curve on liquidity of KMI 30 companies in panel data setting. The appropriate model is chosen using likelihood test. The results of likelihood test are reported below.

TABLE 4.23: Redundant Fixed Effects Tests

Effects Test	Statistic	d.f.	Prob.
Cross-section F	5062.669755	-299,295	0
Cross-section Chi-square	26318.03991	29	0

The presence of significant results indicates that Fixed effect model is appropriate. The results of Fixed effect model are reported table 4.24

The results indicating that the flattening of COVID cases curve has significant negative impact on market liquidity of KMI 30 index. Increase COVID cases

TABLE 4.24: Flattening of COVID-19 Cases Curve on Stock Market Liquidity of KMI 30 Index

KMI 30 index	Coefficient	Returns	Size	Volatility	Cases	F-Statistics	Adjusted R-Squared
Fixed Effect Model	-28.89* (1.789)	7.263* (1.744)	2.843* (0.1611)	-139.61 (79.27)	-0.1827* (0.2283)	4944.81	0.9459

The figure in the bracket is standard error

market liquidity decrease. The fear of COVID cases creates uncertainty so buyer and seller reduce the transaction in the market. This fear information the decision of investor is change about trading. The volatility has also significant negative impact on liquidity indicating that volatility increase leads to decrease in liquidity. Increase in volatility is indicator of high uncertainty which forces the investor to wait in see and reduce its trading in the market.

Size has significant positive impact on liquidity. It means big and stable firms are more traded in the market. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. Return has significant impact on market liquidity. Coefficient is significant negative show that when number of COVID cases increases market liquidity decrease. Market reports low returns.

4.3.8 Flattening of COVID-19 Deaths Curve on Stock Market Liquidity of KMI 30 Index

The impact of flattening of COVID deaths curve on liquidity of KMI 30 companies in panel data setting. The appropriate model is chosen using likelihood test. The results of likelihood test are reported below.

TABLE 4.25: Redundant Fixed Effects Tests

Effects Test	Statistic	d.f.	Prob.
Cross-section F	5058.8842	(29,9295)	0.0000
Cross-section Chi-square	26311.4773	29	0.0000

The presence of significant results indicates that Fixed effect model is appropriate. The results of Fixed effect model are reported table 4.26

TABLE 4.26: Flattening of COVID-19 Deaths Curve on Stock Market Liquidity of KMI 30 Index

KMI 30 index	**Coefficient**	**Returns**	**Size**	**Volatility**	**Deaths**	**F-Statistics**	**Adjusted R-Squared**
Fixed Effect Model	-29.5* (1.791)	7.119* (1.735)	2.905* (0.1615)	-173.94* (86.02)	0.1934 (0.3232)	4944.6	0.9459

The figure in the bracket is standard error

The results indicating that the flattening of COVID deaths has no impact on market liquidity. When numbers of COVID cases increases the people early response in the market on the basis of efficient market hypothesis theory. The volatility has also significant negative impact on liquidity indicating that volatility increase leads to decrease in liquidity. Increase in volatility is indicator of high uncertainty which forces the investor to wait in see and reduce its trading in the market.

Size has significant positive impact on liquidity. It means big and stable firms are more traded in the market. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The link between return and liquidity is significant indicating that higher return motivating investor to jump in and trade.

Chapter 5

Conclusion and Recommendations

5.1 Conclusion

The main purpose of the study is to find out the impact of flattening of COVID-19 curve on stock market returns and liquidity of companies listed at Pakistani stock exchange. This study focus on impact of flattening of COVID-19 cases and deaths on stock market returns and stock liquidity at firm level. This study includes firm indicated in KSE 30 and KMI 30. This study use regression analysis and panel data analysis to study the said impact of variable of interest individually and jointly. The time period of the study is January 1, 2020 to May 31, 2021. The shriah complaint contributes a high regulatory requirements. Because debt and financial risk are lower, new information possibility is less effective.

The flattening of COVID cases curve has significant positive impact on returns of only 3 companies' listed in KSE 30 index, because these companies are stable as people are more oriented about these companies, so these companies has positive returns. The flattening of COVID cases curve has significant negative impact on returns of 27 companies listed at KSE 30 index, because when number of cases increases the return decreases, fear and uncertainty exist in the market. Fear changes the investor's decision. There are only 3 companies where volatility has significant positive impact on returns. The results indicate that when buying

process in bullish trend the volatility has positive impact on returns. There are only 4 companies where volatility has significant negative impact on returns. Increase in volatility is indicator of high uncertainty which forces the investor to wait and see and reduce its trading in the market. Size has significant positive impact on returns of 9 companies. The big companies are generally blue chip and investor may prefer holding or trading being less risky. The liquidity has significant impact on returns of 22 companies. The positive sign indicate that increase in liquidity indicates the bullish trend in market due to presence of buyer in the market.

The robustness of the results has been tested by using deaths. The flattening of COVID deaths curve has significant positive impact on returns of 5 companies indexed in KSE 30 index, the flattening of COVID deaths curve has significant negative impact on returns of 11 companies. When number of deaths increases the return decreases. However, market is negatively influenced by the pandemic. In 2 companies of KSE 30 index' volatility has significant positive impact on return reason is that the bullish trend of buying is positive impact on returns. The of volatility has significant negative impact on returns of 11 companies. The size of 8 companies of KSE 30 index has significant positive impact on returns, because blue chip firms and investor may prefer then for holding or trading being less risk. The liquidity of 16 companies has significant positive impact on returns, because positive sign indicate that increase in liquidity indicates the bullish trend in market due to presence of buyer in the market.

The flattening of COVID cases curve has significant negative impact on returns of all 13 companies of KMI 30 index. When number of cases increases the return decreases, because fear and uncertainty exist in the market. The volatility has significant positive impact on EGCH. The volatility has significant negative impact on returns of KELE. Increase in volatility is indicator of high uncertainty which forces the investor to wait in see and reduce its trading in the market. Size has significant positive impact on returns of EGCH and GLAX. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The liquidity has significant positive impact on returns of all 13 companies of KMI 30 index.

The robustness of the results has been tested by using deaths. The flattening of

COVID deaths curve has significant positive impact on return of only one company of KMI 30 index that is EGCH, because when number of deaths decreases the return increases due to reverse movement of deaths. The flattening of COVID deaths curve has significant negative impact on returns of 8 companies, because fear and uncertainty exist in the market. The volatility has significant negative impact on returns of KELE. Size of 3 companies of KMI 30 index has significant positive impact on returns. The big companies are generally blue chip and investor may prefer then for holding or trading being less risky. The liquidity has significant positive impact on returns of 8 companies of KMI 30 index. The model is again run in panel data analysis the results are consistent with earlier results in general.

The impact of flattening of COVID cases curve has 20 companies significant positive impact on liquidity of KSE 30 index. When number of cases increases returns decreases, so liquidity also decreases. The insignificant impact on liquidity is observed in 10 companies. Volatility has significant positive impact on liquidity of all companies including in KSE 30 index. Size has 4 companies significant positive impact on liquidity, because big and stable firms are more traded in the market. Size has significant negative impact on liquidity of ENGR and PKOL, because the large firms which are stable and have relatively low growth rate earn low returns. The return of 21 companies has significant positive impact on liquidity. Return has significant negative impact on liquidity of INTE. Significant negative results show that when number of cases increases the return decreases as well as liquidity decreases. Fear information change the investor's decision, so market reports lower liquidity.

The robustness of the results has been tested by using deaths. Flattening of COVID deaths curve has significant positive impact on liquidity of 11 companies indexed KSE 30. When number of cases increases return decreases, so liquidity also decreases. The flattening of COVID deaths curve has significant negative impact on liquidity 7 companies. The COVID deaths create uncertainty so buyer and seller reduce the transaction in the market. This fear of change information may change the decision of investor about trading. Volatility has significant positive impact on liquidity of all companies including in KSE 30 index. Size has significant positive impact on liquidity of 5 companies. The big companies are generally

blue chip and investor may prefer then for holding or trading being less risky. Size of 6 companies has significant negative impact on liquidity. The returns has 18 companies significant positive impact on liquidity of KSE 30 index, so these companies has positive returns and market has high liquidity. A return has significant negative impact on liquidity only 2 companies. When number of cases increases the return decreases as well as liquidity decreases, because fear and uncertainty exist in the market.

Results shows that the flattening of COVID cases curve has significant positive impact on liquidity of all companies of KMI 30 index. Volatility has significant positive impact on liquidity of all companies including in KMI 30 index. When risk and uncertainty decreases returns increases, so liquidity increases in the market and vice versa. Size has significant positive impact on liquidity of only 2 companies. It means big and stable firms are more traded in the market. Size has significant negative impact on liquidity of only 2 companies. The return has significant positive impact on liquidity of all 13 companies of KMI 30 index except SUIN. The result for positive indicates the buying pressure or bullish trend in the market. The market reports high liquidity. Significant negative impact show that the selling pressure or bearish trend in the market.

The impact of flattening of COVID deaths curve has significant negative impact on liquidity of 3 companies. Significant negative results show that, fear change the investor's decision. The fear of COVID cases creates uncertainty so buyer and seller reduce the transaction in the market. Therefore, market is negatively influenced by the pandemic. The flattening of COVID deaths curve has significant positive impact on liquidity of KELE. Volatility has significant positive impact on liquidity of all companies including in KMI 30 index because the high volatility increases returns which is in line with high risk and high return, so liquidity also high. Size has significant negative impact on liquidity of only 3 companies, because the large firms which are stable and have relatively low growth rate earn low returns. The return has significant positive impact on liquidity of 8 companies. The positive sign indicate that increase in liquidity indicates the bullish trend in market due to presence of buyer in the market. The model is again run in panel data analysis the results are consistence with earlier.

5.2 Recommendations

The impact of COVID-19 on stock market returns and liquidity at firm level is the main focus of this study. COVID-19 creates uncertainty and fear all over the world. During COVID-19 period stock markets performed very badly. When number of cases and deaths increases the new information directly affect the stock market. A fluctuation in the stock market also creates feras so every investor feels panic. When number of cases and deaths increases the stock market liquidity decreases and stock market return decreases. Because buyers and sellers hesitate to take position in the stock market. This study is helpful for decision maker and investor. During pandemic investor make better policy for their investment in stock market. Decision maker make effective policy to beat the COVID-19.

- Investor should consider the pandemic pattern before making decision.
- Returns and Liquidity reciprocate each other so these should be considered as confirming signals for the expected direction.
- Government should take steps to control pandemic so that the financial disaster can be avoided.

Bibliography

Abbas, G., Bashir, U., Wang, S., Zebende, G. F., & Ishfaq, M. (2019). Thereturn and volatility nexus among stock marke tand macroeconomic fundamentals for China. *Physica A: Statistical Mechanics and Its Applications*,7(10), 1–16.

Ahmad, E., & Zaman , B. U. (1999). Volatility and Stock Returns at Karachi Stock Exchange. *Pakistan Economic and Social Review*, 37(1), 25-37 .

AlAli, M. S. (2020). The Effect of WHO COVID-19 Announcement on Asian Stock Markets Returns: An Event Study Analysis. *Journal of Economics and Business*, 3(3), 1051-1054.

Al-Awadhi , A. M., Al-Saifi , K., Al-Awadhi , A., & Alhamadi, S. (2020). Death and Contagious Infectious Diseases: Impact of the COVID-19 Virus on Stock Market Returns. *Journal of Behavioral and Experimental Finance*, 27(1), 100326.

Ali, M. S., & Hashmi, S. H. (2018). Impact of Institutional Ownership on Stock Liquidity: Evidence from Karachi Stock Exchange, Pakistan. *Global Business Review*, 19(4), 1–13 .

Alnaif, L. K. (2014). Stock Liquidity Determination Evidence from Amman Stock Exchange. *Asian Economic and Financial Review*, 4(12), 1894-1905 .

Arslan, M., Ahmed, W. S., & Akhter, M. (2020). Volatility, Global Proxy Index, VAR: Empirical Study on Pakistan And China Stock Exchanges. International Journal of Advances in Data and Information Systems, 1(2), 103-115.

Audretsch, D. B., & Elston, J. A. (2002). Does firm size matter? Evidence on the impact of liquidity constraints on firm investment behavior in German. *International Journal of Industrial Organization*, 20(2), 1-17.

Baig , A. S., Butt , H. A., Haroon , O., & Rizvi, S. A. (2020). Deaths, Panic, Lockdowns and US Equity Markets: The Case of COVID-19 Pandemic. *Finance Research Letters*, 38(1), 101701.

Berument , M. H., & Dogan, N. (2012). Stock market return and volatility: day-of-the-week effect. *J Econ Finan*, 36(2), 282–302 .

Broto, C., & Lamas, M. (2020). Is market liquidity less reselint after the financial crisis? Evidence for US Treasuries. *EconomicModelling*, 93(3), 217-229.

Chebbi, K., Ammer, M. A., & Hameed, A. (2021). The COVID-19 pandemic and stock liquidity: Evidence from S&P 500. *The Quarterly Review of Economics and finance*, 81(1), 134–142.

Chen, M. H., Demir, E., Gomez, C. D., & Zaremba, A. (2020). The impact of policy responses to COVID-19 on U.S. travel and leisure companies. *Annals of Tourism Research Empirical Insights*, 1(1), 100003.

Cheung, W. M., Chung, R., & Fung, S. (2015). The effects of stock liquidity on firm value and corporate governance: Endogeneity and the REIT experiment. *Journal of corporate finance*, 35(4), 211-231.

Derbali, A., & Hallara, S. (2016). Day-of-the-week effect on the Tunisian stock market return and volatility. *Cogent Business & Management*, 3(1), 1147111.

Ellahi, N., Rehman, J. u., Sulehri, N. A., Ahmad, M. A., & Qureshi, T. (2021). Investigating the Impact of COVID 19 Outbreak on Stock Market Returns: Evidence from Pakistan. *International Journal of Innovation, Creativity and Change*, 15(5), 1-9.

Erdogan, S., Gedikli, A., & Cevik, E. I. (2020). The effects of the covid-19 pandemic on conventional and islamic stock markets in Turkey. *Bilimname*, 2020(42), 89-110.

Fama, E. F., Fisher, L., Jensen, M., & Roll, R. (1969). The adjustment of stock prices to new information. *International economic review*, 10(1), 1-21

Farhan, M., & Sharif, S. (2015). Impact of Size on Returns at Karachi Stock Exchange (KSE). *Research Gate*, 37(1), 16-34.

Farid, A., Ashraf, J., & Khan , A. H. (1995). Volatility at Karachi Stock Exchange. *The Pakistan Development Review*, 34, (4), 651-657.

Farooq , U., Nasir , A., Bilal , & Quddoos , M. U. (2021). The impact of COVID-19 pandemic on abnormal returns of insurance firms: a cross-country evidence. *Applied Economics*, Volume 53 (31), 1-21.

Farzami, Y., Allen, R. G., Alexander, M., & Sehrish, S. (2021). COVID-19 and the liquidity network. *Finance Research Letters*, 42(1), 1544-6123.

Foley, S., Kwan, A., Philip, R., & Ødegaard, B. A. (2021). Contagious margin calls: How COVID-19 threatened global stock market liquidity. *Journal of Financial Markets*, 13(1) 100689.

Ftiti, Z., Ameur, H. B., & Louhichi, W. (2020). Does non-fundamental news related to COVID-19 matter for stock returns? *Economic Modelling*, 99(2), 105484.

Goker, İ. E. K., Eren, B. S., & Karaca, S. S. (2020). The impact of the covid-19 (coronavirus) on the borsa istanbul sector index returns: An event study. *Gaziantep University Journal of Social Sciences*, 23(2), 14-41.

Handayani, M., Farlian, T., & Ardian. (2019). Firm Size, Market Risk, and Stock Return: Evidence from Indonesian Blue Chip Companies. *Jurnal Dinamika Akuntansi dan Bisnis*, 6(2), 171-182 .

Haroon, O., & Rizvi, S. A. (2020). Flatten the Curve and Stock Market Liquidity – An Inquiry into Emerging Economies. *Emerging Markets Finance and Trade*, 56(10), 2151–2161.

Hasan, M. B., Mahi, M., Hassan, M. K., & Bhuiyan, A. B. (2021). Impact of COVID-19 pandemic on stock markets: Conventional vs. Islamic indices using wavelet-based multi-timescales analysis. *The North American Journal of Economics and Finance*, 58(1), 101504.

Imran, S. M., Saleem, R., & Rehman, H. U. (2021). The Impact of the COVID-19 Pandemic on Firm Performance: Firm-Level Evidence from Pakistan Stock Exchange. *International Journal of Innovation, Creativity and Change*, 15(8), 1-7.

Iqbal , N., Manzoor, M. S., & Bhatti, M. I. (2021). Asymmetry and Leverage with News Impact Curve Perspective in Australian Stock Returns' Volatility during COVID-19. *Journal of Risk and Financial Management*, 14(2), 314.

Just, M., & Echaustb, K. (2020). Stock market returns, volatility, correlation and liquidity during the COVID-19 crisis: Evidence from the Markov switching approach. *Finance Research Letters*, 37(2), 101775.

Khan, K., Zhao, H., Zhang, H., Yang, H., Shah, M. H., & Jahanger, A. (2020). The impact of COVID-19 pandemic on stock markets: An empirical analysis of world major stock indices. *The Journal of Asian Finance, Economics, and Business*, 7(7), 463-474.

khan, N., Elahi , F., Ullah , D. H., & Khattak , A. (2021). COVID–19's Impact on Stock Returns—an Event Study based on the Pakistan indices. *Research Gate*, 126(3), 9.

Kumar, M., & Sehgal , S. (2004). Company Characteristics and Common Stock Returns : The Indian Experience. *The Journal of Business Perspective*, 8(2) 33-45.

Mitra, P. (2016). Day-of-the-Week Effect on Stock Market Return and Volatility: Evidence from Indian Stock Market. *IOSR Journal of Economics and Finance*, 7(4) , 2321–5925.

Mubarik, F., & Javid, A. Y. (2009). Relationship Between Stock Return, Trading Volume and Volatility: Evidence from Pakistani Stock Market. *Asia Pacific Journal of Finance and Banking Research*, 3(3), 1-17.

Naidu, D., & Ranjeeni, K. (2021). Effect of coronavirus fear on the performance of Australian stock returns: Evidence from an event study. *Pacific-Basin Finance Journal*, 66(1), 101520.

Naseer, M., & Tariq, Y. b. (2015). The Efficient Market Hypothesis: A Critical Review of the Literature. *The IUP Journal of Financial Risk Management*, 12(4), 17.

Neukirchen, D., Engelhardt, N., Miguel, K., & Posch, P. N. (2021). Firm efficiency and stock returns during the COVID-19 crisis. *Finance Research Letters*, 39(2), 102037.

Nomran1, N. M., & Haron, R. (2021). The impact of COVID-19 pandemic on Islamic versus conventional stock markets: international evidence from financial markets. *Future Business Journal*, 7(1), 1-16.

Onali , E. (2020). Covid-19 and stock market volatility. SSRN electronic Journal *Research Gate*, 12(5) 124.

Polemis , M., & Soursou, S. (2020). Assessing the Impact of the COVID-19 Pandemic on the Greek Energy Assessing the Impact of the COVID-19 Pandemic on the Greek Energy Firms: An Event Study Analysis. *Energy Research Letters*, 1(3), 17238.

Rakshit, B., & Neog, Y. (2021). Effects of the COVID-19 pandemic onstock marke treturns and volatilities:evidence from selected emerging economies. *Studies in Economics and Finance*, 36(1), 24-38.

Ryandono, M. N. H., Muafi, M., & Guritno, A. (2021). Sharia Stock Reaction Against COVID-19 Pandemic: Evidence from Indonesian Capital Markets. *The Journal of Asian Finance, Economics, and Business*, 8(2), 697-710.

Saleemi, J. (2021). COVID-19 and liquidity risk, exploring the relationship dynamics between liquidity cost and stock market returns. *National Accounting Review*, 3(2), 218–236.

Sidhu , D. K. (2018). Impact of Leverage of a Company on Stock Market Liquidity in Indian Markets. *IOSR Journal of Business and Management*, 20(1), 01-08 .

Tahat , Y., & Ahmed, A. H. (2020). Stock Market Returns, liquidity and COVID-19 Outbreak: Evidence from the UK. *Research Gate*, 12(3), 8-12.

Tan , S. H., & Khan , M. T. (2010). Long Memory Features in Return and Volatility of the Malaysian Stock Market. *Economics Bulletin*, 30 (4) , 3267-3281.

Tomal, M. (2021). Modelling the Impact of Different COVID-19 Pandemic Waves on Real Estate Stock Returns and Their Volatility Using a GJR-GARCHX Approach: An International Perspective. *Journal of Risk and Financial Management*, 14(2), 374.

Tuna, G. (2021). Predicting financial market returns in the presence of health crisis: evidence from conventional and Islamic stock markets. *Economic Research-Ekonomska Istraživanja*, 34(3), 1-21.

Ul Haq, I., & Rashid, K. (2014). Stock Market Efficiency and Size of the Firm: Empirical Evidence from Pakistan. *Economics of Knowledge*, 6(1), 10-31.

Umar, M., Rubbaniy, G., & Rizvi, S. K. (2021). Covid-19 and stock market liquidity: an international evidence. *Social sciences and research network,* 23(1), 100-129.

Umar, M., Rubbaniy, G., & Rizvi, S. K. (2021). Covid-19 and stock market liquidity: an international evidence. *Research Gate*, 10(2), 29-45.

Waheed, R., Sarwar, S., Sarwar, S., & Khan, M. K. (2020). The impact of COVID-19 on Karachi stock exchange: Quantileon-quantile approach using secondary and predicted data. *Journal of public affairs* , 20(4), 2290.

Wong, K. A. (1989). The Firm Size Effect on Stock Returns in a Developing Stock Market. *Economics Letters*, 30(1), 61-65 .

Zhang, P., Gao, J., & Li, X. (2021). Stock Liquidity and Firm Value in the Time of COVID-19 Pandemic. *Emerging Markets Finance and Trade*, 57(6), 1578–1591.