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Impact of Monetary Policy on the Stock Market Return, Volatility, and Liquidity

by

Anum Zia

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degree of Master of Science

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*I want to dedicate this achievement to my parents, teachers and friends who
always encourage and support me in every crucial time*



CERTIFICATE OF APPROVAL

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Anum Zia

Abstract

This research is focused on whether a change in monetary policy (interest rate) brings any changes in the stock market liquidity, volatility, and return. The stock market indices KSE100, KSE30, and KMI30 from the Pakistani the stock market. The data was gathered from 2012 to 2021, and regression analysis was performed in MS Excel 2019. From monetary policy only one factor is taken that is interest rate which is one of the main factor of monetary policy and have mojour affect on stock market. The results have demonstrated that when the interest rate increases, volatility within the stock market, where the stock prices go up or down uncertainly. The level of volatility increases with an increase in the interest rate. Moreover, the results contended that an increase in interest brings no significant change in stock market liquidity or stock market return. This research also explored the effect of stock market liquidity and stock market volatility on the stock market return along with monetary policy (interest rate) in a single model, where findings of the study represented that increasing stock market volatility reduces the stock market return, whereas increasing stock market liquidity increases the stock market return.

Keywords: Monetary Policy, Stock Market, Stock Market Return, Stock Market Liquidity, Stock Market Volatility, KSE100, KSE30, KMI30, Pakistan.

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Abbreviations

IntR	Interest Rate
LIQ	Liquidity
MOPL	Monetary Policy
STM	Stock Market
STML	Stock Market Liquidity
STMR	Stock Market Return
STMV	Stock Market Volatility
VOLA	Volatility

Chapter 1

Introduction

1.1 Research Background

In finance and economics, monetary policy (MOPL) has played a central part in the assets market while being a topic under consideration for the last few decades (Rifat, 2015). Central banks utilize MOPL to modify macroeconomic factors, including the GDP, production index of the industries, & consumer goods prices (Hussain, Lal, & Mubeen, 2009). Moreover, banks use MOPL to control inflation and the country's exchange rates. In terms of monetary policies, the key tool utilized by the central banks is to modify the country's short-term interest rate (IntR), which eventually helps achieve company-related goals and objectives (Rifat, 2015). As per the research, an effective and well-developed monetary sector that contributes to economic progress is impossible without studying the function of MOPL

Contrarily, in the present economic times, the stock market (STM) plays a crucial part in a country's economy (Hojat, 2015). Several individuals are directly and indirectly involved in the STM to gain possible returns. Daily, several individual investors and investor companies invest a certain sum of money in the STM for certain outcomes in the form of returns (Marozva, 2020). Due to this, the investors' decisions for investing become noteworthy based on the information available concerning which stock to sell and which not based on returns from those stocks &

the threat involved in investing in those particular stocks (Hojat, 2015). Similarly, the companies providing the investors individuals or corporations with the stocks and shares for investments also need to have sufficient information concerning the prices which they need to set for the shares as per the benefits they are earning on the investments (Laine, 2021).

Monetary policy is crucial for addressing the nation's monetary challenges. This demonstrates that the effectiveness and sustainability of monetary systems and capital developments are the results of the MOPL and its effects on a nation's economic conditions. Mishkin (2007) contends that MOPL is essential for the monetary wellness and prosperity of any nation's economic condition. As per the research, an effective and well-developed monetary sector that contributes to economic progress is impossible without studying the function of MOPL. This demonstrates the significant linkage among MOPL and the economic system, which cannot be disregarded under any circumstances. However, the transfer patterns among monetary elements such as MOPL and the actual economic condition are still a subject of much scientific and philosophical debate.

Numerous developing nations, like Pakistan, have experienced numerous challenges, such as sustaining prosperity and progress. Many of these issues have centered on fluctuating prices, rapidly changing currencies, volatile money systems, declining foreign currency assets, etc. Changes in the monetary system in emerging nations were being discussed, and it was ultimately determined that economic progress is achievable only via new banking strategies. MOPL was the broad policy tool employed by most emerging economies to handle financial turmoil. The MOPL recommendations included bolstering currencies in the forex market, boosting capital creation and development, creating more foreign currency resources, or perhaps both while preventing economic uncertainty or limiting the monetary supply to curb demand-related rising prices (Chiesa, 2001). On the one end, it is widely known that recessionary MOPL may result in unfavorable consequences that directly contradict the original predictions, such as currency devaluation, rising unemployment levels, and overall economic stagnation. An extremely expansionary MOPL with a very low IntR and an inflation rate that fails to increase aggregate demand faces the danger of economic uncertainty since it makes cash

reserves more appealing than interest-bearing bank deposits ([García-Herrero & Del Rio Lopez, 2003](#); [Diamond & Rajan, 2006](#)).

Monetary policy is the initial line of protection from the domestic and foreign financial recession. Therefore, it is crucial to get MOPL properly ([World Economic Outlook, 2008](#)). The rising quantity of articles and seminars in this field reflects the relevance of MOPL and its influence on market stabilization ([Sack & Wieland, 2000](#)). This is a result of the awareness that "Monetary policy significantly influences the short-term course of the real economy ... [and also] that the choice of how to conduct MOPL has important consequences for aggregate activity" ([Clarida, Gali, & Gertler, 1999](#)).

After the international monetary crisis, many contended that guaranteeing monetary sustainability is also the central bank's aim, as monetary difficulties can wreak havoc on monetary stabilization. A large set of academics highlights that the primary function of the central bank is to guarantee stable prices. Monetary consistency is the capacity of a nation's monetary structure to offset or absorb a variety of crises without impairing the overall favorable circumstances for economic development, such as deposits or the seamless transmission of payment. The Austrian National Bank's Market Stability Findings describe the relation among financial system stability: "MOPL strategy, comprised of economic & financial assessment, aids in evaluating the danger of extreme lending, which threatens monetary sustainability and may lead to the formation of booms. Furthermore, the monetary assessment includes details on abnormalities in the overall monetary situation ". [Stein \(1995\)](#) contends that stressing monetary sustainability as a primary purpose of the central bank is not a new slogan but has traditionally been the prevalent viewpoint. Minimizing significant monetary disasters caused by uncontrolled banking systems was a significant impetus for establishing central banks across the globe.

A country's MOPL is based on the stability of the prices in the country & the improvement in the economy of a country, and purchasing power of people based on increased employees ([Jonathan & Oghenebrume, 2017](#)). To achieve this target objective, a country's central bank performs certain actions, including changes in the IntR and the changes in the volume of the monetary supply in the country

(Samour, Isiksal, & Türsoy, 2020). The acts support improving a country's ability to achieve all its goals and objectives. Despite this, the influence of MOPL on the country's economy is developed in a broader sense through the financial markets working in the country (Galí & Gambetti, 2015). This represents that a country's MOPL influences the investors' decisions concerning allocating all the existing resources in different investment portfolios, eventually changing the nation's economic conditions.

1.2 Identification of the Problem in the Research

The emergence of the Covid 19 pandemic after the global monetary stress of 2008-9 has dramatically influenced the working of the economies. Several economists, as well as researchers, have been highly shocked and surprised by the outcomes of the Covid 19 pandemic. In a pandemic situation, more specifically, the MOPL's role becomes more crucial to ensure the stability of the country's money supply and the people's stable purchasing power. In the last two decades, just like the rest of the world, Pakistan has faced financial problems, including the 2008-9 global monetary distress. Pakistan is a developing economy with a semi-industrial economy while exporting several products, including textiles, leather products, sports products, chemicals, and other products. The economic growth of Pakistan decreased in 2019-20 and increased in 2020-21; however, it is forecasted to decrease in 2021-22 and 2022-23 (Economic survey of Pakistan 2022). In an emerging economy, the part of MOPL on the country's STM is a topic of great importance where the monetary distress of 2008-9 & the Covid-19 outbreak has influenced the overall working of the country.

Moreover, in the last two decades, there have been different governments, including the nine years dictatorship-based tenure of General Pervez Musharraf (1999-2008), the democratic tenure of Asif Ali Zardari (2008-13), the tenure of Nawaz Shareef/Khakan Abbasi (2013-18); tenure of Imran Khan (2018-2022); and the current government of Shahbaz Shareef (2022-). In all the tenures, the monetary policies kept on changing as per the changing tenures, & so did the economic condition of Pakistan. Moreover, research by Maio (2014) also represented that in

different situations or based on different characteristics, the effect of MOPL on the STM eventually changes. Based on the identified situation of the monetary distress of 2008-9 and the Covid-19 outbreak, there is a need to explore how the effect of MOPL on the STM in all these different situations changed over time. Thus, in such a volatile situation, the key role of MOPL, especially the alteration in the IntR in the stock market return (STMR), needs to be explored in the last decade, 2012-2021, to address this problem identified.

1.3 Gap Analysis

Monetary policy and the STM are not new concepts; rather, it has been under research for decades. Different authors, including the studies of (Okpara, 2010; Durham, 2003; Ioannidis & Kontonikas, 2008; Maio, 2014; Rigobon & Sack, 2003; Bissoon et al., 2016; Marozva, 2020; Paule-Vianez, Gómez-Martínez, Prado-Román, et al., 2020) and many others have focused on MOPL and the STM. The previous research suggests that MOPL has a statistically significant effect on the changes occurring in the STM and its returns. The research of Laine (2021) reported that when the IntR of a country change with certain policy changes, it brings great fluctuations in the STM while influencing the prices of shares. Similarly, the research of Kurihara (2017) depicted that when policymakers bring changes in their policies concerning IntR and other factors, it eventually brings fluctuations in the STM while either increasing or decreasing the chances of easily converting the stocks/assets into cash (while bringing no changes in the market price of those shares).

Similar were the results reported in the study of Debata and Mahakud (2018), who illustrated a direct connection among MOPL and stock market liquidity (STML). The study stated that changes in the policy change the shareholders' ability to easily sell their shares without bringing major changes in the market prices of those shares. Moreover, Mallick, Mohanty, and Zampolli (2017) considered the effect of changes in MOPL on the volatility (VOLA) level in the STM, where the study represented that changes in MOPL play a key role in bringing sudden increases or decreases in the prices of shares/stocks.

However, the previous research mainly focuses on firm-specific factors while considering the data of certain specific firms working in different countries (Rifat, 2015; Ioannidis & Kontonikas, 2008). The previous literature lacks research on the influence of IntR alterations in MOPL on the STMRs and the LIQ and VOLA of the Pakistani STM. This is literature as well as the centered gap which the current study has identified as the STM is a critical player in the economic condition of a country, and the policies which improve the STM are required to be identified to improve the economic condition of a developing country, i.e., Pakistan.

1.4 Questions to be Answered in Research

The countries develop a MOPL to ensure the financial health of a country's economy, and if a country's MOPL keeps changing, it brings great changes in the asset/equity prices in the financial market. As discussed earlier, the government of Pakistan in the recent decade has changed more than three times while having certain changes in the MOPL over time. This eventually raises some of the questions as discussed below:

Since the STMR is very important for investors, the changes caused by this return due to changes in the MOPL are of immense importance to policymakers and investors (Okpara, 2010). Thus, there is a need to explore the answer to the following question in the STM of Pakistan.

i. Does monetary policy influence the stock market return of the Pakistani stock market?

STML represents investors' ability to quickly convert their stock/shares/assets into cash. The market is highly liquid when there are higher chances of quickly converting assets/stocks into cash (Marozva, 2020). A highly liquid market is far more beneficial for investors than a less-liquid market while playing a key role in a country's economy (Kurihara, 2017). Due to this reason, it is required to explore how the MOPL changes have changed the LIQ level of the STM of Pakistan. The study has developed the following question based on this.

ii. Does monetary policy bring changes in the liquidity of the Pakistani stock market?

Volatility in the STM represents the systematic uncertainty in the prices of the shares/assets, either going up or down at a different rate (Lawal, Somoye, Babajide, & Nwanji, 2018). A highly volatile STM represents companies needing to pay a higher rate to generate funds for their daily work (Li, Ma, Zhang, & Zhang, 2020). When the MOPL (IntR) fluctuates in the country, it brings changes in the VOLA of the share/asset's prices in the country, as reported in the research of (Chiang, 2021; Morema & Bonga-Bonga, 2020; Baker, Bloom, Davis, & Kost, 2019). This raises a question.

iii. Do monetary policy changes bring changes in the volatility of the Pakistani stock market?

Moreover, along with these questions, the present research also focuses on finding the answer to the following question:

iv. Do changes in stock market liquidity, and volatility brings changes in the stock market return of the Pakistani stock market?

1.5 Objectives to be Achieved

While considering the questions mentioned above raised based on the identified research problem, the present research has the following objectives to achieve at the end of present research:

1. To find the influence of monetary policy on the stock market return of the Pakistani stock market.
2. To find the influence of monetary policy on the liquidity of the Pakistani stock market.
3. To find the influence of monetary policy on the volatility of the Pakistani stock market.

4. To find the influence of stock market liquidity and volatility on the Pakistani stock market return.

1.6 Research Value/Significance

The current study is focused on exploring the role of MOPL (IntR variations) on the STM of Pakistan while considering the STMR, LIQ, and VOLA. There are several aspects based on which the present research is valuable and will provide value to the readers and researchers.

Since the growth & the structure of the financial or STM plays a great role in the economic progress of a country, the effect of MOPL on the STM is required to be studied (Hojat, 2015). Due to this, exploring the role of MOPL, especially the changes in the IntR in a country's STM of a country will help the policymakers and investors gain a better insight into the extent of the effect. Based on the results, the policymakers can consider the IntR, which can eventually influence the STM funds amount, thus contributing positively to the economy.

Similarly, the investors can eventually make decisions based on information available concerning the changes occurring in the country's IntR, which can either increase or decrease the STMRs, VOLA & LIQ. Moreover, the study is useful for researchers, policymakers, investors, & other people who are interested in understanding the changes occurring in the returns & the LIQ & VOLA of the STM of Pakistan due to changes in the MOPL of the country while providing them with information from the past two decades (2000-21).

The present research results are also useful for academic researchers for future research while providing directions based on the limitations identified at the end of the present research due to several reasons which might have affected the results or altered them if those limitations were overcome in future studies.

1.7 Research Organization

Chapter No 1: Introduction to Research

This section covers the historical details of the research. It also describes the research's aims and the issues it sought to solve, and information regarding the study's significance and purpose is provided.

Chapter No 2: Review of Existing Literature

This section covers information regarding past research in the domain studied. It allows the people reviewing the report to comprehensively analyze monetary policy and STM return, VOLA, and LIQ.

Chapter No 3: Method for Analysis

This section covers the philosophical and structural foundation utilized during the study. Information regarding the sample size and the method used to collect data is provided. Analysis methods are also comprehensively discussed.

Chapter No 4: Analysis Findings

This section covers the results obtained from the analysis of the data collected through methods described in the previous section. Here, the correlation among the present study and existing research journals and studies is addressed.

Chapter No 5: Conclusion & Recommendations

This section discusses the important results and the researcher's suggestions within the topic area. The key limitation observed by the researcher and the direction for further research is considered.

Chapter 2

Literature Review

2.1 Monetary Policy

The monetary policy (MOPL) serves as one of the most powerful weapons a Central Bank utilizes under its control ([Christiano, Ilut, Motto, & Rostagno, 2010](#)), and it is implemented to accomplish the financial objectives the state has established. This is accomplished by regulating the two facets of MOPL, which are IntR plus printing paper money to keep the economic situation in equilibrium ([Danišková, 2012](#)). Because asset values indicate how well or poor the economic condition is, the STM is essential to the country's economic health. Price changes in stocks have a considerable influence on the whole economy, and as a result, STM fluctuations can play a major part in formulating MOPL ([Ton & Tatay, 2021](#)).

Monetary policy is the primary component of macroeconomics, and its primary objectives are to maintain financial prosperity and advance economic growth via the influence of economic factors ([Srithilat, Sun, & Thavisay, 2017](#)). Meanwhile, MOPL is also referred to as the purposeful activity of the central bank in impacting the price, volume, and accessibility of money credit to achieve targeted macroeconomic goals and maintain external and internal balances. The MOPL affects the overall macroeconomic environment and influences the microeconomic environment in which businesses operate ([Zhao, Chen, & Hao, 2018](#)).

The MOPL may independently influence the STM's returns via five different mechanisms, including IntR, loans, the multiplier effect, currency exchange, and money

supply. Maintaining a constant exchange rate may be the foundation for MOPL in some nations (Ufoeze, Odimgbe, Ezeabalisi, & Alajekwu, 2018). The national banks had a broad range of objectives, each of which was highlighted uniquely at different times. The objectives include variable IntR on loans, growth rates for thin cash and broad cash, economic circumstances, growth, switching size, and other types of monetary markets (Lawal et al., 2018).

The equity market is a monetary marketplace where stocks may be purchased and traded through an IPO (Initial Public Offer) in the primary market or as a transfer of shares outstanding among concerned parties in the secondary market. Both of these markets are considered to be primary markets (Galí & Gambetti, 2015). Even though equities are claims made on assets, and studies have discovered ample proof that MOPL can influence share price in the short run (Kartal, Ertuğrul, & Ulussever, 2022), monetary neutrality suggests that MOPL must not influence real stock values in the long term (Wen, Shui, Cheng, & Gong, 2022).

Before we can even begin to comprehend how MOPL affects the STM, we need to grasp what MOPL entails in the first place. Changes in market/real IntR are used as gauges of MOPL by several researchers, including Lamont et al. (2001), Caraiani and Călin (2018); Umezurike, Echekoba, and Ananwude (2019); Chiang (2021). In contrast, this indicator of MOPL tracks variations in the circumstances of the economic cycle in addition to other pertinent economic indicators. The VAR models that Campbell and Perron (1991) presented were used by Christiano, Eichenbaum, and Evans (1994) to extract MOPL as the orthogonalized discoveries from those models.

A study design centered on this has demonstrated that the behavior of US stock prices towards policy shocks derived from federal funds rates shows that returns of big companies react less firmly compared to those of small businesses (Robstad, 2018). The overall strategy for stock returns is rather lesser, and foreign financial markets respond to variations in their native money markets and the US market (Lütkepohl & Netšunajev, 2018). Monetary policy fluctuations will probably be vulnerable to the endogeneity issue, whether derived from structural VAR models or IntR variations. This means that it is doubtful that MOPL fluctuations will be entirely uncontrolled (Pal & Garg, 2019).

Akbar, Iqbal, and Noor (2019) used a special VAR-based technique to examine the linkage among rising prices and STMR, whereas (Tsuchida & Tucker, 2012) investigated the linkage among policies & share prices. Their study did not concentrate directly on MOPL; rather, it concentrated on how the market reacted to changes in employment opportunities.

2.2 Stock Market Return

A return also referred to as a monetary benefit, is the sum of income earned or wasted because of an investment during a predefined time frame. A return may be represented technically as the change in the dollar value of a particular investment over time. This is one way to think about returns. Market return can also be stated as a proportion, calculated by dividing profit by investment and then by 100. Returns can also be provided as the net effect, which considers costs, taxes, and price increases, as well as net gains, which do not consider anything other than price fluctuation (Zhong & Enke, 2019). It is helpful to understand the factors that cause the STM to change to comprehend the returns of the STM. The gain, dividend, or combination of the two that investors realize on their capital is the return from the STMs. A firm's share price may go up or down for several reasons, including supply and demand, the market's attitude, fluctuations in income, and political difficulties, to mention just a few. These elements can influence the average rate of return on equities an investor achieves in various ways (Wen et al., 2022). Raising import duties among two countries, for example, can affect the value of specific stocks in a linked economy, even though these factors may have no connection when STM's propensity for VOLA is sometimes affected by new developments worldwide and rapid shifts in the cost of items accessible to individuals and companies.

2.3 Stock Market Liquidity

Since there have been many years since the monetary distress, LIQ has been the focus of several studies in the financial literature, particularly in the Stock market

LIQ. More significantly, STML is, first and foremost, crucial to the economy of the country, and it is considered a relevant parameter in projecting the economy's future condition (Naik & Reddy, 2021). Despite this, O'Hara (2004) said, "LIQ is hard to describe but simple to experience it." Keynes (2013) provides an early description of LIQ, and subsequent study has recognized it in various ways from several perspectives (Fang, Noe, & Tice, 2009). STML is a fundamental aspect of the market, and its existence, which is beneficial to the market's overall efficiency, also benefits vice versa. The STML represents the investors' capacity to purchase and sell assets in the STM with smooth transactions. This ability is reflected in the stock exchanges (Næs, Skjeltorp, & Ødegaard, 2011).

The absence of LIQ in the markets has direct repercussions for the entire monetary sector and indirect repercussions for the economy by preventing them from operating customarily and routinely. The STM is considered one of the most important parts of an economy because it acts as a "prism" to analyze how other parts of the economy are developing (Herwany, Satyakti, & Wardhana, 2017).

Consequently, the equity market's LIQ is of the utmost significance even to the economy, and it may be seen as an indication of the investing mood as well as the pattern of the cash flow. According to Ellington (2018), decreased LIQ levels inhibit economic development during times of crisis and hurt the economy. Studies conducted by Smimou (2014) characterized STML as an important indicator in projecting the future condition of the economy. These findings are consistent with a perspective that is encouraging in this position.

2.4 Stock Market Volatility

STMV has been of significant interest to policymakers and market players for a long time. The impacts of VOLA on actual market working are of considerable concern to policymakers, whereas the implications of VOLA on the equity market concern investors. Decision makers are concerned with the spillover outcomes of VOLA. In contrast, there is a widespread consensus that the fluctuating nature of the equity marketplace hampers the revival of the real economy. The actions of

the federal reserve are a factor that contributes to the volatile nature of the STM. The choices that are made about MOPL affect several different short-term IntR. Consequently, these rates impact the depreciated present value of projected future revenues, which may also increase or decrease the share price. According to the "leverage effect," decreased stock market volatility (STMV) will result from greater (less) stock returns after greater (lesser) stock prices, which will, in turn, lead to increased stock prices. This effect, which refers to the unequal association among STMRs & VOLA, has been extensively established in previous research ([Gospodinov & Jamali, 2012](#)).

2.5 An Overview of Previous Literature

When it comes to the STM, the communication of MOPL must be accomplished via the use of two linkages of the LIQ influence. Initially, when the federal reserve changes the amount of money in circulation, the participants in the STM will have definite mental assumptions ([Liu, 2021](#)). Moreover, the modifications to the money supply will, through the STM, communicate the goals of the money supply to the actual economy. For instance, if the central bank prints one yuan and then sells it on the marketplace, the yuan price will increase by a factor of four. If the banking system's goal in making changes to MOPL is to boost the money supply, then the LIQ of the share market will grow as a result ([Liang, 2021](#)).

Regarding mental anticipations, investors will believe that stock prices may grow due to investments since they will assume that investments boost demand. The real economy will see a rise in the desire for expenditure due to investment stimulation ([Du, Huang, Dong, Zhou, & Wang, 2022](#)). To put it another way, investments are often employed to encourage more spending on the part of consumers. The MOPL encourages the flow of public resources via its influence on the financial market, which ultimately contributes to the efficiency and growth of the wider economy. This effect is one of the two LIQ implications discussed.

Discrepancies in MOPL's influence on different STM variables have been well-studied and recorded in published works. [Chuliá, Martens, and van Dijk \(2010\)](#) are only two examples of the many academic works that have been published

that study the disparities in the reaction of stock return to the MOPL shocks' direction. Several researchers investigated disparities in STM fluctuations (Kurov, 2010). According to a study by Basistha and Kurov (2008), the decision made by the central bank regarding MOPL has varying impacts on STM indices, such as prices or profit, throughout periods of growth and fall.

2.5.1 Monetary Policy & Stock Market Return

It is generally accepted that the monetary markets, and more especially the share markets, are extremely responsive to fluctuations in the economic system. The future cash flows that are connected to the shares are used to perform an analysis of their value, and this analysis is then discounted using an adequate IntR. This rate is determined by considering the average level of IntR currently prevalent in an economic system (Lemeirut, 2021). Because IntR at discounted cashflows will be less during times of expansion, share values should generally be greater. This is because economic activity should also be greater during these times. A restricted era is characterized by increased IntR and fewer long-term economic activities, leading to a decline in stock values (Bissoon et al., 2016).

Because it offers deficit spending units (businesses) in the economic system with exposure to massive funds and because it gives excess lending units (investors) in the economic system a chance to be stockholders of these businesses and earn earnings based on the potential achievement of these businesses, the equity market is regarded to be among the most critical areas of the modern economic system. Nations can experience increased prosperity and economic progress directly from active financial markets, particularly their STMs. As a result, authorities, and decision-makers all over the globe use various initiatives and regulations to administrate the economy to control activities on the money market. This is done to guarantee that the economy remains stable.

In their study, Chatziantoniou, Duffy, and Filis (2013) discovered a reverse causality linkage among the efficiency of the STM & money supply. This means that the STM's efficiency not only portrays a reaction to MOPL shocks but also serves as a response to decision-makers regarding the private industry's assumptions regarding the prospect path of other economic determinants. These results are based

on a study utilizing data on how the STMs in three (3) industrialized nations reacted to disruptions in the government's fiscal & monetary policies (US, UK & Germany).

Yoshino, Taghizadeh-Hesary, Hassanzadeh, and Prasetyo (2014) investigated the response of prices in Asian STMs to disturbances caused by MOPL shifts by employing the vector error model as an estimated approach. Their study focused on the Tehran stock exchange as a specific example. The research looked at time series data from 1970 up to 2013. According to the study's findings, the value of stock prices consistently increases in response to external MOPL relaxation. Granger causality was utilized as an estimating approach by (Muktadir-Al-Mukit, 2013) to investigate the influence of MOPL factors on the efficiency of the equity market in Bangladesh. In addition, the study used time series, gathering data every month from 2006 to 2012. The research findings showed a one-way chain of causation connecting the stock index, money supply, and T-bills to inflation.

Bordo and Wheelock (2004) investigated the causes of peaks in stock prices and the possible adjustments that may be made to MOPL to dampen the effects of boom times. Using a VAR model, Suhaibu, Harvey, and Amidu (2017) showed that MOPL in 12 African nations positively affected equity market success. Unfortunately, they did not find any evidence of reverse causation in their findings. They did, however, demonstrate that boom times are often accompanied by growth in credit and cash above normal. This was in contrast to their finding that there was no dependable association among booms in the equity market and rising prices.

Additionally, Nwakoby and Alajekwu (2016) investigate the influence of MOPL on the profitability of the Nigerian STM. The data for the time series (1986-2013) from the Central Bank of Nigeria was utilized in the analysis. The ordinary least square and granger causality tests were utilized in the research as estimation strategies. Additionally, the Share Index was used as a proxy to quantify the profitability of the STM. The study's results indicated that adjustments in MOPL largely explain 53% of variations in the STM performance in Nigeria. In addition, the findings of the Granger causality test have demonstrated a causal connection among lending & deposit costs in the long run. Idowu, Bamidele, and Elumah (2020) explored the role of monetary and fiscal policy on STMRs while considering Nigeria's STM.

The study adopted the ex-post facto research design while gathering time-series data from 1985 to 2017. Study results demonstrated that the connection among MOPL and the STMR is a long-term connection where increasing MOPL leads to a statistical increase in the STMR of Nigeria. In contrast, no significant role of fiscal policy was found in Nigeria's STMR.

Similarly, [Adekunle, Elekeokwuri, and Onayemi \(2020\)](#) explored the role of MOPL in Nigeria's STM while considering the information from 1986 till 2017 using two steps-based Engle and Granger error modeling techniques. The research found that the MOPL of Nigeria increases the prices of stocks in the STM of Nigeria. [Cepni and Gupta \(2021\)](#) focused on the effect of MOPL on the changes in the returns of the US STM while considering the VAR model. The study focused on the time-varying model estimates. It explored that the negative sensitivity of stock returns to recessionary MOPL disruptions is bigger in the condition linked with comparatively higher investor positivity. This is compared to the low investor emotion state, in which investor positivity was fairly low.

[Okoro \(2013\)](#) discovered a positive connection among the MOPL and the functioning of the STM in Nigeria. The study's authors, [Saleem, Zafar, and Rafique \(2013\)](#), used yearly time series data from 1985 to 2011 utilizing VECM to investigate the influence of MOPL on share rates. They discovered a negative link among contractionary MOPL and the functioning of STMs. The influence of MOPL on the activities of the STM has not been the subject of a significant number of studies in Ghana. [Harvey, Liu, and Zhu \(2016\)](#) used a quarterly times series data set that spanned the duration from 1991 to 2015 and a VECM model to examine the link among MOPL rate & STM fluctuations in Ghana. They discovered that there was a negative link among the two variables. This was the case when they analyzed the data. Again, utilizing quarterly data from 1993 to 2013 and correspondingly 1991 to 2009 and the VAR model to analyze the link among MOPL & STM profitability in Ghana, where a positive association was discovered among the two factors in Ghana ([Taufian, 2018](#)).

[Mwasya \(2016\)](#) investigated Ghana to empirically examine the influence of the MOPL rate on the STM efficiency of companies listed on the Ghana Stock Exchange. A Multiple Linear Regression Model was used as an estimating approach,

and the data set included monthly readings from 1998 through 2015. The study's findings indicated that the IntR of MOPL has a depressing influence on the functioning of the STM over the long run. In addition, the study discovered that the rate of price fluctuations had a detrimental influence on the share prices. [Mei, Zeng, Zhang, and Hou \(2018\)](#) investigate the significance of economic policy VOLA in Europe and the United States regarding the prediction of gains in European STMs, namely the STMs of the United Kingdom, Germany, & France. The findings point to that the economic policy VOLA in their nation has not successfully increased the credibility of forecasts for these markets. In contrast, the VOLA of economic policies in the United States improved the unpredictability of these STM outcomes.

The gains from STMs may be affected positively and negatively by factors such as economic VOLA and the uncertainty suggested by the media. The study by [Su, Fang, and Yin \(2019\)](#) examined the influence that ambiguity regarding economic policy in the United States, ambiguity regarding financial markets, & uncertainty regarding news-implied markets have on the ambiguity of the STMs of six developed markets & three developing markets. According to ([Sum, 2012](#)), the unpredictability of economic policy in the United States has a detrimental influence on the STMR of the BRIC nations, except China. [Zhang, Lei, Ji, and Kutan \(2019\)](#) demonstrates that the economic policy VOLA in the United States, and not China, significantly influences the formation of worldwide monetary markets.

The ARDL bounds testing methodology was used by [Nwaogwugwu \(2018\)](#) to research macroeconomic policies' influence on the STM's functioning in Nigeria. Using monthly data and the ARDL estimate approach, [Lawal et al. \(2018\)](#) investigated the influence that fiscal and monetary policies have on the behavior of STMs. According to the results, factors such as the IntR, MOPL, state expenditure, and taxes had a statistically substantial influence on the STM in all long and short forms. The findings indicated that a linkage existed among the two economic policies and that this linkage affected stock returns in Nigeria. Indications of a long-run link among stock returns & monetary-fiscal policy mixture were found using the ARDL estimating method. [Chen \(2007\)](#) used monthly statistics for 1965-2004 to investigate the hypothesis that monetary influence varies on asset values

in the United States. The declaration of MOPL substantially influences markets in both the United States and Europe. As stand-ins for MOPL, economists use the money supply growth measure (M2), the fed funds rate, and the discount rate. According to the results, a substantial positive association exists among share price and money growth (M2), whereas discount and fed funds rates are highly correlated with negative values. In addition, a rise of one percent in the discount rate leads to a fall of return of 6.12 percent under bearish market conditions and a fall in stock prices of 2.5 percent during bullish market conditions (Ali, Adeeb, & Saeed, 2014). Stoica and Diaconasu (2012) investigated the linkage among MOPL and share price using co-integration & the granger causality test. They suggested that there is a link, both in the long & short term, among the IntR and the stock values in European nations.

According to Hasan and Nasir (2008), a substantial and positive link exists among IntR, currency value, MOPL, and stock return; however, a link among Pakistan's industrial output, inflation, and oil prices are considered to be minimal. There is a substantial positive association among stock returns and many macroeconomic variables, such as the currency rate, rate of interest, & MOPL. Okpara (2010) states that the long-term IntR negatively correlates with stock prices, whereas the short-term IntR positively correlates with stock prices. According to MAKU and ATANDA (2010), fluctuations in the gain in the STM are frequently represented by the amplitude and VOLA of stock prices, stock indexes, and the market's LIQ. The chance of monetary trouble is reduced when IntR is lowered since higher equity prices result from this (Umezurike et al., 2019).

This VOLA in modifying the MOPL level has been highlighted as a significant component that impacts investors' profits in financial investments (Abaenewe & Ndugbu, 2012). This VOLA may be caused by the fact that there is a lack of clarity about the future path of MOPL. On the other hand, Mersch (2006) hypothesizes that a great number of potentially disturbing factors feed the financial system's susceptibility in various ways. The contradictory findings in previous empirical research on the link among MOPL & STM gains in Nigeria served as the impetus for the current investigation. It has been discovered by Chude and Chude (2013) that MOPL is a substantial driver of the long-run profits of the Nigerian STM.

Chibi, Benbouziane, and Chekouri (2019) used the ARDL estimate technique to study the dynamic linkage among Algeria's monetary & fiscal policies throughout the timeframe 1963-2017. The interactions among the fiscal & monetary regulators demonstrated that fiscal policy was not sensitive to the mechanisms of MOPL throughout the time but that MOPL mechanisms were reactive to the mechanisms of fiscal policy. According to the research findings, Algeria's MOPL is subservient to Algeria's fiscal policy. Similarly, Tawfiq and Tahtamouni (2018) evaluated the effects of monetary & fiscal policies on the earnings of the STM in Jordan from 2006 to 2016. This period included the years 2006 through 2016. A method known as multiple regression analysis was used for this data analysis. The research presented in the study demonstrated a long-run cointegrating link among the interplay of monetary and fiscal policy and market return.

2.5.2 Monetary Policy & Stock Market Liquidity

According to Gust and López-Salido (2014), a nation's MOPL affects the monetary marketplaces, affecting the macroeconomic conditions of the nation. Besides this, the extreme obstacles that all nations' monetary institutions have encountered in the period of globalization, along with one of the dangerous effects, notably the Global Monetary distress of 2007-2009, have demonstrated the exceptional significance of the LIQ of the monetary system and the LIQ of the equity market specifically. This is because globalization has brought about an increase in the interconnectedness of economies around the world (Ton & Tatay, 2021).

More precisely, in line with the rising significance of market-concerned economic systems and financial coalition with established countries, improving STML in evolving market economic systems has grown essential to draw a greater flow of capital from the globe and offer "an effective and profitable option to bank funding," and help to increase and boost profits. This is because of the increasing significance of market-oriented economic markets and economic coalitions with mature economies (Ton & Tatay, 2021). Orekoya (2017) used structural VAR on data from 1990Q1 to 2016Q4 to examine the influence of fiscal and MOPL instruments on the Nigerian STM. According to the research findings, the Nigerian

STM exhibited a swift and substantial response to the various fiscal and MOPL tools.

The STML is emerging as an increasingly important problem in developing capital markets, maintaining the stability of financial markets, and gaining access to the projected return variance of securities/stocks (Apergis, Artikis, & Kyriazis, 2015). The discovery of the factors that determine market LIQ has been a growing priority in recent years due to the significance of market LIQ for investment decisions and economic policy. Recent research on asset LIQ records a significant degree of synchronized movement among the LIQ of specific stocks. This phenomenon is similar to LIQ (Liang, 2021). The idea that there might be certain macroeconomic dynamics or at least a central component that simultaneously influences the LIQ of all the market's stocks is supported by the observation that there is a similarity in LIQ that has been seen. In this sense, the existing body of academic research implies that MOPL is the most appropriate choice in the macroeconomic arena (Chowdhury, Uddin, & Anderson, 2018).

Literature on market microstructure has an extensive section devoted to the theoretical connection among MOPL and market LIQ. According to the inventory theory of market microstructure, the turnover of asset inventories and the threat of keeping liquid asset inventories are two factors that influence market LIQ (Hasbrouck, 2007). Two essential grounds for this theory are its cheap financing cost and a low threat of keeping liquid equities. Because changes in MOPL affect the costs associated with these two characteristics of liquid stocks, it is expected that MOPL will affect the STML. By shifting the limits on who may borrow money, the central bank's MOPL can affect market LIQ, affecting how much money flows into the equity market (Lee, Ryu, & Kutan, 2016).

According to research by Goyenko and Ukhov (2009), there is a direct and positive link among the fluctuations in MOPL and the STML. In this case, it was discovered that tightening MOPL decreased the STML and vice versa for the US market. In addition, Fernández-Amador, Gächter, Larch, and Peter (2013) found a positive association among expansionary MOPL and the STML. They concluded that an expansionary MOPL implemented by the European Central Bank led to an increase in the overall LIQ of the STMs in Germany, France, and Italy. This

was the conclusion reached by the researchers. In addition, the results showed that the influence of MOPL is nonlinear, as the small-cap equities were shown to be more affected than the big-cap equities (Chu, 2015).

According to Chordia, Sarkar, and Subrahmanyam (2005), the association among MOPL and STML only occurs during severe economic instability. In addition, Fujimoto (2004) discovers that the variation in MOPL affected the STML from 1965 to 1982 but that no meaningful association developed among the two variables from 1983 to 2001. Lee et al. (2016) provide evidence to support the claim that MOPL does influence LIQ. In contrast, this occurs due to a transmission mechanism in which the LIQ of bonds serves as a route via which shocks caused by changes in MOPL are passed into the STM.

According to (Chordia et al., 2005), the forecasting value of the MOPL on the STML is quite small. An expansive MOPL is only related to a simultaneous rise in collective LIQ throughout moments of emergency, according to their findings for a group of equities exchanged on the New York Stock Exchange (NYSE). The authors evaluate the effectiveness of MOPL using the federal funds rate and the number of stocks that have been net-borrowed.

Söderberg et al. (2008) investigates the influence of 14 macroeconomic factors on the market LIQ of three Scandinavian stock exchanges from 1993 to 2005, presenting contradictory and inconclusive data. The study found that the policy rate can anticipate market LIQ on the Copenhagen STM, while money supply growth plays a substantial part in the Oslo stock exchange. Also, short-term IntR and mutual fund flows can forecast market LIQ on the Stockholm stock exchange. However, there is not a single characteristic that can accurately predict LIQ across all three markets.

Additionally, Fujimoto (2004) investigates the connection among several macroeconomic factors and the LIQ of the NYSE and AMEX STMs. A beneficial shock to non-borrowed reserves enhances LIQ throughout the period extending from 1965 to 1982, but a rise in the federal funds rate lowers LIQ during this same period. On the other hand, among 1983 and 2001, shocks to either the federal funding rate or non-borrowed resources could not accurately anticipate the share market's LIQ.

Using the VAR approach, [Choi and Cook \(2006\)](#) conducted an observational investigation of the linkage among macroeconomic variables and Japan's STML from 1995 to 2001. They concluded that macroeconomic factors, including MOPL, had a substantial influence on STML. Most specifically, the IntR strongly correlates with the STML. According to the findings of a study conducted by [Jepkemei \(2017\)](#) using least squares throughout 2002 to 2011, which looked at the effect of inflation on STML in Kenya, inflation and MOPL harmed STM liquid behavior. [Debata, Dash, and Mahakud \(2021\)](#) focused on understanding the link among MOPL and STML while considering the market in India. The findings point to a high degree of forecasting of the effect of MOPL on LIQ both on the overall market and on the individual level stocks. In times of low sentiment (pessimistic outlook), the influence of MOPL on LIQ is larger than in times of higher optimism (optimistic outlook).

Similarly, [Sun and Yuan \(2021\)](#) considered the connection among the MOPL of China and its STM. The findings indicate that there is an antipersistence in the linkage among the financial market rate & its LIQ in the long-term but that there is a tendency for these cross-correlations to be highly consistent in the short-term. The adverse linkage among the IntR and the LIQ of the financial markets are more substantial than their positive counterparts regarding their overall influence ([Sun & Yuan, 2021](#)). In addition, the linkage among the rates on the financial markets and the LIQ of the STM exhibit restricted features. This explains the fluctuations in the link among the IntR and the STML at various timeframes. Furthermore, the fact that there is a lesser degree of multifractality in the linkage among the rate on the money market and the LIQ of the financial markets is more evidence that an IntR is a useful tool for controlling the LIQ of the share market ([Lee et al., 2016](#)).

[Mousa \(2016\)](#) explored the link among macroeconomic factors and stock LIQ in Jordan from January 2012 to June 2016, using correlation and ANOVA for analysis. The conclusion reached was that there is an inverse association among GDP, MOPL, and stock LIQ. In their study, [Paškevičius and Norkaitytė \(2011\)](#) used correlation methods to investigate macroeconomic indicators' influence on Baltic capital markets' LIQ from 2004 to 2010. Their findings were published in 2011. In

the research, cross-sectional statistics were used, and it was discovered that there is a correlation among market LIQ and macroeconomic indicators, particularly GDP and MOPL.

[Sequeira \(2021\)](#) examined the changes caused in a country's STM due to variations in that country's MOPL. According to the study, unexpected MOPL moves linked with any contractionary policy initiatives and neutral policy moves have a persistently large and unfavorable influence on stock returns. The only MOPL shock that has a meaningfully favorable influence on stock returns is accompanied by a policy shift that re-centers the economy downward. A re-calibrated classification method was used in the research project, and one of its findings was that the effects of MOPL upsets vary depending on which part of the economy is being examined. The findings illustrated how unexpected shifts in MOPL could have a sizeable effect on the STM by disproportionately negatively influencing industries struggling with financial & LIQ restrictions ([Chava & Hsu, 2020](#)).

The research of [Kartal et al. \(2022\)](#) investigated the ways in which the COVID-19 outbreak influenced the effects of international cash flows (routed by foreigners' retaining shares) & monetary policy reactions (routed by the cost of repurchasing). The usage of a "volatility index, credit default swap spreads, and foreign exchange rates" are examples of factors, and the database utilized spans the time period from January 2, 2017, to October 20, 2020, and it is updated daily. Following an analysis of the different factors' normality and nonstationary attributes, the study first implemented a "nonlinear autoregressive distributed lag (NARDL) model," and afterward, as a robustness check, the study carried out a "Markov switching regression (MSR)." According to the findings, both changes in foreign portfolio flows & changes in monetary reactions have a significant impact on the index; however, changes in foreign portfolio flows have a more significant impact than changes in monetary responses. As a consequence of this, the findings that were derived from the NARDL and MSR models are reliable and accurate.

2.5.3 Monetary Policy & Stock Market Volatility

The MOPL and STM connection has been a topic of mere importance in the last few decades, especially after the monetary distress of 2008-9, when the topic

became more important to researchers. [Ioannidis and Kontonikas \(2008\)](#) research focused on exploring the 13 OECD countries from 1972 to 2002 and found a statistically significant influence of MOPL on the STMRs. Moreover, the study depicted that when policymakers work on ensuring a stable MOPL in the country rather than bringing more sensitivity, it eventually alters the STMRs.

Research published in previous years has paid a significant amount of emphasis on MOPL's uneven influence on the STM's volatile behavior. The unpredictability of the STM is a cause for worry since it slows down the procedure by which the economic sector is recovering, which has negative implications ([Daly, 2008](#)). According to the findings of several lines of research, the STM reacts in various ways to changes in MOPL. [Gospodinov and Jamali \(2012\)](#) reveal, in a manner that is compatible with the premise of an uneven equity market, that the only element of decisions about MOPL that influences the STM's volatile nature is the surprising one. More specifically, a negative shock, defined as a decline in the IntR that is higher than what was anticipated by the market, brings down the excess of VOLA threat.

[Maio \(2014\)](#) explored the STM's response to changes in a country's MOPL. The study used diverse portfolios to find how the monthly changes in federal funds rate bring more changes in the STMRs of companies with financially restricted/lesser value possessing stocks compared to the stock with good conditions/higher value possessing stocks ([Maio, 2014](#)). [Laine \(2021\)](#) also explores the connection among MOPL and the STM while considering the STM threat premia (dividend forecast and future prices). The study represented that the threat-free rate reduced greatly after 2008-9, yet the average expected STMRs remained constant at 9% while representing an increase in STM threat premium due to the monetary distress of 2008-9. The study overall illustrated that when MOPL is eased, it eventually enhances the average threat premium.

[Samour et al. \(2020\)](#) explored the STM changes caused by Turkey's MOPL changes. The study explored the monetary Policy of Turkey while considering the exchange and IntR as well as the money supply and the consumer prices in Turkey. The study gathered data from 1993 to 2016 while considering the two important financial crises. The results of the research depicted that in the long term & short

term, changes in MOPL bring sufficient changes in the STM of Turkey. Increasing consumer prices, appreciation in the currency of Turkey, and increasing money supply leads to an increase in the stock prices of Turkey, whereas an increase in the IntR in Turkey leads to a decrease in the STMRs or stock prices.

[Asiedu, Oppong, and Gulnabat \(2020\)](#) explored how MOPL influences a country's STM while gathering information from 10 African Countries from 1980 to 2019. The study focused on the S&P global index, turnover of the stocks and capitalization of the STM, inflation, exchange, IntR, and broad money growth. A random effect-based model was utilized, which revealed a positive effect of MOPL based on broad money on the STM, whereas a negative effect of interest and inflation rate on the STM. Moreover, it was found that MOPL brings sufficient changes in African countries' STM performance ([Asiedu et al., 2020](#)).

According to [Chuliá et al. \(2010\)](#), the influence of MOPL surprises on market VOLA is larger when the economy is experiencing a downturn than when it is in an upswing. The irrational conduct of market players and the inadequacy of the equity market are the justifications for this phenomenon. The market players do not always respond rationally to the economic headlines, both when the economy is doing well and when it is doing poorly. More specifically, when there is a downturn, the timeliness of MOPL shocks is more significant, but the amount of such shocks is more crucial when there is an upswing. However, there haven't been many studies concentrating on these imbalances throughout an STM cycle.

In bear markets, [Zare, Azali, and Habibullah \(2013\)](#) find that MOPL has a stronger influence on the VOLA of STMs. They contend that the financial constraint theory adequately explains the imbalance in the situation. The existence of contradictory data results in a rise in the costs of foreign funds, which may result in establishing a monetary restriction that is enforceable during periods of declining market prices. Consequently, the influence of the central bank's MOPL is magnified in bear markets. In a panel regression, though, the influence of group-wise heteroskedasticity and cross-sectional dependency has not been accounted for.

[Al-Raimony and El-Nader \(2012\)](#) studied the Middle Eastern market and identified the factors influencing price fluctuations on the Amman Stock Exchange (ASE). To reach their conclusion, the researchers used ARCH/GARCH analysis

on monthly data from 1991-2010. To quantify the influence of the disturbance on the many macroeconomic factors, they also created the Stimulus Reaction Factor. It was found that there is a negative linkage among STMV and the identified macroeconomic factors, including MOPL and other factors. For instance, a rise in InTR can cause a decline in stock prices, reducing earnings.

[Mertens \(2009\)](#) investigated the effects of extreme instability in the share market on the basics of a small open country's economic framework. The author noted that even while shareholders would only incur moderate damages due to their holdings' tiny lack of equilibrium, the external forces that lead to excessive VOLA are significant. A very volatile market causes investors to become more demanding of greater premiums, yet, these higher premiums will eventually cause a decline in the total amount of capital invested when the probabilistic steady state is reached.

The effect of MOPL on the turbulence of STMs in the setting of industrialized countries has been the subject of much research in the body of prior scholarly work, ([Vähämaa & Äijö, 2011](#); [Morema & Bonga-Bonga, 2020](#); [Alsawaf & Rana, 2021](#)). Academic research has largely concluded that central banks' choices about their MOPL may affect STMV. Several studies have led researchers to conclude that stock returns and VOLA reactions to changes in MOPL are asymmetric. Bernanke and Kuttner, 2005 investigated asymmetry in the path that MOPL shocks took concerning the performance of STMs. Some studies ([Bredin, Gavin, & O'Reilly, 2005](#); [Andersen, Bollerslev, Diebold, & Vega, 2007](#); [Basistha & Kurov, 2008](#); [Lawal et al., 2018](#)), and ([Marozva, 2020](#)) looked into asymmetries across the course of the economic cycle. Asymmetries concerning bull and bear markets were investigated in the studies of ([Jansen & Tsai, 2010](#); [Kaminska & Roberts-Sklar, 2018](#)).

[Rigobon and Sack \(2003\)](#) worked to evaluate the asymmetric response of STMV to both positive and negative MOPL shocks. On the other hand, there is not a lot of data to back up the idea that there is an asymmetric reaction of STMV to MOPL throughout both bull and down-market periods. The only study we are aware of is the one conducted by ([Konrad, 2009](#)), and it concluded that the influence of MOPL on the VOLA of the returns on German stocks is significantly greater during periods of bearish market conditions than during periods of bullish market conditions.

Plakandaras, Gupta, Balcilar, and Ji (2022) performed research on finding the influence of monetary policies, including the conventional and unconventional on the volatility of the stock market of the United States where the "structural heterogeneous vector autoregressive (SHVAR) model" was utilized to perform the analysis on the identified factors of the research. The research shows that recessionary monetary policy increases price movement; nevertheless, the impact of policy shocks in driving stock price volatility varies across various environments and is related to supply upsets (along with volatility upsets). When compared to changes in the economic cycle, monetary policy upsets describe a bigger proportion of the variation in stock prices at smaller timeframes. On the other hand, these disturbances describe a smaller proportion of the variation over medium to long timeframes. The fundamental results of the favorable effects of monetary policy on shares market turmoil (being considerably stronger throughout durations of soothing financial marketplaces) are also substantiated by analysis performed at the regular frequency predicated on an enlarged "heterogenous autoregressive model of realized volatility (HAR-RV)" and a "multivariate kth order nonparametric causality-in-quantiles framework." Both of these models predict that monetary policy has a good effect on shares market turmoil.

The present study performed an analysis to determine the role of the monetary policies of the companies during the covid-19 pandemic on the volatility of the stock market where information was gathered from the US and China. The wavelet transforms reveal that the effect has more consistency in the shorter wavelength domains. In comparison to shifts in the oil price, COVID-19 is the primary factor behind the choppy performance of the equity market in the United States. Nevertheless, in contrast to China, the rapid increase in the number of everyday new instances, which has persisted for many months, has rendered the equity market in the United States immune to COVID-19. In addition, the Federal Reserve's strategy of very low-interest rates has significantly reduced the fluctuation of the stock market in the United States.

On the other hand, in contrast to China, the United States now maintains an interest rate that is very close to zero, which makes it challenging to develop adequate monetary policy room to confront a prospective new disaster. The findings of

this research illustrate the various responses of the financial market to the various pandemic control strategies. In light of the fact that COVID-19 is not being successfully regulated, it is possible that a lax monetary policy might be an efficient option to take in order to stabilize the market.

[Wen et al. \(2022\)](#) performed research on findings on the influence of unexpected changes within the monetary policy on the stock market returns volatility of the G7 and BRICS countries, where a quantile-on-quantile research approach was adopted to perform the analysis. An overall adverse impact of MPU was noted on share prices in the majority of nations, notably in the region that integrates greater estimates of MPU with lesser quantiles of the share market. According to the findings, increased levels of ambiguity led to lower stock returns whenever the share market has a fall.

The smaller values of the MPU exhibited a positive market movement to MPU disruptions as well, which suggested that ambiguity may increase stock value too. Overall, the findings of the research indicated that the reactions of markets in G7 nations to MPU disruptions appear to be more variable than those of markets in BRICS countries. The study provided a comprehensive and accurate depiction of the overall interconnectedness among share prices & MPU by revealing the reaction of the share market at various quantiles to varying levels of monetary policy ambiguity. Comprehensively, the research confirmed how the share market responds distinctly to monetary policy volatility.

[Alipanah and Kiss \(2022\)](#) examined how the European Central Bank's (ECB) declarations regarding its "unconventional monetary policy (UMP)" affected the fluctuation of the German equity market. The 2008 economic crisis demonstrated that the short-term cost of borrowing, the conventional instrument of monetary policy, is no longer efficient at dealing with new difficulties. Therefore, the major central banks, including the ECB, were forced to adopt a new, unproven, & unique monetary policy. Throughout the study, the authors extracted unexpected monetary policy using the ECB's shadow interest rates methodology. Additionally, the researchers used the GJR GARCH (p, o, q) framework to evaluate price movements in Germany. After which, for a timeframe spanning from January 2006

to December 2019, the research calibrated "OLS (linear regression) and Markov-switching (probability-matrix of regime changes)" models to investigate the response of German shares returns fluctuation to ECB's UMP declaration. These frameworks' outputs demonstrated that the ECB's UMP had a significant and adverse impact on the fluctuation of the German financial markets.

Additionally, both approaches demonstrated that the dependent factor is significantly and negatively impacted by the historical volatility of German stocks, while the variability of German share prices is a consequence of the worldwide fluctuation as measured by the VIX indicator. The findings also show that the "Markov-switching regression model," as opposed to the OLS model, gives a better depiction of the influence of UMP on stock market turbulence since it can capture shifts in both the usual era and the monetary stimulus (crisis) domain. Moreover, the outcomes of the OLS regression model indicated that there is no meaningful correlation between both the output gap & the inflation gap with the fluctuation of the German stock market, whereas the "Markov-switching regression model" revealed how these two gaps change the uncertainty of the Dax indicator.

2.6 Theoretical Perspective

Arbitrage pricing theory is the relevant theory because it is based on multi factors such as interest rate, inflation, money supply, exports etc. Previously there has been research done while considering the CAPM, as suggested by Sharp, as a financial equilibrium model to explore the changes in the stock return. The study [Hojat \(2015\)](#); [De Santis \(2018\)](#); [Konrad \(2009\)](#) and many others assumed that all the STMRs emerge as a result of a one-factor model where the factor includes all the threaty assets' market portfolio ([Iqbal & Haider, 2005](#)).

Moreover, different or mixed results were explored due to using CAPM as a model to explore the changes in STMRs, due to which true STM portfolio measurement becomes very difficult ([Iqbal & Haider, 2005](#)). CAPM focuses on single factor pricing model which is the main issue. Based on this identified problem in CAPM, different models have been presented under the arbitrage pricing theory framework.

Arbitrage pricing theory illustrates that there are different threat sources within the economy that diversification doesn't eliminate. The arbitrage pricing theory was developed and is based on predicting the connection among returns through different shifts in the economic conditions of a country, including the money supply or the GDP, production of industries or the threat premiums shifts, and several other factors which determines the economic perspective of a country (Okereke & Amusa, 2020). Since arbitrage pricing theory focuses more on adopting flexible assumptions, it is referred to as a deviation from the capital asset pricing model, which considers threat premium as a market predictor (Roll & Ross, 1980).

The arbitrage pricing theory further illustrates that threat sources include economic factors (inflation rate, IntR, purchasing power, consumer prices). Here, rather than calculating the single sensitivity beta in CAPM, arbitrage pricing theory calculates several betas to understand the sensitivity in the stock returns caused by all the factors (Iqbal & Haider, 2005). Thus, the arbitrage pricing theory focuses on calculating several threat premiums based on all the factors affecting the stock returns. The arbitrage pricing theory represents the law of one price in different markets/countries, which illustrates that goods or services are priced differently in different countries based on the difference in their currencies (P#1240 Okereke & Amusa, 2020).

2.7 Hypotheses of the Study

Based on the above-mentioned previous literature, the present research has developed the following hypothesis:

H₁: There is a significant influence of monetary policy on the stock market return of Pakistan.

H₂: There is a significant influence of monetary policy on the stock market liquidity of Pakistan.

H₃: There is a significant influence of monetary policy on the stock market volatility of Pakistan.

H₄: There is a significant influence of stock market volatility on the stock market return of the Pakistani stock market.

H₅: There is a significant influence of stock market liquidity on the stock market return of the Pakistani stock market.

Chapter 3

Research Methodology

This chapter focuses on the methods used for testing the hypotheses developed in the previous chapter while finding the answers to the research questions. Research involves all techniques that aid in analysis while offering details about strategies and the methods and technologies needed to pick, collect, and try to assess facts accumulated on a particular subject.

3.1 Research Approach and Strategy

Among the most important steps in conducting research is determining the methodological approach, that also tends to help establishing an aspect for the investigation while also responding how the author will obtain answers and recognizing the respondents of investigation. Recognizing the respondents of investigation is another one of the most important aspect (Ponto, 2015). Two primary approaches to investigation includes qualitative & quantitative where qualitative approach helps us receive data that is both useful and of high quality that is relevant to a research subject. Quantitative research, on the other hand, contributes to the collection of large amounts of information (Matusov, Marjanovic-Shane, & Gradovski, 2019). The quantitative methodology is the ideal way to use while doing research since it offers a greater understanding of a situation by expressing that understanding in the form of figures. This allows for a better comprehension of the link between two elements (Adekunle et al., 2020).

Prior authors have adopted quantitative approach to determine link among monetary policy & stock market aspects of Pakistan. Some of the prior authors have published their findings in academic journals. On the basis of this, a quantitative research approach is established in order to investigate the nature of the connection that exists between MOPL and STM in Pakistan. We will be adopting the quantitative research method, since the positivist school of thought maintains that there is an unalterable aspect of the social world that is amenable to being better measured and investigated by making use of the quantitative research approach (Kroeze, 2012). In the research that Rahman did, quantitative analysis was deemed to be more effective than other methods (2020).

The current study concentrated on employing the financial information regarding the MOPL & STM of Pakistan as it was regarded one of most acceptable response to examine the adjustments in the STM as conducted in the prior studies by prior researchers. The financial information may be easily obtained in the form of accounting records or in other formats (Debreceeny, Felden, Piechocki, & Wagenhofer, 2007), both of which make it simple to get accessibility to the information and utilize it in the assessment. For all of this purpose, the current research has used financial information in order to conduct an analysis of the link that exists between MOPL and STM of Pakistan.

While thinking about the quantitative research approach, there are two distinct study models to be taken into account: descriptive and experimental. The testing of theories and hypotheses built on changes that were induced in the predictor variables by modifications in the independent factors is what experimental investigation entails (Creswell & Creswell, 2017). The experimental investigation strategy was chosen because it is often regarded as the superior method for putting an extensively researched theory to the test while also establishing hypotheses based on earlier perspectives. On the other hand, it is superior to descriptive research since it assists in the development of causality while taking into consideration a plausible probability range (Zikmund, D'alessandro, Winzar, Lowe, & Babin, 2014). For the research context that is connected to the timeframe of information gathering, the existing study has chosen a longitudinal context in which information is assembled for various periods instead of accumulating information from a

data within a single given timeframe. This was done in order to maximize the amount of information that can be gained from the research (Cavana, Delahaye, & Sekeran, 2001). The criteria for the dissertation comprised a restricted time period, which is why the study moved toward a cross-sectional investigation environment. A longitudinal investigation context is more advantageous since it gives (Avey, Luthans, & Mhatre, 2008). After the study design has been developed, the following stage is to choose participants and specify the operational definition of factors in order to acquire information from them in order to assess the effect of MOPL on the Pakistan's STM. This phase comes after the formulation of the research strategy.

3.2 Sample of the Study

The sample of the present research is the economic context of Pakistan, where the study will gather information from the STM in Pakistan to find changes caused by the changes in the country's monetary policy. To conduct the analysis, the present research will focus on the following indices of the Pakistani STM:

- KSE-100 Index
- KSE-30 Index
- KMI-30 Index

To achieve the desired objectives of the present research, a sample of data from 2012-21 is gathered for all the independent (monetary policy) and the dependent variables (STM return, liquidity, and volatility) of the present research. The frequency of data is monthly.

3.3 Descriptions of Variables

3.3.1 Independent Variables

There are many aspects of monetary policy but we have taken only one variable as an independent variable. The present research focuses on the IntR aspect since

the IntR is the basic tool of monetary policy, as revealed by [Hussain et al. \(2009\)](#); [Rifat \(2015\)](#); [Samour et al. \(2020\)](#); [Idowu et al. \(2020\)](#); [Ioannidis and Kontonikas \(2008\)](#); [Maio \(2014\)](#) and other researchers. The IntR of Pakistan has been volatile since 2000 as it was 11 percent in 2000, which decreased to 7.5 percent in 2002; increased to 15 percent in 2008-9 (a period of the monetary distress); decreased to 6.5 percent in 2015 and increased to 8.75 percent in 2021 (a period of Covid 19 pandemic) (Pakistan Interest Rates, 2022). Currently interest rate rises to 17% in pakistan highest ever in history of Pakistan.

3.3.2 Dependent Variables

When measuring the STM, the present research has focused on exploring the STM's return, volatility, and liquidity.

Stock Market Return

The STMR is calculated as the changes in the stock price rate:

$$R_{it} = \frac{\log P_t}{P_{t-1}}$$

Where $t = 1, \dots, T$.

Here, R_{it} represents the return of index "i" in a month "t," while P_{it} and $P_{i,t-1}$ represents the index points "i" in month t and t-1 ([Paule-Vianez et al., 2020](#)).

Stock Market Volatility

To explore volatility in STMRs, the study uses the difference among the highest and the lowest listing prices while subtracting the lowest listing prices from the higher ones and dividing it by the average of both.

$$v_{it} = \frac{P_{it}^H - P_{it}^L}{[P_{it}^H + P_{it}^L]/2}$$

Where $t = 1, \dots, T$.

Here, V_{it} is the volatility in the index "i" for the month "t," P_{it}^H Is the maximum point in index "i" for the month "t" while P_{it}^L represents the minimum points in

index "i" for the month "t" (Paule-Vianez et al., 2020). The results are also tested by using GARCH based model.

Stock Market Liquidity

When it comes to STM liquidity, the current study will measure STM liquidity through the response of the STM to the changes in the trading volume.

$$l_{it} = \frac{\text{turnover}}{\text{Total stock of companies listed in index}}$$

Where $t = 1, \dots, T$; the l_{it} is the liquidity in the index "i" for the month "t",

3.4 Econometric Model

The econometric model for the current study is:

$$STMR_t = \beta_o + \beta_1 INT_t + \mu_t \quad (3.1)$$

$$STMV_t = \beta_o + \beta_1 INT_t + \mu_t \quad (3.2)$$

$$STML_t = \beta_o + \beta_1 INT_t + \mu_t \quad (3.3)$$

Where $STML_t$ represents the STM liquidity for the index for the month "t", INT_t is the IntR of the country in the month "t".

$$STMR_t = \beta_o + \beta_1 INT_t + \beta_2 STMV_t + \beta_3 STML_t \quad (3.4)$$

Where $STMR_{it}$ presents the STM return for the index for the month "t", $STMV_t$ presents the STM volatility for the index for the month "t", $STML_t$ presents the STM liquidity for the index for the month "t", and INT_t is the IntR of the country in the month "t".

3.5 Data Collection Method

For the purpose of performing analysis on finding the influence of MOPL on STM of Pakistan the present research has gathered information from 1st January 2012 to 1st December 2021 while gathering information on monthly basis. The information has been gathered within excel to perform the analysis. The information has been gathered within excel to perform the analysis. Data has been gathered from online sites such as :

- SCS Trade
- Investing.com
- Pakistan stock exchange

All the data that is collected by research is of quantitative type. So, this is pure quantitative research.

3.6 Data Analysis Method

After gathering of all information within excel, analysis was performed on the data gathered within MS office 365 while finding the cause and effect relationship among MOPL and STM while including the STMR, STML, and STMV. Moreover, regression analysis has been performed to find the effect of MOPL, STML and STMV on STMR. GARCCH model has also been performed but the results were insignificant so it was eliminated later on.

Chapter 4

Results and Analysis

This chapter includes an analysis to find the influence of monetary policy on STM return, liquidity, and volatility of three indices (KSE100, KSE30; KMI30). This chapter includes descriptive statistics, correlation, regression analysis, and graphical representation.

4.1 Descriptive Statistics

Descriptive statistics represents the characteristics of the information gathered for all the variables, whereas the present study has focused on the graphical representation to better understand the changing trends over time.

4.1.1 Monetary Policy and Stock Market Volatility

Figure: 4.1 represents the changes in the VOLA of the KSE100 index over time while comparing it to the changes in IntR of Pakistan monthly.

The STM of Pakistan has been relatively very volatile all these years; where among Dec 2019 till May 2022, there was a significant increase in the VOLA of the KSE100 index. Whereas for the rest of these years, there were ups and downs. In contrast to changes in the IntR, the KSE100 index was relatively very volatile.

Figure: 4.2 represents the changes in the VOLA of the KSE30 index over time while comparing it to the changes in the IntR of Pakistan monthly.

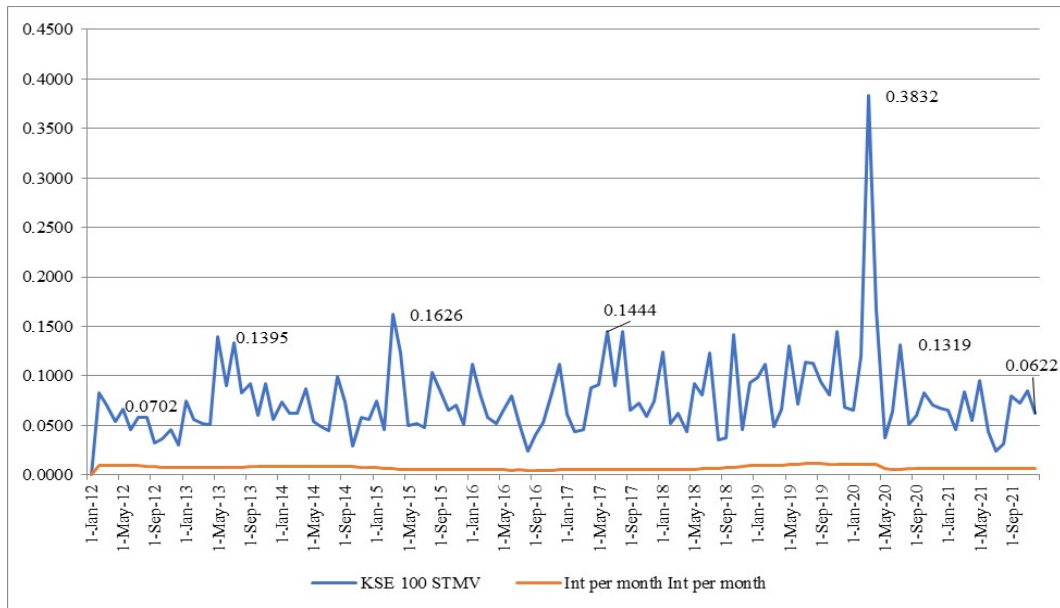


FIGURE 4.1: Monetary Policy to the Volatility of the KSE100 Index

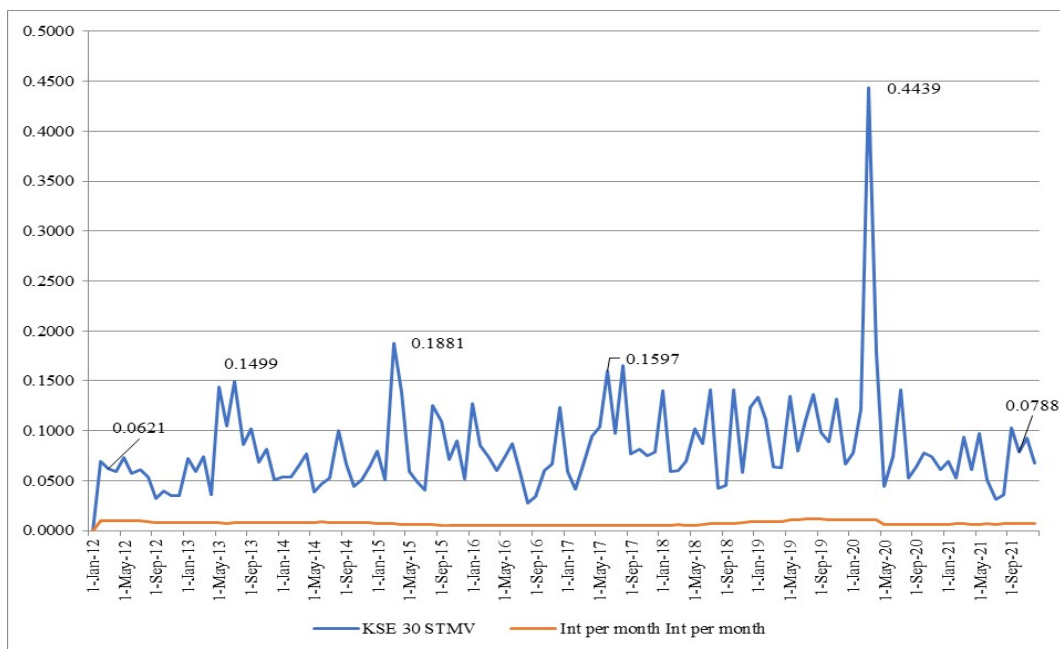


FIGURE 4.2: Monetary Policy to the Volatility of the KSE30 Index

The STM of Pakistan has been relatively very volatile all these years; where among Dec 2019 till May 2022, there was a significant increase in the VOLA of the KSE30 index. Whereas, for the rest of these years, there were ups & downs. In contrast to changes in the IntR, the KSE30 index was relatively very volatile.

Figure: 4.3 represents the changes in the VOLA of the KMI30 index over the period while comparing it to the changes in the IntR of Pakistan every month.

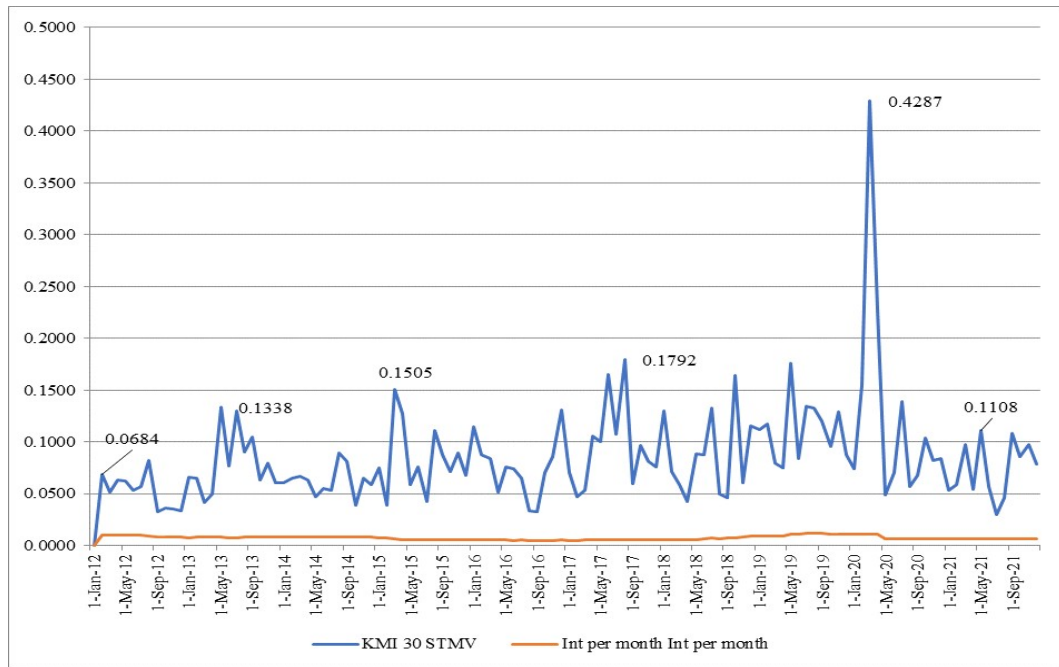


FIGURE 4.3: Monetary Policy to the Volatility of the KMI30 Index

It can be seen that the STM of Pakistan has been relatively very volatile all these years; among Dec 2019 till May 2022, there was a significant increase in the VOLA of the KMI30 index, whereas, for the rest of these years, there were ups and downs. In contrast to changes in the Intr, the KMI30 index was relatively very volatile.

Figure 4.4 represents the changes in the VOLA of the KSE100, KSE30, and KMI30 index over the period monthly.

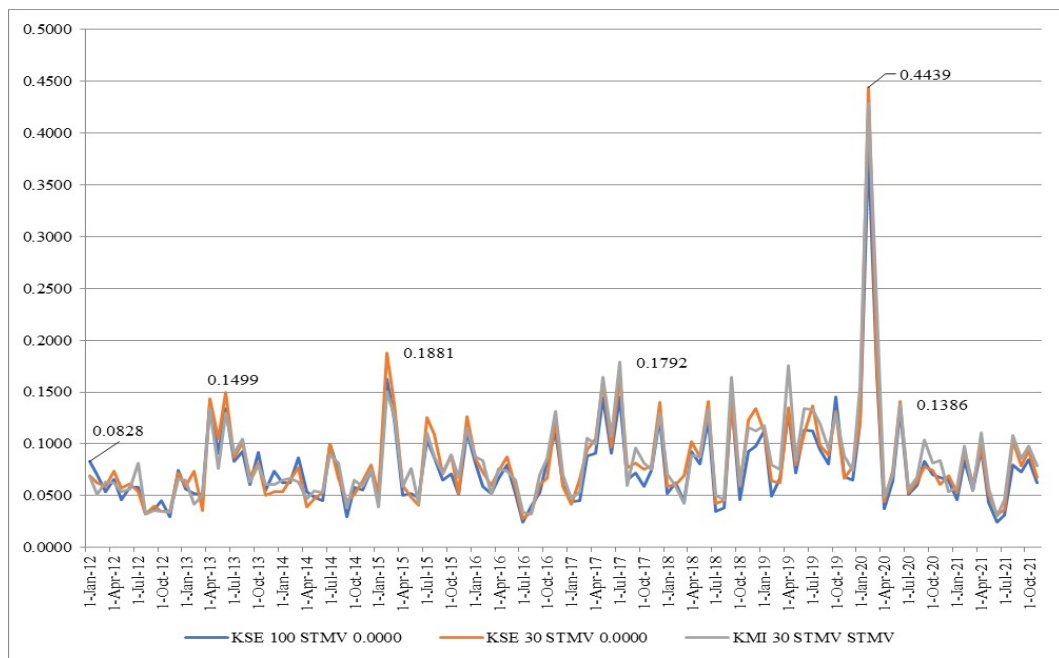


FIGURE 4.4: Volatility of KSE100, KSE30, and KMI30 Index

Figure 4.4 represents that all the indices, including KSE100, KSE30, and KMI30, closely had similar trends or changes in their volatility level.

4.1.2 Monetary Policy and Stock Market Liquidity

Figure 4.5 represents the changes in LIQ of the KSE100 index over time while comparing it to the changes in IntR of Pakistan monthly. **Figure 4.5** represents

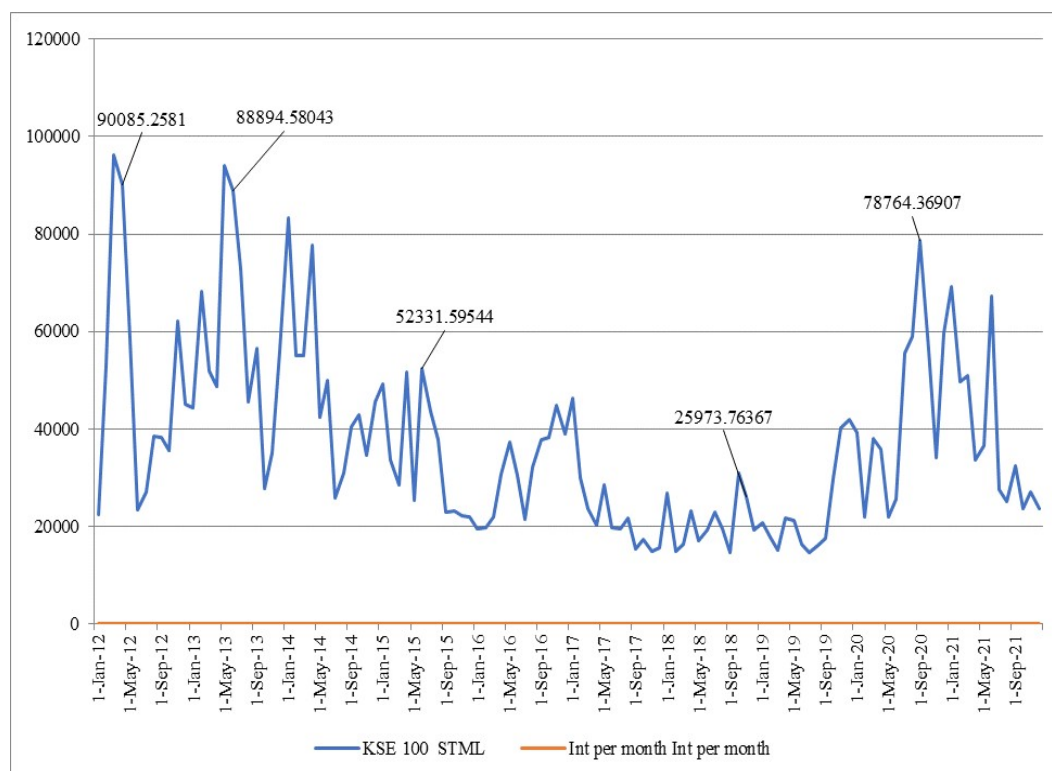


FIGURE 4.5: Monetary Policy on the Liquidity of the KSE100 Index

that the KSE100 index had been highly liquid in 2012, whereas the LIQ of the KSE100 decreased till June 2012, increased in 2013, and then with certain ups, there was a significant decrease till July 2019. Even though the LIQ of KSE100 increased till October 2020 but again decreased till August 2021 with certain increases, this represents that in contrast to 2012, the LIQ of KSE100 has reduced to a great extent till 2021. This represents that in 2012 people were better able to convert their shares into cash while bringing no changes in the market prices of shares compared to 2021.

Figure 4.6 represents the changes in LIQ of the KSE30 index over time while comparing it to the changes in IntR of Pakistan monthly.

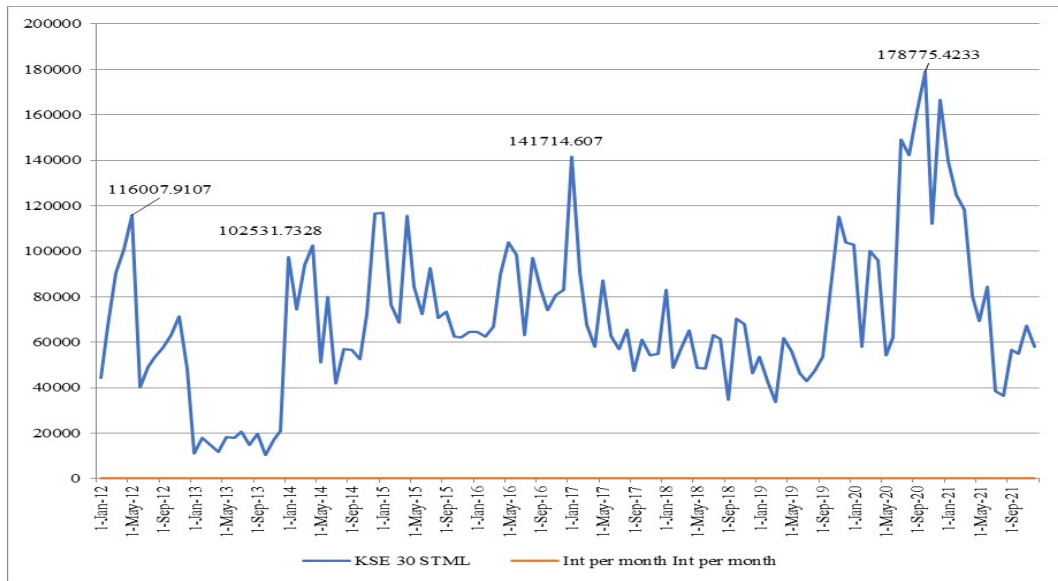


FIGURE 4.6: Monetary Policy on the Liquidity of the KSE30 Index

Figure 4-6 represents that the LIQ of KSE30 decreased in 2013 compared to 2012 but had an increasing trend till January 2017, after which the LIQ of KSE30 had a decreasing trend till mid of 2019. However, from July 2019 to October 2020, there was an increase in the LIQ of KSE30, which eventually decreased till August 2021. This represents that the ability of investors to convert their shares into cash was better in 2012, which decreased in 2013, was better from 2013 till mid-2019 with many ups and downs, and increased in 2020 but decreased in 2021.

Figure 4-7 represents the changes in LIQ of the KMI30 index over the period while comparing it to the changes in the Intr of Pakistan monthly.

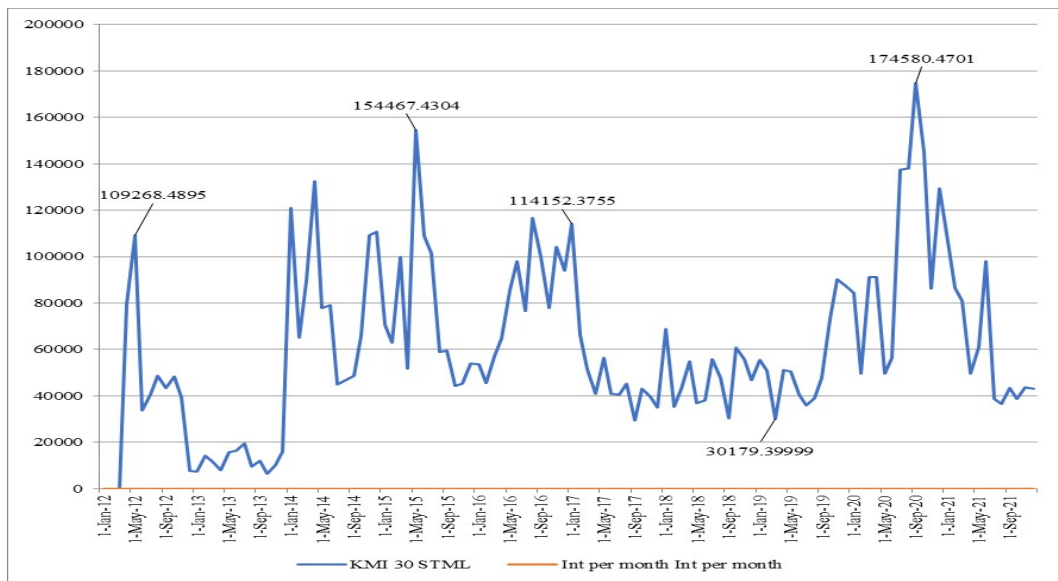


FIGURE 4.7: Monetary Policy to the Liquidity of the KMI30 Index

Figure 4.7 represents that the LIQ of KMI30 decreased in 2013 compared to 2012 but had an increasing trend till January 2017, after which the LIQ of KMI30 had a decreasing trend till mid of 2019. However, from July 2019 to October 2020, there was an increase in the LIQ of KMI30, which eventually decreased till August 2021. This represents that the ability of investors to convert their shares into cash was better in 2012, which decreased in 2013, was better from 2013 till mid-2019 with many ups and downs, and much better in 2020, but very less in 2021.

Figure 4.8 represents the changes in LIQ of the KSE100, KSE30, and KMI30 index every month.

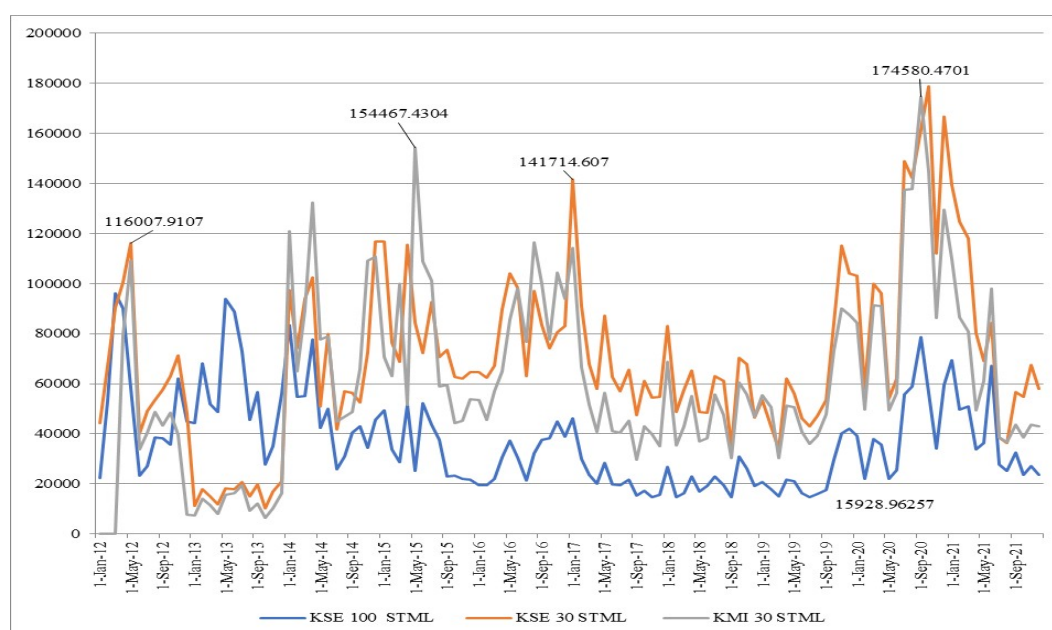


FIGURE 4.8: Liquidity of KSE100, KSE30, & KMI30

Figure 4.8 represents that all three indices, including KSE100, KSE30, and KMI30, had a close shift in all these years, where KSE100 was relatively less liquid than all other stocks these years. However, the shift in all these years in KSE30 and KMI30 was very close to each other, showing that investors of KSE30 and KMI30 had more options to liquidate shares quickly.

4.1.3 Monetary Policy and Stock Market Prices

Figure 4.9 represents the changes in IntR over time while comparing it to the prices of KSE100 in Pakistan monthly.

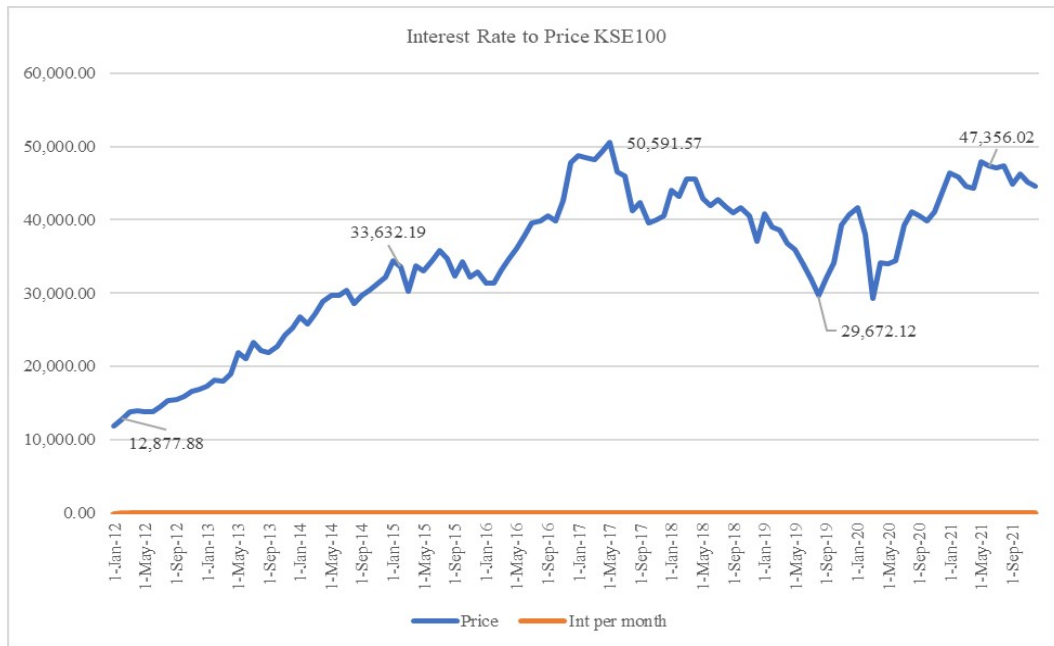


FIGURE 4.9: Monetary Policy to Price of KSE100

Figure 4.9 represents that the price changes have been significant in all these years with changes in InTR, where prices in 2021 are relatively high compared to 2012. The table also represents a decrease in the prices of KSE100 as of 2019 during the covid-19 outbreak; however, the situation worsened in 2021 again.

Figure 4.10 represents the changes in InTR over time while comparing it to the prices of KSE30 in Pakistan monthly.



FIGURE 4.10: Monetary Policy to Price of KSE30

Figure 4.10 represents that the price changes have been significant in all these years with changes in IntR, where prices in 2021 are relatively high compared to 2012. The table also represents a decrease in the prices of KSE100 as of 2019 during the covid-19 outbreak; however, the situation worsened in 2021 again.

Figure 4.11 represents the changes in IntR over time while comparing it to the changes in the price of KMI30 in Pakistan monthly.

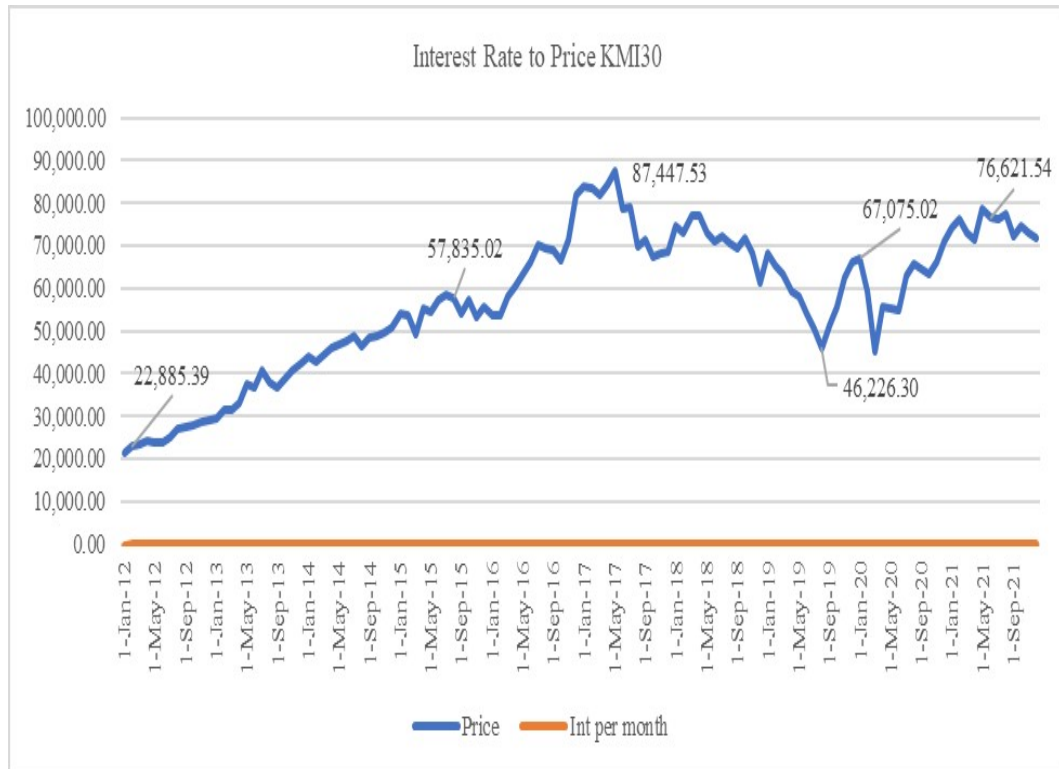


FIGURE 4.11: Monetary Policy to Price of KMI30

Figure 4-11 represents that the price changes have been significant all these years with changes in IntR, where prices in 2021 are relatively high compared to 2012. The table also represents a decrease in the prices of KSE100 as of 2019 during the covid-19 outbreak; however, the situation worsened in 2021 again.

4.2 Impact of Monetary Policy on the Stock Market

The following section includes the influence of monetary policy on the STM validity, return, and LIQ.

4.2.1 Monetary Policy and Stock Market Volatility

Table 4.1 represents the influence of MOPL on the VOLA of STM measured through the KSE 100 index.

Monetary Policy & Stock Market Volatility – KSE100 (High Low Method)

TABLE 4.1: Monetary Policy & KSE100 Volatility

KSE100	Coefficient	Stand. Error	T - Stat	P - Value
Intercept	0.0411	0.0148	2.7843	0.0062
Monetary policy	4.939	1.9703	2.5068	0.0135

Table 4.1 presents that the value of p for MOPL (IntR) to the STMV of the KSE100 index is 0.0135, which is less than the significance level of 0.05, thus revealing that the effect of MOPL (IntR) on STMV is significant. Similar is the result represented by the t-stat value, which is greater than 1.96 showing the acceptance of the alternative hypothesis of the research. Based on this, proceeding to the coefficient value, it can be stated that with a 1 unit increase in MOPL (IntR), there has been an increase of 4.9390 units in the STMV of Pakistan.

Monetary Policy & Stock Market Volatility – KSE30 (High Low Method)

TABLE 4.2: Monetary Policy & KSE30 Index Volatility

KSE30	Coefficient	Stand. Error	T – Stat	P – Value
Intercept	0.0495	0.017	2.9132	0.0042
Monetary policy	4.6416	2.2674	2.0471	0.0429

Table 4.2 presents that the p-value for MOPL (IntR) to the STMV of the KSE30 index is 0.0429, which is less than the significance level of 0.05, thus revealing the effect of MOPL (IntR) on STMV is significant. Similar is the result represented by the t-stat value, which is greater than 1.96 showing the acceptance of the

alternative hypothesis of the research. Based on this, proceeding to the coefficient value, it can be stated that with a 1 unit increase in MOPL (IntR), there has been an increase of 4.6416 units in STMV of Pakistan.

Monetary Policy & Stock Market Volatility – KMI30 (High Low Method)

TABLE 4.3: Monetary Policy & KMI30 Index Volatility

KMI30	Coefficient	Stand. Error	T – Stat	P – Value
Intercept	0.0428	0.0168	2.5555	0.0118
Monetary policy	5.8471	2.2378	2.6129	0.0101

Table 4.3 presents that the p-value for MOPL (IntR) to the STMV of the KMI30 index is 0.0101, which is less than the significance level of 0.05, thus revealing that the effect of MOPL (IntR) on STMV is significant. Similar is the result represented by the t-stat value, which is greater than 1.96 showing the acceptance of the alternative hypothesis of the research. Based on this, proceeding to the coefficient value, it can be stated that with a 1 unit increase in MOPL (IntR), there has been an increase of 5.8471 units in STMV of Pakistan. Overall, it represents that the stock market volatility of the KSE100, KSE30, and KMI30 indexes is significantly influenced by the monetary policy when volatility is calculated through high-low prices.

4.2.2 Monetary Policy and Stock Market Liquidity

Table 4.4 represents the results of the influence of MOPL on the STML.

Impact of Monetary policy on stock market liquidity – KSE100 Index

TABLE 4.4: Monetary Policy & KSE100 Index Liquidity

KSE100	Coefficient	Stand. Error	T – Stat	P–Value
Intercept	26092.905	6725.6826	3.8796	0.0002
Monetary policy	1508177.15	894488.285	1.6861	0.0944

Table 4.4 presents that the value of p for MOPL (IntR) to STML of the KSE100 index is 0.0944, which is greater than the significance level of 0.05, thus revealing the effect of MOPL (IntR) on STML is insignificant. Thus, it can be stated that there is no significant influence of MOPL on the stock market liquidity of the KSE100 index.

Impact of Monetary Policy on Stock Market Liquidity – KSE30 Index

TABLE 4.5: Monetary Policy & KSE30 Index Liquidity

KSE30	Coefficient	Stand. Error	T-Stat	P-Value
Intercept	90492.3505	11898.8676	7.6051	8.00E-12
Monetary policy	-2769846.8	1582500.72	-1.75	0.0827

Table 4.5 presents that the value of p for MOPL (IntR) to STML of the KSE30 index is 0.0827, which is greater than the significance level of 0.05, thus revealing the effect of MOPL (IntR) on STML is insignificant. Similar is the result represented by the t-stat value, which is less than 1.96 showing the rejection of the alternative hypothesis of the research. Thus, it can be stated that there is no significant influence of monetary policy on the stock market liquidity of the KSE30 index.

Impact of Monetary Policy on Stock Market Liquidity – KMI30 Index

TABLE 4.6: Monetary Policy & KMI30 Index Liquidity

KMI30	Coefficient	Stand. Error	T – Stat	P – Value
Intercept	82707.1266	12453.6424	6.6412	1.00E-09
Monetary policy	-2981076.9	1656283.51	-1.8	0.0745

Table 4-6 presents that the value of p for MOPL (IntR) to STML of the KMI30 index is 0.0745, which is greater than the significance level of 0.05, thus revealing

that the effect of MOPL (IntR) on STML is insignificant. Similar is the result presented by the t-stat value, which is less than 1.96 showing the rejection of the alternative hypothesis of the research. Thus, it can be stated that there is no significant influence of monetary policy on the stock market liquidity of the KMI30 index.

Impact of Monetary Policy, Stock Market Volatility, Stock Market Liquidity & Stock Market Return – KSE100 Index

TABLE 4.7: Monetary Policy, Stock Market Volatility, Stock Market Liquidity & KSE100 Index Return

KSE100	Coefficient	Stand. Error	T – Stat	P–Value
Intercept	5.67E-05	0.0197	0.0028	0.9977
Monetary policy	-0.2052	2.5214	-0.0813	0.9352
Stock market volatility	-0.3346	0.1198	-2.7923	0.0061
Stock market liquidity	1.03E-06	2.62E-07	3.9285	0.0001

Table 4.7 presents that the value of p for MOPL (IntR) to STMR of the KSE100 index is 0.9352, which is greater than the significance level of 0.05, thus revealing the effect of MOPL (IntR) on STMR is insignificant. Similar is the result presented by the t-stat value, which is less than 1.96 showing the rejection of the alternative hypothesis of the research. Thus, it can be stated that there is no significant influence of monetary policy on the stock market return of the KSE100 index.

Similarly, **Table 4.7** presents the value of p for STMV to STMR of the KSE100 index as 0.0061, which is less than the significance level of 0.05, thus revealing the effect of STMV on STMR is significant. Similar is the result presented by the t-stat value, which is greater than 1.96 showing the acceptance of the alternative

hypothesis of the research. The negative sign represents the inverse influence of VOLA on STMR. Based on this, proceeding to the coefficient value, it can be stated that with a 1 unit increase in the STMV of the KSE100 index, there will be a decrease of 0.3346 units in the STMR of the KSE100 index. Thus, it can be stated that there is an inversely significant influence of stock market volatility on stock market return while considering the KSE100 index.

Similarly, **Table 4.7** presents the value of p for STML to STMR of the KSE100 index as 0.0001, which is less than the significance level of 0.05, thus revealing the effect of STML on STMR is significant. Similar is the result presented by the t-stat value, which is greater than 1.96 showing the acceptance of the alternative hypothesis of the research. The positive sign represents the direct influence of STML on STMR. Based on this, proceeding to the coefficient value, it can be stated that with a 1 unit increase in STML of the KSE100 index, there will be an increase of 1.0285E-06 units in the STMR of the KSE100 index. Thus, it can be stated that there is an inversely significant influence of stock market liquidity on stock market return while considering the KSE100 index.

Impact of Monetary Policy, Stock Market Volatility, Stock Market Liquidity & Stock Market Return – KSE30 Index

TABLE 4.8: Monetary Policy, Stock Market Volatility, Stock Market Liquidity & KSE30 Index Return

KSE30	Coefficient	Stand. Error	T – Stat	P – Value
Intercept	0.0049	0.0247	0.2021	0.8402
Monetary policy	2.0056	2.7651	0.7253	0.4697
Stock market volatility	-0.4307	0.1161	-3.7083	0.0003
Stock market liquidity	2.82E-07	1.64E-07	1.7153	0.089

Table 4.8 presents that the value of p for MOPL (IntR) to STMR of the KSE30 index is 0.4697, which is greater than the significance level of 0.05, thus revealing the effect of MOPL (IntR) on STMR is insignificant. Similar is the result presented by the t-stat value, which is less than 1.96 showing the rejection of the alternative hypothesis of the research. Thus, it can be stated that there is no significant influence of monetary policy on the stock market return of the KSE30 index.

Similarly, **table 4-8** presents the value of p for STMV to STMR of the KSE30 index as 0.0003, which is less than the significance level of 0.05, thus revealing that the effect of STMV on STMR is significant. Similar is the result presented by the t-stat value, which is greater than 1.96 showing the acceptance of the alternative hypothesis of the research. The negative sign presents the inverse influence of STMV on STMR. Based on this, proceeding to the coefficient value, it can be stated that with a 1 unit increase in STMV of the KSE30 index, there will be a decrease of 0.4307 units in the STMR of the KSE30 index. Thus, it can be stated that there is an inversely significant influence of stock market volatility on stock market return while considering the KSE30 index.

Similarly, Table 4.8 presents the value of p for STML to STMR of the KSE30 index as 0.089, which is greater than the significance level of 0.05, thus revealing the effect of STML on STMR is insignificant. Similar is the result presented by the t-stat value, which is less than 1.96 showing the rejection of the alternative hypothesis of the research. Thus, it can be stated that there is no significant influence of stock market liquidity on stock market return while considering the KSE30 index.

Impact of Monetary Policy, Stock Market Volatility, Stock Market Liquidity & Stock Market Return – KMI30 Index

Table 4.9 presents that the value of p for MOPL (IntR) to STMR of the KMI30 index is 0.6129, which is greater than the significance level of 0.05, thus revealing the effect of MOPL (IntR) on STMR is insignificant. Similar is the result presented by the t-stat value, which is less than 1.96 showing the rejection of the alternative hypothesis of the research. Thus, it can be stated that there is no significant influence of monetary policy on the stock market return of the KMI30 index.

TABLE 4.9: Monetary Policy, Stock Market Volatility, Stock Market Liquidity & KMI30 Index Return

KMI30	Coefficient	Stand. Error	T-Stat	P-Value
Intercept	0.0147	0.0237	0.6192	0.5369
Monetary policy	1.4484	2.8553	0.5073	0.6129
Stock market volatility	-0.3476	0.1206	-2.8821	0.0047
Stock market liquidity	2.34E-07	1.59E-07	1.4759	0.1426

Similarly, **Table 4.9** presents the value of p for STMV to STMR of the KMI30 index as 0.0047, which is less than the significance level of 0.05, thus revealing the effect of STMV on STMR is significant. Similar is the result presented by the t-stat value, which is greater than 1.96 showing the acceptance of the alternative hypothesis of the research. The negative sign presents the inverse influence of VOLA on STMR. Based on this, proceeding to the coefficient value, it can be stated that with a 1 unit increase in the STMV of the KMI30 index, there will be a decrease of 0.3476 units in the STMR of the KMI30 index. Thus, it can be stated that there is an inversely significant influence of stock market volatility on stock market return while considering the KMI30 index.

Similarly, **Table 4.9** presents the value of p for STML to STMR of the KMI30 index is 0.1426, which is greater than the significance level of 0.05, thus revealing the effect of STML on STMR is insignificant. Similar is the result presented by the t-stat value, which is less than 1.96 showing the rejection of the alternative hypothesis of the research. Thus, it can be stated that there is no significant influence of stock market liquidity on stock market return while considering the KMI30 index.

4.3 Summary of Hypotheses

The table below represents the summary of the hypotheses of the present research.

For KSE100

TABLE 4.10: Summary of Hypotheses

Hypothesis	Statement	Result
1	There is a significant influence of monetary policy on the stock market return of Pakistan.	Rejected
2	There is a significant influence of monetary policy on the stock market liquidity of Pakistan.	Rejected
3	There is a significant influence of monetary policy on the stock market volatility of Pakistan.	Don't Rejected
4	There is a significant influence of stock market volatility on the stock market return of the Pakistani stock market.	Don't Rejected
5	There is a significant influence of stock market liquidity on the stock market return of the Pakistani stock market.	Don't Rejected

For KSE30

Continued Table 4.10 Summary of Hypotheses

Hypothesis	Statement	Result
1	There is a significant influence of monetary policy on the stock market return of Pakistan.	Rejected
2	There is a significant influence of monetary policy on the stock market liquidity of Pakistan.	Rejected
3	There is a significant influence of monetary policy on the stock market volatility of Pakistan.	Don't Rejected
4	There is a significant influence of stock market volatility on the stock market return of the Pakistani stock market.	Don't Rejected
5	There is a significant influence of stock market liquidity on the stock market return of the Pakistani stock market.	Don't Rejected

For KMI30

Continued Table 4.10 Summary of Hypotheses

Hypothesis	Statement	Result	
1	There is a significant influence of monetary policy on the stock market return of Pakistan.	Rejected	
2	There is a significant influence of monetary policy on the stock market liquidity of Pakistan.	Rejected	
3	There is a significant influence of monetary policy on the stock market volatility of Pakistan.	Don't	Re-
4	There is a significant influence of stock market volatility on the stock market return of the Pakistani stock market.	Don't	Re-
5	There is a significant influence of stock market liquidity on the stock market return of the Pakistani stock market.	Don't	Re-

Chapter 5

Discussion and Conclusion

5.1 Discussion

This study focused on finding the effect of MOPL (IntR) on the STM (liquidity, volatility, and return) while considering the Pakistani market's KSE100, KSE30, and KMI30 indices.

This research considered the high-low-price method to find the influence of MOPL (IntR) on STMV. The high-low-price model showed that MOPL (IntR) changes significantly in the STMV of all three indices. The significant effect represents that when the IntR changes, the VOLA in the STM also changes, i.e., an increase in IntR leads to an increase in STMV, where the highest increase occurred in the KMI30 index in contrast to other indices (5.84 units). The results of this research are in line with the previous results of [Ioannidis and Kontonikas \(2008\)](#); [Gospodinov and Jamali \(2012\)](#); [Asiedu et al. \(2020\)](#); [Samour et al. \(2020\)](#) and many others who reported that IntR is directly linked with STMV, where increasing IntR brings an increase in variations in the STM prices.

This study further considered the influence of MOPL (IntR) on STML while considering the STM's response to the changes in the trading volume while considering three STM indices (KSE100, KSE30, and KMI30). Regression analysis results showed no significant influence of MOPL (IntR) on STML. However, the values of beta are insignificant, which represents that there is no influence of MOPL (IntR) on STML of KSE30 and KMI30, Results of a previous study by [Fujimoto \(2004\)](#);

Mousa (2016) revealed that an increase in federal rate lowers the STML. While considering the present research findings, it is reported that in the context of three Pakistani indices (KSE100, KSE30, and KMI30), there is no significant change in STML due to changes in MOPL (IntR). The results of the present study have significant previous literature support, where studies of (Chordia et al., 2005; Fujimoto, 2004; Söderberg et al., 2008), and many others who were unable to find a significant connection among MOPL (IntR) and STML.

This research considered the influence of MOPL (IntR) on STMR while considering the changes in the stock price rate and three STM indices (KSE100, KSE30, and KMI30). The results showed no significant influence of MOPL (IntR) on STMR. However, the values of beta represent that the sign with KSE100 is negative, which represents that if there were a significant influence of MOPL (IntR) on STMR (KSE100, KSE30, and KMI30), there would have been a decrease in STMR due to increasing IntR. Results of previous research by (Chatziantoniou et al., 2013; Muktadir-Al-Mukit, 2013; Yoshino et al., 2014), and many others represented the presence of indirect connection where relaxation in IntR leads to an increase in return on investment in the STM. However, the findings of the present research for all the three STM indices represented in this research show no significant influence of MOPL (IntR).

However, STMV and LIQ significantly influence the STMR. This represents that when the VOLA in the STM increases, the returns from investment in the STM eventually decrease. However, when the STM is relatively liquid, it improves the return on the investment done in the STM in KSE100, KSE30, and KMI30 indices. There has rarely been any research available on the influence of STMV or STML on STMR (as per the author's knowledge); the present research findings are an addition to the previous research on MOPL (IntR) and STMR.

This research only consider one independent factor of monetary policy that is interest rate & ignore many other important factor such as inflation, purchasing power, globalization, political condition etc. while in dependent factors it only consider return, volatility & liquidity from 3 stock markets KSE100, KMI30 & KSE30 & ignore many other factors.

5.2 Conclusion

This research focused on whether a change in monetary policy (IntR) brings any changes in the STM indices, including KSE100, KSE30, and KMI30, where STML, STMV, and STMR were considered fundamentals of the STM. The research emphasized Pakistani STM. The results have demonstrated that when the IntR increases, it increases VOLA within the STM, where the stock prices either go up or down uncertainly. The level of VOLA increases with an increase in the IntR. Moreover, the results contended that an increase in interest brings no significant change in STML or STMR. This research also explored the effect of STML and STMV on the STMR along with MOPL (IntR) in a single model, where findings of the study represented that increasing STMV reduces the STMR, whereas increasing STML increases the STMR.

Based on these findings, the present research concludes that there is a significant influence of monetary policy (interest rate) on stock market volatility, stock market volatility and stock market liquidity on stock market return, whereas no influence of monetary policy (interest rate) on stock market liquidity and stock market return in terms of Pakistani stock exchange.

5.3 Recommendations and Directions for Future Research

While considering the present research findings, the following are the recommendations for the investors and threat management portfolio manager:

- i. This research found a positive influence of MOPL (IntR) on STMV, due to which investors should pay more attention to their decisions when the government is going to bring change in IntR.
- ii. This research found no influence of MOPL (IntR) on STML and STMR; this might be due to certain uncertainties in the Pakistani STM. Future research can be performed while considering the political factor as a control variable to understand the influence better. MOPL has relatively fewer influences on the stock in KMI30 and KSE30.

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- iii. This research found that an increase in STML leads to an increase in STMR, based on which investors should go for investing more in the market when the market is highly liquid, as it will eventually improve the STMR to a great extent. Therefore, LIQ must be considered while investing in a broader portfolio set.
 - iv. This research found that an increase in STMV leads to a decrease in STMR, based on which investors should not invest more when the market is highly volatile, as it will eventually reduce the STMR.
 - v. This research consider one aspect that is effect of interest rate on stock market return, volatility & liquidity but we can also study reverse affect also to find out the dual effect like effect of liquidity changes on monetary policy, effect of return changes on monetary policy & effect of volatility changes on monetary policy.
 - vi. Future research can be performed while considering other factors, including political factors (instability) and environmental factors, to better understand the connection among these variables.
 - vii. Future research can also be performed while considering the other indices of stock market of Pakistan like NASDAQ composite.
 - viii. This research only focuses on Pakistani stock market but in future we can consider other economy's too like US, China etc to see the broade effect.
 - ix. It is also recommended that future research can also be done while considering the more time frame as we have taken data from 2012 to 2021. This will help to see a broader effect.

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Appendix-A

Questionnaire

Dear Respondent

I am student of MS/M-Phil Management Sciences at Capital University of Science and Technology Islamabad. I am conducting a research on a topic titled “thesis title”. You can help me by completing the attached questionnaire, you will find it quite interesting. I appreciate your participation in my study and I assure that your responses will be held confidential and will only be used for education purposes.

Sincerely,

name,

MS Research Scholar,

Faculty of Management and Social Sciences,

Capital University Science and Technology, Islamabad.

Section 1: Demographics

Gender	1- Male 2- Female 3- Prefer not to say
Age(years)	1 (18-25), 2 (26-33), 3 (34-41), 4 (42-49), 5 (50-above)
Qualification	1 (Matric), 2 (Inter), 3 (Bachelor), 4 (MS/M.Phil.), 6 (PhD)
Experience(years)	1 (1-5), 2 (6-10), 3 (11-15), 4 (16-20), 5 (21-above)

Section 2: Emotional Labor

Please tick the relevant choices: 1= strongly disagree, 2= Disagree, 3 = Neutral, 4= Agree, 5= Strongly Agree.