Liquidity in Indian Stock Market: An Empirical Study

A Thesis submitted in partial fulfillment for the degree of

DOCTOR OF PHILOSOPHY
In the Goa Business School
Goa University

By

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July *2022*

DECLARATION

I, Naik Priyanka Umesh hereby declare that this thesis represents work which has been carried out by me and that it has not been submitted, either in part or full, to any other University or Institution for the award of any research degree.

Place: Taleigao Plateau.
Date: 06-07-2022 Naik Priyanka Umesh

CERTIFICATE

I hereby certify that the work was carried out under my supervision and may be placed for evaluation.

Prof. Y. V. Reddy

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Acknowledgment

I would like to thank all the people who contributed to the work described in this thesis. First and foremost, I thank my research guide, Prof. Y. V. Reddy, for accepting me as his research scholar. During my tenure, he has always given me intellectual freedom in my work, supported my attendance at various conferences, engaged me in new ideas, and demanded a high quality of work in all my endeavors, due to which I have been able to produce quality research work and publications. I also owe the credit to Dr. Poornima B.G and Dr. Narayan Parab for their excellent collaboration and deep discussions relating to my research topic, due to which I could build a considerable research competence.

I thank Prof. K. B. Subhash, Vice Dean (Academics), Goa Business School (GBS), Goa University, who introduced me to the world of research during my Post Graduation degree. I thank my DRC expert members, Dr. P. Sriram and Dr. Maithili Naik, for their valuable suggestions while undertaking my research. I extend my sincere gratitude to Prof. M.S. Dayanand (Dean, GBS), Prof. P.K. Sudarsan (Vice-Dean Research), Prof. Guntur Anjana Raju (Programme Director, Ph.D.), and Prof. Nilesh Borde (Programme Director, MBA) for their everlasting support.

I appreciate the words of encouragement from my colleagues at Goa University and my previous workplace, Swami Vivekanand Vidyaprasarak Mandal's College of Commerce, Bori-Ponda. I thank Dr. Subrahmanya Bhat (College Principal) for extending constant support to undertake research work during my tenure at the College. I sincerely thank Dr. Pournima Dhume and Dr. Pushpender Kumar Yadav for their valuable insights on my research topic. I also acknowledge the support and assistance received from the non-teaching staff of Goa University.

I am very much grateful to the reviewers of SAGE Open, PLOS One, and Macroeconomics and Finance in Emerging Market Economies for their critical reviews and suggestions, which benefitted in bettering the quality of my work and helped in refining my research writing skills. I also thank the session chairperson at the conferences I attended for their guidance and motivation.

Finally, I would like to acknowledge friends and family who supported me. Firstly, I would like to thank my parents for their constant love and endless support, due to which I completed my Ph.D. work. I thank my teachers, friends, and family members for their encouragement and motivation.

Dedicated to

My Parents

Shri. Umesh Vaman Naik

Smt. Radha Umesh Naik

&

My Professor

Prof. Y. V. Reddy

For their blessings, motivation, and support in my endeavors

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List of Abbreviations

RQS	Relative Quoted Spread
ST	Share Turnover
AR	Amihud Illiquidity Ratio
CET	Coefficient of Elasticity of Trading
NSE	National Stock Exchange
CMIE	Centre for Monitoring Indian Economy
GOLD	Gold Prices
SILVER	Silver Prices
FER	Foreign Exchange Reserves
INFL	Inflation Rate
IR	Interest Rate
BRENT	Crude Oil Prices
M3	Broad Money
M1	Narrow Money
REER	Real Effective Exchange Rate
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
PFCE	Private Final Consumption Expenditure
GFCE	Government Final Consumption Expenditure
CAB	Current Account Balance
FDI	Foreign Direct Investment
FPI	Foreign Portfolio Investment
IMP	Imports of Goods and Services
EXP	Exports of Goods and Services
BSE	Bombay Stock Exchange
ARDL	Autoregressive Distributed Lag
US	United States
VAR	Vector Autoregression
BRICS	Brazil, Russia, India, China, and South Africa
SUR	Seemingly Unrelated Regressions
CSCTA	Cross-Sectionally Correlated Time Wise Autoregressive
CAPM	Capital Asset Pricing Model
NYSE	New York Stock Exchange
NASDAQ	National Association of Securities Dealers Automated Quotations
ADF	Augmented Dickey Fuller
FRED	Federal Reserve Economic Data
RBI	Reserve Bank of India

RET	Market Returns
VOLATILITY	Market Volatility
TV	Trading Volume
MCAP	Firm Size
LM	Lagrange Multiplier
RV	Return Volatility
SR	Stock Return

Chapter 1

Introduction

This section introduces the research topic and highlights the study's need, scope, objectives, and hypothesis. This section also presents the significance of the study, the possible limitations, and the organization of chapters into which the thesis has been drafted.

1.1 Introduction

Market liquidity is the security marketability (Amihud & Mendelson, 1986) and is an essential component of equity markets. It generally refers to the ease with which a security can be exchanged at a given price. A consistent level of market liquidity is relevant to the market participants, firms, and regulators since it ensures continuity in trade at desired prices, regulates the cost of capital, and allows frictionless functioning of the equity market.

Being an increasingly researched area in finance in the recent last three decades, market liquidity is regarded as an ambiguous concept and has been described in multiple ways by the existing literature. Hasbrouck and Schwartz (1988) refer to it as the immediacy with which a trade is executed, whereas Chordia et al. (2005a) define it as the ability to exchange securities at lower trading costs and reasonable prices. On the other hand, Liu (2006) and Fisher (1959) consider market liquidity as the ability to execute a trade in large quantities of security without any delay in time and having no significant influence on its price. Additionally, Kyle (1985) mentions that the liquidity of a market can be understood in terms of three facets, namely; the number of securities that are traded (depth), the ability of the security prices to quickly recover after a liquidity shock (resiliency) and the costs incurred in trading security (tightness). Furthermore, the time taken to execute a trade (immediacy) and the intensity of trading volume impact on security prices (breadth) is also regarded as the additional facets of market liquidity (Sarr & Lybek, 2002).

Being multi-dimensional, the related literature in Chapter 2 depicts that liquidity has been examined by employing a combination of numerous measures tracing the depth, breadth, immediacy, resiliency, and tightness dimensions of liquidity across different market structures.

Further, to obtain a broader view of market liquidity, many recent studies have used a combination of liquidity dimensions in different contexts (Ali et al., 2018; Chordia et al., 2001; Deng et al., 2018; Fernández-Amador et al., 2013; Hillert et al., 2016; Johnson, 2008; Kim & Lee, 2014; Loukil et al., 2010; Zheng & Su, 2017). However, Chai et al. (2010) and Goyenko et al.(2009) empirically suggest that each of these dimensions captures distinct aspects of market liquidity and has a different set of inter-relationships in different market systems and conditions. Thus, these necessitate measuring liquidity multi-dimensionally and examining the nature of their inter-relationships with one another.

Since the financial crisis hit the world economies in 2008, empirical works in this area have been undertaken to comprehensively determine the notion of stock market liquidity by focusing on identifying key determinants affecting the liquidity at aggregate and individual stock levels (Naik & Reddy, 2021). Studies have found a significant impact of regulatory policy announcements, corporate announcements, corporate governance mechanisms, stock exchange mergers, developments in trading systems, and company-specific factors on liquidity. However, macroeconomic determinants of market liquidity have been infrequently studied. Macroeconomic indicators are known for causing an immense disturbance to the overall market and are critical in stimulating systematic effects on stock market characteristics, principally in emerging markets (Olokoyo et al., 2020). As noted in the previous literature, liquidity is an essential market characteristic and is critical in determining the economy's health and forecasting economic conditions (NÆS et al., 2011; Smimou, 2014); hence a proper understanding of systematic forces causing liquidity becomes imperative. Thus, the current study aims to identify the vital macroeconomic determinants of liquidity in the Indian stock market.

There has also been a growing focus on evaluating the asset pricing role of liquidity (Naik & Reddy, 2021). Although studies have intensively evidenced the significant effect of size, value, and market risk on stock returns, Amihud & Mendelson (1986) highlighted a crucial role of liquidity as a stock characteristic affecting the stock returns. They argued that an investor would prefer to either execute the trade in illiquid stocks immediately by foregoing their expected profits or hold the illiquid stock for a longer period in wait for execution at a favorable price, thereby inducing them to anticipate higher future returns while dealing with such illiquid stocks. This paved the way for numerous studies (Acharya & Pedersen, 2005; Asparouhova et al., 2010; Baradarannia & Peat, 2013; Cakici et al., 2016; Chang et al., 2010; Ibbotson et al., 2013; Marshall & Young, 2003) that explored the pricing ability of liquidity in addition to other renowned factors. Many of these studies were focused mainly on the developed markets and had an inaccurate consensus on significant liquidity-return relationships in the emerging markets. Lee (2011) argued that illiquidity is a significant cause of concern for emerging markets due to the non-existence of appointed liquidity providers. Thus, validating the role of liquidity in determining stock returns will be very important. The current study tries to evaluate the effect of liquidity on the expected stock returns in addition to prominent factors, namely, size, value, and market risk.

Furthermore, the financial market's liquidity and volatility share common characteristics. Market liquidity refers to the ease with which trades are executed without any time delay and price impact. On the other hand, market volatility refers to variations in security prices on account of trades. Both volatility and liquidity have been empirically proven to be relevant to the investors as they play a pivotal role in portfolio construction and asset pricing (Acharya & Pedersen, 2005; Amihud & Mendelson, 1986; Bansal et al., 2014; Vasilellis & Meade, 1996). Contemporarily, volatility has been considered an inevitable risk factor that influences the trading strategies, but now liquidity has emerged as an additional systematic risk against which trading strategies need to be aligned (Atilgan et al., 2016; Baradarannia & Peat, 2013).

Prior studies indicate a crucial relationship between liquidity and volatility in quote-driven and order-driven markets (Ahn et al., 2001; Gallant et al., 1992; Glosten & Harris, 1988; Karpoff, 1987; Stoll, 1978; Xu et al., 2018). Also, these studies have evidenced a significant causal relationship between volatility and liquidity and have been primarily considered relevant after the advent of the financial crisis. These studies have shown significant lead-lag relationships between market liquidity and volatility on account of inventory risk, information asymmetry, lack of funding liquidity, and higher trading margins. In addition, these studies also indicate that volatile periods result in sudden liquidity dry-ups and subsequently cause erosion of return on securities. Also, they evidence prolonged effects of such illiquidity on causing the future volatility, which in turn leads to a negative effect on stock returns, thus paving the way for further uncertainties in the post-crisis period. Since emerging markets have been evidenced as susceptible to higher volatility and illiquidity (Będowska-Sójka & Kliber, 2019) thus, an empirical study in this regard would provide significant implications to all market stakeholders and the same is attempted in this study.

1.2 Need for the Study

Though Stock Market Liquidity has been investigated in earlier literary works (Kyle, 1985; Grossman & Miller, 1988; Amihud & Mendelson, 1986; Chordia, Roll & Subrahmanyam, 2001), its relevance was realized during the financial crisis in the year 2008. To many world economies, rebuilding the lost confidence in the market by ensuring adequate liquidity was a significant challenge to recover from the downturn. Therefore, the post-crisis period witnessed momentum in the studies relating to stock market liquidity and evidenced significant implications of dynamics in market liquidity in policy formulations and investment decisions. These studies expressed varied views and proposed refined approaches towards market liquidity across various data sets, market structures, and periods by duly considering the significant contributions made by previous literature and thus extended the scope of stock market liquidity. However, these studies were mainly undertaken concerning developed markets while they are still evolving in case of emerging markets.

Market liquidity is a time-varying component and makes an emerging market more susceptible to liquidity shortages, making it imperative to persistently refine existing contributions. India's stock market is one of the fastest-growing emerging markets with varied market securities and offers enormous investment opportunities with attractive returns to diverse investors. Being an order-driven market with no designated liquidity providers, the demanded liquidity is ensured by market participants and indirectly by the market regulator, which in turn requires a thorough consideration of liquidity as an essential market microstructure component. Since the previous literary works indicate the inevitable importance of market liquidity to investors, corporate firms, regulators, and the entire economy. Hence, the measurement of liquidity of the Indian stock market by taking into account the different dimensions of liquidity and examining the nature of their interactions with one another over an extended period becomes necessary to create a fundamental understanding of the different constituents of the aggregate market liquidity.

Further, macroeconomic indicators are critical in stimulating systematic effects on stock market characteristics, principally in emerging markets (Olokoyo et al., 2020). As noted earlier, liquidity is an essential market characteristic. Given its impact on individual stock returns, aggregate returns, and economic health, a proper understanding of systematic forces causing liquidity becomes imperative. Also, the evidence of commonality in liquidity emphasizes that factors affecting market and stock level liquidity are common. Hence, an evaluation of determinants of market liquidity will instantly direct towards identifying individual stock liquidity determinants.

Additionally, the pronounced empirical effect of market liquidity on the stock prices eventually serve liquidity as an essential attribute in trading strategies, portfolio formulation, and accurate forecasting of portfolio returns (Gârleanu, 2009; Rubia & Sanchis-Marco, 2013). A wide range of studies (Acharya & Pedersen, 2005; Asparouhova et al., 2010; Baradarannia & Peat, 2013; Marshall & Young, 2003) explored the pricing ability of liquidity in addition to other renowned factors. Many of these studies have been focused mainly on the developed markets. As an ambiguous concept, many liquidity measures have been used to obtain robust results. However, there has been an inaccurate consensus on significant liquidity-return relationships in emerging markets. These markets are seen as an avenue for portfolio diversifications, especially by foreign investors, and possess higher asymmetric market information; thus, identifying relevant factors making up the security prices becomes relevant, and the present study shall serve this purpose.

Also, market liquidity and volatility share common characteristics as they are determined based on the movement of stock prices. Although market volatility has been a prominent risk factor while evaluating investment avenues, market liquidity is also emerging as a relevant risk factor under consideration. A wider span of empirical inferences evidence the effect of liquidity and volatility on stock return, but the liquidity-volatility-return relationship has been rarely emphasized. The emerging markets are always sensitive to changes in volatility and illiquidity levels; thus, an empirical study in this regard would be pertinent to all market participants. Moreover, the investors always seek to understand relevant information from the market to design lucrative trading strategies, and due consideration of the liquidity-volatility-return relationship can remarkably assist in this regard. Hence, the current study identifies and evaluates crucial dependencies and causality between liquidity, volatility, and return.

1.3 Scope of the Study

The current study aims to measure the liquidity of the Indian stock market by taking into account the different dimensions of liquidity and examining the nature of their interactions. The market liquidity will be measured across four dimensions, namely; tightness, depth, breadth, and immediacy, by computing Relative Quoted Spread (RQS), Share Turnover (ST), Amihud

Illiquidity Ratio (AR), and Coefficient of Elasticity of Trading (CET) over ten years by using daily frequency data. The analysis will be performed at the aggregate market level and across turnover-based quintiles. The turnover at the beginning of each year will be used to group the stocks into quintiles. For the study, 500 stocks constituting the NIFTY 500 index of the National Stock Exchange (NSE), India, will be selected as of 26th May 2019. The data on trading volume, bid and ask closing prices, the number of outstanding shares, and closing share prices will be retrieved from 1st April 2009 to 31st March 2019 from Bloomberg and the Centre for Monitoring Indian Economy (CMIE) Prowess database on a daily basis.

The current study will also try to identify the vital macroeconomic determinants of liquidity in the Indian stock market by employing four-dimensional liquidity measures computed for 500 stocks constituting the NIFTY 500 index of the NSE, India, as of 26th May 2019 from 2009-2019. For this purpose, 18 macroeconomic indicators will be selected based on their profound impact on the stock market and will be analyzed at monthly and quarterly frequencies. These indicators include Gold prices (GOLD), Silver prices (SILVER), Foreign Exchange Reserves (FER), Inflation Rate (INFL), Interest Rate (IR), Crude Oil prices (BRENT), Broad Money (M3), Narrow Money (M1) and Real Effective Exchange Rate (REER) which are in monthly series while Gross Domestic Product (GDP), Gross Fixed Capital Formation (GFCF), Private Final Consumption Expenditure (PFCE), Government Final Consumption Expenditure (GFCE) and Current Account Balance (CAB), Foreign Direct Investment (FDI), Foreign Portfolio Investment (FPI), Imports of Goods and Services (IMP) and Exports of Goods and Services (EXP) will be in quarterly series.

The current study will even evaluate the effect of aggregate market liquidity on the expected stock returns in addition to prominent factors, i.e., size, value, and market risk using triple-sorted portfolios. The liquidity measures and stock return will be computed for 500 stocks constituting the NIFTY 500 index of the NSE, India, as of 26th May 2019. Portfolios will be formed annually based on the information available at the start of the financial year. Each year, stocks will be triple-sorted according to their size, book-to-market equity ratio, and liquidity factors. The size factor will be determined using the annual average of the daily values of individual stocks' market capitalization. The book-to-market ratio will be computed by the annual average of the daily book-to-market ratio obtained by dividing daily book value per share by market capitalization per share. The liquidity factor will be obtained through the average of each stock's liquidity measures in a year.

The current study will also evaluate the crucial inter-dependencies and causality between liquidity, volatility, and return for stocks listed on NSE NIFTY 500 index, India. The spread measure will be employed to derive liquidity. At the same time, volatility will be computed using the standard deviation of daily returns. In contrast, returns will be computed using the log of current and immediate past prices. The study will use daily data from April 2009 to March 2019 and employ liquidity and volatility-based quintile portfolios to draw relevant inferences. These portfolios will be formed based on the rankings of stocks as determined by the annual average of liquidity and volatility measures at the beginning of each year.

Thus, the present study will measure stock market liquidity across four distinct dimensions, evaluate the macroeconomic determinants of stock market liquidity, trace the impact of market liquidity on stock returns and evaluate causality and inter-dependencies between market liquidity, volatility, and returns.

1.4 Objectives of the Study

The objectives of the study are:

- **Objective I:** To measure the liquidity of Indian stock market across various dimensions and to identify relationships between the liquidity dimensions.

  Sub Objectives:

  - To measure the liquidity of the Indian Stock Market across various dimensions.
  - To identify the relationships between the various dimensions of market liquidity in the Indian Stock Market.

- **Objective II:** To analyze the effect of macroeconomic indicators on the liquidity of Indian stock market.

- **Objective III:** To analyze the effect of market liquidity on the stock returns.

- **Objective IV:** To analyze the causality and inter-dependencies between market liquidity, volatility, and returns.

  Sub Objectives:

  - To study the causal effect between market liquidity, volatility, and returns.
  - To study the inter-dependencies between market liquidity, volatility, and returns.

1.5 Hypothesis of the Study:

1.5.1 Hypothesis to measure the liquidity of Indian stock market across various dimensions and to identify relationships between the liquidity dimensions

- H_{1a}: There exists no relationship between liquidity dimensions in the full sample.
- H_{1b}: There exists no relationship between liquidity dimensions across the quintiles.

1.5.2 Hypothesis to analyze the effect of macroeconomic indicators on the liquidity of Indian stock market

- H_{2a}: Macroeconomic indicators do not Granger-cause market liquidity.
- H_{2b}: Market liquidity does not Granger-cause macroeconomic indicators.
- H_{2c}: There is no significant effect of macroeconomic indicators on the stock market liquidity.

1.5.3 Hypothesis to analyze the effect of market liquidity on the stock returns

- H_3: There is no significant effect of market liquidity on the stock returns.

1.5.4 Hypothesis to analyze the causality and inter-dependencies between market liquidity, volatility, and returns:

- H_{4a}: There is no causality between stock market liquidity, volatility, and returns.
- H_{4b}: There exists no interdependency between stock market liquidity, volatility, and returns.

1.6 Significance of the Study

This study attempts to measure the aggregate market liquidity of the Indian stock market, identifies relationship between the liquidity dimensions, evaluates the impact of macroeconomic determinants on market liquidity, explains the role of market liquidity in determining the stock returns, and investigates the inter-dependencies among liquidity, volatility, and return. This study fruitfully adds to the existing scarce literature in the area of market liquidity concerning an order-driven market and will be of significance to the investors, market regulator, and corporate firms and will also supplement economic policy determination. This study will enable to comprehensively understand the nature of liquidity and its measurement across four key dimensions and analyze the relevance of inter-relationships between them while devising regulatory policies and investment strategies.

Further, an analysis of the effect of macroeconomic indicators on the overall liquidity will contribute to understanding the role of systematic forces in determining liquidity variations. These results will enable the domestic and foreign investors to devise investment strategies tactically, and the market regulator can also frame appropriate and timely intervening economic policies to overcome liquidity problems. Also, the study will highlight the role of market liquidity in determining the overall asset return and reveal liquidity-volatility-return relationships, enabling the investors to formulate appropriate portfolio decisions and even assisting the issuing companies in regulating their cost of capital.

1.7 Limitations of the Study

The present study does not consider the liquidity dimension of resiliency while measuring the dimensional nature of liquidity. This is due to the reason that there has been inadequate empirical support regarding acceptable resiliency measures concerning order-driven markets, and hence liquidity was examined throughout the study using only four dimensions. The study period considered is only 10 years, from 2009 to 2019, and does not give relevance to the liquidity conditions before this period, i.e., the pre-financial crisis period. While evaluating the macroeconomic determinants of market liquidity, the study selects 18 variables whose data is available at different frequencies and thus was analyzed at those different frequencies. Also, the selection of a few variables in examining the macroeconomic determinants of liquidity, asset pricing role of liquidity, and the relationship between liquidity-volatility-return; may prove to be a limitation of this study.

1.8 Chapterisation

Chapter 1 focuses on the introduction, need of the study, the scope of the study, objectives of the study, the hypothesis of the study, the significance of the study, limitations of the study, and the scheme of chapterisation.

Chapter 2 elaborates objective-wise review of literature and derives the research gap from the overall literature.

Chapter 3 presents the detailed research methodology for each objective of the study.

Chapter 4 incorporates results and discussion of the measurement of market liquidity and relationships between the liquidity dimensions.

Chapter 5 incorporates results and discussion of the effect of macroeconomic indicators on the liquidity of Indian stock market.

Chapter 6 incorporates results and discussion of the effect of market liquidity on the stock returns.

Chapter 7 incorporates results and discussion of the causality and inter-dependencies between market liquidity, volatility, and returns.

Chapter 8 summarizes the findings, conclusion, policy implications of the study, contribution of the study, and scope for future research.

Chapter 2

Review of Literature

This section describes a detailed review of prior studies undertaken in the context of the current research topic and is presented below by utilizing the historical review writing style. The literature has been reviewed objective-wise to identify research gaps for each objective; the same is presented in this section.

2.1 Measurement of Market Liquidity and Relationships between the Liquidity Dimensions

The nature of market liquidity has been differently conceptualized in the literature, and thus an accurate measurement of market liquidity has been a difficult task for the earlier researchers. Black (1971) provided distinct characteristics of market liquidity. He mentioned that a liquid market is the one that ensures continuous trading of any quantity of securities at prices close to their current market price in a relatively short time. Based on this, Kyle (1985) structured three dimensions of market liquidity, namely, Tightness – cost involved in executing a transaction, depth – the quantity of a security that can be traded without influencing the market price, resiliency – the speed with which prices revert to normal after a shock. In addition, the immediacy and breadth aspect of market liquidity was mentioned by Sarr and Lybek (2002), which referred to the speed with which a trade can be executed in the market and the extent of price impact caused by trading volume.

Due to its multidimensional nature, market liquidity has been examined using numerous measures. The measures tracing the depth and breadth dimension of market liquidity have been popularly employed compared to the other dimensions. (Alzahrani et al., 2013; Amihud, 2002; Chai et al., 2010; Choi & Cook, 2005; Datar et al., 1998; Donadelli & Prosperi, 2012; Gregoriou & Dung, 2010; Kang et al., 2018; Marshall, 2006). Moreover, liquidity measurement by considering the spread dimension has been adequately examined (Amihud & Mendelson, 1986; Hasbrouck, 1991; Hasbrouck & Schwartz, 1988; Holden, 2009; McInish &Wood, 1992; Pan et al., 2015), whereas the immediacy dimension is implicitly covered by Wanzala (2018) and Wyss (2004). Lastly, the resilience dimension of liquidity has also been investigated (Hmaied et al., 2007; Kim & Kim, 2019; Large, 2007; Wanzala et al., 2018) and is considered a complex dimension due to insufficient representation through a single measure (Ranaldo, 2001).

Further, to obtain a broader view of market liquidity, many recent studies have used a combination of liquidity dimensions in different contexts (Ali et al., 2018; Chordia et al., 2001; Deng et al., 2018; Fernández-Amador et al., 2013; Hillert et al., 2016; Johnson, 2008; Kim & Lee, 2014; Loukil et al., 2010; Zheng & Su, 2017). However, very few studies have tried to uniquely analyze the patterns and relationships between the various dimensions of stock market liquidity. Studies on this matter have mainly concentrated on highlighting the intraday movements in liquidity by employing high-frequency data. Chordia et al. (2001) traced a negative correlation between volume, trading activity, and spread liquidity measures, which were mainly observed in the case of large-sized stocks. Hmaied et al. (2007) and Olbrys and Mursztyn (2017) observed a negative relationship between spread and depth measures of stock liquidity as evidenced by the vector autoregression approach, whereas Ranaldo (2001) found a positive association between depth, resiliency, and immediacy dimension of market liquidity and observed a U shaped pattern in the liquidity measures at the beginning and end of the trading session.

Additionally, studies have also examined liquidity dimensions by using low-frequency measures. Sklavos et al. (2013) analyzed the relationship between spread, turnover, and price impact liquidity measures in the context of the energy sector. Following structural vector autoregression, they found a consistent interrelationship between all measures and obtained significant causality from turnover to the spread and price impact measures. Daníelsson and Payne (2012) identified a positive association between depth, spread, and trading activity measures but found that this relationship disappears during high volatility. Yeyati et al. (2008) found a negative relation between depth and spread measures and evidenced that the relationship inverses during the crisis.

In the context of the Indian stock market, Krishnan and Mishra (2013) used spread, depth, and multifaceted liquidity measures and found that there is high liquidity at the beginning and end of the trading sessions. The study also established a positive relationship between depth and spread measures and, using Principal Component Analysis, evidenced moderate intraday movement between the measures. Jha et al. (2018) examined the liquidity using Bombay Stock

Exchange (BSE) 500 stocks. They concluded that Indian market liquidity gets adversely affected by financial shocks. Still, at the same time, it was observed that it normalizes within a short time duration, thereby depicting high market resilience. Bhattacharya et al. (2019) employed the Autoregressive Distributed Lag (ARDL) Bounds Testing Approach and perceived that market liquidity measured in terms of depth, immediacy, tightness, and resiliency exhibits a significant long-term relationship with the overall Indian stock market as proxied by BSE 500 index.

The existing literature provides multiple dimensions for determining the market liquidity wherein Chai et al. (2010) and Goyenko et al. (2009) empirically suggest that each of these dimensions captures distinct aspects of market liquidity in different market systems and conditions. But most studies have not adequately analyzed all the liquidity dimensions in a single study. Also, the literature has rarely emphasized capturing the interdependencies between the liquidity dimensions that can help in framing coherent trading strategies. Moreover, less attention has been paid to determining liquidity based on low-frequency data. Kim and Lee (2014) suggest that measures based on low-frequency data enable to study liquidity over a long time and across different market structures.

2.2 Effect of Macroeconomic Indicators on Market Liquidity

The literature provides a handful of studies done in the context of macroeconomic factors and their impact on stock market liquidity. Fujimoto (2011) studied the effect of macroeconomic indicators and stock market variables on the liquidity of the United States (US) stock market. The study employed macroeconomic indicators like industrial production growth, the change in the unemployment rate, the inflation rate, the growth rate of the conference board index of sensitive materials prices, the difference in the federal funds rate, and the orthogonalized non-borrowed reserves and stock market variables namely market return, volatility and share turnover. It was found that the macroeconomic indicators directly determine the aggregate liquidity and indirectly through their effect on stock market variables. Additionally, negative supply-side inflation and expansionary monetary policy are vital in stimulating liquidity during the high volatility period.

More specifically, Omran and Pointon (2001) studied and concluded a negative impact of changes in inflation levels on the Egyptian stock market trading activity and liquidity. They argued that a decrease in the inflation rate enhances the market trading activity and liquidity because investors expect an increased investment return. Such effect was empirically proved over the short as well as long run. Next, Zheng and Su (2017) looked for the impact of oil price changes arising from three sources, namely, specific demand, aggregate demand, and supply, on market liquidity in China and showed that liquidity increased due to oil price changes resulting from distinct demand shock. In contrast, oil price effects on oil supply and aggregate demand shocks adversely lowered the overall liquidity. Moreover, Jiang (2014) examined the impact of the output and inflation gap on stock liquidity and liquidity commonality using the Taylor Rule. They found that a wide gap in inflation and output increases commonality and contract liquidity. The results also suggest that lack of funding liquidity makes traders prefer large-size stocks over smaller ones; thus, the effect seems to be higher on the liquidity of small stocks.

Some studies evaluated the impact of monetary policy decisions on the stock market liquidity. Chowdhury et al. (2018) investigated the influence of monetary and fiscal policy variables on the market liquidity of eight emerging Asian stock markets. Different liquidity measures concluded that an expansionary monetary and fiscal policy positively affects market liquidity and individual stocks. These results were robust even across the stock portfolios sorted based on size and industrial sectors. Additionally, Fernández-Amador et al. (2013) employed panel Vector Autoregression (VAR) and found that expansionary monetary policy increases stock specific and market liquidity and that this effect was found to be more significant for small stocks. Concerning the Indian stock market, Debata and Mahakud (2018) analyzed the impact of monetary policy on the liquidity of continuously traded stocks listed on the National Stock Exchange, India. The study approximated monetary policy through two indicators, reserve money growth rate and interest rate, and employed liquidity measures across the dimensions of depth, breadth, and tightness. By performing Panel VAR, Granger causality tests, impulse response functions, and variance decomposition analysis, the study concluded a positive influence of expansionary monetary policy on the stock liquidity, which was observed more prominently during the financial crisis.

Few studies even evaluate the role of macroeconomic and policy announcements in determining stock market liquidity. Chordia et al. (2005) analyzed the specific determinants of stock and bond market liquidity. They examined whether monetary announcements by central banks infuse more trading activity and cause an increase in order flow in both the markets. The study concluded that cross-market correlations in liquidity and volatility are positive and confirm the common influences across the markets using VAR and Impulse Response

Functions. Also, found that monetary policy easing improves liquidity, especially during high volatility in both the markets. Busch and Lehnert (2014) tested the impact of policy interventions on stock liquidity during the financial crisis by using spread as a liquidity measure. It was found that the spreads narrowed due to liquidity and rescue interventions, mainly in the context of less traded stocks. In addition, studies have also documented that emerging markets are susceptible to the macroeconomic announcements made by developed economies. Ekinci et al. (2019) and Sensoy (2017) have revealed that announcements relating to monetary policy, interest rates, and GDP of the US economy strongly determined the liquidity of the Turkish stock market.

Although a few variables have been undertaken to evaluate their impact on the market liquidity, the effect of diverse macroeconomic variables is mainly developed concerning stock market performance, primarily measured in terms of index returns and market capitalization. We even consider them relevant for review since stock market performance has also been represented by aggregate liquidity levels at times. Khan (2004) used Error Correction Model and cointegration test and revealed that higher inflation deteriorates the stock market performance in Karachi by enormously lowering the market capitalization and liquidity, whereas Boyd et al. (1996) explained a robust negative relationship between inflation and stock market performance as measured by market return and liquidity principally in moderate inflation economies. Olokoyo et al. (2020) report a long-run positive effect of the exchange rate, growth rate, and foreign capital flows while a negative impact of interest rate, inflation, and trade on the stock market performance in Nigeria. Even Hussain et al. (2009) studied and found a long-run positive impact of the industrial production index, real exchange rate, foreign exchange reserve, money supply, and gross fixed capital formation on stock prices in the Karachi Stock Exchange and a negative impact of inflation.

A study by Tangjitprom (2011) analyzed 24 market sectors through VAR and Granger causality test and presented a strong negative impact of interest rate and a positive effect of exchange rate changes on the performance of the stock market of Thailand. Similar results were also evidenced by Hondroyiannis and Papapetrou (2001) using the VAR approach and Impulse Response Functions concerning Greece's stock market along with a negative impact of oil price changes. Besides, a systematic review of earlier research works concerning the developed and developing economies (Verma & Bansal, 2021) accentuate a positive effect of GDP, foreign investment flows, money supply, and exchange rate, whereas a negative impact of changes in the gold price, interest rates, and inflation rates. They even find that an oil-exporting country's stock market is favorably affected by oil price fluctuations, whereas the reverse is true for an importing country.

In the Indian context, several studies manifest a crucial macroeconomic effect on the stock market performance predominantly measured in terms of index returns. Pal and Mittal (2011) reveal a significant impact of inflation, interest rate, and exchange rate on the Indian stock market indices, while Mishra (2004) evidenced a substantial influence of exchange rate on the index returns. Parab and Reddy (2020) evidenced that stock market return is positively related to crude oil prices, real effective exchange rate, foreign direct investment, interest rate, imports of goods and services, GDP, and tax revenue and is negatively related to gold and silver prices. Such impact was found to be varying across different structural periods. Using the autoregressive distributed lag model, Tripathi and Kumar (2015) showed that money supply positively influences the stock return in Brazil, Russia, India, China, and South Africa (BRICS) markets, whereas a negative impact was found in the case of interest rate, exchange rate, and oil prices.

Moreover, with the help of the co-integration and error correction model, Kotha and Sahu (2016) revealed a long and short-run positive relationship of inflation and money supply with the index return. Ahmed (2008) witnessed a long and short-run relationship between foreign direct investment, money supply, and index of industrial production and stock prices. On the other hand, Megaravalli and Sampagnaro (2018) evaluated the stock market performance in India, China, and Japan by using the Granger causality test, co-integration tests, and the pooled estimated results and showed the existence of the only long-run positive effect of exchange rate on stock market index returns and an insignificant negative effect of inflation. On the contrary, Pethe and Karnik (2016) present an indecisive long-run relationship between Indian indices and macroeconomic variables such as exchange rate, bank lending rates, broad money, narrow money, and industrial production index.

2.3 Effect of Market Liquidity on Stock Returns

Studies in the developed markets accurately define the role of liquidity on the expected returns across varied stocks and periods. Amihud (2002) used the Fama and MacBeth procedure and regressed stock characteristics and illiquidity on the stock returns. The results confirmed a positive illiquidity-return relationship across the stocks over varying periods and also evidenced a similar relationship between expected illiquidity and expected excess returns. But in case of unexpected illiquidity and expected excess returns, they find a positive relationship. Such effect was more pronounced across small-size stocks and presented them as highly prone to liquidity fluctuations. Asparouhova et al. (2010) also found a positive effect of illiquidity on stock returns even after statistically eliminating any form of biases in stock prices on account of any market noise. A similar result was obtained by Chordia et al.(2016) in the US market using a three-factor model of Fama-French and multiple liquidity proxies. Further, Ibbotson et al. (2013), using Fama French four-factor model, suggested that liquidity on small-size stocks rewards an investor with higher returns when held for a more extended period. In addition to the market risk, Amihud & Mendelson (1989) evidenced that the expected returns are an increasing function of illiquidity proxied by bid-ask spreads, whereas, Baradarannia & Peat (2013) found that stock liquidity and systematic liquidity risk play a significant role in cross-sectional variations in expected returns more prominently during the period of economic distress.

Furthermore, Lou and Sadka (2011) presented the prominent role of liquidity risk in explaining the cross-section of stock returns over the liquidity level during the financial crisis. They even argued that the liquidity of large-size stocks with high liquidity risk needs to be more importantly managed during the crisis because such stocks are present in the portfolios to ensure risk diversification. Moreover, few studies explored the effect of liquidity variability and skewness on stock returns. Chang et al. (2010) used a cross-sectional regression model with three Fama-French and stock level factors. They found that stock liquidity level and liquidity variability negatively affect the stock return and the liquidity effect is more robust when liquidity variability is controlled across the sub-periods. Blau & Whitby (2015) found a positive relationship between volatility in spreads and expected returns using Fama MacBeth regressions after controlling average spreads and other factors. On the other hand, Jeong et al. (2018) showed a significant long-run effect of illiquidity skewness on stock return after controlling for other determining factors and using the Liquidity-Adjusted Capital Asset Pricing Model and Liquidity-Adjusted Downside Capital Asset Pricing Model also evidence that over and above the illiquidity level and illiquidity risks, its skewness is also priced in the returns and are robust even after using alternative liquidity measures.

In line with the earlier studies, a positive impact of illiquidity on stock returns has been found even in emerging markets and has been robust across multiple liquidity measures. Using panel data analysis, Loukil et al. (2010) evidenced that investors expect a premium on their returns for lower liquidity measured in terms of high price impact and low trading frequency in addition to other risk factors. Even they reveal that the past cumulative illiquidity positively determines the present-day stock returns. However, such illiquidity effects were seasonal and were limited to only non-January months. Marshall & Young (2003) observed a positive impact of illiquidity and returned across the dimensional liquidity measures except for the spread measure. They used Seemingly Unrelated Regressions (SUR) and the Cross-Sectionally Correlated Time Wise Autoregressive (CSCTA) model and found a robust negative size effect and a small liquidity effect on stock returns over a long period. Further, by using a new multi-dimensional spread measure, Marshall (2006) found a positive liquidity premium in returns that existed throughout the year of study even after controlling for other firm-level determinants of returns. Atilgan et al.(2016) found a positive cross-sectional relation between various illiquidity measures and expected returns in the Borsa market over factors like size, the book to market ratio, beta, and momentum by employing the Fama Macbeth methodology. Across portfolios sorted based on size, illiquidity, and volatility, they find that the returns of small and volatile stocks earn a higher premium for illiquidity.

Next, Hearn (2014) analyzed Nigeria's industrial sectors using a liquidity-size augmented Capital Asset Pricing Model and found the size and liquidity effect on stock returns more prominently those belonging to the financial and primary material industrial sector. Under diverse market conditions, Stereńczak (2021) studied the conditional liquidity premium and return relationship using panel regression and found a higher liquidity premium in expected returns, especially during a bull market state and stocks with small firm size, the large book to market values, and high return volatilities. Gernandt et al. (2012) found that liquidity is priced in returns of the Swedish market during the industrialization phase using four-factor Fama MacBeth regressions. The liquidity-return effect was studied in developed and emerging markets using two factor Fama-French Model by Donadelli and Prosperi (2012). They found that liquidity via transaction costs negatively affects excess returns over and above the impact of market risk and is a significant factor determining the premium in the returns of emerging markets. Moreover, the study proves that global liquidity risk factors are prominently priced over the local factors in emerging market stock excess returns.

Batten & Vo (2014) contradicts the positive illiquidity-return relationship by concluding a negative impact of illiquidity on expected returns in the Vietnam market and thereby suggest that during the financial crisis, the investors are ready to forego the liquidity premium if they entail diversification benefits on account of being a less integrated stock market. They use a fixed effect regression model with Fama French three factors and find these results consistent across quintiles annually. Additionally, Leirvik et al. (2017) concluded that market liquidity has a negligible impact on stock returns in Norway by using a simple linear regression model.

Some emerging market-focused studies have ascertained the relevance of liquidity augmented asset pricing models and evaluated the liquidity-return effect. Using size and liquidity augmented Fama-French Capital Asset Pricing Model, Hearn et al. (2010) traced a consistently positive impact of illiquidity measured by the Amihud Ratio and a dominant size impact on excess returns. They also exhibit that this augmented Capital Asset Pricing Model reveals a significant role of size and liquidity premium over the market risk premium, suggesting its superiority over the traditional Capital Asset Pricing Model (CAPM). Minović & Živković (2014) evidenced that Liquidity Adjusted CAPM is a better model than the standard CAPM model since it incorporates vital risk factors that influence expected returns in an emerging market and found that liquidity risk premium is positively priced, whereas size premium is negatively priced in the returns. Furthermore, Mckane & Britten (2018) found a significant liquidity effect on cross-sectional returns. Liquidity Adjusted CAPM is a good model for predicting such effect over standard CAPM and Fama three-factor models. The study also adds that liquidity and size factors independently affect stock returns.

2.4 Causality and Inter-Dependencies between Market Liquidity, Volatility, and Returns

The positive relationship between market illiquidity and volatility was initially detailed by Cohen et al.(2016), wherein they witnessed liquid markets being less volatile than the illiquid ones. After that, numerous studies confirmed the existence of such a relationship (Gallant et al., 1992; Karpoff, 1987; Rahman et al., 2002; Wyart et al., 2008). The recent studies in this regard have been focused on using robust liquidity and volatility measures under various market regimes. Ramos and Righi (2020) analyzed the relationship between liquidity and implied volatility in New York Stock Exchange (NYSE) market. Using the VAR approach and decomposing implied volatility into conditional variance and variance premium, they found that liquidity measures are positively related mainly to conditional variance. These results were found to be robust across different liquidity measures. Using the Markov switching-regime approach, Xu et al. (2019) found that market liquidity significantly affects volatility in the Shanghai market, which persists even under stable and unstable market situations. They also show a strong liquidity impact on volatility during a low liquidity regime. Meanwhile, in case of emerging markets, the studies (Bai & Qin, 2015; Będowska-Sójka & Echaust, 2019) have evidenced that market volatility and liquidity are strongly related in volatile market conditions.

Next, a positive relation between illiquidity, volatility, and returns was presented by Stoll (1978) in case of National Association of Securities Dealers Automated Quotations (NASDAQ) stocks, who stated that less informed dealers transact securities at a premium under volatile conditions against the informed traders, thereby results to rise in returns. The model developed by Brunnermeier and Pedersen (2009) exhibited that high volatility increases illiquidity in the market due to the lowering of funding liquidity, further widens trading margins, and hampers the trading willingness of participants. Such decreased liquidity induces volatility in the near future, further inflating the demand for risk premiums.

Moreover, most studies claim a negative impact of positive illiquidity-volatility relation on stock returns. Domowitz et al. (2001) analyzed the inter-relationship between liquidity, execution costs, and volatility across 42 countries and their impact on stock return. They found that higher volatility-induced execution costs reduce portfolio returns and lower the turnover, decreasing overall liquidity primarily in emerging economies. Chordia et al. (2004) analyzed the cross-sectional and time-series relationship between liquidity variations, volatility, and returns across size-based quartiles using NYSE stocks. Through regression analysis, they found that the liquidity of small-size firms varies most often and that these variations are positively related to volatility and thereby offer lower returns.

On the other hand, the liquidity resilience to information-induced price sensitivities is higher for large-sized stocks and thus have strong liquidity and offer a higher return on account of lower volatility. Further, using the same dataset of NYSE stocks and using the VAR model, Chordia et al. (2005) found that the liquidity of large-cap (small-cap) portfolios is determined by volatility, liquidity, and return of the small-cap (large-cap) portfolios, thereby indicating cross effects of the variables across the size-based portfolios. They also evidence that wider spreads due to informed trading in large-cap stocks predict the returns of small-cap stocks with a lag. This indicates that liquidity shock in large stocks is transmitted to small stocks resulting in downward pressure on their future returns.

Some empirical evidence proposes liquidity as a crucial market feature in determining the impact of volatility on stock return. Chung & Chuwonganant (2018) show that market liquidity primarily affects stock-specific liquidity. They found that market volatility shocks impair the market liquidity, further deteriorating the liquidity of stocks and lowering the return on such stocks that are more prone to illiquidity levels. Ma et al. (2018) found a time-varying market volatility effect on returns channeled through stock liquidity across countries characterized by higher volatility, trading frequency, and better corporate governance.

The next strand of literature focuses on evaluating causal relationships between liquidity-volatility-return, thereby indicating the forecasting ability of these variables concerning future movements in each other. Będowska-Sójka and Kliber (2019) used Toda-Yamamoto and Granger Causality tests and found that volatility-liquidity causality is bidirectional in the Warsaw stock market, wherein liquidity more often granger causes volatility than volatility causes liquidity. Similar to these results, bidirectional causality between liquidity, volatility, and the stock return was found by Ong (2015) using information theory in contrast to Granger Causality tests. Their results reveal that causality between liquidity to volatility further defines a robust causal relationship between volatility and stock return. On the contrary, Brooks (1998) obtains bidirectional causality between volatility and market liquidity in the NYSE market, wherein causality from volatility dominates.

Further, studies use Granger Causality tests to convey unidirectional causality among liquidity, volatility, and returns. Gold et al. (2017) revealed a strong predictive power of market liquidity on future market volatility. Also, Valenzuela et al. (2015) yielded similar results based on intraday analysis in the Istanbul market. In addition, Foucault et al.(2007) show that wide bid-ask spreads on the Paris stock exchange convey relevant information about a likely increase in future volatility to the uniformed traders during non-anonymous limit orders. Another study by Pascual and Veredas (2010) used high-frequency data from the limit order book of the Spanish market and found that increased illiquidity embeds information regarding higher volatility in the future, which will further impair stock returns and thereby deteriorates the efficiency of the market. Contrastingly, Wang (2013) emphasized that volatility is a significant factor causing variations in liquidity across developed and emerging Asian markets, especially after the financial crisis. Chuliá et al. (2020) also found that volatility causes liquidity co-movements during the crisis. Interestingly, the study highlights feedback effects of the financial crisis, which indicates that such increased liquidity co-movements in the post-crisis period persistently drive future volatility.

Along similar lines, there has been an array of empirical views in the context of the Indian stock market, but a majority of them emphasized on volume, return, and volatility relationship

(Jha et al., 2018; Kumar & Singh, n.d.;Kumar & Thenmozhi, 2012; Mahajan & Singh, 2005, 2009; Naik & Padhi, 2012; Siddiqui & Roy, 2019). They all exhibit that the past values of volume, return, and volatility conveys future movements in each other due to the unequal information dissemination among the market participants. A few of the recent studies on an intraday basis in the Indian context have pertained to evaluating volume, return, and volatility relationships by using bid-ask spreads and have evidenced that bid-ask spreads represent a positive interaction with information asymmetry (Paital & Sharma, 2016; Pan & Misra, 2021; Tripathi et al., 2021).

2.5 Research Gap

A significant gap in the literature is that there is a lack of empirical works on studying market liquidity in order-driven markets. These markets substantially offer diversified investment opportunities to a wide range of investors and are strongly prone to liquidity shocks. In such markets, consistency in trading activity plays a pivotal role in supplying liquidity due to the absence of designated liquidity providers; thus, the foremost understanding of the level and characteristics of liquidity becomes imperative. The current study aims to fill these gaps by adequately measuring the liquidity of the Indian stock market using different dimensional measures and examining the inter-relationships between the dimensional measures of liquidity for the overall market and stocks classified based on their turnover.

The existing literature also focuses very little on macroeconomic determinants of stock market liquidity and considers a few of them. Macroeconomic indicators are known for causing long-run and systematic exposures in the financial markets and were apparent during every financial crisis. Moreover, the empirical evidence of commonality in liquidity compels us to believe that common/systematic factors determine the liquidity of the aggregate market and individual stocks. Hence, macroeconomic indicators can be assumed as the foremost frequent factors. Furthermore, the studies have rarely looked for an effect on multidimensional facets of liquidity. This is pertinent due to the growing evidence of the multifaceted nature of liquidity and the need to consider them for robust results. Additionally, a limited number of empirical studies have considered the effect of macroeconomic indicators on market liquidity in emerging economies. Since each emerging market is unique in its market structure, mechanisms, and processes, and is often prone to face liquidity problems, a study concerning the systematic effect of macroeconomic indicators will provide some new cognizance in the area. The current study tries to overcome these gaps and evaluates the macroeconomic determinants of Indian stock market liquidity. Understanding macroeconomic determinants will assist the market stakeholders in perceiving and timely adapting to the liquidity levels.

Although the developed market studies convey a consistent liquidity-return effect but are indistinct for emerging markets, there are numerous well-defined liquidity measures available in the earlier research works for these markets, but it is observed that the extent of the use of these measures is minimal in the reviewed studies. The emerging economies offer diversification benefits to investors and can increase this potential by rightly compensating for expected risk. Since the reviewed literature highlights the relevance of liquidity in asset pricing, it becomes pertinent to incorporate all the significant aspects that define liquidity to make factual inferences. Moreover, the recent literature applies two-way sorts (size-liquidity sorts or value-liquidity sorts) portfolio approaches to study the liquidity-return effect. As highlighted that stocks' size and value are the principal determinants of stock returns, it becomes essential to filter the stocks based on size and value before deriving the liquidity-return effect solely on liquidity sorted stocks. The current study tries to narrow these gaps and identify liquidity as a determining factor in stock returns in the Indian stock market.

The available related literature depicts studies concerning developed markets. The financial crisis in the past has shown detrimental effects of volatility and liquidity on investment returns in both advanced and emerging economies. However, emerging markets have higher liquidity risks during highly volatile conditions but have received negligible focus in evaluating the intricacies between liquidity, volatility, and return. In addition, there are studies considering the stocks listed in a specific market or across different country markets and industrial sectors and have studied them under volatility and liquidity regimes, but no study focuses on estimating these inter-relationships among stocks characterized by their volatility and liquidity levels. This is important since investors require both comprehensive market information and idiosyncratic information for effective trading strategies. More importantly, a handful of studies focused on the Indian stock market examining volatility and return relationship with spread-based liquidity measures even though these measures reflect information asymmetry have been empirically proven. The current study attempts to fill in these gaps and contributes to validating the association between liquidity, volatility, and return in the Indian stock market by using the spread measure of liquidity and the quintile-based portfolio approach.

Chapter 3

Research Methodology

A detailed objective-wise research methodology are elaborated below. This section comprises the period of study, sample design, data variables, sources, and methodology followed in analyzing the objectives of the study.

3.1 Research Methodology for Objective I

3.1.1 Period of study

The study considers daily data of over 10 years from 1st April 2009 to 31st March 2019 to measure the market liquidity of the Indian stock market.

3.1.2 Sample Design

For the study, we select 500 stocks constituting the NIFTY 500 index of the NSE, India, as of 26th May 2019. Data relating to the select variables needed to be available throughout the study period across the selected stocks, and thus only 352 stocks qualified to be included in the final sample. We measure market liquidity with the help of these stocks in terms of four dimensions, as presented by Sarr and Lybek (2002): Tightness, Immediacy, Depth, and Breadth. Moreover, the study does not consider the fifth dimension of resiliency due to inadequate empirical support regarding acceptable resiliency measures concerning order-driven markets. The previous literature (Fernández-Amador et al., 2013; Jha et al., 2018; Loukil et al., 2010; Naik et al., 2020; Sklavos et al., 2013; Yeyati et al., 2008) has provided a wide range of measures for tracing every dimension of liquidity in the context of emerging markets. By analyzing the same, we select the widely applied low-frequency measures that enable adequate capture of every liquidity dimension over an extended period.

3.1.3 Data Variables and Sources

The study computes market liquidity across four liquidity dimensions, namely; tightness, immediacy, depth, and breadth, and was measured by using the measures such as Relative

Quoted Spread (RQS), Coefficient of Elasticity of Trading (CET), Share Turnover (ST) and Amihud Illiquidity Ratio (AR). The data on trading volume, bid and ask closing price, the number of outstanding shares, market capitalization, and closing share prices were retrieved from Bloomberg and the Centre for Monitoring Indian Economy (CMIE) Prowess database on a daily basis.

The liquidity dimensions and measures employed in the study are explained below:

- **Tightness**

Tightness indicates the amount of cost incurred by an investor for transacting security. The Bid-Ask Spreads have been mainly used in earlier studies to evaluate the market's tightness. But Grossman and Miller (1988) state that in a market, the trades may not always be executed at quoted Bid-Ask prices, and thus it becomes inappropriate to determine the actual transaction cost. Considering this, we use Relative Quoted Spread (RQS) as a measure of tightness, as suggested by Yilmaz et al. (2015) and Foran et al. (2015), which expresses daily spread as a percentage of the midpoint of the bid and ask prices. It is calculated as follows:

$$\text{Relative Quoted Spread} = \frac{AP_{it} - BP_{it}}{\frac{1}{2}\,(AP_{it} + BP_{it})} \qquad (1)$$

where AP and BP denote daily closing Ask Price and daily closing Bid Price; i and t denote stock i at time t. A narrow RQS would indicate lower transaction costs and higher liquidity on account of a tighter market.

- **Immediacy**

Immediacy indicates the execution time required for a transaction, which depends on both parties' willingness to execute the stated quantity of a security at the quoted price without any delay in time. To measure market immediacy, the study uses the Coefficient of Elasticity of Trading (CET) as suggested by Wanzala (2018), which rightly depicts the speed of execution of a trade as depicted through a percentage change in trading quantity for a percentage change in the share price. This measure is calculated as follows:

$$\text{Coefficient of Elasticity of Trading} = \frac{\%\Delta T_s}{\%\Delta P} \qquad (2)$$

Where $\%\Delta T_s$ denotes the percentage change in the daily trading volume of a stock 's' and $\%\Delta P$ denotes the percentage change in daily closing price. A larger CET indicates a higher immediacy, thereby confirming higher liquidity.

- **Depth**

Depth refers to the availability of a reasonably large amount of orders in the market such that it maintains equilibrium in the security's market price. Thus, the amount of security traded in the market is a prerequisite for a deep market and can be readily ascertained through the trading volume. Since the study employs stocks of varied sizes to determine market liquidity, it uses the liquidity measure of Share Turnover (ST) as it considers volume traded as a proportion to the number of shares outstanding (Nielsson, 2009). It is computed as follows:

$$\text{Share Turnover} = \frac{VO_t}{SO_t} \qquad (3)$$

Where VO_t is the number of shares traded on day t and SO_t is the number of shares outstanding on day t. A higher ST indicates a deep market and represents higher liquidity.

- **Breadth**

Breadth refers to the ability of the market to smoothly enable trading of a given volume of securities without much influencing the share prices. Price impact measures are effectively used to evaluate the liquidity dimension of breadth. We use the Amihud Illiquidity Ratio (AR), as proposed by Amihud (2002), for measuring the market breadth, regarded as the best price impact measure by Goyenko et al. (2009). This ratio exhibits the movement in the security prices due to changes in its volume and is computed as follows:

$$\text{Amihud Illiquidity Ratio} = \frac{|R_{it}|}{Vol_{it}} \qquad (4)$$

Where $|R_{it}|$ and Vol_{it} are the absolute return and volume (in Rs.) on day t for stock i, respectively. A lower AR portrays wide market breadth and thereby conveys the presence of high liquidity.

3.1.4 Methodology

Each of the selected liquidity measures was calculated daily for every stock constituting the final sample over the entire study period. Non-positive Relative Quoted Spreads were eliminated, as suggested by Sklavos et al. (2013) and Jacoby and Zheng (2010). In order to derive the aggregate market liquidity, the daily stock-specific measures were aggregated into cross-sectional averages that were weighted based on the daily market capitalization of these stocks and were further averaged across time to derive monthly averages. Next, to avoid any outliers, these monthly averages of liquidity measures were converted into natural log values

(Angelidis & Andrikopoulos, 2010; Chae, 2005; Karolyi et al., 2012). Lastly, these log values were evaluated to derive the results relating to aggregate market liquidity.

Summary statistics, Correlation Analysis, and Augmented Dickey-Fuller (ADF) Unit Root tests were performed across the dimensional measures. Further, the study employs VAR model to assess interdependency among the liquidity dimensions. The study models Relative Quoted Spread (RQS), Coefficient of Elasticity of Trading (CET), Amihud Illiquidity Ratio (AR), and Share Turnover (ST) using VAR as follows:

$$Z_t = c + AZ_t + u_t \quad (5)$$

Where: Z_t is the vector of endogenous variables (AR, CET, RQS, ST)

c is the vector of intercepts,

A is a coefficient matrix of endogenous variables, and

u_t is the vector of residuals.

In addition, the liquidity dimensions and their interdependencies are also evaluated across low and high-traded stocks by equally dividing the entire sample stocks into five Quintiles based on their rankings in terms of stock-specific share turnover at the beginning of each year, wherein 1st Quintile (also referred as upper quintile) comprised of highly traded stocks while 5th Quintile (also referred as lower quintile) consisted of less traded stocks. Each quintile had a total of 70 stocks (except the 5th Quintile, which consisted of 72 stocks) throughout the sample period, and the constituting stocks in every quintile were allowed to vary based on changes in their turnover rankings every year.

We expect crucial interdependencies between the selected liquidity dimensions at the market level and across the Quintiles from the VAR Model. Diaz and Escribano (2020) suggest that depth and breadth dimensions tend to be interrelated as they rely on the volume exchanged for security. Sklavos et al. (2013) evidenced that market tightness resembles risk to a market maker that gets influenced by market depth and breadth but conversely, they are not affected by market tightness. On the other hand, liquidity in an order-driven market is supplied by the traders themselves, and thus market tightness, depth, breadth, and the resultant immediacy (Díaz & Escribano, 2020) tend to be interdependent at various time lags due to the presence of different types of traders. As evidenced by the existing literature, a liquid market is characterized to have higher tightness, immediacy, depth, and breadth; hence, with this consideration, the study assumes the alternative hypothesis that a positive interdependency exists between markets tightness, immediacy, depth, and breadth. On the other hand, the null hypothesis to be tested was that no interdependency exists between markets tightness, immediacy, depth, and breadth.

Further, to determine suitable lag lengths for the VAR model, the lag length selection criteria are used, VAR estimates are derived over the selected lags, and Impulse Response Functions are used to identify the extent to which one variable responds to its past changes as well as to the shocks in other variables in the model. Finally, the Breusch-Godfrey Serial Correlation LM Test (Breusch, 1978; Godfrey, 1978) is used to trace the existence of serial correlation by assuming the null hypothesis that no serial correlation exists in the model.

3.2 Research Methodology for Objective II

3.2.1 Period of study

The study considers daily data of over 10 years from 1st April 2009 to 31st March 2019 to determine the effect of macroeconomic indicators on the liquidity of the Indian stock market.

3.2.2 Sample Design

Market liquidity is measured in terms of four dimensions: Tightness, Immediacy, Depth, and Breadth. The study uses a final sample of 352 stocks constituting the NIFTY 500 index of NSE India and was selected based on data availability across the select variables of the study. For analyzing the macroeconomic determinants of stock market liquidity in India, a total of 18 macroeconomic indicators were identified based on their profound impact on the stock market, as evidenced by the previous research works (Olokoyo et al., 2020; Parab & Reddy, 2020; Tripathi & Kumar, 2015).

3.2.3 Data Variables and Sources

The study computes daily market liquidity across four liquidity dimensions, namely; tightness, immediacy, depth, and breadth, by using the measures such as Relative Quoted Spread (RQS), Coefficient of Elasticity of Trading (CET), Share Turnover (ST), and Amihud Illiquidity Ratio (AR). Further, macroeconomic indicators include Gold prices (GOLD), Silver prices (SILVER), Foreign Exchange Reserves (FER), Inflation Rate (INFL), Interest Rate (IR), Crude

Oil prices (BRENT), Broad Money (M3), Narrow Money (M1) and Real Effective Exchange Rate (REER) which are in monthly series, Gross Domestic Product (GDP), Gross Fixed Capital Formation (GFCF), Private Final Consumption Expenditure (PFCE), Government Final Consumption Expenditure (GFCE) and Current Account Balance (CAB), Foreign Direct Investment (FDI), Foreign Portfolio Investment (FPI), Imports of Goods and Services (IMP) and Exports of Goods and Services (EXP) are in quarterly series.

For computing liquidity measures, the data on trading volume, bid and ask closing price, the number of shares outstanding, and closing share prices were retrieved from Bloomberg and the Centre for Monitoring Indian Economy (CMIE) Prowess database on a daily basis. The data relating to macroeconomic indicators were extracted from the official websites of the World Bank, Federal Reserve Economic Data (FRED), and Reserve Bank of India (RBI) at monthly and quarterly frequencies.

3.2.4 Methodology

Each of the selected liquidity measures was calculated daily for every stock. These were further aggregated into value-weighted cross-sectional averages and value-weighted time averages to derive monthly and quarterly averages of aggregate market liquidity. Next, to avoid any outliers, these averages of liquidity measures and the selected macroeconomic indicators were converted into natural log values at monthly and quarterly frequencies and were used to derive the empirical results.

In addition, we control for the effect of market-specific factors on stock market liquidity by incorporating Market Returns (RET) and Market Volatility (VOLATILITY) (Chordia et al., 2005; Fernández-Amador et al., 2013). RET is computed monthly and quarterly as the value-weighted average of individual monthly/quarterly stock returns. Similarly, the market's monthly/quarterly VOLATILITY is calculated as the monthly/quarterly standard deviation of the value-weighted average of daily stock returns. Even we control for individual stock characteristics that are known to determine market liquidity by including Trading Volume (TV) and Firm Size (MCAP) (Hameed et al., 2014; Verrecchia & Diamond, 1991). The TV is calculated monthly and quarterly as the value-weighted average of individual monthly/quarterly stock trading volume. In contrast, MCAP is computed as the average of individual monthly/quarterly stock market capitalization. All the control variables are converted into natural log values.

First, descriptive statistics and correlation analysis are performed for all the liquidity, macroeconomic, and control variables. Before a further examination, we test data for stationarity using the ADF test. Although the related literature points out a unidirectional relationship between the macroeconomic indicators and stock market liquidity but some studies (Chu & Chu, 2020; NÆS et al., 2011; Ogunmuyiwa, 2017; Zhu et al., 2004) evidence that stock market liquidity is a leading indicator of the real economic growth and any adverse liquidity shocks result in economic distress. Thus, we expect an endogenous relationship between the selected macroeconomic variables and the liquidity dimensions. VAR approach has been favorably considered as an appropriate model in capturing such endogenous relationships between the variables, specifically between financial and economic data series (Wu & Zhou, 2015), and thereby we specify the following VAR model.

$$Z_t = c + AZ_t + BX_{t-1} + u_t \quad (6)$$

Where: Z_t is the vector of endogenous variables (AR, CET, RQS, ST, CAB, EXP, FDI, FPI, GDP, GFCE, GFCF, IMP, PFCE, BRENT, INFL, FER, GOLD, IR, M1, M3, REER, SILVER)

X_{t-1} are control variables (RET, VOLATILITY, MCAP, VOL),

c is the vector of intercepts,

A is a coefficient matrix of endogenous variables,

B is the coefficient matrix of control variables, and

u_t is the vector of residuals.

The study assumes that PFCE, GFCE, GFCF, GDP, M1, M3, FDI, FPI, FER, CAB, EXP, and REER positively impact stock market liquidity, whereas CPI, IR, GOLD, SILVER, BRENT, and IMP will have an inverse impact.

Next, to determine suitable lag lengths for the VAR model, the lag length selection criteria are used, VAR estimates are derived over the selected lags, and Impulse Response Functions are used to identify the reaction of liquidity dimensions in response to a shock in macroeconomic indicators. Further, the Granger-causality test is used to assess whether the variables have any power to cause the other variables in the VAR model. The study tests the null hypothesis for Granger-causality tests that the lagged endogenous variable (either macroeconomic indicators or stock market liquidity) does not Granger-cause the dependent variable (either stock market liquidity or macroeconomic indicators). Finally, the Breusch-Godfrey Serial Correlation LM

Test (Breusch, 1978; Godfrey, 1978) is used to trace the existence of serial correlation by assuming the null hypothesis that no serial correlation exists in the model.

Since the study focuses on the effects of the macroeconomic indicators and stock market liquidity on each other, only these results are used for analysis. The rest of the results are presented in the Annexure II & III.

3.3 Research Methodology for Objective III

3.3.1 Period of study

The study considers daily data of over 10 years from 1st April 2009 to 31st March 2019 to analyze the effect of market liquidity on the stock returns in the Indian stock market.

3.3.2 Sample Design

Market liquidity is measured in terms of four dimensions: Tightness, Immediacy, Depth, and Breadth. The study uses a final sample of 352 stocks constituting the NIFTY 500 index of NSE India that were qualified based on data availability across the select variables of the study. Further, expected returns of the NIFTY 500 stocks are computed across the portfolios sorted based on size, value, and liquidity.

3.3.3 Data Variables and Sources

The study computes market liquidity across four liquidity dimensions, namely; tightness, immediacy, depth, and breadth, and was measured by using the measures such as Relative Quoted Spread (RQS), Coefficient of Elasticity of Trading (CET), Share Turnover (ST) and Amihud Illiquidity Ratio (AR). Daily expected returns are computed for 352 stocks constituting the NIFTY 500 index of NSE India. Additionally, control variables, namely stock-specific size and book-to-market ratio, are computed along with the market risk. The data on trading volume, bid and ask closing price, the number of shares outstanding, market capitalization, the book to market ratio, and closing share prices were retrieved for the period from 1st April 2009 to 31st March 2019 from Bloomberg and Centre for Monitoring Indian Economy (CMIE) Prowess database on a daily basis.

3.3.4 Methodology

We employ the procedure proposed by Fama & French (1993) and use portfolios to test whether stock liquidity has incremental explanatory power for returns after controlling for other well-known risk factors. We analyze them at the portfolio level rather than the individual stock level since it's possible to obtain robust conclusions based on the group of securities in portfolio settings rather than individual stock basis.

Portfolios are formed annually based on the information available at the start of the financial year: Each year, stocks are sorted according to size, book-to-market equity ratio, and liquidity. The size sort is done by using the annual average of daily values of the market capitalization of individual stocks. The book-to-market ratio sorts is based on the annual average of daily book-to-market ratio obtained by dividing daily book value per share by market capitalization per share. Liquidity sorts are done by sorting the stocks into the portfolios according to the average of each liquidity measure across all stocks in a year. According to the median value, the size portfolios are split into small (S2) and big (S1). We further sort these stocks into high (S1V1 and S2V1) and low (S1V2 and S2V2) book-to-market portfolios in each size portfolio. Then we construct liquidity sort portfolios in each of the size-book to market sort portfolios, and thereby we obtain eight portfolios each for the selected liquidity measures, namely AR (S1V1AR1, S1V1AR2, S1V2AR1, S1V2AR2, S2V1AR1, S2V1AR2, S2V2AR1, S2V2AR2), CET (S1V1CET1, S1V1CET2, S1V2CET1, S1V2CET2, S2V1CET1, S2V1CET2, S2V2CET1, S2V2CET2), RQS (S1V1RQS1, S1V1RQS2, S1V2RQS1, S1V2RQS2, S2V1RQS1, S2V1RQS2, S2V2RQS1, S2V2RQS2) and ST (S1V1ST1, S1V1ST2, S1V2ST1, S1V2ST2, S2V1ST1, S2V1ST2, S2V2ST1, S2V2LST2). Next, the risk factors relating to size (SMB), value (HML) and liquidity (IML) are computed with the help of these portfolios (Refer Annexure V).

Further, summary statistics and stationarity using the ADF test of all the variables across the portfolios are derived. To determine the effect of diverse risk factors on stock returns, we employ the Liquidity Augmented Fama-French Three-Factor Model (Baradarannia & Peat, 2013; Mckane & Britten, 2018; Minović & Živković, 2014). This asset pricing model evaluates the effect of market risk, size, value, and illiquidity risk factors on the expected excess returns. Consistent with the literature, we assume that liquidity (represented by a lower illiquidity risk factor premium) negatively affects stock returns. On the contrary, the null hypothesis assumed was that liquidity does not affect the stock returns.

$$R_{pt} - R_{ft} = \propto_p + \beta_p(MER_t) + \beta_{psmb}SMB_t + \beta_{phml}HML_t + \beta_{piml}IML_t + \varepsilon_{pt} \quad (7)$$

Where, R_{pt} is the monthly average expected excess return on portfolio p in period t.

R_{ft} is the risk-free rate proxied by the 91-day Treasury Bill Rate

$\propto_p$ is the intercept of the portfolio

β_p is the premium for market risk

MER_t is the average monthly market excess return

β_{psmb}, β_{phml}, β_{piml} are the premiums related to risk factors for portfolio sorts on size, book-to-market ratio, and illiquidity, respectively.

SMB_t refers to Small Minus Big - the risk factor related to firm size computed as the difference between the monthly average returns on small and big size portfolios.

HML_t refers to High Minus Low - the risk factor related to the book-to-market value computed as the difference between the monthly average returns on high and low-value portfolios.

IML_t refers to Illiquid Minus Liquid - the risk factor related to liquidity computed as the difference between the monthly average returns on illiquid and liquid portfolios.

The IML_t factor in the model is further extended by the four liquidity measures as follows:

$$R_{pt} - R_{ft} = \propto_p + \beta_p(MER_t) + \beta_{psmb}SMB_t + \beta_{phml}HML_t + \beta_{pimlar}IML(AR)_t + \varepsilon_{pt} \quad (7a)$$

$$R_{pt} - R_{ft} = \propto_p + \beta_p(MER_t) + \beta_{psmb}SMB_t + \beta_{phml}HML_t + \beta_{pimlcet}IML(CET)_t + \varepsilon_{pt} \quad (7b)$$

$$R_{pt} - R_{ft} = \propto_p + \beta_p(MER_t) + \beta_{psmb}SMB_t + \beta_{phml}HML_t + \beta_{pimlrqs}IML(RQS)_t + \varepsilon_{pt} \quad (7c)$$

$$R_{pt} - R_{ft} = \propto_p + \beta_p(MER_t) + \beta_{psmb}SMB_t + \beta_{phml}HML_t + \beta_{pimlst}IML(ST)_t + \varepsilon_{pt} \quad (7d)$$

Where, $IML(AR)_t$ refers to the liquidity risk factor, the difference between the monthly average returns on illiquid and liquid portfolios determined by Amihud Ratio.

$IML(CET)_t$ refers to the liquidity risk factor, the difference between the monthly average returns on illiquid and liquid portfolios determined based on the Coefficient of Elasticity of Trading.

$IML(RQS)_t$ refers to the liquidity risk factor, the difference between the monthly average returns on illiquid and liquid portfolios determined based on Relative Quoted Spread.

$IML(ST)_t$ refers to the liquidity risk factor, the difference between the monthly average returns on illiquid and liquid portfolios determined by Share Turnover.

Finally, we examine the residuals of the developed models using the Serial Correlation LM test (Breusch, 1978; Godfrey, 1978) to check the presence of autocorrelation by assuming the null hypothesis that no serial correlation exists in the model.

3.4 Research Methodology for Objective IV

3.4.1 Period of study

The study considers daily data of over 10 years from 1st April 2009 to 31st March 2019 to analyze the inter-dependencies and causality between market liquidity, volatility, and returns.

3.4.2 Sample Design

Market liquidity is determined by using the Relative Quoted Spread (RQS) measure that represents the tightness dimension of liquidity. Since higher trading costs characterize emerging markets, the same has been evidenced with much more intricacy in the Indian stock market (Pan, 2020), which may have significant implications while examining the volatility-return relationship, thus choosing spread over the other liquidity measures was favorably considered. The study considers a final sample of 352 stocks constituting the NIFTY 500 index of NSE India that were qualified based on data availability across the select variables of the study. Liquidity, volatility, and returns of the NIFTY 500 stocks are computed, and the volatility and liquidity sorted portfolios are constructed for analysis purposes.

3.4.3 Data Variables and Sources

The daily liquidity is measured across the sample stocks using RQS, which represents the bid-ask spread as a percentage of the average bid-ask prices of a security. Next, the log of daily stock return is calculated across all the selected stocks, and volatility is derived as a monthly standard deviation of the log of daily stock return. Liquidity, volatility, and log returns are computed daily using data from Bloomberg and the Centre for Monitoring Indian Economy (CMIE) Prowess database.

3.4.4 Methodology

More prominently, the previous literature indicates a significant relationship between liquidity and volatility in both cross-sectional and time series, as well as causality between liquidity and volatility, which further affects the overall returns. Thus, the study analyzes by grouping the sample stocks into liquidity and volatility based quintiles. The stocks are grouped into quintiles based on their annual average liquidity and volatility rankings at the beginning of each year. Subsequently, liquidity based quintiles (LiqQn1, LiqQn2, LiqQn3, LiqQn4, and LiqQn5) and volatility based quintiles (VolQn1, VolQn2, VolQn3, VolQn4, and VolQn5) are formed. The 1st Quintile comprised liquid or lower RQS (less volatile) stocks, while the 5th Quintile consisted of illiquid or higher RQS (volatile) stocks. Each quintile had a total of 70 stocks (except 1st & 5th Quintile, which consisted of 71 stocks each) throughout the sample period, and the constituting stocks in every quintile were allowed to vary based on changes in their liquidity and volatility-based rankings every year. In order to derive the aggregate variable for each quintile, the daily stock-specific measures were aggregated into cross-sectional averages and further averaged across time to derive monthly averages that were finally used for analysis. Next, summary statistics and correlation analysis are conducted across the portfolio to understand the characteristics of the variables under study and to trace their associations over the study period. Further, the variable data was tested for stationarity by using the ADF test.

The VAR model is employed to analyze the interdependencies between liquidity, volatility, and return. The study models Relative Quoted Spread (RQS), Return Volatility (RV), and Stock Return (SR) using VAR as follows:

$$Z_t = c + AZ_t + u_t \tag{8}$$

Where: Z_t is the vector of endogenous variables (RQS, RV, SR)

c is the vector of intercepts,

A is a coefficient matrix of endogenous variables,

u_t is the vector of residuals.

We expect crucial interdependencies between liquidity, volatility, and return across the Quintiles from the VAR Model. Since trading in volatile conditions demands a higher security premium and causes unwillingness to trade instantly at the most immediate price, thus widens the spread and lowers the present returns. More evidently, emerging markets are susceptible to higher volatilities and liquidity crunch; the study assumes a negative interdependency among liquidity, volatility, and return. On the contrary, the null hypothesis assumed was that there is no interdependency among liquidity, volatility, and return.

Moreover, there has been evidence of causation effects between liquidity, volatility, and return; hence, this study also employs VAR-based Granger Causality tests to trace the causal relationship among them. Finally, we examine the residuals of the developed models using the Serial Correlation LM test (Breusch, 1978; Godfrey, 1978) to check the presence of autocorrelation by assuming the null hypothesis that no serial correlation exists in the model.

Chapter 4

Measurement of Market Liquidity and Relationships between the Liquidity Dimensions

4.1 Introduction

The present section provides the results and discussion relating to the measurement of market liquidity and relationships between the liquidity dimensions. The analysis is drawn for the full sample and the turnover-based quintile portfolios using the data from 2009 to 2019. Market liquidity has been measured using four different dimensional measures: Amihud Illiquidity Ratio, Coefficient of Elasticity of Trading, Relative Quoted Spread, and Share Turnover. The dynamic relationships between the liquidity dimensions are analyzed with the help of the Vector Auto Regression approach, wherein the inferences are drawn based on the VAR coefficients and Impulse Response Functions. In addition to this, the study undertakes descriptive statistics of all variables employed, unit root test for stationarity of the variable data, correlation analysis to understand the presence of any significant relationship between the variables, lag selection criteria to determine suitable lag lengths for the model, VAR analysis to analyze the relationships between variables, Impulse Response Functions to identify the extent to which one variable responds to their past changes and to the shocks in other variables in the model and residual diagnostics to trace the existence of serial correlation. The results for the same are discussed in this section.

4.2 Results and Discussion

4.2.1 Descriptive Statistics

The descriptive statistics of the liquidity measures are given in Table 4.1. They indicate nominal values over the study period. The mean values depict the higher value of CET and the lower value of AR compared to other measures, thereby indicating that large volumes of security can be easily traded in the market without delay in time at a lower price impact. Further, the RQS is higher than ST and AR, thus exhibiting higher trading costs for executing a transaction in the market. Even then, ST has been consistent (as indicated by lower standard deviation) over the period, stabilizing the volume-induced price fluctuations and enhancing immediacy. CET exhibits the highest standard deviation among the liquidity measures, whereas ST has the lowest variation over the study period. The liquidity dimensions exhibit positive skewness.

Table 4.1: Descriptive statistics of the liquidity measures for the full sample.

	Mean	**Standard Deviation**	**Skewness**	**Kurtosis**
AR	-11.0935	0.0421	2.4161	27.2727
CET	-0.1010	0.0733	0.1655	6.7588
RQS	-4.6284	0.0381	0.6739	4.3436
ST	-4.7418	0.0306	2.2563	9.7789

Source: Authors' calculations.

Table 4.2 gives descriptive statistics of liquidity measures across the Quintiles created based on share turnover rankings at the beginning of each year. It exhibits a similar pattern as obtained in the case of the full sample, wherein the value of AR has been the lowest, and that of CET is the highest; also, ST has been consistent and is lower than RQS. Additionally, most of the values are positively skewed.

We observe a huge difference in ST (nearly 29%) between the upper and lower quintiles. Also, AR is lower for the upper quintile, indicating that highly traded stocks generate a lower price impact due to continuity in trading such stocks. Regarding RQS, stocks in the upper quintile witness reduced spreads than those in the lower quintiles. This suggests that it is cheaper to transact in highly traded stocks than in low-traded ones. Moreover, CET is higher for low-traded stocks, but at the same time, it is highly unstable. Interestingly, we notice that AR and RQS are the lowest in the case of stocks in the 2nd Quintile, which means that moderately higher traded stocks have lower trading costs and price impact.

Table 4.2: Descriptive Statistics of the liquidity measures for quintiles.

	Mean	Standard Deviation	Skewness	Kurtosis
1st Quintile				
AR	-10.1564	0.0372	7.1845	55.5355
CET	0.3395	0.0933	-0.9214	10.5800
RQS	-3.9921	0.0477	0.3120	2.5216
ST	-3.6058	0.0366	1.1291	4.5973
2nd Quintile				
AR	-11.9649	0.1320	-3.4395	25.2369
CET	0.4027	0.1079	-0.8538	7.4557
RQS	-4.0436	0.0424	0.4600	3.2477
ST	-4.0562	0.0333	0.2263	2.6909
3rd Quintile				
AR	-10.4904	0.0329	5.9114	64.0840
CET	0.4544	0.1688	-3.8636	24.1581
RQS	-4.0113	0.0421	0.3920	3.0302
ST	-4.2108	0.0421	0.6294	2.8121
4th Quintile				
AR	-10.7693	0.1186	-4.3559	27.5936
CET	0.6079	0.0927	-0.4412	5.8809
RQS	-3.7492	0.0317	3.2396	20.7464
ST	-4.4331	0.0451	0.3737	2.8647
5th Quintile				
AR	-9.3514	0.0393	3.4105	31.9759
CET	0.5008	0.2809	-2.3344	10.0977
RQS	-3.7115	0.0440	0.7361	3.4879
ST	-4.6366	0.0508	0.2409	2.5217

Source: Authors' calculations.

4.2.2 Unit Root Test

To examine the stationarity of the liquidity measures, the study employs the ADF Test for the full sample and across the Quintiles. The results in Table 4 evidence significant results; hence, the null hypothesis is rejected, and thus, all the liquidity measures are stationary.

Table 4.3: ADF Unit root results of the liquidity measures for the full sample and quintiles.

Null Hypothesis	Full Sample	1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile
AR has a unit root	-11.3005***	-11.4125***	-8.1334***	-13.9375***	-11.2513***	-10.64768***
CET has a unit root	-9.7692***	-10.2710***	-11.6484***	-10.8741***	-5.8096***	-9.9524***
RQS has a unit root	-5.0151***	-4.2217***	-4.3940***	-4.6885***	-8.2781***	-4.4243***
ST has a unit root	-5.1128***	-4.4946***	-4.8622***	-3.2033**	-2.7298*	-4.5096***

Source: Authors' calculations.

Note: ***Significant at 1% Level, **Significant at 5% Level, *Significant at 10% Level.

4.2.3 Correlation Analysis

Table 4.4 shows the correlation between the various liquidity measures employed in the VAR model. It shows a positive correlation between ST and RQS in the full sample and the Quintiles. However, the strength of this relationship is lower for less-traded stocks. This is because volume-based trading is quite common in highly traded stocks. Such a form of trading is undertaken to reap adequate returns from the trade, which results in an increased impact on security prices, raises volatility in trade, and induces the spreads to widen to accommodate increased uncertainty (Krishnan & Mishra, 2013). This is also evident from the stocks in the 2nd quintile, which shows that AR is positively correlated with ST and RQS and negatively related to CET. Further, ST is positively related to AR in the case of stocks in the 4th Quintile, which means that the low turnover stocks tend to have a lower price impact.

Table 4.4: Correlation analysis of liquidity measures for the full sample and quintiles.

Null Hypothesis	Full Sample	1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile
No correlation between AR & CET	-0.0322	0.0289	-0.1976**	-0.0403	-0.0655	-0.0481
No correlation between AR & RQS	-0.0744	-0.0243	0.1540*	0.0200	-0.1065	-0.0033
No correlation between AR & ST	0.0886	0.0588	0.2006**	-0.0495	0.2434***	-0.0396
No correlation between CET & RQS	-0.1087	0.0079	0.0107	-0.0332	-0.0545	-0.0393
No correlation between CET & ST	-0.1019	0.0042	0.0122	0.0633	-0.2588	0.0983
No correlation between ST & RQS	0.4291***	06098***	0.6598***	0.5211**	0.1836**	0.2108**

Source: Authors' calculations.

Note: ***Significant at 1% Level, **Significant at 5% Level, *Significant at 10% Level.

4.2.4 Selection of Appropriate Lag Length

In order to identify the relationships between the different liquidity dimensions, appropriate lags have been selected for the full sample and across the quintiles. Table 4.5 depicts that lag two has been selected.

Table 4.5: Results for appropriate lag length.

	Lag	LogL	LR	FPE	AIC	SC	HQ
Full Sample	2	913.7839	183.5567	7.62e-13*	-16.5515*	-16.0549*	-16.3502*
1st Quintile	2	841.3242	38.0465*	3.93e-12*	-14.9134*	-14.0194	-14.5509
2nd Quintile	2	685.8215	150.2930	5.19e-11*	-12.3300*	-11.8333*	-12.1286*
3rd Quintile	2	797.7200	38.9761*	1.19e-11*	-13.8096*	-12.5182	-13.2860
4th Quintile	2	762.6368	37.7141	1.69e-11*	-13.4562*	-12.5622	-13.0937
5th Quintile	2	677.2371	217.8807	6.09e-11*	-12.1711*	-11.6744*	-11.9697*

Source: Authors' calculations.

Note: * indicates lag order selected by the criterion

4.2.5 Vector Autoregression Estimates & Impulse Response Function Analysis

- **VAR estimates for the full sample**

The interactions among the various liquidity measures are tested through VAR and are depicted in Table 4.6. AR and ST are significantly affected by both the lags of RQS but in opposite directions. CET is exogenously determined as it is not significantly dependent on any liquidity measures. On the contrary, CET positively affects ST and RQS, indicating that previous day immediacy raises the present values of spreads and share turnover. The reason is that increased speed of execution ensures the presence of willing counterparties to trade in securities and results in higher trading activity, making future trades costlier on cautious trades.

Regarding ST, the estimates indicate that its previous day lag mainly characterizes it compared to other determining variables. This exhibits that the current trading activity is caused by the past trading activity, which seems to be increasing the future spreads, as evidenced by the positive effect of one day lag of ST on RQS. This suggests that the presence of informed trading in the market drives the next day's turnover, widens the future spreads, and causes an immediate impact on prices (Easley & O'Hara, 1987; Sklavos et al., 2013). Moreover, RQS displays an effect of its lag value that hints at the market's adjustment to the uncertainty brought in by informed traders. At the same time, current values of RQS are negatively dependent on two days lag of ST. This can be because informed trading persuades more uninformed trading, which reduces the information asymmetry (Sankaraguruswamy et al., 2013) and thereby contracts the RQS and stabilizes the price impact. Thus AR and ST witness the opposite effects of RQS at various time lags. The overall results indicate the presence of significant inter-relationships between the liquidity dimensions and hence amount to a rejection of the null hypothesis (H_{1a}).

Table 4.6: VAR results for liquidity measures in the full sample.

	AR	**CET**	**RQS**	**ST**
C	-10.4647*** (-6.3340)	0.3351 (0.1124)	-1.8235** (-2.2988)	-2.0649*** (-3.6415)
AR(-1)	-0.0774 (-0.8381)	0.1386 (0.8313)	-0.0114 (-0.2572)	-0.0304 (-0.9590)
AR(-2)	0.1224 (1.3280)	0.0126 (0.0760)	0.0108 (0.2450)	-0.0517* (-1.6329)
CET(-1)	-0.0653 (-1.2081)	0.1031 (1.0562)	0.0530** (2.0392)	0.0357** (1.9213)
CET(-2)	0.0609 (1.1157)	0.0009 (0.0089)	-0.0290 (-1.1073)	-0.0027 (-0.1456)
RQS(-1)	-0.6082*** (-2.7897)	0.2989 (0.7597)	0.7112*** (6.7943)	-0.1242* (-1.6607)
RQS(-2)	0.5948*** (2.8427)	-0.3330 (-0.8820)	0.1072 (1.06 66)	0.1294* (1.8013)
ST(-1)	0.3219 (1.0950)	-0.6472 (-1.2204)	0.1511* (1.0705)	0.7042*** (6.9805)
ST(-2)	-0.2812 (-0.9902)	0.4167 (0.8134)	-0.3573*** (-2.6208)	0.0469 (0.4814)

Source: Authors' calculations.

Note: Figures represent the coefficients; t-statistics in ( ); ***Significant at 1% Level, **Significant at 5% Level, *Significant at 10% Level.

Next, the results of the Impulse Responses of the full sample are given in Figure 4.1 and support the patterns observed in the VAR model. The Impulse Responses show the extent of response of a variable to a given change (shock or information) in another variable. In this study, they are plotted for 10 months. It is to be noted that all liquidity measures respond quickly to their own lagged changes. In this context, the response of AR to AR and CET to CET diminishes quickly and reaches equilibrium within 3 months, while in the case of RQS to RQS and ST to ST it takes 10 months and shows a concentrated response. Further, it is evident that CET is not dependent on any of the liquidity dimensions and that AR responds negatively to RQS and quickly adjusts within 3 months. Also, a long period opposite impact is observed in RQS and ST on account of shocks in each other.

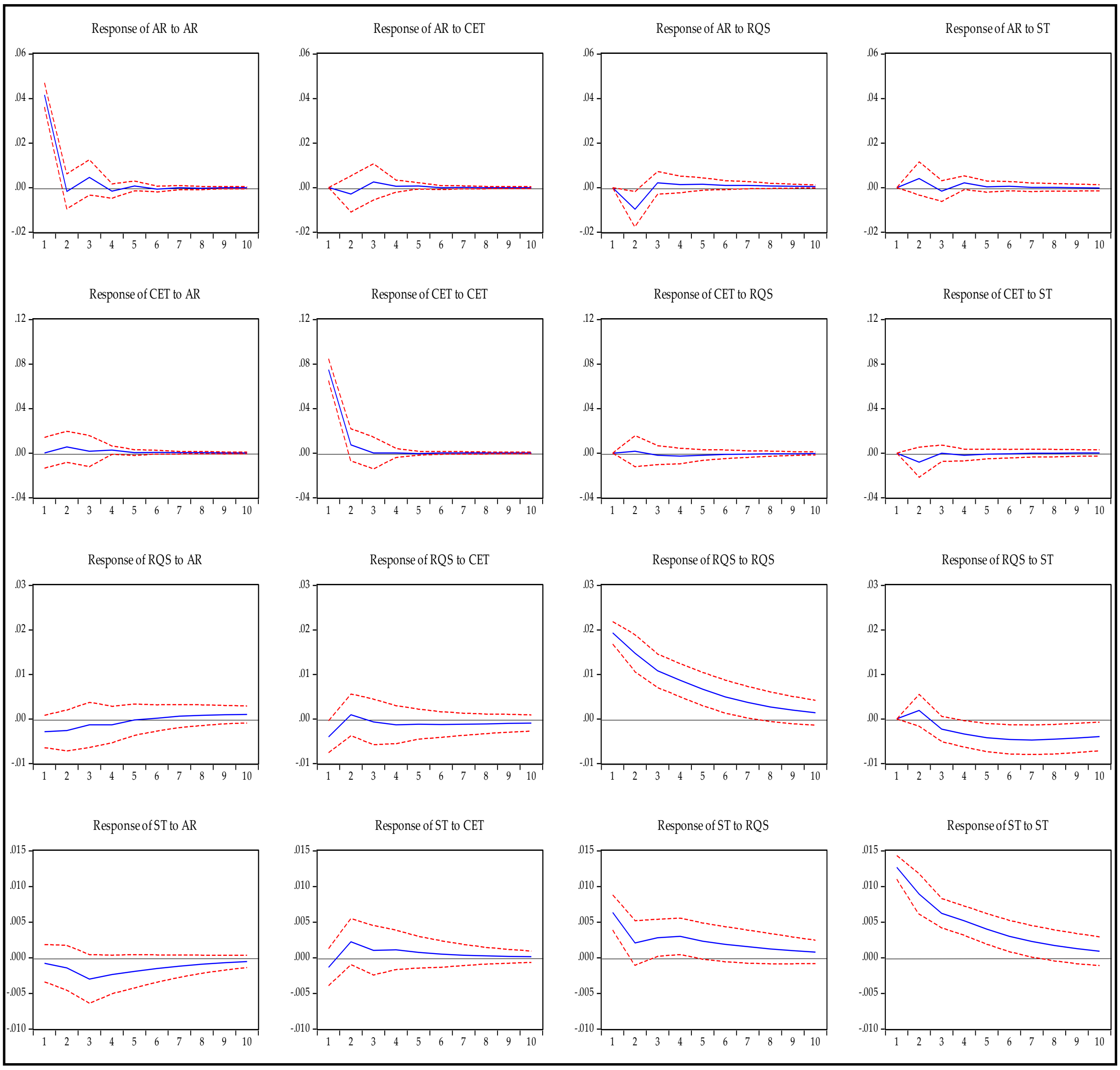

Figure 4.1: Impulse Responses of liquidity measures to a shock in liquidity measures (Full sample)

- **VAR estimates for quintiles**

Table 4.7 shows the VAR estimates for liquidity measures and their interrelationships for the turnover-based quintiles. In the case of 1st Quintile, the two days lag of CET negatively affects AR, whereas RQS and ST are positively dependent. Also, we find that the previous day's AR positively affects RQS. This means that in highly traded stocks, past increased immediacy in trade generates more trading activity, lowers the impact on prices, and increases trading costs and vice versa. It is observed that ST is dependent on its time lag, which means that investors base their trading behavior on referring to the past trading activity, thereby confirming the notion of the information content of turnover. Also, RQS is positively affected by its lagged values and also by the one-day lag of ST. This depicts that trading costs and trading activity of the earlier periods define the crucial movements in present-day costs. This mainly arises when informed traders desire to immediately materialize the benefit of their informational advantage (Wong et al., 2009), and thus a significant increase in their trading activity raises the cost of immediate execution. Moreover, a higher intensity in trading smoothens the flow of information among all market participants and enables optimal trading, which further eases the trading costs. This is evident from the negative effect of two days' ST on RQS. In the 2nd Quintile, AR depends on its previous day lag, whereas interrelationships between ST, CET, and RQS are similar as found in the 1st Quintile.

On the other hand, the 3rd, 4th, and 5th Quintiles describe a similar level of interdependencies between the liquidity measures. The results show that considerable variations in RQS are solely caused by their past movements. This indicates the adjustment of trades towards the risk induced by information asymmetry. Moreover, low turnover stocks have infrequent trading activity and lower dissemination of stock-related information. Thus transactions in such stocks will always be executed at a higher cost and constantly elevate future costs. Additionally, Easley et al.(1996) mention that spreads of low-traded stocks is mainly characterized by higher information asymmetry, which causes a vast effect on their prices. Thus an investor with relevant information can strategize their trades and fulfill their profit motives but relevantly at higher costs. Further, RQS is found to affect the present values of AR positively. Since the increased execution costs will discourage further trades, which will result in a higher impact on their prices. It is seen that ST depends on its lagged values, and AR is negatively affected by two days lag of ST. This means that lower turnover of less traded stocks reduces the present trading activity and broadens the price impact. Remarkably, the immediate execution of trades in low quintiles is facilitated by price impact as CET depends on the one-day lagged value of AR, which prompts the strong presence of informed trading activity. The overall results indicate the presence of significant inter-relationships between the liquidity dimensions across all the quintiles, hence amounting to a rejection of the null hypothesis (H_{1b}).

Table 4.7: VAR results for liquidity measures in quintiles.

	1st Quintile			
	AR	**CET**	**RQS**	**ST**
C	-10.5648***	-2.1773	0.31142	-1.2228*
	(-7.9432)	(-0.6119)	(0.3246)	(-1.7323)
AR(-1)	-0.0429	-0.2569	0.1228**	0.0127
	(-0.4820)	(-1.0783)	(1.9108)	(0.2679)
AR(-2)	-0.0441	-0.1219	0.0177	-0.0474
	(-0.4911)	(-0.5072)	(0.2725)	(-0.9928)
CET(-1)	0.022423	0.052426	0.0290	0.0069
	(0.6278)	(0.5488)	(1.1274)	(0.3643)
CET(-2)	-0.1451***	-0.1257	0.0658***	0.0604***
	(-4.1082)	(-1.3299)	(2.5839)	(3.2209)
RQS(-1)	0.0880	0.0709	0.5916***	-0.0643
	(0.6566)	(0.1976)	(6.1165)	(-0.9041)
RQS(-2)	-0.1137	0.0803	0.2474***	0.1243*
	(-0.8477)	(0.2239)	(2.5574)	(1.7468)
ST(-1)	0.2670	0.3095	0.3548***	0.8386***
	(1.4380)	(0.6232)	(2.6486)	(8.5095)
ST(-2)	-0.1183	-0.1150	-0.4766***	-0.1399
	(-0.6504)	(-0.2364)	(-3.6335)	(-1.4493)
	2nd Quintile			
	AR	**CET**	**RQS**	**ST**
C	-5.6276***	0.0081	-0.8153**	-1.3601***
	(-3.0790)	(0.0050)	(-2.1866)	(-3.9547)
AR(-1)	0.2296***	0.0012	-0.0159	-0.0004

	(2.3798)	(0.0145)	(-0.8090)	(-0.0228)
AR(-2)	-0.0975	0.0054	0.0429**	0.0013
	(-1.0437)	(0.0654)	(2.2526)	(0.0771)
CET(-1)	0.0607	-0.0936	0.0064	0.0413**
	(0.5449)	(-0.9470)	(0.2816)	(1.9703)
CET(-2)	0.0080	-0.0761	0.0212	0.0406**
	(0.0711)	(-0.7664)	(0.9296)	(1.9286)
RQS(-1)	-0.3317	-0.1216	0.6564***	-0.0392
	(-0.6632)	(-0.2742)	(6.4338)	(-0.4167)
RQS(-2)	0.4988	-0.1202	0.0654	0.2320***
	(1.0271)	(-0.2790)	(0.6597)	(2.5392)
ST(-1)	0.4512	0.6688	0.2029*	0.5940***
	(0.8311)	(1.3885)	(1.8323)	(5.8147)
ST(-2)	0.5623	-0.5613	-0.2031*	-0.1160
	(1.0167)	(-1.1439)	(-1.8006)	(-1.1148)

	3rd Quintile			
	AR	**CET**	**RQS**	**ST**
C	-15.0135***	14.6138*	-0.7507	-0.3359
	(-9.3960)	(1.7211)	(-0.5720)	(-0.2744)
AR(-1)	-0.2807***	0.3925	-0.0133	0.0077
	(-3.0270)	(0.7965)	(-0.1741)	(0.1088)
AR(-2)	-0.1127	0.9738**	0.0319	0.0352
	(-1.2194)	(1.9831)	(0.4198)	(0.4970)
CET(-1)	0.0069	-0.0261	-0.0037	0.0339***
	(0.3907)	(-0.2770)	(-0.2518)	(2.4913)
CET(-2)	0.0270	-0.0632	-0.0039	0.0012
	(1.4642)	(-0.6449)	(-0.2543)	(0.0827)
RQS(-1)	-0.1512	-0.1067	0.6464***	-0.0505
	(-1.1006)	(-0.1462)	(5.7312)	(-0.4798)

RQS(-2)	0.2191	-0.6844	0.0890	0.0162
	(1.7200)	(-1.0110)	(0.8502)	(0.1661)
ST(-1)	0.0783	-0.3188	0.1269	0.7519***
	(0.5393)	(-0.4131)	(1.0638)	(6.7589)
ST(-2)	-0.2334*	1.0218	-0.0999	0.0979
	(-1.6601)	(1.3673)	(-0.8654)	(0.9090)
	4th Quintile			
	AR	**CET**	**RQS**	**ST**
C	-9.2337***	-0.2618	-1.4027***	-0.4969
	(-4.5924)	(-0.1539)	(-4.6895)	(-0.9145)
AR(-1)	0.0954	-0.1258*	-0.0040	0.0310
	(1.0594)	(-1.6513)	(-0.3000)	(1.2752)
AR(-2)	0.0909	0.0939	0.0310***	-0.0076
	(1.0398)	(1.2688)	(2.3865)	(-0.3233)
CET(-1)	0.0477	-0.0021	-0.0058	0.0328
	(0.4304)	(-0.0224)	(-0.3496)	(1.0976)
CET(-2)	0.1172	0.1899**	-0.0132	0.02370
	(1.0637)	(2.0366)	(-0.8069)	(0.7957)
RQS(-1)	0.5641	0.2278	0.4314***	-0.0481
	(0.9054)	(0.4321)	(4.6549)	(-0.2856)
RQS(-2)	-1.0725**	0.2400	0.0943	0.0319
	(-2.1851)	(0.5779)	(1.2916)	(0.2404)
ST(-1)	0.5292	-0.1940	0.0558	0.5707***
	(1.4636)	(-0.6339)	(1.0365)	(5.8404)
ST(-2)	-0.1831	-0.2948	-0.0388	0.2818***
	(-0.5154)	(-0.9804)	(-0.7333)	(2.9349)
	5th Quintile			
	AR	**CET**	**RQS**	**ST**
C	-9.1782***	7.0681	-1.5461**	-0.1688
	(-7.1681)	(0.7371)	(-1.9260)	(-0.1419)
AR(-1)	-0.0242	0.6839	-0.0554	0.0880
	(-0.2668)	(1.0089)	(-0.9770)	(1.0458)

AR(-2)	0.0601	0.0606	-0.0521	-0.0328
	(0.6625)	(0.0891)	(-0.9162)	(-0.3887)
CET(-1)	-0.0020	0.0712	0.0092	0.0015
	(-0.1584)	(0.7434)	(1.1455)	(0.1259)
CET(-2)	-0.0016	0.0898	-0.0076	-0.0073
	(-0.1222)	(0.9418)	(-0.9475)	(-0.6149)
RQS(-1)	-0.2472*	-0.2044	0.7624***	0.1828
	(-1.6318)	(-0.1801)	(8.0268)	(1.2982)
RQS(-2)	0.3104**	-0.2443	-0.0336	-0.0257
	(2.1613)	(-0.2271)	(-0.3733)	(-0.1925)
ST(-1)	0.0775	0.7961	0.0705	0.5582***
	(0.7525)	(1.0326)	(1.0923)	(5.8346)
ST(-2)	-0.1633*	-0.5043	0.0305	0.1673*
	(-1.6241)	(-0.6695)	(0.4844)	(1.7902)

Source: Authors' calculations.

Note: Figures represent the coefficients; t-statistics in ( ); *** significant at 1%,
** significant at 5%, * significant at 10%.

Furthermore, Figure 4.2 to Figure 4.6 depicts the Impulse Responses of liquidity measures across the Quintiles over an observation period of 10 months, which validate the relationships obtained in the VAR model. The Impulse Responses exhibit an instant response to their shocks wherein the response of AR to AR and CET to CET reaches equilibrium within 4 months, while it requires 10 months for RQS and ST to absorb their changes. Though the intensity of the response of liquidity measures to the shocks eases in the lower quintiles, the responses of RQS to RQS amplify and take a long time to reach parity. This validates the notion that infrequently traded stocks have higher execution risk and are transacted at inflated trading costs.

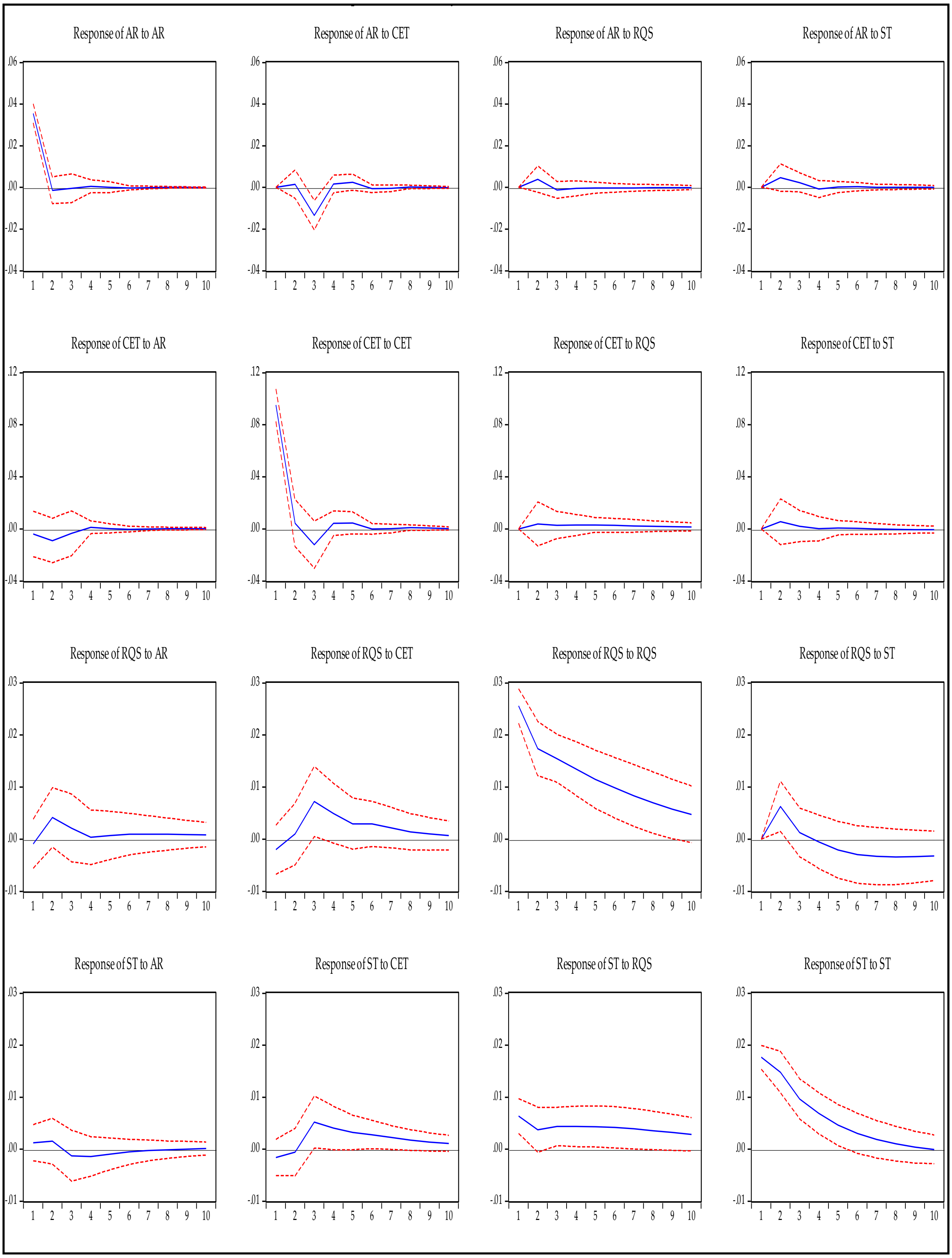

Figure 4.2: Impulse Responses of liquidity measures to a shock in liquidity measures (1st Quintile)

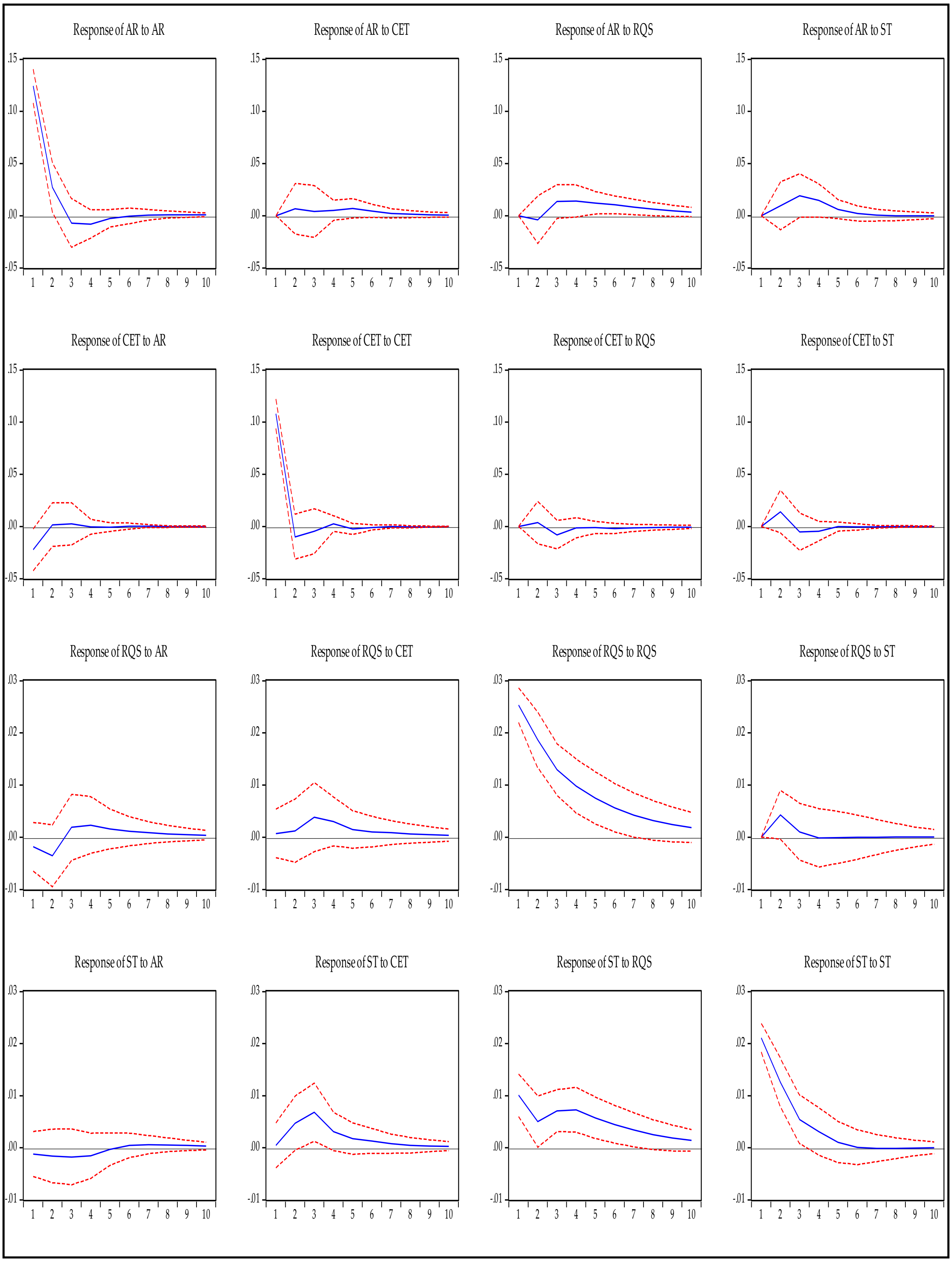

Figure4.3: Impulse Responses of liquidity measures to a shock in liquidity measures (2nd Quintile)

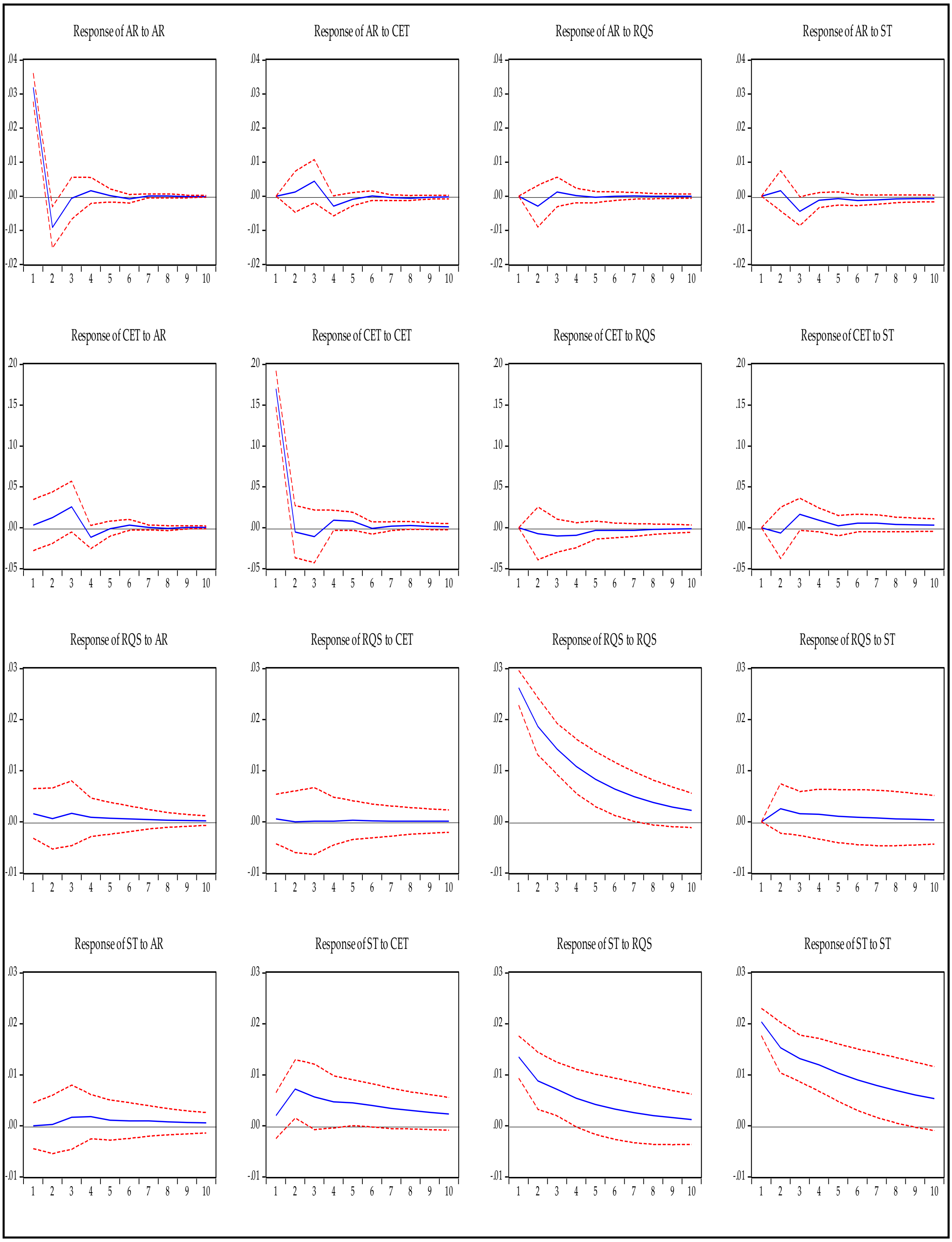

Figure4.4: Impulse Responses of liquidity measures to a shock in liquidity measures (3rd Quintile)

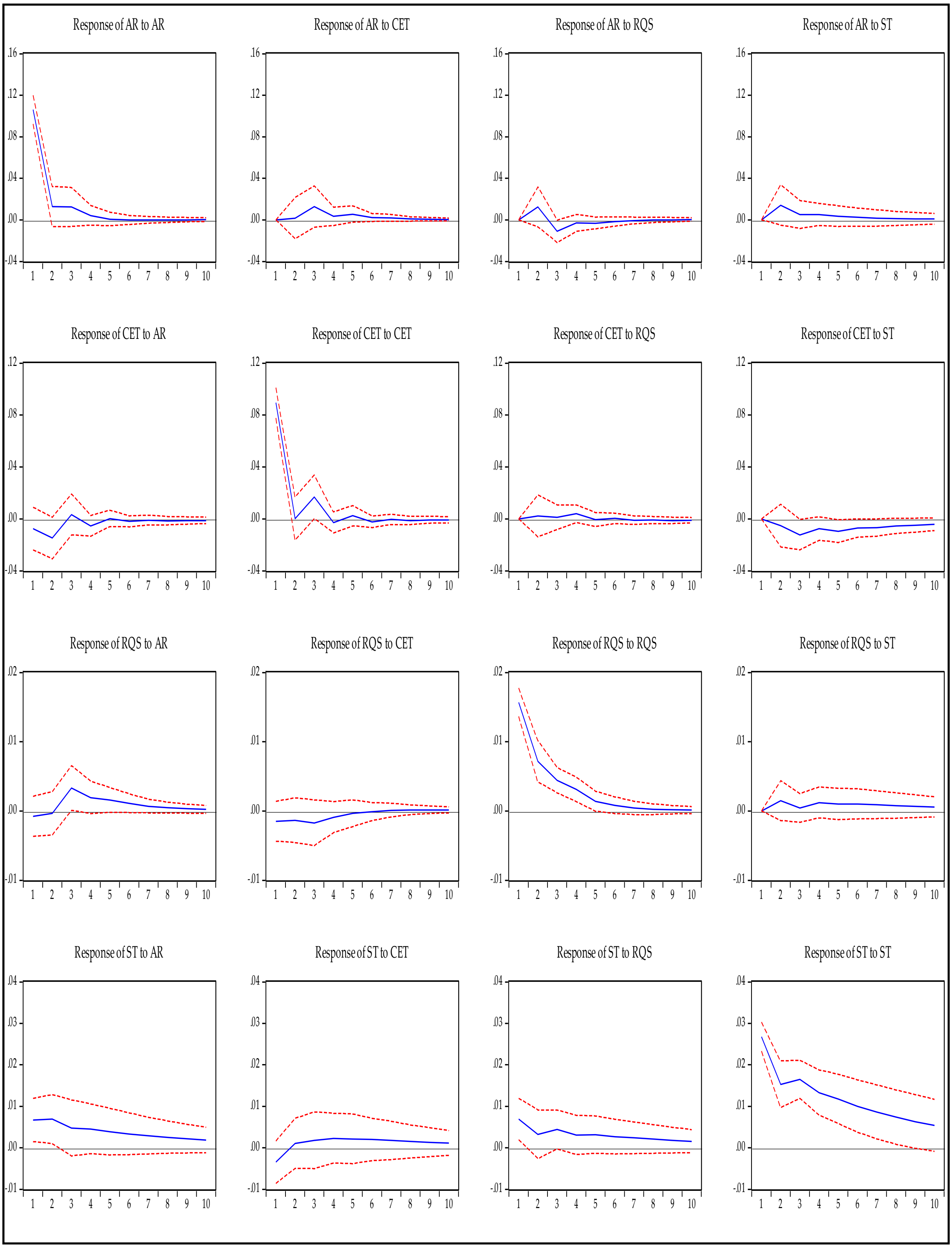

Fig 4.5: Impulse Responses of liquidity measures to a shock in liquidity measures (4th Quintile)

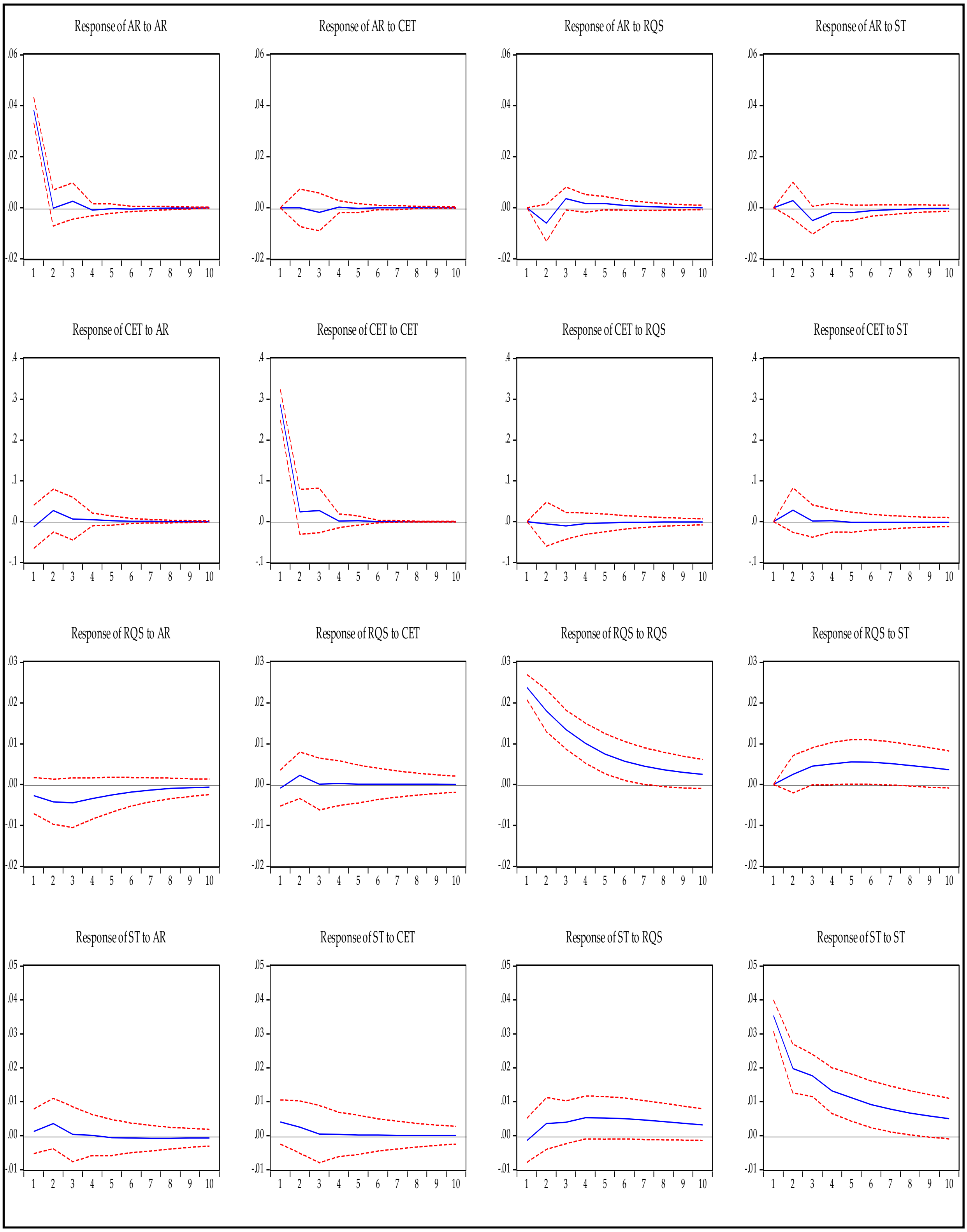

Fig 4.6: Impulse Responses of liquidity measures to a shock in liquidity measures (5th Quintile)

4.2.6 Residual Diagnostics

Table 4.8 presents the Breusch-Godfrey Serial Correlation LM Test results for the models examining the relationship between liquidity measures for the full sample and across quintiles. The test results indicate that p-values are more than the required level of significance, which results in the non-rejection of the null hypothesis. This signifies no presence of serial correlation in the models used for analysis.

Table 4.8: Breusch-Godfrey Serial Correlation LM Test results of the models examining the relationship between liquidity measures.

	Lag	**F-statistic**	**P-value**
Full Sample	2	17.4369	0.3579
1st Quintile	2	10.8941	0.8160
2nd Quintile	2	12.4237	0.7143
3rd Quintile	2	16.10137	0.4459
4th Quintile	2	13.6063	0.6280
5th Quintile	2	13.37952	0.6448

Source: Authors' calculations.

Chapter 5

Effect of Macroeconomic Indicators on the Market Liquidity

5.1 Introduction

The present section provides the results and discussion relating to the effect of macroeconomic indicators on the liquidity of Indian stock market. Market liquidity has been measured using four different dimensional measures: Amihud Illiquidity Ratio, Coefficient of Elasticity of Trading, Relative Quoted Spread, and Share Turnover. A total of 18 macroeconomic indicators reported on monthly and quarterly time frequencies are selected for the study; thus, the analysis is also done at monthly and quarterly time frames. The effect of macroeconomic indicators on liquidity dimensions is analyzed with the help of the Vector Auto Regression approach, wherein the inferences are drawn based on the VAR-based Granger Causality tests and Impulse Response Functions. In addition to this, the study undertakes descriptive statistics of all variables employed, unit root test for stationarity of the variable data, correlation analysis to understand the presence of any significant relationship between the variables, lag selection criteria to determine suitable lag lengths for the model, VAR based Granger Causality tests to analyze the causal relationships between variables, Impulse Response Functions to understand the responsiveness of each variable towards the changes in other variables as well as in its own and residual diagnostics using Breusch-Godfrey Serial Correlation LM Test to trace the existence of serial correlation. The results for the same are discussed in this section.

5.2 Results and Discussion

5.2.1 Descriptive Statistics

In Table 5.1 Panel A, CET is higher among the liquidity variables, and ST is lower than other liquidity measures. This indicates a higher immediacy and lower trading activity. Also, transaction costs are higher for a given trading volume as represented by higher RQS, and the price impact of trades is lower, as indicated by lower AR. Concerning macroeconomic variables, PFCE is higher, and FPI is the lowest. The control variables indicate a higher MCAP and lower VOLATILITY. CET, CAB, and RET have substantial deviations, whereas ST, GFCF, and MCAP display more downward variations.

In Table 5.1 Panel B, AR has been the highest among liquidity measures, whereas ST is the lowest, thus indicating a higher trading impact on prices and lower trading activity. Also, M3 has been the most elevated, and REER is the weakest compared to other macroeconomic variables. RET is higher, and VOLATILITY is lower. Moreover, CET, IR, and RET have been highly volatile, whereas ST, CPI, and TV show lower deviations.

Table 5.1: Descriptive statistics of market liquidity, macroeconomic indicators, and control variables.

	Mean	**Standard Deviation**	**Skewness**	**Kurtosis**
Panel A. Quarterly variables				
AR	-0.0060	0.2161	0.0039	9.3662
CET	0.0024	0.4943	1.0744	4.6104
RQS	-0.0049	0.0794	-1.0952	6.4258
ST	-0.0062	0.0463	-0.4381	4.0878
CAB	-0.0022	2.6556	0.1653	18.7869
EXP	0.0309	0.0737	-0.1244	5.2719
FDI	0.0160	0.8142	0.0078	3.2472
FPI	-0.0196	1.0481	0.3299	4.7807
GDP	0.0318	0.0496	-0.3086	2.8203
GFCE	0.0282	0.2100	-0.0450	1.8509
GFCF	0.0295	0.0466	-0.1851	2.5985
IMP	0.0287	0.0584	0.0320	2.3752
PFCE	0.0323	0.0525	0.7047	2.8752
RET	-0.0065	0.7287	0.3020	4.7218
VOLATILITY	-0.0286	0.3273	-0.1574	2.3377
MCAP	0.0026	0.0051	0.1716	3.0767
TV	0.0013	0.0118	0.4781	3.3780
Panel B. Monthly variables				
AR	-0.0003	0.1405	0.2202	14.6946
CET	-0.0010	0.2267	0.0519	4.7587

RQS	-0.0029	0.0529	-0.3537	4.2078
ST	-0.0020	0.0375	-0.0738	3.2931
BRENT	0.0022	0.0792	-0.7184	4.0600
INFL	0.0061	0.0087	0.7376	6.1729
FER	0.0068	0.0213	-0.5582	6.0335
GOLD	0.0059	0.0341	0.6093	4.2705
IR	0.0077	0.1890	-0.1222	5.2437
M1	0.0079	0.0376	-2.6408	30.0727
M3	0.0084	0.0143	-3.9985	34.9721
REER	0.0010	0.0166	-0.3457	3.3817
SILVER	0.0044	0.0611	0.3576	3.1575
RET	0.0019	0.7922	-0.3921	11.4229
VOLATILITY	-0.0120	0.4307	-0.1064	4.1985
MCAP	-0.0039	0.0532	-10.7012	16.0221
TV	0.0005	0.0109	-0.0474	2.9474

Source: Authors' calculations.

5.2.2 Unit Root Test

The study employs the ADF Test for monthly and quarterly variable series to examine the stationarity of the liquidity measures, macroeconomic indicators, and control variables. The ADF unit root results are shown in Table 5.2. It evidences significant effects; hence, the null hypothesis that the variables are non-stationary is rejected and that all the variables are stationary at level.

Table 5.2: ADF Unit root results of market liquidity, macroeconomic indicators, and control variables.

Null Hypothesis	**ADF test statistic**	**Null Hypothesis**	**ADF test statistic**
Quarterly variables		**Monthly variables**	
AR has a unit root	-10.533***	AR has a unit root	-9.9700***
CET has a unit root	-9.8920***	CET has a unit root	-6.0252***
RQS has a unit root	-6.6927***	RQS has a unit root	-10.3607***
ST has a unit root	-5.6219***	ST has a unit root	-12.8746***
CAB has a unit root	-10.3307***	FER has a unit root	-10.5798***
EXP has a unit root	-9.2836***	GOLD has a unit root	-9.3069***

FDI has a unit root	-5.7278***	IR has a unit root	-18.1937***
GDP has a unit root	-2.5477***	M1 has a unit root	-8.2041***
FPI has a unit root	-4.9217***	M3 has a unit root	-11.2412***
GFCE has a unit root	-3.3445***	SILVER has a unit root	-9.2277***
GFCF has a unit root	-2.0481***	REER has a unit root	-9.0928***
IMP has a unit root	-6.5228***	BRENT has a unit root	-9.2277***
PFCE has a unit root	-11.5607***	INFL has a unit root	-6.5345***
RET has a unit root	-10.2050***	RET has a unit root	-9.7377***
VOLATILITY has a unit root	-5.1719***	VOLATILITY has a unit root	-13.2853***
MCAP has a unit root	-5.1345***	MCAP has a unit root	-10.0586***
TV has a unit root	-6.0463***	TV has a unit root	-14.4404***

Source: Authors' calculations.

Note: ***1% level of significance.

5.2.3 Correlation Analysis

The correlation results of the quarterly series in Table 5.3 Panel A show that AR is not significantly related to any of the employed macroeconomic indicators and control variables among the market liquidity measures. CET is positively related to EXP and GFCF, which can be because the growth in exports and higher capital formation contribute to increased investment, especially in developing nations (Sundararajan, 2014), promoting higher immediacy in the market. CET is negatively related to PFCE, which indicates that lower private expenditure on consumption enhances market immediacy. Further, RQS is negatively related to MCAP, suggesting that trading in small firm stocks carries higher transaction costs due to their illiquid characteristic (Kissell, 2013). Moreover, the transaction costs increase with the trading volume and market volatility, as depicted by the positive relationship between RQS, TV, and VOLATILITY. ST is negatively related to RET and positively to TV. This suggests that an increased trading volume for stocks will foster trading activity and lower the overall return on account of higher market liquidity. Additionally, ST and VOLATILITY are positively correlated, which hints that trades are executed in an asymmetric informational environment (Jones, 2005).

The correlation results of the monthly series in Table 5.3 Panel B show that AR is positively related to INFL and REER, implying a higher price impact of trades during a higher inflationary trend and appreciation in domestic currency. Further, it is seen that higher price impact is not duly compensated by higher returns as depicted by the negative relationship between AR and RET, thereby indicating depressed investment prospects. CET is negatively related to TV and VOLATILITY, indicating that market immediacy is enhanced during lower trading volume and market volatility periods. Moreover, RQS is negatively related to M1 and REER, which means that a rise in narrow money and appreciation in domestic currency lowers the transaction costs because of increased investment inflow. In contrast, RQS widens during increasing oil prices, as indicated by the positive relation between RQS and BRENT.

On the other hand, RQS and ST are positively correlated with TV and VOLATILITY, thus indicating trading in asymmetric information as observed in the quarterly series of these variables. Also, RQS rises during an increase in FER, implying that higher foreign assets resemble a higher liability because of higher foreign investment receipts. Lastly, RQS has a positive relationship with GOLD, which indicates that gold prices rise when transaction costs are high, thereby confirming with safe investment property of gold as a security. However, ST is found to be positively related with GOLD.

Table 5.3: Correlation analysis of market liquidity, macroeconomic indicators, and control variables.

	AR	**CET**	**RQS**	**ST**
Panel A. Quarterly variables				
CAB	0.0328	0.1569	0.1166	-0.0151
EXP	-0.0782	0.2674*	0.0126	-0.0193
FDI	0.1521	-0.2202	0.1108	0.0004
GDP	-0.1004	0.0039	0.0522	0.0079
FPI	-0.0562	-0.2703	0.1725	-0.2779
GFCE	-0.0584	0.0582	0.0671	0.1105
GFCF	-0.0834	0.2980*	-0.1019	0.0098
IMP	-0.2293	-0.0440	-0.1557	-0.1972
PFCE	0.0476	-0.3264**	-0.0540	-0.1042
RET	0.1202	-0.2389	-0.0247	-0.4742***
VOLATILITY	-0.1428	-0.1691	0.6893***	0.4826***
MCAP	0.0955	-0.0951	-0.3958***	-0.2230
TV	0.1835	0.0969	0.3957***	0.8593***

Panel B. Monthly variables				
BRENT	-0.048	0.1248	0.1656*	-0.0347
INFL	0.1784**	0.0482	-0.1289	-0.1186
FER	-0.0316	-0.0689	0.3224***	0.1251
GOLD	0.0939	-0.0516	0.3127***	0.1795**
IR	-0.1292	-0.033	-0.1312	-0.139
M1	-0.027	-0.0455	-0.1521*	-0.074
M3	0.0234	-0.0227	-0.0725	-0.0516
REER	0.1881**	0.1184	-0.3359***	-0.0562
SILVER	0.0769	-0.0166	0.0988	0.1342
RET	-0.2120**	-0.0089	0.2696***	0.0391
VOLATILITY	0.0719	-0.2693***	0.4963***	0.3743***
MCAP	0.002	0.0508	0.0219	-0.0415
TV	0.0302	-0.1644*	0.2907***	0.7740***

Source: Authors' calculations.

Note: ***1% level of significance, ** 5% level of significance, *10% level of significance.

5.2.4 Selection of Appropriate Lag Length

Appropriate lags are selected to evaluate the effect of macroeconomic indicators on the stock market liquidity. Table 5.4 depicts that for most of the quarterly indicators, a lag of 1 has been selected, whereas lag 2 is selected for GDP, GFCE, and PFCE. On the other hand, lag 8 is chosen for most of the monthly indicators except for M1 and IR, for which lag 3 and for M3, lag 4 was selected.

Table 5.4: Results for appropriate lag length.

Variables	Lag	LogL	LR	FPE	AIC	SC	HQ
			Quarterly variables				
CAB	1	410.9889	152.6729*	2.67e-19*	-17.3507	-13.4323	-15.9693*
EXP	1	541.8816	148.3028*	2.26e-22*	-24.4260*	-20.5076	-23.0446
FDI	1	461.7488	160.6661*	1.72e-20*	-20.0945	-16.1761	-18.7131*
FPI	1	455.0084	143.6617*	2.47e-20*	-19.7302*	-15.8117	-18.3487
GDP	2	681.5484	112.5612*	2.21e-23*	-27.5972*	-20.1522	-24.9725*
GFCE	2	591.1821	84.5520	2.92E-21	-22.7125*	-15.2675	-20.0878

GFCF	1	559.1387	146.3587*	8.88e-23*	-25.3588*	-21.4404	-23.9774
IMP	1	546.2038	138.2634*	1.79e-22*	-24.6597*	-20.7412	-23.2782
PFCE	2	644.8585	85.5131	1.61E-22	-25.6140*	-18.1689	-22.9892
Monthly variables							
BRENT	8	1863.1100	94.6677	3.12E-20	-21.7317*	-5.6942	-15.2258
CPI	8	2156.9770	100.3214	1.56E-22	-27.0266*	-10.9891	-20.5207
FER	8	2057.2220	111.8681*	9.44E-22	-25.2292*	-9.1917	-18.7233
GOLD	8	2004.5400	123.4418*	2.44E-21	-24.2800*	-8.2425	-17.7741
M1	3	1469.2150	133.0608	2.67e-21*	-21.9318	-15.7804	-19.4364
IR	3	1314.4880	130.5549	4.34e-20*	-19.1439	-12.9926	-16.6485
M3	4	1640.3360	103.8256*	6.04E-22	-23.5556	-15.4270	-20.2581
REER	8	2081.7920	108.6953*	6.06E-22	-25.6719*	-9.6344	-19.1660
SILVER	8	1916.9830	128.6907*	1.18E-20	-22.7024*	-6.6649	-16.1965

Source: Authors' calculations.

Note: * indicates lag order selected by the criterion

5.2.5 Causation Effect between Stock Market Liquidity and Macroeconomic Indicators

From Table 5.5 Panel A, we find that only a few macroeconomic indicators are causing the various dimensions of market liquidity. CAB causes AR and RQS, FPI causes RQS and GFCF causes AR. On the other hand, Table 5.5 Panel B discloses that all the dimensional measures show causality across many macroeconomic indicators. AR causes CAB and GFCF, CET causes GFCE and PFCE, RQS causes FDI and FPI, ST causes GDP and GFCE. These results reveal bidirectional causality between AR and CAB, AR and GFCF, RQS, and FPI.

Table 5.5: Granger causality test results for quarterly variables.

Panel A. Macroeconomic variables and market liquidity				
Variables	**Macroeconomic variable to AR**	**Macroeconomic variable to CET**	**Macroeconomic variable to RQS**	**Macroeconomic variable to ST**
CAB	27.5970***	1.7706	7.6400**	1.8504
EXP	3.0379	3.1151	0.9280	2.3730
FDI	4.2677	3.1207	0.1369	3.2015
GDP	1.8461	0.8046	0.3509	5.9218

FPI	0.7429	1.0816	11.9353***	3.2839
GFCE	2.8819	4.2162	0.5473	4.6756
GFCF	7.2102*	2.6364	2.6320	0.6482
IMP	3.3264	4.2882	0.3462	2.9857
PFCE	4.0974	4.5615	0.4629	0.8766

Panel B. Market liquidity and Macroeconomic variables				
Variables	**AR to Macroeconomic variable**	**CET to Macroeconomic variable**	**RQS to Macroeconomic variable**	**ST to Macroeconomic variable**
CAB	15.0520***	0.4065	2.4390	1.0480
EXP	4.9809	0.3043	0.2653	1.5219
FDI	4.2677	2.9815	16.7536***	0.6154
GDP	1.8461	0.8046	4.7028	10.7104***
FPI	0.7429	3.0413	6.6639*	1.5858
GFCE	2.8819	19.7920	0.4618	7.7591**
GFCF	7.2102*	5.7287	0.9302	2.2859
IMP	3.3264	4.2882	1.6769	2.8155
PFCE	4.0974	10.7302***	1.0618	4.7647

Source: Authors' calculations.

Note: ***1% level of significance, ** 5% level of significance, *10% level of significance.

From Table 5.6 Panel A, we find that GOLD causes ST. M1 drives CET and ST. M3 causes CET and RQS. REER causes CET. SILVER causes CET and ST. On the other hand, Table 5.6 Panel B discloses that AR causes GOLD. CET causes INFL, GOLD, IR, M3, and REER. RQS causes M3. ST causes IR, M1, M3, and REER. There is bidirectional causality between M1-ST, M3-RQS-CET, and REER-CET.

Table 5.6: Granger causality test results for monthly variables

Panel A. Macroeconomic variables and market liquidity				
Variables	**Macroeconomic variable to AR**	**Macroeconomic variable to CET**	**Macroeconomic variable to RQS**	**Macroeconomic variable to ST**
BRENT	2.2533	2.1385	5.0476	2.1902
CPI	1.9461	3.6817	1.3546	1.0352
FER	4.9311	1.9056	0.7634	1.7975
GOLD	3.3741	5.2256	3.1830	6.4557*

IR	0.9083	3.0939	3.7826	2.7287
M1	0.2125	16.4208***	5.4833	6.4655*
M3	0.7271	10.6767***	8.7981**	3.5544
REER	2.8123	7.0075*	0.6357	1.9139
SILVER	4.9179	9.0976**	4.1063	9.7300**

Panel B. Market liquidity and Macroeconomic variables

Variables	AR to Macroeconomic variable	CET to Macroeconomic variable	RQS to Macroeconomic variable	ST to Macroeconomic variable
BRENT	1.8842	4.2765	0.1452	2.4047
CPI	2.4600	10.6853***	2.5449	3.9690
FER	0.8473	0.7653	1.8224	0.7307
GOLD	7.9773**	8.4642**	3.2421	3.2644
IR	3.3615	8.3540**	3.9491	7.9007**
M1	0.4786	4.4570	1.5952	11.3106***
M3	0.5444	6.8572*	6.8069*	6.4492*
REER	3.4584	6.0402*	2.8142	7.9002**
SILVER	4.8797	2.2769	0.7680	1.3774

Source: Authors' calculations.

Note: Figures represent the Chi-sq values; ***1% level of significance, ** 5% level of significance, *10% level of significance.

5.2.6 Impulse Response Analysis

From Figures 5.1 to 5.4, we find that the immediate lag of FDI has a positive impact on AR. A higher ownership concentration by foreign investors leads to a higher price impact on account of information asymmetry. Since these investors gain direct ownership control in the management of the host company and have longer investment durations and thus tend to have an informational advantage over the other investors. It is also found that the price impact increases during a lower CAB, as observed through a negative impact of the lag of CAB on AR. The current account deficit indicates the country's liability, mainly funded through significant foreign direct investments (Behera and Yadav 2019), contributing to higher illiquidity in the stock market. Even the transaction costs (RQS) witness a negative impact of the lag of CAB.

Moreover, CET is increasing due to higher imports in the country (as indicated by the positive effect of the second lag of IMP on CET) since higher imports foster higher foreign investments (Fontagne, 1999), which tend to improve the execution time of trades. But such increased execution speed is available at a higher transaction cost. It results in a broader volume impact on stock prices, as depicted by the positive effect of the immediate lag of FPI on RQS and of the lag of IMP and FDI on AR. The impact of all these variables shows a persistent long-run impact on all the dimensional measures of liquidity. This results in rejecting the null hypothesis (H2c) and say macroeconomic indicators (FDI, CAB, IMP, and FPI) have a significant effect on market liquidity.

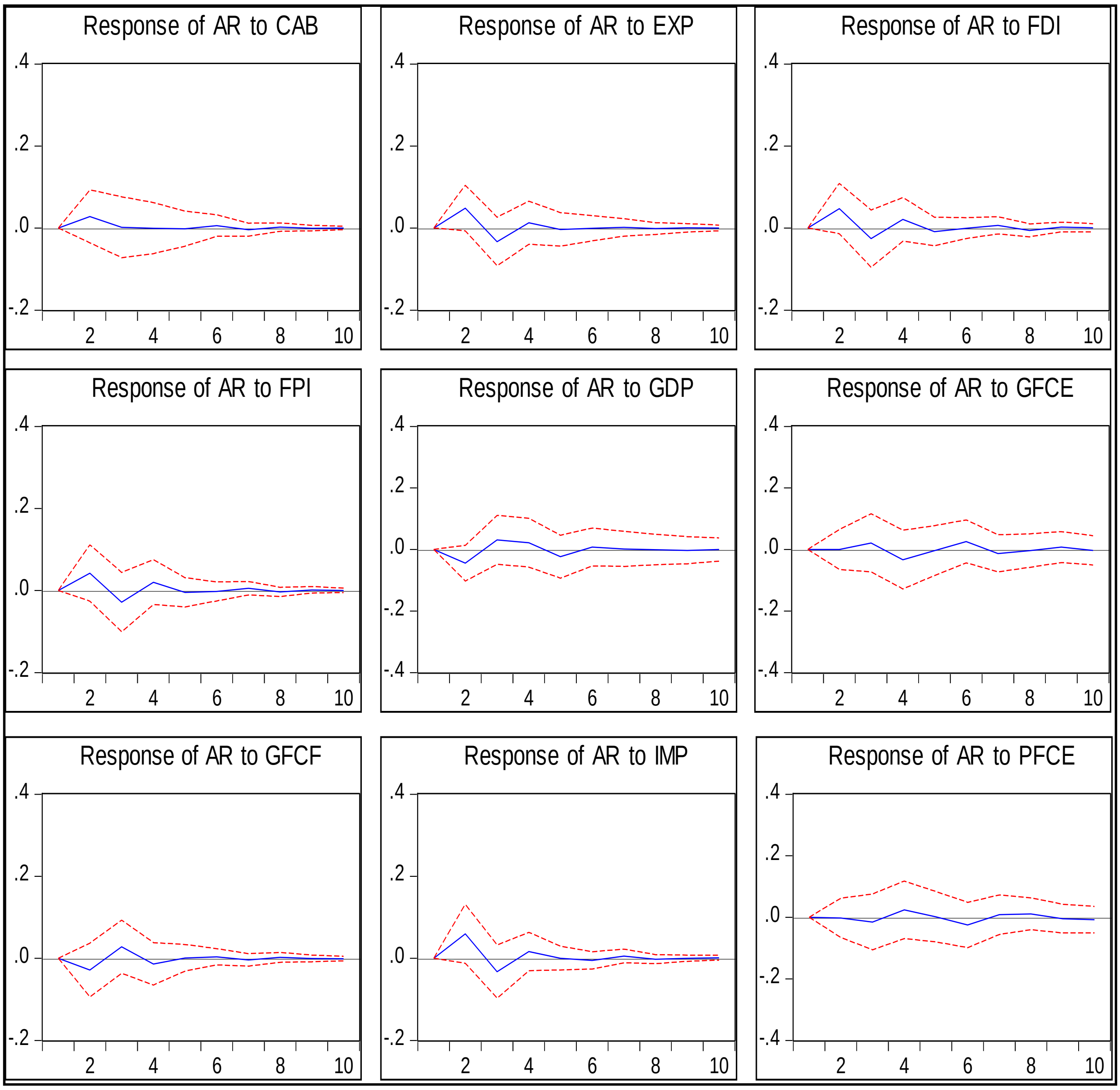

Figure 5.1: Impulse responses of AR to a shock in the Macroeconomic indicators (Quarterly)

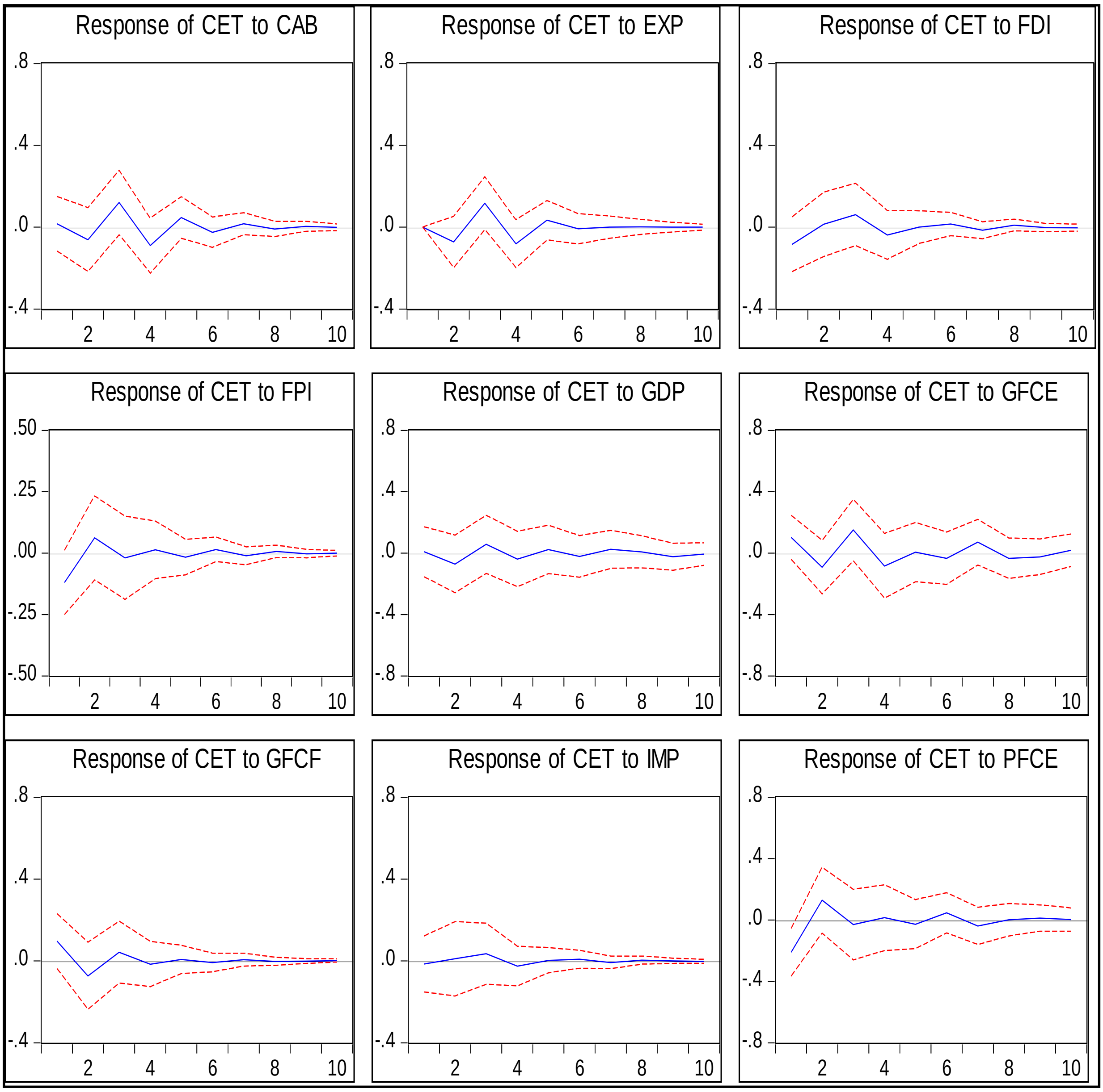

Figure 5.2: Impulse responses of CET to a shock in the Macroeconomic indicators (Quarterly)

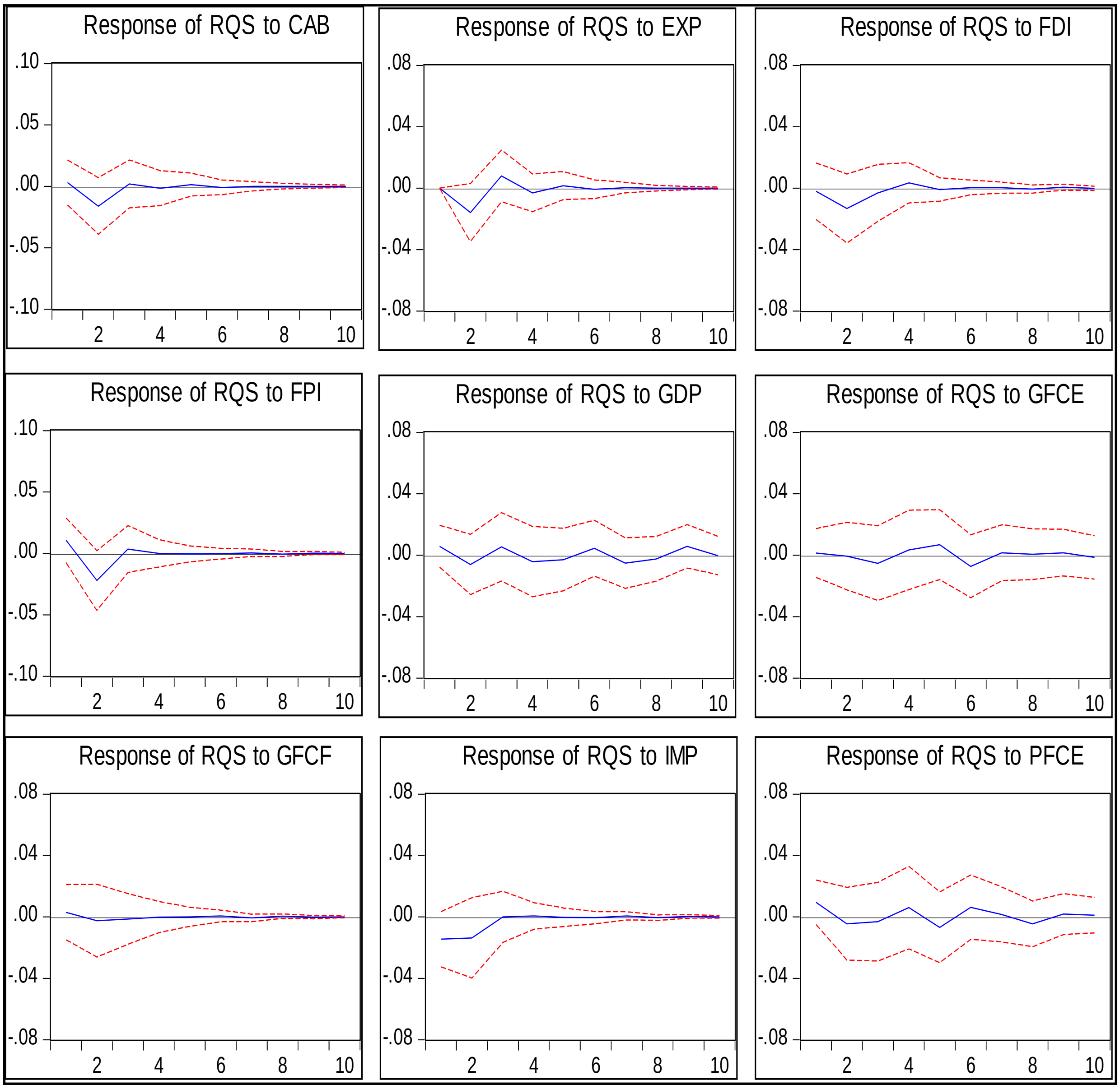

Figure 5.3: Impulse responses of RQS to a shock in the Macroeconomic indicators (Quarterly)

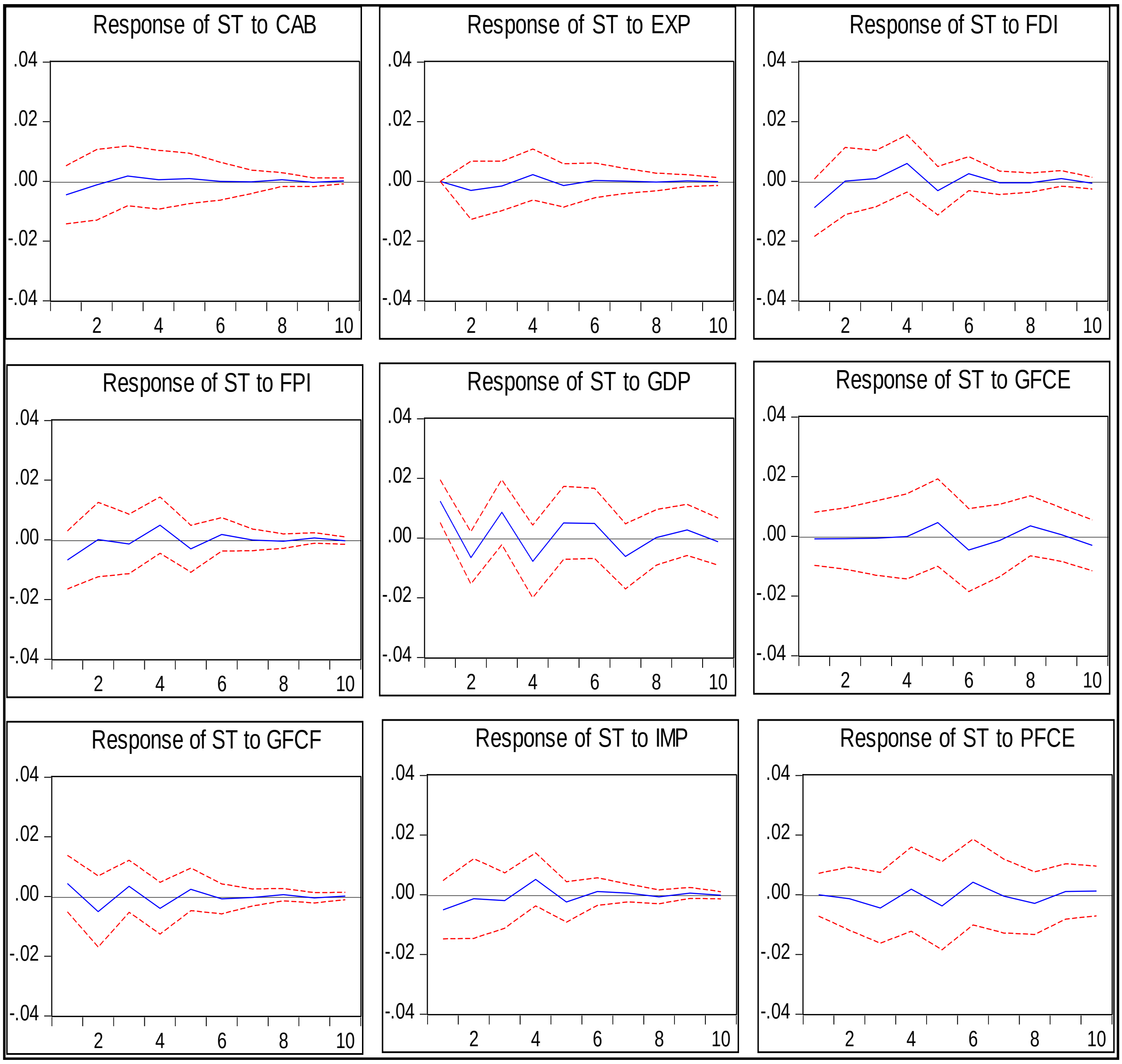

Figure 5.4: Impulse responses of ST to a shock in the Macroeconomic indicators (Quarterly)

From Figure 5.5 to Figure 5.8, we find that the monthly series of CET is positively affected by the immediate lags of money supply (M1 and M3). This means that the market immediacy lowers when the money supply is curtailed, which further broadens the bid-ask spreads, as shown by the negative impact of the fifth lag of M1 and M3 on RQS. Moreover, this decreased money supply lowers the trading activity, as demonstrated by the positive effect of the lags of M1 and M3 on ST. It is even evidenced that the distant lags of M1 and M3 cause positive impact on AR which indicates that an increased supply of money severely affects the stock prices in the future thereby confirms an inflationary effect of the money supply as explained by (Sprinkel, 1971). Besides, a higher inflation is found to be reducing the liquidity levels as shown by the positive impact of CPI on AR.

Additionally, the increased IR positively affects RQS, confirming that higher borrowing cost deprives investors from trading. Also, the execution speed of trade and trading activity slows down during increasing gold and silver prices, as represented by the negative impact of the third lag of GOLD and SILVER on CET and the immediate lags of GOLD and SILVER on ST. Moreover, increased GOLD and SILVER prices make trading in securities costly, as shown by the positive impact of their lags on RQS. However, the negative impact of the third lag of SILVER is nullified by the positive effect of its distant lag on CET. Thus, GOLD evolves as the vital security that significantly affects trading activity and immediacy in the stock market over SILVER. The impact of all these variables shows a persistent long-run impact on all the dimensional measures of liquidity. This leads to rejection of the null hypothesis (H_{2c}) and say there is a significant effect of macroeconomic variables (M1, M3, INFL, IR, GOLD, and SILVER) on market liquidity.

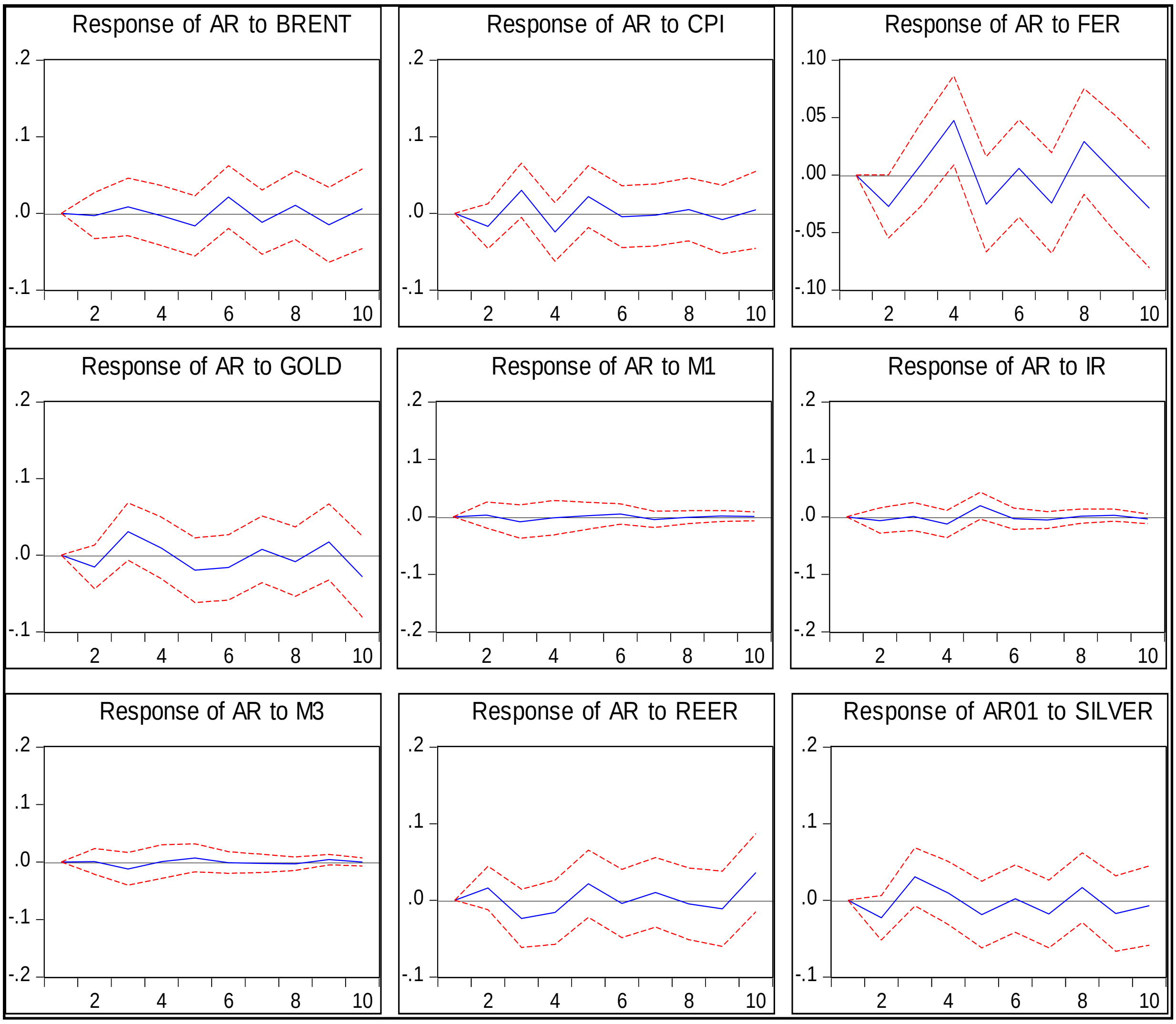

Figure 5.5: Impulse responses of AR to a shock in the Macroeconomic indicators (Monthly)

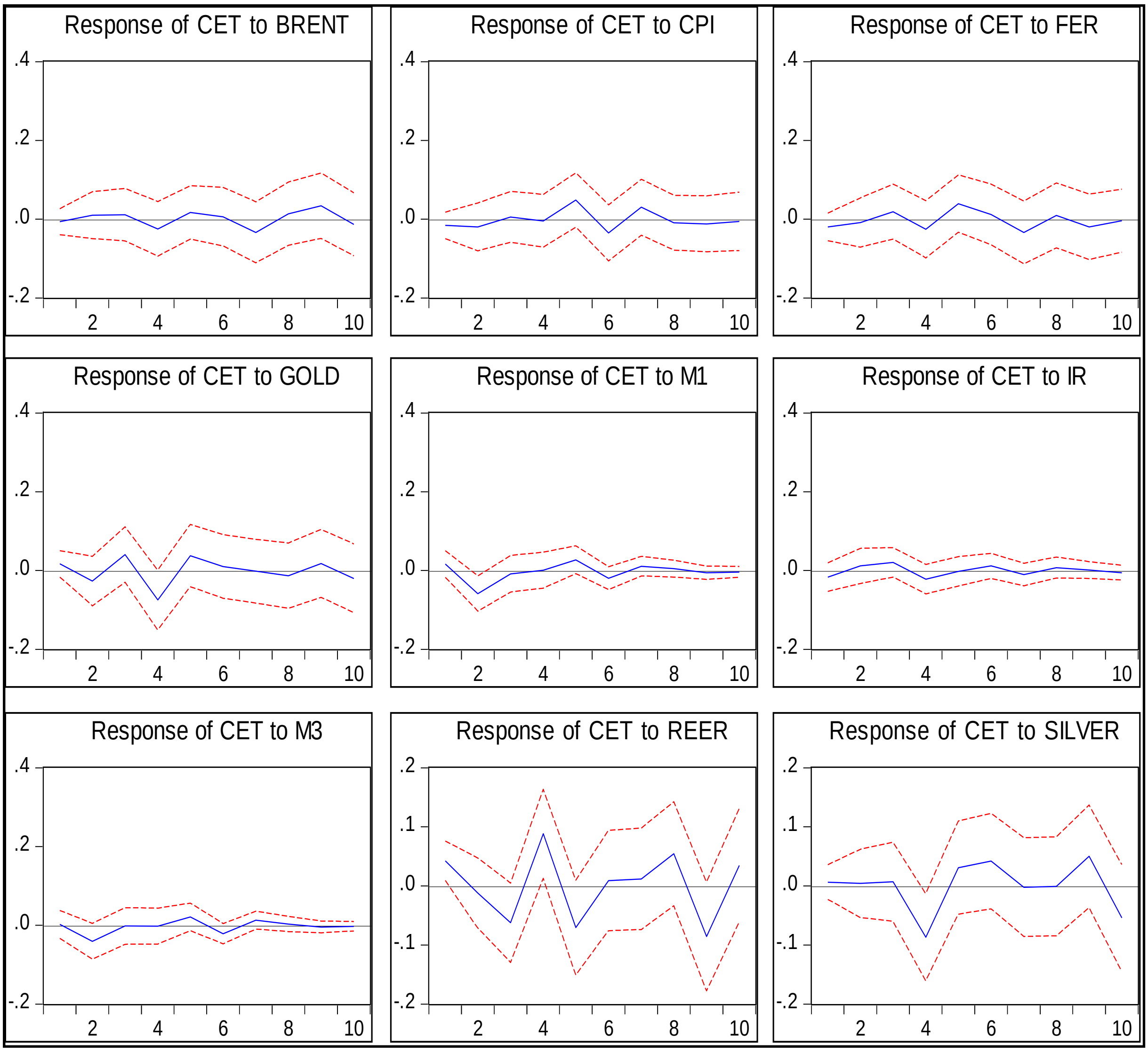

Figure 5.6: Impulse responses of CET to a shock in the Macroeconomic indicators (Monthly)

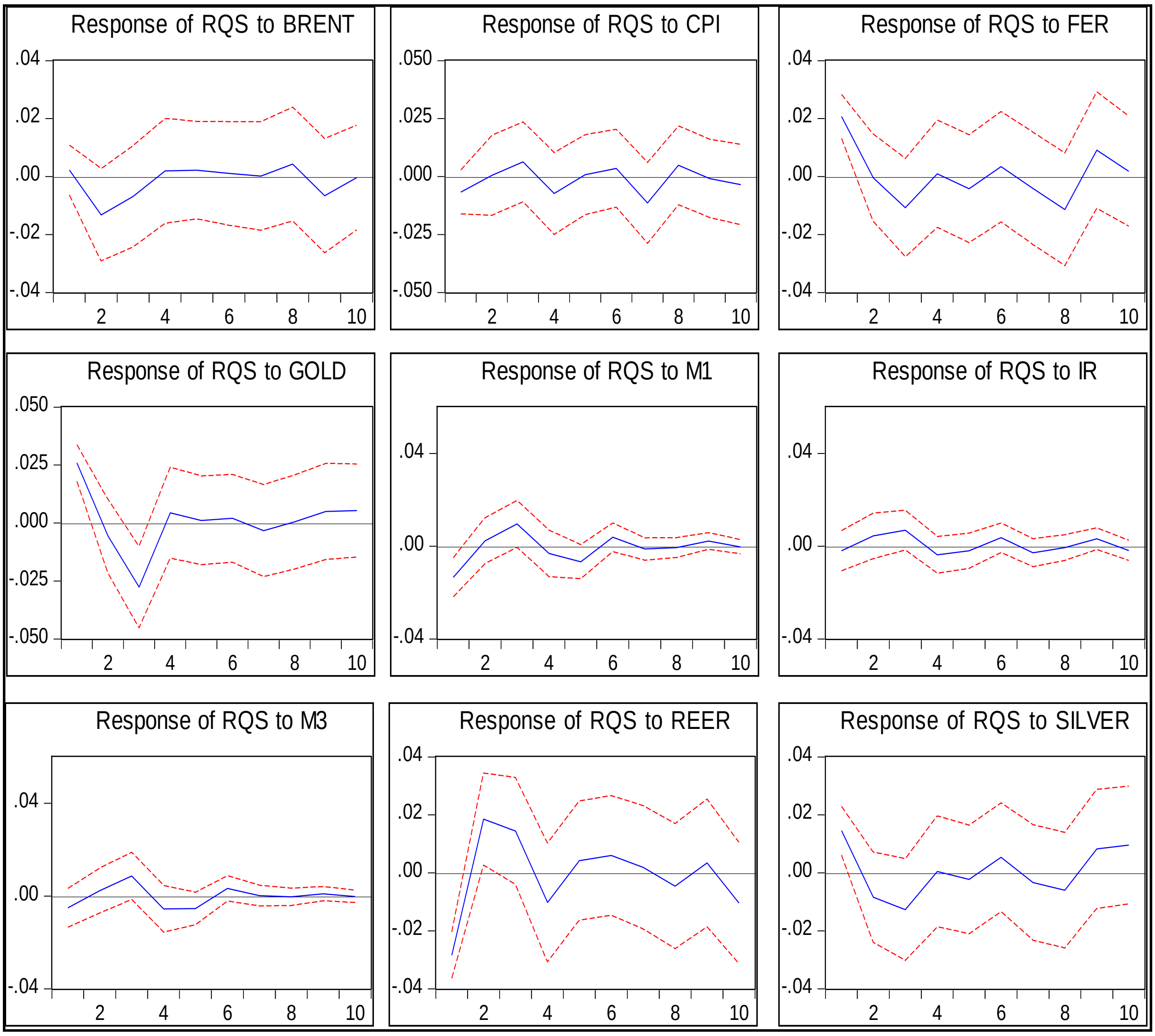

Figure 5.7: Impulse responses of RQS to a shock in the Macroeconomic indicators (Monthly)

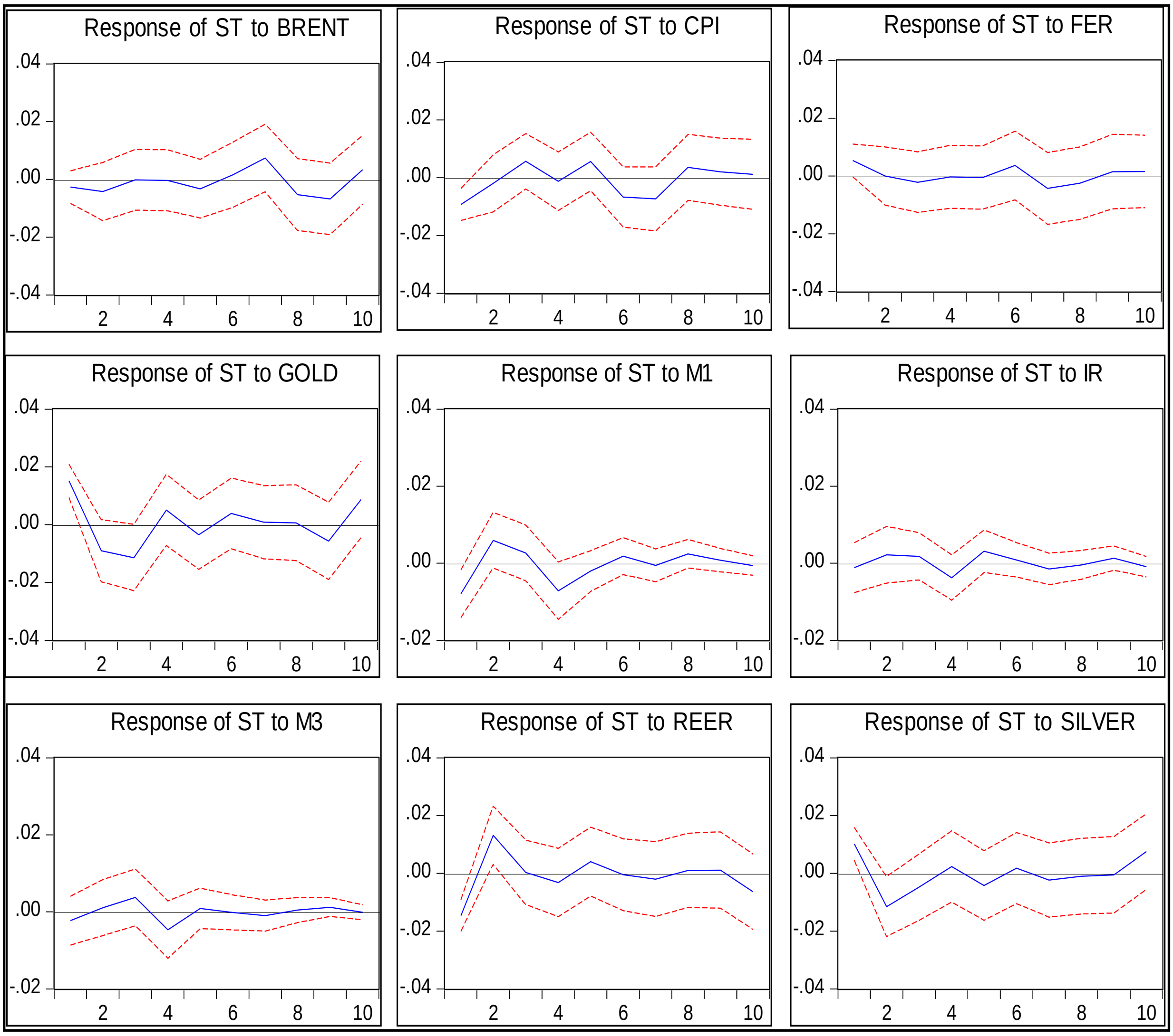

Figure 5.8: Impulse responses of ST to a shock in the Macroeconomic indicators (Monthly)

5.2.7 Residual Diagnostics

Table 5.7 presents the Breusch-Godfrey Serial Correlation LM Test results for the models examining macroeconomic indicators' impact on stock market liquidity. The p-values signify no presence of serial correlation in the models used for analysis.

Table 5.7: Breusch-Godfrey Serial Correlation LM Test results of the models examining the impact of macroeconomic indicators on stock market liquidity.

	Lag	**F-statistic**	**P-value**
Quarterly variables			
CAB	1	81.7306	0.4564
EXP	1	77.3228	0.5951
FDI	1	79.9091	0.5134
FPI	1	66.8866	0.8702
GDP	2	85.1949	0.3534
GFCE	2	90.4612	0.2212
GFCF	1	75.4240	0.6539
IMP	1	63.1844	0.9285
PFCE	2	94.3647	0.1471
Monthly Variables			
BRENT	8	87.3774	0.2944
CPI	8	93.9639	0.1537
FER	8	71.6710	0.7612
GOLD	8	63.8108	0.9202
M1	3	93.2635	0.1659
IR	3	88.1542	0.2748
M3	4	91.8968	0.1915
REER	8	80.3267	0.5002
SILVER	8	70.3043	0.7960

Source: Authors' calculations.

Chapter 6

Effect of Market Liquidity on the Stock Returns

6.1 Introduction

The present section provides the results and discussion relating to the effect of market liquidity on stock returns. For analysis, the selected stocks are sorted based on size, value, and liquidity into various portfolios using data from 2009 to 2019. Market liquidity has been measured using four different dimensional measures: Amihud Illiquidity Ratio, Coefficient of Elasticity of Trading, Relative Quoted Spread, and Share Turnover. The effect of market liquidity on stock returns is analyzed with the help of the Liquidity Augmented Fama-French Three-Factor Model, in which risk factors relating to the market, size, and value are also employed. In addition to this, the study undertakes descriptive statistics of all variables employed, unit root test for stationarity of the variable data, Liquidity Augmented Fama-French Three-Factor Model to analyze the effect of liquidity on stock returns, and residual diagnostics using Breusch-Godfrey Serial Correlation LM Test to trace the existence of serial correlation. The results for the same are discussed in this section.

6.2 Results and Discussion

6.2.1 Descriptive Statistics

From Table 6.1, it is observed that a small size-based portfolio generates higher expected excess returns than a large size portfolio, and high-value sorted portfolios generate higher expected excess returns than low-value portfolios. Among the liquidity sorted portfolios, it is found that lower liquidity portfolios sorted in terms of RQS and ST fetch higher expected excess returns, whereas those portfolios sorted in terms of AR and CET do not compensate for higher illiquidity as they generate lower expected excess returns.

We find that the premiums regarding size and value factors are favorable, whereas liquidity factors are negative except in the case of liquidity factor measured using RQS. This indicates that illiquidity due to high transaction costs is duly compensated with a higher return than other illiquidity facets. Additionally, the returns on high-value and liquid portfolios are highly volatile, along with the premium on liquidity factor measured using ST. The returns across the portfolios are negatively skewed and leptokurtic

Table 6.1: Descriptive Statistics for Portfolio Returns and Risk Factors.

Variables	Mean	Standard Deviation	Skewness	Kurtosis
		Portfolio Returns		
S1	-0.0005	0.0026	-0.1159	3.1974
S2	0.0001	0.0032	-0.3750	3.2659
S1V1	-0.0006	0.0030	0.2065	3.2772
S1V2	-0.0004	0.0023	-0.5242	3.3393
S2V1	0.0002	0.0036	-0.3045	3.1528
S2V2	-0.0001	0.0029	-0.4147	3.2744
S1V1AR1	-0.0007	0.0032	0.3498	3.6942
S1V1AR2	-0.0005	0.0030	0.0338	2.8427
S1V2AR1	-0.0004	0.0023	-0.4938	3.2349
S1V2AR2	-0.0004	0.0024	-0.4259	3.3143
S2V1AR1	-0.0001	0.0036	-0.3461	3.3936
S2V1AR2	0.0004	0.0037	-0.2181	2.9447
S2V2AR1	-0.0002	0.0029	-0.6058	4.0212
S2V2AR2	0.0001	0.0030	-0.1850	2.9618
S1V1CET1	-0.0006	0.0029	0.0458	3.1080
S1V1CET2	-0.0006	0.0032	0.3475	3.3799
S1V2CET1	-0.0004	0.0023	-0.5908	3.9667
S1V2CET2	-0.0005	0.0024	-0.4663	2.8678
S2V1CET1	0.0003	0.0036	-0.3433	3.0936
S2V1CET2	0.0001	0.0036	-0.2133	3.1692
S2V2CET1	0.0000	0.0030	-0.3382	3.0950
S2V2CET2	-0.0001	0.0028	-0.4027	3.3366
S1V1RQS1	-0.0006	0.0032	-0.0240	2.8013
S1V1RQS2	-0.0007	0.0031	0.3037	3.4213

S1V2RQS1	-0.0003	0.0024	-0.4660	2.9830
S1V2RQS2	-0.0006	0.0024	-0.4330	3.6844
S2V1RQS1	0.0004	0.0035	-0.3113	3.2384
S2V1RQS2	-0.0001	0.0037	-0.2343	2.9298
S2V2RQS1	0.0000	0.0028	-0.0808	3.4731
S2V2RQS2	-0.0002	0.0031	-0.4989	3.5025
S1V1ST1	-0.0006	0.0038	0.2479	3.5274
S1V1ST2	-0.0006	0.0023	0.1918	3.1967
S1V2ST1	-0.0006	0.0026	-0.5771	4.0558
S1V2ST2	-0.0003	0.0022	-0.3272	2.7603
S2V1ST1	0.0001	0.0040	-0.3846	3.2550
S2V1ST2	0.0002	0.0032	-0.1090	3.0921
S2V2ST1	0.0000	0.0032	-0.5558	3.6225
S2V2ST2	-0.0001	0.0027	-0.1835	3.2625
Risk Factors				
SMB_t	0.0006	0.0012	0.5415	3.2524
HML_t	0.0000	0.0011	0.3450	2.7549
$IML(AR)_t$	-0.0003	0.0007	-0.3709	2.5975
$IML(CET)_t$	-0.0001	0.0005	-0.0079	2.6778
$IML(RQS)_t$	0.0003	0.0009	0.0680	3.8947
$IML(ST)_t$	-0.0001	0.0016	-0.2262	3.8536

Source: Authors' calculations.

6.2.2 Unit root test

To examine the stationarity of the variables, the study employs the ADF Test across the portfolios and risk factors. The ADF unit root results are shown in Table 6.2. It evidences significant effects; hence, the null hypothesis that the variables are non-stationary is rejected and that all the variables are stationary at level.

Table 6.2: ADF Unit root results of Portfolio Returns and Risk Factors.

Null Hypothesis	ADF test statistic	Null Hypothesis	ADF test statistic
Portfolio Returns			
S1 has a unit root	-8.9563***	S2V1CET2 has a unit root	-9.0653***
S2 has a unit root	-8.6343***	S2V2CET1 has a unit root	-8.5232***
S1V1 has a unit root	-9.0036***	S2V2CET2 has a unit root	-8.4690***
S1V2 has a unit root	-8.3640***	S1V1RQS1 has a unit root	-8.2514***
S2V1 has a unit root	-8.9014***	S1V1RQS2 has a unit root	-9.3526***
S2V2 has a unit root	-8.3521***	S1V2RQS1 has a unit root	-8.2849***
S1V1AR1 has a unit root	-9.0147***	S1V2RQS2 has a unit root	-9.6089***
S1V1AR2 has a unit root	-9.1253***	S2V1RQS1 has a unit root	-8.3460***
S1V2AR1 has a unit root	-8.5305***	S2V1RQS2 has a unit root	-9.4298***
S1V2AR2 has a unit root	-8.1202***	S2V2RQS1 has a unit root	-7.7028***
S2V1AR1 has a unit root	-8.9315***	S2V2RQS2 has a unit root	-9.0690***
S2V1AR2 has a unit root	-8.8358***	S1V1ST1 has a unit root	-9.4942***
S2V2AR1 has a unit root	-8.9142***	S1V1ST2 has a unit root	-8.5107***
S2V2AR2 has a unit root	-7.9903***	S1V2ST1 has a unit root	-8.5418***
S1V1CET1 has a unit root	-8.8746***	S1V2ST2 has a unit root	-9.0708***
S1V1CET2 has a unit root	-9.1544***	S2V1ST1 has a unit root	-9.2033***
S1V2CET1 has a unit root	-8.6842***	S2V1ST2 has a unit root	-8.6856***
S1V2CET2 has a unit root	-8.6553***	S2V2ST1 has a unit root	-8.7799***
S2V1CET1 has a unit root	-8.7865***	S2V2ST2 has a unit root	-7.9150***
Risk Factors			
MER_t has a unit root	-8.9868***	$IML(CET)_t$ has a unit root	-10.7461***
SMB_t has a unit root	-4.7027***	$IML(RQS)_t$ has a unit root	-4.5165***
HML_t has a unit root	-9.6730***	$IML(ST)_t$ has a unit root	-11.2474***
$IML(AR)_t$ has a unit root	-9.4733***		

Source: Authors' calculations.

Note: ***1% Level of Significance.

6.2.3 Liquidity Augmented Fama-French Three-Factor Models

The model results in Table 6.3 represent that the market risk factor premium positively affects returns across all the portfolios, and their magnitude is very high. This indicates that return on a stock is predominantly affected by higher market risk irrespective of the extent of its size, value and liquidity level. A similar effect is also seen in the lagged factor, but the magnitude of impact is very low. The size risk factor premium seems to have a positive impact on returns of small-size portfolios, including those further sorted based on value and liquidity risk factors, but the coefficient of impact is higher for illiquid stocks and value stocks. This indicates that small-size stocks with lower liquidity and higher value generate higher returns (Stereńczak, 2021). The size risk premium impact is seen to be higher in magnitude than other risk factor premiums and thus indicates a dominant impact on the portfolio returns than other factors in the model(Marshall & Young, 2003). Also, a premium on the value risk factor results in higher returns on high-value portfolios and prevails irrespective of the level of liquidity.

Concerning the liquidity risk factor, the returns on less liquid portfolios increase, whereas it decreases in liquid portfolios (rejection of H3). This is evident across the liquidity risk factor derived from AR, CET, RQS, and lagged ST. On the contrary, the illiquidity premium from ST portfolios negatively affects the returns across all the portfolios, principally in high turnover portfolios.

6.2.4 Residual Diagnostics

Table 6.4 reflects the results of the Serial Correlation LM test. We notice the p-values in the developed models to be more than 0.01, 0.05, and 0.10 at 1%, 5%, and 10% levels of significance, respectively. This results in the non-rejection of null hypotheses at the respective level of significance. The incorporated lagged dependent and lagged independent variables eliminated serial correlation, making the developed models robust.

Table 6.3: Liquidity Augmented Fama-French Three-Factor Model Results

Variables	**Model 1 Y=S1**	**Model 2 Y=S2**	**Model 3 Y=S1V1**	**Model 4 Y=S1V2**	**Model 5 Y=S2V1**	**Model 6 Y=S2V2**	**Model 7 Y=S1V1AR1**	**Model 8 Y=S1V1AR2**	**Model 9 Y=S1V2AR1**	**Model 10 Y=S1V2AR2**	**Model 11 Y=S2V1AR1**	**Model 12 Y=S2V1AR2**	**Model 13 Y=S2V2AR1**	**Model 14 Y=S2V2AR2**
C	-0.0004***	-0.0004***	-0.0004***	-0.0003*	-0.0003*	-0.0004***	-0.0002	-0.0006***	-0.0003*	-0.0003*	-0.0004***	-0.0001	-0.0005***	-0.0004***
MER_t	0.8660***	0.8660***	0.8720***	0.8590***	0.8590***	0.8720***	0.9147***	0.8215***	0.8214***	0.8946***	0.8584***	0.8571***	0.8577***	0.8812***
SMB_t	-0.0329	0.9671****	-0.1013	0.0336	1.0336***	0.8987***	-0.2269*	0.0075	0.0351	0.0267	1.0657***	0.9987***	0.9692***	0.8226***
HML_t	0.3573***	0.3573***	0.9473***	-0.2214***	0.7786***	-0.0527	0.9907***	0.9362***	-0.1712	-0.2502	0.7873***	0.8086***	-0.1033	0.0220
$IML(AR)_t$	0.0983	0.0983	0.1301	0.0597	0.0597	0.1301	0.7246***	-0.4843***	0.3602**	-0.2591	0.6628***	-0.5606***	0.5942***	-0.3383*
$R_{pt-1} - R_{ft-1}$	-0.1981**	-0.1981**	-0.2185**	-0.1499	-0.1499	-0.2185**	-0.1736*	-0.1755*	-0.0872	-0.1441	-0.1634	-0.0192	-0.1572	-0.2263**
MER_{t-1}	0.2226**	0.2226**	0.2351**	0.1849*	0.1849*	0.2351**	0.2598**	0.1345	0.1029	0.2078*	0.2154**	0.0489	0.1292	0.2946***
SMB_{t-1}	0.1682	0.3663***	0.1630	0.1694	0.3193**	0.3815***	0.1405	0.2005	0.2656**	0.0704	0.2558	0.2655*	0.3371**	0.3788***
HML_{t-1}	-0.0227	-0.0227	0.0923	-0.1089	0.0411	-0.1262	0.0519	0.0416	-0.1493	-0.0576	0.0774	-0.0885	-0.1083	-0.1403
$IML(AR)_{t-1}$	-0.0493	-0.0493	-0.0687	-0.0281	-0.0281	-0.0687	0.0394	-0.1767	0.0493	-0.1225	-0.0634	0.0945	0.0878	-0.2576

Variables	**Model 15 Y=S1**	**Model 16 Y=S2**	**Model 17 Y=S1V1**	**Model 18 Y=S1V2**	**Model 19 Y=S2V1**	**Model 20 Y=S2V2**	**Model 21 Y=S1V1CET1**	**Model 22 Y=S1V1CET2**	**Model 23 Y=S1V2CET1**	**Model 24 Y=S1V2CET2**	**Model 25 Y=S2V1CET1**	**Model 26 Y=S2V1CET2**	**Model 27 Y=S2V2CET1**	**Model 28 Y=S2V2CET2**
C	-0.0004***	-0.0004***	-0.0005***	-0.0003*	-0.0003*	-0.0005***	-0.0005***	-0.0004***	-0.0003*	-0.0002	-0.0002	-0.0003*	-0.0004***	-0.0005***
MER_t	0.8681***	0.8681***	0.8756***	0.8597***	0.8597***	0.8756***	0.8498***	0.8976***	0.8345***	0.8833***	0.8498***	0.8671***	0.9268***	0.8273***
SMB_t	-0.0757	0.9243***	-0.1435	-0.0071	0.9929***	0.8565***	-0.1208	-0.1703	-0.0113	-0.0093	0.9805***	1.0029***	0.8409***	0.8723***
HML_t	0.3911***	0.3911***	0.9799***	-0.1891	0.8109***	-0.0201	0.8897***	1.0925***	-0.1010	-0.2583*	0.8189***/	0.8244***	0.0038	-0.0511
$IML(CET)_t$	-0.1053	-0.1053	-0.0987	-0.1075	-0.1075	-0.0987	-0.3918	0.1956	-0.5312*	0.3169	-0.7858***	0.5781**	-0.7031***	0.5040*
$R_{pt-1} - R_{ft-1}$	-0.1902*	-0.1902*	-0.2114**	-0.1449	-0.1449	-0.2114	-0.1298	-0.2483***	-0.1672*	-0.0801	-0.1444	-0.0771	-0.2018**	-0.2359**
MER_{t-1}	0.2063**	0.2063**	0.2141**	0.1771*	0.1771*	0.2141**	0.1719	0.2190**	0.1467	0.1685	0.1917*	0.1017	0.2163**	0.2228**
SMB_{t-1}	0.1897*	0.3799***	0.1742	0.2003*	0.3452**	0.3856***	0.2160*	0.1341	0.1467	0.2515**	0.3934***	0.2268	0.3541***	0.4301***
HML_{t-1}	-0.0283	-0.0283	0.1088	-0.1363	0.0086	-0.1025	-0.0001	0.1841	-0.1063	-0.1544	-0.0343	-0.0051	-0.0685	-0.1362
$IML(CET)_{t-1}$	0.0062	0.0062	-0.1082	0.1207	0.1207	-0.1082	-0.0304	-0.1478	-0.0572	0.2693	0.1217	0.0768	-0.3251	0.1279

Variable	Model 29 Y=S1	Model 30 Y=S2	Model 31 Y=S1V1	Model 32 Y=S1V2	Model 33 Y=S2V1	Model 34 Y=S2V2	Model 35 Y=S1V1RQS1	Model 36 Y=S1V1RQS2	Model 37 Y=S1V2RQS1	Model 38 Y=S1V2RQS2	Model 39 Y=S2V1RQS1	Model 40 Y=S2V1RQS2	Model 41 Y=S2V2RQS1	Model 42 Y=S2V2RQS2
C	-0.0004***	-0.0004***	-0.0005***	-0.0003*	-0.0003*	-0.0005***	-0.0004	-0.0003**	-0.0002	-0.0003**	-0.0002	-0.0003*	-0.0005***	-0.0004**
MER_t	0.8709***	0.8709***	0.8790***	0.8611***	0.8611***	0.8790***	0.9483***	0.8460***	0.8681***	0.8523***	0.8521***	0.8611***	0.8146***	0.9262***
SMB_t	-0.0642	0.9358***	-0.1474	0.0207	1.0207***	0.8526***	-0.4257***	-0.1721	0.0333	0.0141	1.1384***	0.9001***	0.8830***	0.8107***
HML_t	0.3783***	0.3783***	0.9796***	-0.2157	0.7843***	-0.0204	1.2129***	1.0234***	-0.2673*	-0.1705	0.6924***	0.9094***	0.0171	-0.0068
$IML(RQS)_t$	-0.0015	-0.0015	0.0344	-0.0463	-0.0463	0.0344	1.4046***	-0.2732*	0.3131*	-0.4164***	0.3537**	-0.4606***	0.3219**	-0.2774
$\boldsymbol{R_{pt-1} - R_{ft-1}}$	-0.1867*	-0.1867*	-0.2083**	-0.1378	-0.1378	-0.2083**	0.1579	-0.0700	-0.1746*	-0.0891	-0.0629	-0.1212	-0.1738*	-0.0898
MER_{t-1}	0.1986*	0.1986*	0.2093**	0.1644	0.1644	0.2093**	-0.3137***	0.1146	0.2592**	0.0608	0.0877	0.1619	0.2399***	0.0445
SMB_{t-1}	0.2046**	0.3913***	0.1978*	0.2060**	0.3439**	0.4062***	0.2933	0.1740	0.1960	0.2161**	0.2811*	0.3066**	0.3700***	0.3196***
HML_{t-1}	-0.0560	-0.0560	0.0694	-0.1513	-0.0135	-0.1390	-0.6121***	-0.1848	-0.1553	-0.1428	0.0071	-0.1067	-0.1269	-0.1572
$IML(RQS)_{t-1}$	-0.0765	-0.0765	-0.0358	-0.1177	-0.1177	-0.0358	-0.8023***	-0.0576	-0.0303	-0.1669	0.0363	-0.3001*	0.1527	-0.2093

Variable	Model 43 Y=S1	Model 44 Y=S2	Model 45 Y=S1V1	Model 46 Y=S1V2	Model 47 Y=S2V1	Model 48 Y=S2V2	Model 49 Y=S1V1ST1	Model 50 Y=S1V1ST2	Model 51 Y=S1V2ST1	Model 52 Y=S1V2ST2	Model 53 Y=S2V1ST1	Model 54 Y=S2V1ST2	Model 55 Y=S2V2ST1	Model 56 Y=S2V2ST2
C	-0.0003***	-0.0003***	-0.0004***	-0.0002**	-0.0002**	-0.0004***	-0.0003**	-0.0006***	-0.0004***	-0.0001	-0.0003**	-0.0002	-0.0003**	-0.0004***
MER_t	0.6335***	0.6335***	0.6382***	0.6267***	0.6267***	0.6382***	0.7646***	0.4948***	0.5786***	0.6756***	0.6394***	0.5978***	0.5919***	0.6559***
SMB_t	-0.0259	0.9741***	-0.1086	0.0563	1.0563***	0.8914***	-0.2282**	0.0569	0.1042	0.0216	1.0446***	1.0582***	0.9633***	0.8041***
HML_t	-0.0412	-0.0412	0.5515***	-0.6306***	0.3694***	-0.4486***	0.7635***	0.5251***	-0.6555***	-0.6263***	0.5584***	0.1735	-0.6340***	-0.2472***
$IML(ST)_t$	0.5707***	0.5707***	0.5628***	0.5776***	0.5776***	0.5628***	0.8091***	-1.5879***	0.8256***	0.3286***	0.8531***	0.3002***	0.8801***	0.2138**
$\boldsymbol{R_{pt-1} - R_{ft-1}}$	-0.1105	-0.1105	-0.1187	-0.0842	-0.0842	-0.1187	-0.1452	0.3588**	-0.0540	-0.1700*	0.0175	-0.1343	0.0827	-0.1807*
MER_{t-1}	0.2685***	0.2685***	0.2764***	0.2490***	0.2490***	0.2764***	0.2647***	-0.2731**	0.2110**	0.3310***	0.0837	0.3919***	0.1095	0.3778***
SMB_{t-1}	0.0862	0.1967	0.0952	0.0735	0.1577	0.2139*	0.0763	0.1307	0.0595	0.0882	0.0922	0.1662	0.0138	0.2615**
HML_{t-1}	0.1664	0.1664	0.2266*	0.1250	0.2092*	0.1079	0.2544	0.1240	0.2618*	-0.0325	0.0903	0.3008**	0.1664	0.1700
$IML(ST)_{t-1}$	-0.2950**	-0.2950**	-0.3154**	-0.2862**	-0.2862**	-0.3154**	-0.2329	-0.1450	-0.3920**	-0.1863	-0.2466	-0.4282***	-0.4672***	-0.3784***

Source: Authors' calculations.

Note: Figures represent the Chi-sq values; ***1% Level of Significance, **5% Level of Significance, *10% Level of Significance.

Table 6.4:Breusch-Godfrey Serial Correlation LM Test results of the models examining the impact of stock market liquidity on stock returns.

	F-statistic	**P-value**		**F-statistic**	**P-value**		**F-statistic**	**P-value**
Model 1 Y=S1	0.0779	0.7807	Model 11 Y=S2V1AR1	0.0055	0.9413	Model 21 Y=S1V1CET1	1.0527	0.3075
Model 2 Y=S2	0.0779	0.7807	Model 12 Y=S2V1AR2	0.4409	0.5083	Model 22 Y=S1V1CET2	0.6608	0.4183
Model 3 Y=S1V1	0.0005	0.9824	Model 13 Y=S2V2AR1	0.1788	0.6733	Model 23 Y=S1V2CET1	1.4443	0.2324
Model 4 Y=S1V2	0.0625	0.8031	Model 14 Y=S2V2AR2	0.1142	0.7361	Model 24 Y=S1V2CET2	0.7517	0.3881
Model 5 Y=S2V1	0.0625	0.8031	Model 15 Y=S1	0.2009	0.6550	Model 25 Y=S2V1CET1	0.0454	0.8318
Model 6 Y=S2V2	0.0005	0.9824	Model 16 Y=S2	0.2009	0.6550	Model 26 Y=S2V1CET2	0.1246	0.7249
Model 7 Y=S1V1AR1	0.0016	0.9680	Model 17 Y=S1V1	0.0359	0.8502	Model 27 Y=S2V2CET1	0.0000	0.9991
Model 8 Y=S1V1AR2	0.0042	0.9487	Model 18 Y=S1V2	0.0662	0.7975	Model 28 Y=S2V2CET2	0.2760	0.6005
Model 9 Y=S1V2AR1	0.2775	0.5995	Model 19 Y=S2V1	0.0662	0.7975	Model 29 Y=S1	0.1799	0.6724
Model 10 Y=S1V2AR2	0.2713	0.6036	Model 20 Y=S2V2	0.0359	0.8502	Model 30 Y=S2	0.1799	0.6724

	F-statistic	P-value		F-statistic	P-value		F-statistic	P-value
Model 31 Y=S1V1	0.0415	0.8390	Model 41 Y=S2V2RQS1	0.5753	0.4500	Model 51 Y=S1V2ST1	0.3420	0.5601
Model 32 Y=S1V2	0.0306	0.8616	Model 42 Y=S2V2RQS2	0.0545	0.8159	Model 52 Y=S1V2ST2	1.2736	0.2619
Model 33 Y=S2V1	0.0306	0.8616	Model 43 Y=S1	0.5512	0.4596	Model 53 Y=S2V1ST1	0.0959	0.7575
Model 34 Y=S2V2	0.0415	0.8390	Model 44 Y=S2	0.5512	0.4596	Model 54 Y=S2V1ST2	0.6891	0.4085
Model 35 Y=S1V1RQS1	1.6537	0.1968	Model 45 Y=S1V1	0.2847	0.5949	Model 55 Y=S2V2ST1	0.0022	0.9626
Model 36 Y=S1V1RQS2	0.4948	0.4835	Model 46 Y=S1V2	0.3665	0.5463	Model 56 Y=S2V2ST2	0.2814	0.5970
Model 37 Y=S1V2RQS1	0.1731	0.6783	Model 47 Y=S2V1	0.3665	0.5463			
Model 38 Y=S1V2RQS2	0.2018	0.6543	Model 48 Y=S2V2	0.2847	0.5949			
Model 39 Y=S2V1RQS1	0.1256	0.7238	Model 49 Y=S1V1ST1	0.0089	0.9252			
Model 40 Y=S2V1RQS2	0.0060	0.9386	Model 50 Y=S1V1ST2	0.0014	0.9701			

Source: Authors' calculations.

Chapter 7

Causality and Inter-dependencies between Market Liquidity, Volatility, and Returns

7.1 Introduction

The present section provides the results and discussion relating to the causality and inter-dependencies between market liquidity, volatility, and returns. Using the data from 2009 to 2019, the sample stocks are classified into quintiles based on volatility and liquidity levels at the beginning of each year, and the analysis is drawn. Market liquidity is measured by using the Relative Quoted Spread measure. The dynamic relationships between the market liquidity, volatility, and returns are analyzed with the help of the Vector Auto Regression approach, wherein the inferences are drawn based on the VAR-based Granger Causality tests and VAR estimates. In addition to this, the study undertakes descriptive statistics of all variables employed, unit root test for stationarity of the variable data, correlation analysis to understand the presence of any significant relationship between the variables, lag selection criteria to determine suitable lag lengths for the model, VAR based Granger Causality test to determine the cause and effect relationship between the variables, VAR analysis to analyze the relationships between variables, and residual diagnostics to trace the existence of serial correlation. The results for the same are discussed in this section.

7.2 Results and Discussion

7.2.1 Descriptive Statistics

Table 7.1 exhibits summary statistics of the variables across quintile portfolios formed based on liquidity and volatility levels. Liquid portfolios comprise lower RQS, SR, and RV than illiquid portfolios. Volatile portfolios yield higher SR and have lower RQS. Across all the portfolios, the SR earned in illiquid portfolios has been the highest, whereas variations in RV are high throughout, especially concerning illiquid and volatile portfolios. In addition, SR is highly unstable for illiquid and volatile portfolios and negatively skewed.

Table 7.1: Descriptive statistics of liquidity and volatility based portfolios.

	Mean	**Standard Deviation**	**Skewness**	**Kurtosis**
RQS based portfolios				
LiqQn1				
SR	-0.0001	0.0027	-0.0419	3.1300
RV	0.0215	0.0039	0.6302	2.9989
RQS	0.0014	0.0005	0.0900	2.0917
LiqQn2				
SR	0.0000	0.0033	-0.2671	3.3329
RV	0.0232	0.0042	1.0150	3.9557
RQS	0.0020	0.0007	0.0448	2.0079
LiqQn3				
SR	0.0001	0.0030	-0.2048	3.1205
RV	0.0234	0.0041	1.0246	4.6470
RQS	0.0026	0.0009	0.0724	2.2972
LiqQn4				
SR	0.0004	0.0031	-0.3715	3.3034
RV	0.0230	0.0038	0.9751	3.9177
RQS	0.0036	0.0012	0.1540	2.2062
LiqQn5				
SR	0.0005	0.0028	-0.3054	3.0961
RV	0.0225	0.0046	1.2108	4.3677
RQS	0.0072	0.0019	-0.1538	4.4189
RV based portfolios				
VolQn1				
SR	0.0001	0.0021	-0.4481	3.2288
RV	0.0177	0.0037	1.1437	4.3209
RQS	0.0037	0.0013	0.0437	2.0678
VolQn2				
SR	0.0001	0.0024	-0.2810	2.8896
RV	0.0207	0.0041	1.4668	5.5771

RQS	0.0034	0.0013	0.2652	1.9914
VolQn3				
SR	0.0002	0.0030	-0.0666	3.0035
RV	0.0228	0.0040	1.4239	5.8481
RQS	0.0034	0.0010	0.1901	2.7230
VolQn4				
SR	0.0001	0.0036	-0.1171	3.0978
RV	0.0253	0.0045	0.9158	3.6098
RQS	0.0030	0.0009	0.3508	2.8669
VolQn5				
SR	0.0002	0.0039	-0.5183	3.7403
RV	0.0269	0.0046	1.4500	6.3503
RQS	0.0032	0.0010	-1.3072	11.6187

Source: Authors' calculations.

7.2.2 Unit Root Test

To examine the stationarity of the variables, the study employs the ADF Test across the portfolios. The ADF unit root results are shown in Table 7.2. It evidences that the employed variables are stationary across all the quintiles, and hence the null hypothesis that the variables are non-stationary is rejected and that all the variables are stationary at level.

Table 7.2: ADF Unit root results of liquidity and volatility based portfolios.

	RQS based portfolios				
Null Hypothesis	**LiqQn1**	**LiqQn2**	**LiqQn3**	**LiqQn4**	**LiqQn5**
SR has a unit root	-9.0860***	-9.7955***	-8.6561***	-8.2602***	-7.5649***
RV has a unit root	-7.5224***	-7.3276***	-8.1964***	-6.9226***	-7.7321***
RQS has a unit root	-3.6439**	-4.8491***	-3.5587***	-4.1103***	-5.2766***
	RV based portfolios				
Null Hypothesis	**VolQn1**	**VolQn2**	**VolQn3**	**VolQn4**	**VolQn5**
SR has a unit root	-7.9275***	-8.6953***	-8.8289***	-8.9232***	-9.4201***
RV has a unit root	-6.3661***	-8.4593***	-7.5564***	-8.5676***	-7.5859***
RQS has a unit root	-3.1965**	-5.0367***	-4.8182***	-4.8904***	-6.1779***

Source: Authors' calculations.

Note: ***Significant at 1% Level, **Significant at 5% Level.

7.2.3 Correlation Analysis

The correlation results in Table 7.3 indicate a moderately significant relationship among all the variables. There is a positive relationship between RQS and RV, while RQS and RV are negatively related to SR. A stronger relationship between RQS and RV is seen across volatile portfolios, while the RQS and SR relationship reveals a more substantial relation among illiquid and volatile portfolios. This means that volatile stocks tend to have lower liquidity and returns. Additionally, liquid and less volatile stocks generate a higher return, as evidenced by the negative relation between RV and SR for these portfolios. The results suggest that liquid and less volatile portfolio stocks are less prone to volatilities and liquidity shortages and offer higher returns.

Table 7.3: Correlation analysis of liquidity, return, and volatility across liquidity and volatility based portfolios.

	RQS based portfolios				
Null Hypothesis	**LiqQn1**	**LiqQn2**	**LiqQn3**	**LiqQn4**	**LiqQn5**
No correlation between SR and RV	-0.3052***	-0.3298***	-0.2572***	-0.1926**	-0.1592*
No correlation between SR and RQS	-0.1797*	-0.2922***	-0.1878**	-0.3218***	-0.3279**
No correlation between RV and RQS	0.2522***	0.4057***	0.1142	0.3025***	0.0408
	RV based portfolios				
Null Hypothesis	**VolQn1**	**VolQn2**	**VolQn3**	**VolQn4**	**VolQn5**
No correlation between SR and RV	-0.3629***	-0.3534***	-0.2978***	-0.2081**	-0.2620***
No correlation between SR and RQS	-0.1295	-0.1537	-0.3320***	-0.3780***	-0.2467***
No correlation between RV and RQS	0.0374	-0.0759	0.2077**	0.4217***	0.4077***

Source: Authors' calculations.

Note: ***1% Level of Significance, **5% Level of Significance, *10% Level of Significance.

7.2.4 Selection of Appropriate Lag Length

Table 7.4 depicts the lag selection results to analyze the inter-relationship between liquidity, return, and volatility. Lag 2 is selected for LiqQn1, LiqQn2, LiqQn3, and VolQn3; lag 3 is selected for VolQn2, lag 4 for LiqQn4, whereas lag 1 is selected for the remaining portfolios.

Table 7.4: Results for appropriate lag selection.

	Lag	LogL	LR	FPE	AIC	SC	HQ
				RQS Based Portfolios			
LiqQn1	2	1499.0500	19.5933	8.51e-18*	-30.7927*	-30.2318	-30.5660
LiqQn2	2	1468.6560	27.0082*	1.60e-17*	-30.1595*	-29.5986	-29.9328*
LiqQn3	2	1457.5390	18.6045	2.02e-17*	-29.9279*	-29.3669	-29.7011
LiqQn4	4	1414.818	19.04138*	5.32e-17*	-28.96459*	-27.9162	-28.541
LiqQn5	1	1329.1520	79.3202*	2.43e-16*	-27.4407*	-27.1201*	-27.3111*
				RV Based Portfolios			
VolQn1	1	1462.3390	174.1803*	1.51e-17*	-30.2154*	-29.8949*	-30.0858*
VolQn2	3	1456.4660	16.4166	2.50e-17*	-29.7181*	-28.9167	-29.3941
VolQn3	2	1418.3500	20.8878*	4.57e-17*	-29.1115*	-28.5505	-28.8847
VolQn4	1	1395.3070	85.8295	6.12e-17*	-28.8189*	-28.4984*	-28.6893*
VolQn5	1	1335.8560	41.9332*	2.11e-16*	-27.5803*	-27.2598*	-27.4508*

Source: Authors' calculations.

Note: * indicates lag order selected by the criterion

7.2.5 Causation Effect between Liquidity, Returns, and Volatility

The results presented in Table 7.5 exhibits Granger causality results across the portfolios. It is found that SR causes RQS across most of the portfolios and mainly in case of liquid and less volatile portfolios. On the other hand, RV is found to cause RQS in case of liquid and high volatility portfolios. However, no causality is evidenced between RV to SR, RQS to SR, SR to RV, and RQS to RV.

Table 7.5: Granger causality test results across portfolios.

	RV to SR	RQS to SR	SR to RV	RQS to RV	SR to RQS	RV to RQS
			RQS Based Portfolios			
LiqQn1	0.6353	1.5933	2.1851	0.8787	5.2329*	0.4965
LiqQn2	0.4803	0.1062	0.4988	0.8906	8.7454**	6.0618**

LiqQn3	0.3431	2.0627	0.9514	1.0688	12.8544***	0.3405
LiqQn4	0.8324	1.808	0.2491	0.4330	0.3180	0.0556
LiqQn5	1.5417	2.9137*	0.2432	2.0259	5.8434***	0.4568
			RV Based Portfolios			
VolQn1	0.1549	1.8867	0.4119	1.378	0.136	0.514
VolQn2	4.3241	2.0523	1.0519	5.5438	7.0450*	1.1876
VolQn3	0.2580	0.8786	1.4052	3.4720	13.9723***	0.2627
VolQn4	2.1585	0.9372	0.2041	0.0501	1.5343	2.4839
VolQn5	2.0613	0.0209	0.3446	1.6278	1.8924	3.8862**

Source: Authors' calculations.

Note: Figures represent the Chi-sq values; *10% level of significance, **5% level of significance, ***1% level of significance

7.2.6 Vector Autoregression Estimates

VAR estimates are presented in Table7.6 and 7.7, which depicts significant interactions between liquidity, volatility, and return across the quintile portfolios. In the liquidity sorted quintiles shown in Table 7.6, all the variables are affected by their past lags, and additionally, RQS is affected by the distant SR lag. The dependence of SR and RV on their own lagged values elaborates that past price movements consistently reflect market information which assists the investors in defining their trading strategies and thereby are affected only by new information arrivals (Darrat et al., 2003; Medeiros & Doornik, 2008). Moreover, the magnitude of such dependence is more favorable for illiquid portfolio returns and vice versa for liquid quintile returns. Further, there is a minimal positive impact of distant lag of SR on RQS of liquid quintiles and vice versa concerning illiquid quintiles. However, the variations in RQS are majorly explained by its past values, which validate the presence of information disparity among the investors and are more prominent among volatile quintiles (Glosten & Harris, 1988; Hasbrouck, 1991). These results show significant inter-dependencies between liquidity, volatility, and returns (rejects H_{4b}).

Table 7.6: VAR results for RQS based portfolios.

	LiqQn1		
	SR	**RV**	**RQS**
C	-0.0002	0.0143***	0.0004
	(-0.1238)	(-1.4090)	(1.5048)
SR(-1)	0.1110	-0.2163	-0.0042
	(0.9956)	(-1.4090)	(-0.3143)
SR(-2)	-0.2721***	0.0834	0.0290**
	(-2.5973)	(0.5783)	(2.2854)
RV(-1)	0.0253	0.2130**	0.0001
	(0.3203)	(1.9577)	(0.0062)
RV(-2)	-0.0608	0.1352	-0.0062
	(-0.7927)	(1.2798)	(-0.6731)
RQS(-1)	0.7696	0.885	0.5167***
	(0.8505)	(0.7105)	(4.7231)
RQS(-2)	-0.1393	-1.1608	0.3301***
	(-0.1541)	(-0.9333)	(3.0215)
	LiqQn2		
	SR	**RV**	**RQS**
C	-0.0014	0.0159***	0.0007***
	(-0.6102)	(5.5110)	(2.5267)
SR(-1)	0.0988	-0.1011	0.0078
	(0.8181)	(-0.6834)	(0.5434)
SR(-2)	-0.1980*	0.0358	0.0364***
	(-1.8156)	(0.2682)	(2.8080)
RV(-1)	0.0587	0.2549**	0.0031
	(0.6249)	(2.2167)	(0.2750)
RV(-2)	0.0068	0.0165	-0.0263***

	(0.0739)	(0.1458)	(-2.3981)
RQS(-1)	0.2585	0.9327	0.6841***
	(0.2568)	(0.7564)	(5.7176)
RQS(-2)	-0.3201	-0.4400	0.2386**
	(-0.3232)	(-0.3627)	(2.0272)

	LiqQn3		
	SR	**RV**	**RQS**
C	-0.0017	0.0199***	0.0005
	(-0.7336)	(6.2059)	(1.3465)
SR(-1)	0.2434**	-0.1573	-0.0214
	(2.0687)	(-0.9692)	(-1.0690)
SR(-2)	-0.1722*	0.0199	0.0648***
	(-1.6189)	(0.1355)	(3.5807)
RV(-1)	0.0438	0.2517***	-0.0073
	(0.5735)	(-0.6111)	(-0.5586)
RV(-2)	-0.0199	-0.0631	-0.0002
	(-0.0748)	(2.3902)	(-0.0163)
RQS(-1)	0.4806	-0.7449	0.6515***
	(0.7294)	(-0.8196)	(5.8088)
RQS(-2)	-0.0167	0.3673	0.2172**
	(-0.0252)	(0.4027)	(1.9296)

	LiqQn4		
	SR	**RV**	**RQS**
C	-0.0001	0.0000	0.0000
	(-0.1970)	(-0.0406)	(0.5726)
SR(-1)	-0.4223***	0.0165	-0.0616**
	(-3.4737)	(0.1167)	(-2.0481)
SR(-2)	-0.5449***	0.1442	0.0214

	(-3.9606)	(0.8988)	(0.6287)
SR(-3)	-0.0761	-0.0998	-0.0245
	(-0.5631)	(-0.6329)	(-0.7317)
SR(-4)	-0.1662	0.0021	-0.0305
	(-1.4089)	(0.0155)	(-1.0444)
RV(-1)	0.0651	-0.6576***	-0.0100
	(0.6807)	(-5.8964)	(-0.4246)
RV(-2)	0.0914	-0.4488***	-0.0099
	(0.8423)	(-3.5463)	(-0.3691)
RV(-3)	-0.0482	-0.3504**	0.0286
	(-0.4407)	(-2.7443)	(1.0559)
RV(-4)	-0.0218	-0.2224	0.0341
	(-0.2254)	(0.3709)	(1.4274)
RQS(-1)	0.1882	0.2242	-0.2497**
	(0.3630)	(0.3709)	(-1.9478)
RQS(-2)	0.6765	0.0283	-0.2624**
	(1.2847)	(0.0460)	(-2.0151)
RQS(-3)	0.9099*	-0.6471	-0.2222*
	(1.7090)	(-1.0420)	(-1.6874)
RQS(-4)	0.5081	-0.5791	-0.2515**
	(1.0455)	(-1.0216)	(-2.0923)

	LiqQn5		
	SR	**RV**	**RQS**
C	-0.0031*	0.0184***	0.0030***
	(-1.8012)	(6.5557)	(3.2306)
SR(-1)	0.3509***	0.0806	-0.1300***
	(3.5324)	(0.4932)	(-2.4173)
RV(-1)	0.0715	0.2857***	0.0211

	(1.2417)	(3.0152)	(0.6759)
RQS(-1)	0.2484*	-0.3409	0.5327***
	(1.7069)	(-1.4234)	(6.7607)

Source: Authors' calculations.

Note: Figures represent the coefficients; t-statistics in ( ); ***Significant at 1% Level, **Significant at 5% Level, *Significant at 10% Level.

As exhibited by Table 7.7, even volatility sorted quintiles represent variations in RV and SR are determined by their past lagged values, whereas RQS is found to have a positive impact of past RV and SR in addition to the effect of their lags. The effect of past RV and SR on their present values resembles informational effects on them, and such an effect is more extensive regarding less volatile quintiles. Also, RQS conveys a considerable impact of its past movements, principally in case of less volatile quintiles. Furthermore, a negligible positive impact of past SR on RQS of less volatile quintiles and of RV on RQS of volatile quintiles has been evidenced. These results show significant inter-dependencies between liquidity, volatility, and returns (rejects H_{4b}).

Table 7.7: VAR results for RV based portfolios.

	VolQn1		
	SR	**RV**	**RQS**
C	-0.0003	0.0113***	0.0004
	(-0.2459)	(5.7399)	(0.9725)
SR(-1)	0.2491***	-0.1098	0.0129
	(1.3736)	(-0.6418)	(0.3687)
RV(-1)	-0.0222	0.4257***	0.0137
	(-0.3936)	(4.5351)	(0.7169)
RQS(-1)	0.2134	-0.3034	0.8355***
	(1.3736)	(-1.1739)	(1.8551)

	VolQn2		
	SR	**RV**	**RQS**
C	-0.0007	0.0170***	0.0004
	(-0.3212)	(4.6022)	(0.7373)
SR(-1)	0.3070***	-0.0432	-0.0524
	(2.5835)	(-0.2105)	(-1.5934)
SR(-2)	-0.1932	0.1172	0.0651**
	(-1.5749)	(0.5532)	(1.9190)
SR(-3)	0.0952	0.132	0.0248
	(0.8451)	(0.6783)	(0.7960)
RV(-1)	0.1078*	0.1174	-0.0106
	(1.7194)	(1.0839)	(-0.6118)
RV(-2)	-0.0892	0.152	0.016
	(-1.4064)	(1.3880)	(0.9112)
RV(-3)	-0.0186	0.0029	-0.009
	(-0.2941)	(0.0263)	(-0.5137)
RQS(-1)	0.1119	0.8559	0.6928***
	(0.2836)	(1.2559)	(6.3499)
RQS(-2)	0.3685	-0.9882	-0.0095
	(0.7529)	(-1.1687)	(-0.0702)
RQS(-3)	-0.2709	-0.4492	0.2221**
	(-0.6888)	(-0.6612)	(2.0421)

	VolQn3		
	SR	**RV**	**RQS**
C	-0.0014	0.0165***	0.0008

	(-0.5983)	(5.2865)	(1.4586)
SR(-1)	0.2419**	-0.1676	-0.0643**
	(2.0647)	(-1.1044)	(-2.2964)
SR(-2)	-0.1327	-0.0408	0.0844***
	(-1.2091)	(-0.2867)	(3.2176)
RV(-1)	0.0394	0.2270**	0.0093
	(0.4811)	(2.1399)	(0.4751)
RV(-2)	0.0001	0.1774*	-0.0064
	(0.00184)	(1.70653)	(-0.33341)
RQS(-1)	0.4235	-0.5474	0.5527***
	(0.9107)	(-0.9088)	(4.9744)
RQS(-2)	-0.2196	-0.2844	0.1882*
	(-0.4933)	(-0.4933)	(1.7690)

	VolQn4		
	SR	**RV**	**RQS**
C	-0.0043**	0.0209***	0.0017***
	(-2.0908)	(7.9102)	(4.3424)
SR(-1)	0.2128**	-0.0603	-0.0238
	(2.0452)	(-0.4518)	(-1.2387)
RV(-1)	0.1223	0.1576	-0.0243
	(1.4692)	(1.4763)	(-1.5760)
RQS(-1)	0.4376	0.1296	0.6627***
	(0.9681)	(0.2237)	(7.9251)

	VolQn5		
	SR	**RV**	**RQS**
C	-0.0035	0.0182***	0.0009*

	(-1.4953)	(6.8022)	(1.6800)
SR(-1)	0.1224	0.0692	-0.0322
	(1.1917)	(0.5870)	(-1.3757)
RV(-1)	0.1300	0.2544***	0.0407**
	(1.4357)	(2.4481)	(1.9713)
RQS(-1)	0.0577	0.5847	0.3780***
	(0.1445)	(1.2758)	(4.1515)

Source: Authors' calculations.

Note: Figures represent the coefficients; t-statistics in ( ); ***Significant at 1% Level, **Significant at 5% Level, *Significant at 10% Level.

7.2.7 Residual Diagnostics

Table 7.8 presents the Breusch-Godfrey Serial Correlation LM Test results for the models examining the inter-dependency between stock market liquidity, return, and volatility. The p-values signify the presence of no serial correlation in the models used for analysis.

Table 7.8: Breusch-Godfrey Serial Correlation LM Test results of the models examining inter-dependency between stock market liquidity, return, and volatility.

	Lag	**F-statistic**	**P-value**
	RQS based portfolios		
LiqQn1	2	11.0966	0.2691
LiqQn2	2	11.5689	0.2387
LiqQn3	2	8.3837	0.4960
LiqQn4	4	10.5583	0.3072
LiqQn5	1	12.8245	0.1707
	RV based portfolios		
VolQn1	1	9.9480	0.3547
VolQn2	3	8.6573	0.4695
VolQn3	2	13.4312	0.1440
VolQn4	1	11.2061	0.2618
VolQn5	1	11.9092	0.2185

Source: Authors' calculations.

Chapter 8

Findings and Conclusions

This section provides the findings and conclusions drawn for each objective of the study, policy implications, contribution of the study, and scope for future research.

8.1 Findings of the Study

8.1.1 Findings from Objective I analysis

- The study identifies a higher value of CET, a lower value of AR over the period, and a consistent level of ST, indicating that large volumes of security can be immediately traded in the Indian market at a lower price impact.
- The RQS is higher than ST and AR; thus, higher trading costs are incurred for executing a transaction in the Indian market.
- The past values over the sample period indicate that highly traded stocks generate lower price impact, have reduced spreads, and are cheaper to transact.
- The study shows a positive correlation between ST and RQS in the full sample and across the Quintiles. However, the strength of this relationship is higher for highly traded stocks. This indicates the existence of volume-based trading in highly traded stocks and is further evident from a positive correlation of AR with ST and RQS and a negative correlation with CET.
- The overall results from VAR and Impulse Response Functions indicate the presence of inter-relationships between the liquidity dimensions across the full sample and quintiles. However, CET is exogenously determined as it is not significantly dependent on liquidity measures.
- CET positively affects ST and RQS, indicating that the past immediacy raises the present-day spreads and share turnover on cautious trades.

- ST is positively determined by its previous day lag, which increases the future spreads as evidenced by the positive effect of one day lag of ST on RQS. This suggests the presence of informed trading in the market. Moreover, RQS displays an effect of its lag value that hints at the market's adjustment to the uncertainty brought in by informed traders and that this result is mainly found for less traded stocks.
- AR and ST have opposite effects of RQS at various time lags. This is because informed trading persuades more uninformed trading, which reduces the information asymmetry and thereby contracts the RQS and stabilizes the price impact.
- It is found that in highly traded stocks, past increased immediacy in trade generates more trading activity, lowers the impact on prices, and leads to an increase in the trading cost, as evidenced by the negative effect of CET on AR and positive effect on RQS and ST.
- In case of highly traded stocks, it is observed that ST is dependent on its time lag, which means that investors base their trading behavior by referring to the past trading activity, thereby confirming the notion of the information content of turnover.
- The RQS of highly traded stocks is positively affected by its lagged values and also by the one-day lag of ST. This depicts the presence of informed trading.
- It is found that an increased trading intensity in highly traded stocks smoothen the flow of information among all market participants and thereby enables optimal trading, which further eases the trading costs. This is evident from the negative effect of two days' ST on RQS.
- The results show that considerable variations in RQS are solely caused by their past movements. This indicates the adjustment of trades towards the risk induced by information asymmetry.
- Low traded stocks indicate a strong presence of informed trading since RQS and ST are positively dependent on their past lags; AR is negatively affected by two days lag of ST and positively by RQS, and CET is found to be dependent on one day lagged value of AR.

8.1.2 Findings from Objective II analysis

- It is found that PFCE and M3 have seen a significant uptrend in the Indian economy during the sample period, whereas FPI and REER have displayed a downward trend. MCAP has been on a high and stable over the period, and VOLATILITY has been low. CAB, IR, and RET have witnessed substantial deviations, whereas ST, GFCF, MCAP, CPI, and TV display lower deviations.

- CET is positively related to EXP and GFCF and negatively related to PFCE, TV, and VOLATILITY, indicating that market immediacy is enhanced during higher exports and government fixed capital investments; lower consumption expenditures, trading volume, and market volatility.
- RQS is negatively related to MCAP, suggesting that trading in small firm stocks carries higher transaction costs due to their illiquid characteristic. Moreover, the transaction costs increase with the trading volume and market volatility, as depicted by the positive relationship between RQS, TV, and VOLATILITY.
- ST is negatively related to RET and positively to TV. This suggests that an increased trading volume for stocks will foster trading activity and lower the overall return due to higher market liquidity.
- AR is positively related to INFL and REER, implying a higher price impact of trades during a higher inflationary trend and appreciation in domestic currency. Further, it is seen that higher price impact is not duly compensated by higher returns, as depicted by the negative relationship between AR and RET.
- Moreover, RQS is negatively related to M1 and REER, which means that a rise in narrow money and appreciation in domestic currency lowers the transaction costs. In contrast, RQS widens during increasing oil prices and foreign exchange reserves, as indicated by the positive relation of RQS with BRENT and FER.
- Lastly, RQS has a positive relationship with GOLD, which indicates that gold prices rise when transaction costs are high, thereby confirming with safe investment property of gold as a security. However, ST is found to be positively related with GOLD.
- The study found that only a few macroeconomic indicators are causing the various dimensions of market liquidity. CAB causes AR and RQS, FPI causes RQS, GFCF causes AR, GOLD causes ST, M1 and SILVER drive CET and ST, M3 causes CET and RQS. REER causes CET. On the other hand, all the liquidity measures show causality across many macroeconomic variables. AR causes CAB, GFCF, and GOLD, CET causes GFCE, PFCE, INFL, GOLD, IR, M3, and REER, RQS causes FDI, FPI, and M3, ST causes GDP,

GFCE, IR, M1, M3, and REER. These results reveal bidirectional causality between AR and CAB; AR and GFCF; RQS and FPI; M1 and ST; M3, RQS, and CET; REER and CET.

- The impact of FDI, CAB, IMP, FPI, M1, M3, INFL, IR, GOLD, and SILVER shows a persistent long-run impact on all the dimensional liquidity measures. This means that macroeconomic indicators have a significant effect on market liquidity.
- It is found that the immediate lag of FDI has a positive impact on AR, which means that a higher ownership concentration by foreign investors leads to a higher price impact on account of informational advantage. Additionally, since the current account deficit is mainly funded through foreign direct investments, which contributes to higher illiquidity in the stock market and hence evidences a negative impact of the lag of CAB on AR.
- CET is increasing due to higher imports in the country (as indicated by the positive effect of the second lag of IMP on CET) since higher imports foster higher foreign investments. But such increased execution speed is available at a higher transaction cost and results in a broader volume impact on stock prices, as depicted by the positive effect of the immediate two lags of FPI on RQS and of the lag of IMP and FDI on AR.
- Additionally, we find that CET is positively affected by the immediate lags of money supply (M1 and M3). This means that the market immediacy lowers when the money supply is curtailed, which further broadens the bid-ask spreads, as shown by the negative impact of the third lag of M1 and fifth lag of M3 on RQS. Moreover, this decreased money supply lowers the trading activity, as demonstrated by the positive effect of the lags of M1 and M3 on ST.
- It is evidenced that the distant lags of M1 and M3 cause positive impact on AR which indicates that an increased supply of money severely affects the stock prices in the future thereby confirms an inflationary effect of the money supply. Besides, a higher inflation is found to be reducing the liquidity levels as shown by the positive impact of CPI on AR.
- The increased IR positively affects RQS, confirming that higher borrowing cost deprives domestic investors from trading.
- CET and ST slow down during increasing gold and silver prices, as represented by the negative impact of the lags of GOLD and SILVER on CET and ST, whereas RQS widens, as indicated by their positive effect on RQS. However, the negative impact of the third lag of SILVER is nullified by the positive effect of its distant lag on CET. Thus, GOLD

evolves as the vital security that significantly affects trading activity and immediacy in the stock market over SILVER.

8.1.3 Findings from Objective III analysis

- It is found that a small size-based portfolio and high-value portfolios generate higher expected excess returns than the large size and low-value portfolios. Among the liquidity sorted portfolios, it is found that lower liquidity portfolios sorted in terms of RQS and ST fetch higher excess returns, whereas those portfolios sorted in terms of AR and CET do not compensate for higher illiquidity as they generate lower excess returns.
- The premium on size and value portfolios are favorable, whereas on liquidity sorted portfolios, the returns are negative except for the liquidity factor measured using RQS. This indicates that illiquidity on account of high RQS is duly compensated with a higher return than other illiquidity measures.
- The model results represent that the market risk factor premium positively affects the expected returns across all the portfolios, and their magnitude is very high. A similar effect is also seen in the lagged factor, but the magnitude of impact is very low.
- The premium on size risk factor seems to have a positive impact on returns of small-size portfolios, including those further sorted based on value and liquidity levels, but the impact coefficient is high for illiquid stocks and value stocks.
- The size risk premium impact is seen to be higher in magnitude than other factor premiums and thus indicates a dominant impact on the portfolio returns than any other factor in the model.
- The value risk factor premium yields higher returns on high-value portfolios and prevails irrespective of the level of liquidity.
- The study found that the liquidity risk factor significantly affects the returns of the portfolios wherein the premium on less liquid portfolios is higher in comparison to liquid portfolios.

8.1.4 Findings from Objective IV analysis

- Liquid portfolios comprise lower RQS, SR, and RV than illiquid portfolios. Volatile portfolios yield higher SR and have lower RQS. Across all the portfolios, SR earned in illiquid portfolios has been the highest, whereas variations in RV concerning illiquid and volatile portfolios are high. Also, the SRs are highly unstable for illiquid and volatile portfolios.

- The correlation analysis indicates a moderately significant relationship among RQS, RV, and SR across the quintile portfolios. The study found a positive relationship between RQS and RV, while RQS and RV are negatively related to SR. A stronger relationship between RQS and RV is seen across volatile portfolios, whereas between RQS and SR is found among illiquid and volatile portfolios. The results suggest that liquid and less volatile portfolio stocks are less prone to volatilities and liquidity shortages and offer higher returns.
- The Granger causality results across the portfolios indicate that SR causes RQS across most portfolios, mainly in the case of liquid and less volatile portfolios. On the other hand, RV is found to cause RQS in case of liquid and high volatility portfolios. However, no causality is evidenced between RV to SR, RQS to SR, SR to RV, and RQS to RV.
- VAR estimates depict the existence of significant inter-dependencies between liquidity, volatility, and returns.
- Among RQS based quintiles, all the variables are affected by their past lags. Moreover, the magnitude of such dependence is higher and positive for illiquid portfolios in case of SR and RV. This indicates that past price movements efficiently reflect market information in case of illiquid stocks. Further, there is a minimal positive impact of distant lag of SR on RQS of liquid quintiles and a negative impact of distant lag of SR on RQS of illiquid quintiles. However, the variations in RQS are majorly explained by its past values, which validate the presence of information disparity among the investors, and such effect is more prominent among illiquid quintiles.
- The RV based quintiles represent that the variations in RV and SR are determined by their past lagged values. This resembles the informational effects of the past movements; such effect is more significant regarding less volatile quintiles. Also, RQS conveys a considerable impact of its past movements, principally in the case of less volatile quintiles. It is also found to have a positive impact of past RV and SR.

8.2 Conclusion of the Study

The current study is focused on the Indian stock market and aims to measure market liquidity using multidimensional measures, examine the effect of macroeconomic indicators on the market liquidity, analyze the effect of market liquidity on the expected stock returns and evaluate the inter-dependencies between liquidity, volatility and stock returns.

Firstly, this study aimed to measure the liquidity of the Indian equity market and investigated the extent of interdependency between different dimensional aspects of market liquidity. The market liquidity was evaluated in terms of four dimensions: tightness, immediacy, depth, and breadth, whereas interactions between these dimensions were analyzed using the Vector Autoregression (VAR) model. The study employed daily frequency data from 1st April 2009 to 31st March 2019 and analyzed the aggregate market level and across annual turnover ranked quintiles.

The study concluded that liquidity in the context of the Indian equity market was characterized by consistent depth, higher breadth, and immediacy but displays a lower tightness at aggregate and group levels. Besides, there exists a significant negative relation between depth and tightness (represented by positive relation between ST and RQS) and was observed to be more assertive in case of high traded stocks, thereby confirming the existence of volume-based trading in the stock market. These results confirmed those obtained from intraday data series by Krishnan and Mishra (2013) in the Indian stock market. Additionally, the study arrived at a unique set of interdependencies between the dimensional measures of liquidity, which contrasted the study's assumptions. It is found that market depth and tightness were mainly dependent on their lagged values which confirmed the assumption of the informational role of trading activity as suggested by Anderson (1996) and Bohl and Henke (2003), and the asymmetric information component of quoted spreads as concluded by Hasbrouck (1991) and Glosten and Harris (1988). Further, the study evidenced that depth and tightness in the market were divergently dependent on different time-lagged values of each other and indicate a pertinent impact on liquidity provision through interactions between informed and uninformed trading patterns. Moreover, immediacy was found to be independently determined in the market except concerning immediacy in lower quintile stocks, which was perceived to be stimulated by market breadth.

In addition, the study concluded the existence of higher persistence in liquidity for high turnover stocks in comparison to lower turnover stocks as exhibited by higher depth, breadth, and tightness and matches with the findings obtained by Sklavos et al. (2013). Also, the past trading activity in highly traded stocks immensely advances their present depth and stabilizes the unnecessary movements in trading costs, further contributing to the higher liquidity of such stocks. On the contrary, lower depth and tightness in less frequently traded stocks significantly impair their market breadth.

Secondly, the current study analyzed the impact of macroeconomic indicators on the liquidity of the Indian stock market. Eighteen macroeconomic indicators at monthly and quarterly frequencies were selected and analyzed using the Granger Causality test, VAR Model, and Impulse Response Functions from 2009 to 2019. The study found that the Indian stock market is characterized by higher liquidity as determined in terms of higher market immediacy (CET), market breadth (AR), and a consistent level of market depth (ST). Concerning the macroeconomic indicators, Foreign Portfolio Investment (FPI) and Real Effective Exchange Rate (REER) have been the lowest over the period, whereas Private Final Consumption Expenditure (PFCE) and broad money (M3) have surged. Additionally, the market volatility has been relatively low compared to other market characteristics.

Further, a robust significant relationship exists between control variables and liquidity measures wherein transaction costs (RQS) and market volatility (VOLATILITY) were positively correlated. In contrast, market depth (ST) was found to have a positive correlation with trading volume (TV) and supports the findings of Fujimoto (2011). However, a lower significant relationship was found between the liquidity measures and macroeconomic indicators, among which the transaction cost (RQS) measure was related to most of the monthly indicators. RQS was found to be positively related with BRENT, FER and GOLD whereas negatively related with REER and M1.

The Granger Causality results revealed bidirectional causality between Amihud Illiquidity Ratio (AR), Current Account Balance (CAB) and Gross Fixed Capital Formation (GFCF); Relative Quoted Spread (RQS), Foreign Portfolio Investors (FPI), and Broad Money (M3); Share Turnover (ST) and Narrow Money (M1); Coefficient of Elasticity of Trading (CET), Broad Money (M3) and Real Effective Exchange Rate (REER). The VAR results and impulse responses document a significant negative impact of foreign investment inflows on stock market liquidity wherein increased FDI lowered market breadth (widen the price impact of trades) and

FPI decreased tightness by broadening the transaction costs, which confirmed the notion of informational asymmetry caused by foreign investors as modeled by Goldstein and Razin (2006). Besides, expansion in the money supply (represented by M1 and M3) resulted in enhancement of the overall market liquidity by increasing the tightness, immediacy, and depth of the market and was in confirmation to the work of Debata and Mahakud (2018). On the other hand, an increased money supply in the past lowered the market liquidity by impairing the market breadth, thus signify the inflationary pressure of money supply (Sprinkel, 1971). Even gold prices shrunk the aggregate liquidity by reducing the overall trading activity, immediacy and tightness, indicating a flight to safe investment assets. Additionally, rising inflation, imports, interest rates and a lower current account balance contribute towards diminishing liquidity levels. The overall results indicate that foreign investment inflows, money supply, gold prices, inflation, imports and interest rates are the fundamental macroeconomic determinants of liquidity in the Indian stock market.

Thirdly, the study examined the effect of stock liquidity on the returns of Indian stocks by using a sample of 352 stocks drawn from 2009 to 2019. Although the previous research works document the asset pricing role of liquidity but are unclear in the context of the emerging markets. In particular, this study employed liquidity measures that describe liquidity across four dimensions, i.e., breadth, immediacy, tightness, and depth, and uses the Liquidity Augmented Fama-French Three-Factor Model, a well-proven method in purely order-driven markets.

The study found that small-sized and high-value portfolio stocks generate higher expected returns than illiquid portfolios. The results indicated a consistent positive effect of market risk on the portfolio returns. Also, value portfolio stocks generate higher expected returns, including those further sorted as per liquidity levels. Moreover, the size risk premium was pre-dominantly priced in the expected returns of small size, value, and illiquid portfolio stocks, as evidenced by larger effect magnitude (Hearn et al., 2010). Additionally, liquidity risk factor was found to be positively priced in the illiquid portfolio returns and was robust across all dimensional measures used and confirmed the findings of Atilgan et al. (2016). On the contrary, share turnover led illiquidity was negatively priced across the portfolio returns and contradicts the findings of Marshall & Young (2003). Naik et al. (2020) identified that the high turnover stocks have higher transaction costs as they are subject to volume-based trading activities, thereby inducing the investors to discount the same with a higher return on their holdings. The study concludes that lower liquidity levels are priced in the expected returns of stocks over and above the effects of market, size, and value risk factors and thus supports the study of Ibbotson et al. (2013) in suggesting liquidity as an essential component to be considered while determining the stock prices.

Fourthly, this study evaluated the interdependencies and directional causality among liquidity, volatility, and return in the Indian stock market using VAR and Granger Causality tests across liquidity and volatility sorted portfolios. The necessary data was collected on a daily frequency over the period from 2009 to 2019. The market liquidity was measured using the transaction cost measure of Relative Quoted Spread. Relative Volatility was measured by computing the standard deviation of closing stock prices, and stock return was computed using the log of changes in the past closing stock prices. On an average, it was found that liquid and volatile portfolios have generated lower returns. Moreover, there exist moderate inter-relations between the variables used. It was found that returns (SR) were negatively related to illiquidity (RQS), and this tendency was higher among illiquid portfolios. Also, there was an inverse relationship between returns (SR) and volatility (RV) which was considerably higher for liquid and less volatile portfolios. On the other hand, volatility (RV) and illiquidity (RQS) were positively related to liquid and volatile portfolios, but magnitude of such relationship was higher for volatile portfolios.

Further, the VAR results evidenced positive lagged effects on returns (SR), and volatility (RV) of their past movements across liquidity and volatility sorted portfolios; thereby suggesting the past returns and volatility values convey relevant information which can be efficiently used for future trades and thereby affects the present returns and volatility (Darrat et al., 2003; Medeiros & Doornik, 2008). Also, illiquidity (RQS) was found to be majorly determined by its lagged values, indicating the presence of information asymmetry prevailing among the market participants. Furthermore, the past lags of returns (SR) and volatility (RV) also affect illiquidity, which further supports this view (Glosten & Harris, 1988; Hasbrouck, 1991). Eminently, all these effects were evidenced with a higher magnitude in case of illiquid and less volatile portfolios.

The study concluded that liquid portfolios consistently have higher liquidity, lower returns (SR), and less volatility (RV) in the future because of information efficiency in the market. On the other hand, illiquid portfolios will invariably possess higher illiquidity (RQS), and generate lower returns (SR) due to the information disparity in the market which will further raise illiquidity (Domowitz et al., 2001; Pascual & Veredas, 2010). The study also inferred that less volatile portfolios have considerable levels of liquidity (lower RQS) and, more interestingly earn higher returns (SR). Lastly, volatile portfolios are subject to higher illiquidity in the future, being enlarged by their higher volatility (RV) and illiquidity (RQS) levels of the past.

8.3 Policy Implications of Study

The findings of this study will have important implications for the investors and market regulators in a coherent understanding of the essence of market liquidity in the Indian equity market, strategizing of trades, and devising constructive policies to boost market confidence. The results relating to the measurement of market liquidity and interdependencies between the liquidity dimensions suggest that the investors should consider the movements among the market depth and tightness as they are crucial in understanding variations in market liquidity. Also, while formulating investment portfolios, one should consider liquid stocks as they provide a cushion against liquidity shocks. Additionally, due consideration needs to be given by the market regulator to enhance tightness in low-traded stocks to lessen extreme share price variations. Next, the overall macroeconomic determinants of liquidity indicate that foreign investment inflows, money supply, gold prices, inflation, imports and interest rates are the fundamental macroeconomic determinants of liquidity in the Indian stock market and thus should form a crucial consideration while making trading decisions and initiating liquidity-enhancing policy interventions. The findings on liquidity's role in asset pricing emphasize that investors and portfolio managers should consider liquidity as a risk factor in addition to other prime factors while allocating the securities in their portfolios in order to enhance their expected return earnings thereby will facilitate in mitigating the relevant risks. Due consideration to liquidity risk factor will also assist the business firms in adequately controlling their cost of equity by focusing on liquidity-enhancing policies for their stock to facilitate domestic and foreign equity investments. The intricacies presented by interdependencies between liquidity, volatility, and returns will ensure relevant forecasting of the future movements in these market characteristics based on a clear understanding of market efficiency.

8.4 Contribution of the Study

This study fruitfully adds to the existing scarce literature on liquidity measurement based on daily data concerning an order-driven market. The dimensional behavior of liquidity reveals crucial patterns that can be duly considered while devising effective regulatory policies and investment strategies. Moreover, this study offers a novel approach to inclusively studying market liquidity by widely accepted liquidity measures in an order-driven market system. Further, estimating interdependencies between liquidity dimensions using daily frequency data and emphasizing the patterns formed thereon is a distinct attempt concerning an equity market and will enable traders to optimize their trading strategies effectively. This study also highlights the prime macroeconomic indicators that affect the overall liquidity and thus contributes to understanding the role of systematic forces in determining liquidity variations. It adds to the existing scarce literature by investigating the indicator's impact across various liquidity facets, ensuring robust and comprehensive results in an emerging market. This study will even assist in correctly incorporating all the risk factors that determine the overall future asset return, enabling the investors to make appropriate portfolio decisions. Since accurate asset pricing is vital for the issuing companies to manage their cost of raising equity effectively, and would thus be helpful to them. This study contributes to enabling the investors to understand the interactions between liquidity, volatility, and return that can further assist in framing effective trading strategies. The results will also help better recognize the efficiency of the Indian stock market. Finally, this study will validate the liquidity, volatility, and return relationship as propounded by past studies in the emerging markets context.

8.5 Scope for Future Research

The present study presents new avenues for future research and is as follows:

- The present study can be undertaken by using high-frequency data in the Indian context, which can facilitate in understanding the concept of market liquidity on an intraday basis.
- The resiliency dimension of liquidity can be relevantly analyzed by using a considerable measure which is propounded and well proven by the upcoming studies in this area.
- This study can be very well extended to other financial markets in addition to the equity market by using similar methodology. Further, it can also be used to analyze global financial markets thereby facilitating comparative studies across global financial markets.
- Finally, there is an immense scope to conduct this study by incorporating additional variables, market structures, market regimes, and advanced econometric techniques to

refine further and validate the exclusive characteristics and importance of liquidity in the market microstructure.

Research Paper Publications

- Published a research paper titled "Measuring liquidity in Indian stock market: A dimensional perspective" in **PLOS ONE, PLOS**, Volume 15, Issue 9 September, 2020. **(SCOPUS Indexed Journal).**
- Published a research paper titled "Stock Market Liquidity: A Literature Review" in **SAGE Open**, Volume 11, Issue 1, 2021. **(SCOPUS Indexed Journal).**
- Published a research paper titled "Determinants of stock market liquidity – a macroeconomic perspective," in **Macroeconomics and Finance in Emerging Market Economies**, 2021. **(SCOPUS Indexed Journal)**.

Research Paper Presentations

- Presented a paper titled **"Stock Market Liquidity: A Literature Review"** at the Conference on Applied Economics and Finance held from 16th to 18th December 2019 organized by Goa Institute of Management, Sanquelim-Goa.
- Presented a paper titled **"Determinants of Stock Market Liquidity – A Macroeconomic Perspective"** in National E-Conference on Advances in Business, Management & Technology organized by Department of Management Sciences, Mahatma Gandhi Central University on 25th-26th June 2021.

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Annexure

Annexure I: List of companies selected for the study

Sr. No.	Company Name	Sr. No.	Company Name
1	3M India Ltd.	31	Balmer Lawrie & Co. Ltd.
2	A B B India Ltd.	32	Balrampur Chini Mills Ltd.
3	A C C Ltd.	33	Bank Of Baroda
4	A I A Engineering Ltd.	34	Bank Of India
5	Adani Ports & Special Economic Zone Ltd.	35	Bank Of Maharashtra
6	Aegis Logistics Ltd.	36	Bata India Ltd.
7	Ajanta Pharma Ltd.	37	Berger Paints India Ltd.
8	Akzo Nobel India Ltd.	38	Bharat Electronics Ltd.
9	Allahabad Bank	39	Bharat Forge Ltd.
10	Allcargo Logistics Ltd.	40	Bharat Heavy Electricals Ltd.
11	Amara Raja Batteries Ltd.	41	Bharat Petroleum Corpn. Ltd.
12	Ambuja Cements Ltd.	42	Bharti Airtel Ltd.
13	Andhra Bank	43	Biocon Ltd.
14	Apollo Hospitals Enterprise Ltd.	44	Birla Corporation Ltd.
15	Apollo Tyres Ltd.	45	Blue Dart Express Ltd.
16	Ashok Leyland Ltd.	46	Blue Star Ltd.
17	Asian Paints Ltd.	47	Bombay Burmah Trdg. Corpn. Ltd.
18	Astral Poly Technik Ltd.	48	Bombay Dyeing & Mfg. Co. Ltd.
19	Astrazeneca Pharma India Ltd.	49	Bosch Ltd.
20	Atul Ltd.	50	Brigade Enterprises Ltd.
21	Aurobindo Pharma Ltd.	51	Britannia Industries Ltd.
22	Axis Bank Ltd.	52	C C L Products (India) Ltd.
23	B A S F India Ltd.	53	C E S C Ltd.
24	B E M L Ltd.	54	C G Power & Indl. Solutions Ltd.
25	Bajaj Auto Ltd.	55	Cadila Healthcare Ltd.
26	Bajaj Electricals Ltd.	56	Can Fin Homes Ltd.
27	Bajaj Finance Ltd.	57	Canara Bank
28	Bajaj Finserv Ltd.	58	Carborundum Universal Ltd.
29	Bajaj Holdings & Invst. Ltd.	59	Castrol India Ltd.
30	Balkrishna Industries Ltd.	60	Ceat Ltd.

61	Central Bank Of India	91	Eicher Motors Ltd.
62	Century Plyboards (India) Ltd.	92	Elgi Equipments Ltd.
63	Cera Sanitaryware Ltd.	93	Emami Ltd.
64	Chambal Fertilisers & Chemicals Ltd.	94	Engineers India Ltd.
65	Chennai Petroleum Corpn. Ltd.	95	Escorts Ltd.
66	Cholamandalam Financial Holdings Ltd.	96	Essel Propack Ltd.
67	Cholamandalam Investment & Finance Co. Ltd.	97	Exide Industries Ltd.
68	Cipla Ltd.	98	F D C Ltd.
69	City Union Bank Ltd.	99	Federal Bank Ltd.
70	Colgate-Palmolive (India) Ltd.	100	Finolex Cables Ltd.
71	Container Corpn. Of India Ltd.	101	Finolex Industries Ltd.
72	Coromandel International Ltd.	102	Firstsource Solutions Ltd.
73	Corporation Bank	103	Fortis Healthcare Ltd.
74	Crisil Ltd.	104	G A I L (India) Ltd.
75	Cummins India Ltd.	105	G E Power India Ltd.
76	Cyient Ltd.	106	G E T & D India Ltd.
77	D C B Bank Ltd.	107	G H C L Ltd.
78	D C M Shriram Ltd.	108	G M R Infrastructure Ltd.
79	D L F Ltd.	109	Gateway Distriparks Ltd.
80	Dabur India Ltd.	110	Gillette India Ltd.
81	Deepak Fertilisers & Petrochemicals Corpn. Ltd.	111	Glaxosmithkline Consumer Healthcare Ltd.
82	Delta Corp Ltd.	112	Glaxosmithkline Pharmaceuticals Ltd.
83	Dewan Housing Finance Corpn. Ltd.	113	Glenmark Pharmaceuticals Ltd.
84	Dish T V India Ltd.	114	Godfrey Phillips India Ltd.
85	Divi'S Laboratories Ltd.	115	Godrej Consumer Products Ltd.
86	Dr. Reddy'S Laboratories Ltd.	116	Godrej Industries Ltd.
87	E I D-Parry (India) Ltd.	117	Granules India Ltd.
88	E I H Ltd.	118	Graphite India Ltd.
89	Eclerx Services Ltd.	119	Grasim Industries Ltd.
90	Edelweiss Financial Services Ltd.	120	Great Eastern Shipping Co. Ltd.

121	Greaves Cotton Ltd.
122	Grindwell Norton Ltd.
123	Gruh Finance Ltd. (Merged)
124	Gujarat Alkalies & Chemicals Ltd.
125	Gujarat Mineral Devp. Corpn. Ltd.
126	Gujarat Narmada Valley Fertilizers & Chemicals Ltd.
127	Gujarat State Fertilizers & Chemicals Ltd.
128	Gujarat State Petronet Ltd.
129	H C L Technologies Ltd.
130	H D F C Bank Ltd.
131	H E G Ltd.
132	H F C L Ltd.
133	Havells India Ltd.
134	Heidelberg Cement India Ltd.
135	Heritage Foods Ltd.
136	Hero Motocorp Ltd.
137	Hexaware Technologies Ltd.
138	Himadri Speciality Chemical Ltd.
139	Himatsingka Seide Ltd.
140	Hindalco Industries Ltd.
141	Hindustan Petroleum Corpn. Ltd.
142	Hindustan Unilever Ltd.
143	Hindustan Zinc Ltd.
144	Honeywell Automation India Ltd.
145	Housing Development Finance Corpn. Ltd.
146	I C I C I Bank Ltd.
147	I C R A Ltd.
148	I D F C Ltd.
149	I F B Industries Ltd.
150	I F C I Ltd.
151	I R B Infrastructure Developers Ltd.
152	I T C Ltd.
153	I T D Cementation India Ltd.
154	I T I Ltd.
155	India Cements Ltd.
156	Indiabulls Real Estate Ltd.
157	Indiabulls Ventures Ltd.
158	Indian Bank
159	Indian Hotels Co. Ltd.
160	Indian Oil Corpn. Ltd.
161	Indian Overseas Bank
162	Indoco Remedies Ltd.
163	Indraprastha Gas Ltd.
164	Indusind Bank Ltd.
165	Info Edge (India) Ltd.
166	Infosys Ltd.
167	Inox Leisure Ltd.
168	Ipca Laboratories Ltd.
169	J B Chemicals & Pharmaceuticals Ltd.
170	J K Cement Ltd.
171	J K Lakshmi Cement Ltd.
172	J K Paper Ltd.
173	J K Tyre & Inds. Ltd.
174	J M Financial Ltd.
175	J S W Steel Ltd.
176	Jagran Prakashan Ltd.
177	Jai Corp Ltd.
178	Jain Irrigation Systems Ltd.
179	Jaiprakash Associates Ltd.
180	Jammu & Kashmir Bank Ltd.

181 Jet Airways (India) Ltd.
182 Jindal Saw Ltd.
183 Jindal Stainless Ltd.
184 Jindal Steel & Power Ltd.
185 Jubilant Life Sciences Ltd.
186 Jyothy Labs Ltd.
187 K E C International Ltd.
188 K N R Constructions Ltd.
189 K P R Mill Ltd.
190 K R B L Ltd.
191 Kajaria Ceramics Ltd.
192 Kalpataru Power Transmission Ltd.
193 Kansai Nerolac Paints Ltd.
194 Karnataka Bank Ltd.
195 Karur Vysya Bank Ltd.
196 Kaveri Seed Co. Ltd.
197 Kei Industries Ltd.
198 Kolte Patil Developers Ltd.
199 Kotak Mahindra Bank Ltd.
200 L I C Housing Finance Ltd.
201 Lakshmi Machine Works Ltd.
202 Lakshmi Vilas Bank Ltd.
203 Larsen & Toubro Ltd.
204 Linde India Ltd.
205 Lupin Ltd.
206 M R F Ltd.
207 Magma Fincorp Ltd.
208 Maharashtra Scooters Ltd.
209 Maharashtra Seamless Ltd.
210 Mahindra & Mahindra Financial Services Ltd.
211 Mahindra & Mahindra Ltd.
212 Mahindra C I E Automotive Ltd.
213 Mangalore Refinery & Petrochemicals Ltd.
214 Marico Ltd.
215 Maruti Suzuki India Ltd.
216 Max Financial Services Ltd.
217 Minda Industries Ltd.
218 Mindtree Ltd.
219 Monsanto India Ltd. (Merged)
220 Motherson Sumi Systems Ltd.
221 Motilal Oswal Financial Services Ltd.
222 Mphasis Ltd.
223 N C C Ltd.
224 N I I T Technologies Ltd.
225 N L C India Ltd.
226 N M D C Ltd.
227 N T P C Ltd.
228 Natco Pharma Ltd.
229 National Aluminium Co. Ltd.
230 National Fertilizers Ltd.
231 Nava Bharat Ventures Ltd.
232 Navin Fluorine Intl. Ltd.
233 Nesco Ltd.
234 Network18 Media & Invst. Ltd.
235 Nilkamal Ltd.
236 Oil & Natural Gas Corpn. Ltd.
237 Omaxe Ltd.
238 Oracle Financial Services Software Ltd.
239 Oriental Bank Of Commerce
240 P T C India Ltd.

241 P V R Ltd.
242 Page Industries Ltd.
243 Petronet L N G Ltd.
244 Pfizer Ltd.
245 Phillips Carbon Black Ltd.
246 Phoenix Mills Ltd.
247 Pidilite Industries Ltd.
248 Piramal Enterprises Ltd.
249 Power Finance Corpn. Ltd.
250 Power Grid Corpn. Of India Ltd.
251 Praj Industries Ltd.
252 Prism Johnson Ltd.
253 Procter & Gamble Health Ltd.
254 Procter & Gamble Hygiene & Health Care Ltd.
255 Punjab National Bank
256 R E C Ltd.
257 Radico Khaitan Ltd.
258 Rain Industries Ltd.
259 Rajesh Exports Ltd.
260 Rallis India Ltd.
261 Ramco Cements Ltd.
262 Ramkrishna Forgings Ltd.
263 Rashtriya Chemicals & Fertilizers Ltd.
264 Raymond Ltd.
265 Redington (India) Ltd.
266 Reliance Capital Ltd.
267 Reliance Communications Ltd.
268 Reliance Industries Ltd.
269 Reliance Infrastructure Ltd.
270 Reliance Power Ltd.
271 S K F India Ltd.
272 S R E I Infrastructure Finance Ltd.
273 S R F Ltd.
274 Sadbhav Engineering Ltd.
275 Sanofi India Ltd.
276 Schaeffler India Ltd.
277 Shipping Corpn. Of India Ltd.
278 Shoppers Stop Ltd.
279 Shree Cement Ltd.
280 Shree Renuka Sugars Ltd.
281 Shriram City Union Finance Ltd.
282 Shriram Transport Finance Co. Ltd.
283 Siemens Ltd.
284 Sobha Ltd.
285 Solar Industries India Ltd.
286 Sonata Software Ltd.
287 South Indian Bank Ltd.
288 State Bank Of India
289 Steel Authority Of India Ltd.
290 Sterlite Technologies Ltd.
291 Strides Pharma Science Ltd.
292 Sudarshan Chemical Inds. Ltd.
293 Sun Pharma Advanced Research Co. Ltd.
294 Sun Pharmaceutical Inds. Ltd.
295 Sun T V Network Ltd.
296 Sundaram Finance Ltd.
297 Sundaram-Clayton Ltd.
298 Sundram Fasteners Ltd.
299 Suprajit Engineering Ltd.
300 Supreme Industries Ltd.

301 Suven Life Sciences Ltd.
302 Suzlon Energy Ltd.
303 Syndicate Bank
304 T T K Prestige Ltd.
305 T V S Motor Co. Ltd.
306 T V Today Network Ltd.
307 Take Solutions Ltd.
308 Tamil Nadu Newsprint & Papers Ltd.
309 Tata Chemicals Ltd.
310 Tata Coffee Ltd.
311 Tata Consultancy Services Ltd.
312 Tata Elxsi Ltd.
313 Tata Global Beverages Ltd.
314 Tata Investment Corpn. Ltd.
315 Tata Motors Ltd.
316 Tata Power Co. Ltd.
317 Tata Steel Ltd.
318 Tech Mahindra Ltd.
319 Thermax Ltd.
320 Thomas Cook (India) Ltd.
321 Time Technoplast Ltd.
322 Timken India Ltd.
323 Titan Company Ltd.
324 Torrent Pharmaceuticals Ltd.
325 Torrent Power Ltd.
326 Trent Ltd.
327 Trident Ltd.
328 Tv18 Broadcast Ltd.
329 U P L Ltd.
330 Uco Bank
331 Uflex Ltd.
332 Ultratech Cement Ltd.
333 Union Bank Of India
334 United Breweries Ltd.
335 United Spirits Ltd.
336 V I P Industries Ltd.
337 V S T Industries Ltd.
338 Vakrangee Ltd.
339 Vardhman Textiles Ltd.
340 Vedanta Ltd.
341 Venky'S (India) Ltd.
342 V-Guard Industries Ltd.
343 Vodafone Idea Ltd.
344 Voltas Ltd.
345 Wabco India Ltd.
346 Welspun Corp Ltd.
347 Welspun India Ltd.
348 Wipro Ltd.
349 Wockhardt Ltd.
350 Yes Bank Ltd.
351 Zee Entertainment Enterprises Ltd.
352 Zensar Technologies Ltd.

Annexure II: Vector Autoregression Estimates for Macroeconomic Indicators, Market Liquidity and Control Variables

Vector Autoregression estimates for quarterly variables.

	AR	CAB	CET	RQS	ST	VOLATILITY	VOL	RET	MCAP
C	0.0210	-0.0385	0.0736	-0.0023	0.0076	-0.0214	0.0040**	-0.1908*	0.0011
	(0.5817)	(-0.0785)	(0.9324)	(-0.1982)	(1.1825)	(-0.3729)	(2.2099)	(-1.7169)	(1.3235)
AR(-1)	-0.4278***	-0.9137	0.8172**	-0.0707	-0.0960***	-0.7183***	-0.0197**	0.8929***	-0.0046
	(-2.5192)	(-0.3961)	(2.1989)	(-1.2867)	(-3.1579)	(-2.6649)	(-2.3059)	(2.6629)	(-1.1277)
CAB(-1)	-0.0099**	-0.4678	-0.0343	-0.0035**	-0.0011	0.0174	-0.0009	-0.0261	-0.0001
	(0.8037)	(-2.7953)	(-1.2721)	(-0.8670)	(-0.4858)	(0.8877)	(-1.4508)	(-0.6889)	(-0.2715)
CET(-1)	-0.0212	-0.5828	-0.3512**	0.0167	0.0053	-0.0929	0.0050	0.2115	0.0005
	(-0.2811)	(-0.5696)	(-2.1306)	(0.6837)	(0.3917)	(-0.7772)	(1.3347)	(0.9116)	(0.3013)
RQS(-1)	-0.1076	0.4022	0.2512	-0.0989	-0.1190	-0.3348	0.0066	0.4918*	0.0248
	(-0.1479)	(0.2431)	(0.7858)	(-0.4199)	(-0.9135)	(-1.1558)	(0.1810)	(1.8706)	(1.4226)
ST(-1)	0.1757	0.3324	0.7425	0.7751*	0.9704**	0.8512**	0.1492	-0.6847	-0.0755
	(0.0750)	(0.3246)	(0.5348)	(1.8134)	(2.3137)	(2.2454)	(1.2684)	(-0.7877)	(-1.3454)
VOLATILITY(-1)	0.0948	0.8393	-0.1995	-0.0753	-0.0493*	-0.5543***	-0.0095	-0.0108	-0.0025
	(0.6715)	(0.4378)	(-0.6459)	(-1.6490)	(-1.9526)	(-2.4748)	(-1.3462)	(-0.0249)	(-0.7344)
VOL(-1)	-0.4460	-0.7255	-0.2456*	-0.3874	-0.8510**	-0.5519	-0.7304**	0.2459	0.1565
	(-0.1996)	(-0.4138)	(-1.8443)	(-1.4446)	(-2.1982)	(-1.4392)	(-2.0072)	(0.7728)	(0.9022)
RET(-1)	-0.1057*	-0.4141	-0.0908	0.0113	0.0139	0.1273	-0.0004	-0.4526**	-0.0020
	(-1.7867)	(-0.5152)	(-0.7009)	(0.5915)	(1.3122)	(1.3552)	(-0.1491)	(-2.4841)	(-1.4214)
MCAP(-1)	-0.7341	0.0767	-2.3630	0.7649**	-0.0477	0.3586	-0.3549	0.6860**	0.1827

	(-0.9150)	(0.5407)	(-0.1278)	(2.1077)	(-0.6926)	(1.5921)	(-0.8362)	(2.1545)	(0.9031)

	AR	**EXP**	**CET**	**RQS**	**ST**	**VOLATILITY**	**VOL**	**RET**	**MCAP**
C	-0.0052	0.0430**	0.1190	0.0051	0.0097	0.0018	0.0048**	-0.1525	0.0010
	(-0.1358)	(3.0036)	(1.3751)	(0.4078)	(1.3747)	(0.0287)	(2.3659)	(-1.2563)	(1.0744)
AR(-1)	-0.4081***	0.0388	0.7531**	-0.0774	-0.0981***	-0.6902***	-0.0213**	0.6436***	-0.0047
	(-2.5077)	(0.6339)	(2.0379)	(-1.4508)	(-3.2652)	(-2.5882)	(-2.4621)	(2.5928)	(-1.1697)
EXP(-1)	0.7145	-0.3978**	-0.2002	-0.2009	-0.0548	-0.6915	-0.0202	-0.0200	0.0038
	(1.6423)	(-2.4324)	(-1.2149)	(-1.4080)	(-0.6822)	(-0.9700)	(-0.8748)	(-0.7362)	(0.3553)
CET(-1)	-0.0338	-0.0249	-0.3583**	0.0191	0.0057	-0.0375	0.0044	0.2102	0.0003
	(-0.4672)	(-0.9175)	(-2.1815)	(0.8065)	(0.4306)	(-0.3167)	(1.1483)	(0.9128)	(0.1465)
RQS(-1)	0.0386	0.0684	0.8919	-0.1443	-0.1322	-0.3029	-0.0015	3.9058*	0.0247
	(0.0551)	(0.2599)	(0.5607)	(-0.6280)	(-1.0225)	(-1.1351)	(-0.0403)	(1.7509)	(1.4246)
ST(-1)	0.4832	-0.6008	0.4765	0.2981*	0.9513**	0.6715**	0.1493	-0.9535	-0.0719
	(0.2125)	(-0.7030)	(0.4796)	(1.7404)	(2.2671)	(2.0589)	(1.2346)	(-0.8222)	(-1.2779)
VOLATILITY(-1)	0.0680	0.0752	-0.1796	-0.0687	-0.0477*	-0.4900**	-0.0097	0.0104	-0.0028
	(0.4942)	(1.4538)	(-0.5750)	(-1.5232)	(-1.8798)	(-2.1743)	(-1.3205)	(0.0237)	(-0.8263)
VOL(-1)	-0.8058	-0.8984	-0.7220*	-3.0149	-0.7514**	-0.8384	-0.7010*	0.0099	0.1472
	(-0.3976)	(-0.3387)	(-1.6985)	(-1.3023)	(-2.1126)	(-1.2830)	(-1.8677)	(0.8458)	(0.8427)
RET(-1)	-0.1050*	-0.0132	-0.1009	0.0108	0.0137	0.1403	-0.0008	-0.4598***	-0.0021
	(-1.8456)	(-0.6167)	(-0.7812)	(0.5778)	(1.3033)	(1.5047)	(-0.2567)	(-2.5377)	(-1.4747)
MCAP(-1)	-0.9784	-0.1915	-0.8236	0.9964*	-0.2560	0.4346	-0.4271	0.5666**	0.1988
	(-0.5964)	(-0.0610)	(-0.3600)	(1.8248)	(-0.8154)	(1.3478)	(-0.9621)	(1.9664)	(0.9618)

	AR	**FDI**	**CET**	**RQS**	**ST**	**VOLATILITY**	**VOL**	**RET**	**MCAP**
C	0.0214	0.0175	0.0751	-0.0022	0.0076	-0.0217	0.0040**	-0.1852*	0.0012
	(0.6308)	(0.1193)	(0.9403)	(-0.1850)	(1.1946)	(-0.3820)	(2.2170)	(-1.7671)	(1.3310)

AR(-1)	-0.4458***	-0.0654	0.7953**	-0.0728	-0.0948***	-0.7177***	-0.0200**	0.7429***	-0.0048
	(-2.8000)	(-1.5496)	(2.1204)	(-1.3213)	(-3.1655)	(-2.6845)	(-2.3425)	(2.5260)	(-1.1723)
FDI(-1)	0.0803**	-0.2636	-0.0869	-0.0091	-0.0069	0.0677	-0.0028	0.2365**	0.0001
	(2.1030)	(-1.5983)	(-0.9654)	(-0.6857)	(-0.9641)	(1.0560)	(-1.3476)	(2.0035)	(0.0800)
CET(-1)	0.0234	0.1622	-0.4372***	0.0079	0.0011	-0.0409	0.0026	0.2542	0.0004
	(0.3363)	(0.5392)	(-2.6639)	(0.3271)	(0.0827)	(-0.3493)	(0.7008)	(1.1806)	(0.2492)
RQS(-1)	-0.2151	0.2614	0.2156	-0.1018	-0.1111	-0.3674	0.0067	0.5195*	0.0241
	(-0.3141)	(0.4266)	(0.7536)	(-0.4297)	(-0.8624)	(-1.1894)	(0.1830)	(1.6634)	(1.3803)
ST(-1)	0.9340	0.2690	2.2572	0.7323*	0.9081**	0.8627**	0.1311	-0.6686	-0.0735
	(0.4174)	(0.9593)	(0.4282)	(1.7086)	(2.1572)	(2.3589)	(1.0911)	(-0.3859)	(-1.2876)
VOLATILITY(-1)	0.1053	-0.3591	-0.2444	-0.0798*	-0.0505**	-0.5326**	-0.0107	-0.0585	-0.0026
	(0.7998)	(-0.6318)	(-0.7882)	(-1.7527)	(-2.0408)	(-2.4100)	(-1.5134)	(-0.1439)	(-0.7742)
VOL(-1)	-0.5745	-0.7663	-0.2107	-0.0690	-0.5844**	-0.0564	-0.6310*	0.2206	0.1521
	(-0.6549)	(-0.8875)	(-1.5930)	(-1.2701)	(-1.9669)	(-1.6249)	(-1.6829)	(0.3345)	(0.8542)
RET(-1)	-0.1113**	-0.1663	-0.0967	0.0108	0.0143	0.1271	-0.0005	-0.4973***	-0.0021
	(-2.0049)	(-0.6935)	(-0.7391)	(0.5605)	(1.3660)	(1.3632)	(-0.1788)	(-2.8982)	(-1.4579)
MCAP(-1)	-0.8944	0.4181	-0.1272	0.5798**	-0.2043	0.8236*	-0.4129	0.9292***	0.1854
	(-0.7370)	(0.7940)	(-0.2191)	(2.0167)	(-0.8005)	(1.6997)	(-0.9617)	(2.5100)	(0.9091)
	AR	**FPI**	**CET**	**RQS**	**ST**	**VOLATILITY**	**VOL**	**RET**	**MCAP**
C	0.0158	-0.1418	0.0928	-0.0010	0.0077	-0.0274	0.0038**	-0.2208**	0.0010
	(0.4292)	(-0.7015)	(1.1514)	(-0.0861)	(1.1746)	(-0.4654)	(2.0200)	(-2.0341)	(1.1499)
AR(-1)	-0.4362***	-0.0264	0.8528**	-0.0709	-0.0978**	-0.7147***	-0.0228***	0.1598**	-0.0057
	(-2.5183)	(-0.0277)	(2.2458)	(-1.2576)	(-3.1515)	(-2.5812)	(-2.5629)	(2.2681)	(-1.3914)
FPI(-1)	0.0319	-0.2675	-0.1187	0.0073*	-0.0001	0.0333	0.0019	0.2323*	0.0011
	(0.6779)	(-1.0330)	(-1.1501)	(-0.4744)	(-0.0112)	(0.4421)	(0.7932)	(1.6710)	(1.0391)

CET(-1)	0.0022	-0.2176	-0.4341***	0.0094	0.0035	-0.0573	0.0041	0.2243	0.0007
	(0.0299)	(-0.5366)	(-2.6845)	(0.3920)	(0.2680)	(-0.4856)	(1.0727)	(1.0300)	(0.3961)
RQS(-1)	-0.1140	0.0068	0.2913	-0.1051	-0.1257	-0.2962	-0.0034	0.5133	0.0217
	(-0.1555)	(0.0017)	(0.8036)	(-0.4406)	(-0.9569)	(-1.1063)	(-0.0898)	(1.6237)	(1.2653)
ST(-1)	0.0990	0.4140	0.9921	0.7096*	0.9854**	0.8714**	0.1658	-0.8507	-0.0720
	(0.0422)	(0.4197)	(0.5817)	(1.8455)	(2.3443)	(2.1787)	(1.3768)	(-0.7003)	(-1.3098)
VOLATILITY(-1)	0.0605	-0.1676	-0.0683	-0.0692	-0.0507*	-0.5801**	-0.0137*	-0.4001	-0.0043
	(0.3837)	(-0.1935)	(-0.1977)	(-1.3489)	(-1.7959)	(-2.3028)	(-1.6967)	(-0.8601)	(-1.1731)
VOL(-1)	0.6297	0.5037	-0.9283**	-3.8780	-0.8725**	-0.2841	-0.6277	0.9017	0.2247
	(0.0807)	(0.1516)	(-2.1582)	(-1.5263)	(-2.0543)	(-1.1448)	(-1.5670)	(1.3411)	(1.2277)
RET(-1)	-0.0972	0.2011	-0.1213	0.0088	0.0133	0.1397	-0.0007	-0.4404***	-0.0019
	(-1.6397)	(0.6175)	(-0.9336)	(0.4544)	(1.2567)	(1.4755)	(-0.2264)	(-2.5177)	(-1.3877)
MCAP(-1)	-0.5934	0.1750	-0.9103	0.7444**	-0.0382	0.4382	-0.3322	0.8464**	0.1919
	(-0.8948)	(1.2898)	(-0.1564)	(2.0793)	(-0.6829)	(1.5803)	(-0.7627)	(2.3170)	(0.9648)

	AR	**GDP**	**CET**	**RQS**	**ST**	**VOLATILITY**	**VOL**	**RET**	**MCAP**
C	0.0609	0.0526***	0.0584	-0.0029	0.0121	0.0177	0.0058***	-0.0423	0.0013
	(1.1864)	(9.3619)	(0.4387)	(-0.1675)	(1.5294)	(0.1911)	(2.6476)	(-0.2895)	(0.8977)
AR(-1)	-0.7363***	0.0314	0.8741	-0.0169	-0.0636*	-0.7615*	-0.0121	0.2875	0.0017
	(-3.0739)	(1.1993)	(1.4063)	(-0.2120)	(-1.7209)	(-1.7624)	(-1.1836)	(0.4216)	(0.2579)
AR(-2)	-0.1088	0.0213	0.2958	0.0794	0.0319	-0.2330	0.0115	-0.7132	0.0070
	(-0.3561)	(0.6367)	(0.3731)	(0.7791)	(0.6756)	(-0.4227)	(0.8866)	(-0.8199)	(0.8408)
GDP(-1)	-0.8271	0.1654	0.6885	-0.1066	-0.0613	-0.7975	0.0003	-0.7361	-0.0115
	(-0.8694)	(1.5878)	(0.2789)	(-0.3360)	(-0.4175)	(-1.0474)	(0.0077)	(-1.3794)	(-0.4443)
GDP(-2)	-0.4699	-0.8039***	0.3341	-0.1723	-0.1091	-0.2791	-0.0548	-0.0691	0.0033
	(-0.5614)	(-8.7734)	(1.0747)	(-0.6176)	(-0.8444)	(-0.8471)	(-1.5399)	(-1.2879)	(0.1437)

CET(-1)	-0.0969	-0.0153	-0.3855	-0.0019	0.0069	-0.0628	0.0044	-0.1204	0.0020
	(-0.8635)	(-1.2459)	(-1.3241)	(-0.0509)	(0.3971)	(-0.3104)	(0.9154)	(-0.3768)	(0.6614)
CET(-2)	-0.1423	0.0538***	-0.0354	0.0327	0.0162	-0.0499	0.0091*	-0.2541	0.0015
	(-1.2904)	(4.4563)	(-0.1237)	(0.8897)	(0.9525)	(-0.2510)	(1.9319)	(-0.8094)	(0.5164)
RQS(-1)	-0.4965	0.0975	0.4200	-0.3769	0.0054	-0.3281	0.0176	-0.8772	0.0520
	(-0.4028)	(0.7227)	(1.0691)	(-0.9171)	(0.0286)	(-1.0468)	(0.3365)	(-0.2499)	(1.5510)
RQS(-2)	-0.0943	-0.0081	-0.1340	0.1624	0.0014	0.5205	0.0205	0.8101	0.0045
	(-0.1022)	(-0.0804)	(-0.0560)	(0.5280)	(0.0100)	(0.9138)	(0.5229)	(0.3085)	(0.1806)
ST(-1)	-0.7977	-0.3016	0.5173	0.1774	0.2774	0.4181	-0.0359	-0.0479	-0.0217
	(-0.4597)	(-0.7044)	(0.9379)	(0.1361)	(0.4597)	(0.9098)	(-0.2161)	(-0.8127)	(-0.2046)
ST(-2)	0.1007	0.0419	-2.0629	0.0716	0.1757	-0.6249	0.1026	0.0529	-0.0252
	(0.0332)	(0.1259)	(-0.2617)	(0.0707)	(0.3747)	(-0.8439)	(0.7944)	(0.3530)	(-0.3055)
VOLATILITY(-1)	0.1784	0.0305	-0.3408	-0.0352	-0.0195	-0.6274	-0.0010	-0.2804	-0.0032
	(0.8177)	(1.2751)	(-0.6019)	(-0.4841)	(-0.5784)	(-1.5937)	(-0.1036)	(-0.4513)	(-0.5362)
VOLATILITY(-2)	0.1917	0.0178	0.1305	-0.0661	-0.0027	-0.2962	-0.0043	-0.1172	0.0023
	(0.8911)	(0.7551)	(0.2337)	(-0.9210)	(-0.0810)	(-0.7631)	(-0.4676)	(-0.1914)	(0.3909)
VOL(-1)	0.4410	-0.2758	-0.7974	0.4925	-0.5080	-0.1272	-0.4789	0.6814	-0.0177
	(0.3884)	(-1.4840)	(-1.5350)	(0.1054)	(-0.6976)	(-0.2029)	(-0.8041)	(1.1203)	(-0.0464)
VOL(-2)	-0.0712	-0.6406	-0.8811	-0.1290	0.0842	0.3105	-0.2221	-0.7572	0.0883
	(-0.2175)	(-0.6145)	(-0.3189)	(-0.0406)	(0.0573)	(1.0658)	(-0.5485)	(-0.3230)	(0.3412)
RET(-1)	-0.1188	-0.0321***	0.1039	-0.0209	0.0103	0.0566	-0.0049	-0.7596**	-0.0012
	(-1.0885)	(-2.6814)	(0.3668)	(-0.5746)	(0.6122)	(0.2875)	(-1.0651)	(-2.4436)	(-0.4175)
RET(-2)	-0.0986	-0.0044	-0.0339	0.0172	0.0316***	-0.0634	0.0068**	-0.4950**	0.0017
	(-1.2367)	(-0.5047)	(-0.1639)	(0.6455)	(2.5660)	(-0.4410)	(2.0171)	(-2.1802)	(0.7944)
MCAP(-1)	-0.7977	0.6784	0.7427	0.9952	0.1565	-0.0094	0.0897	-0.9090	0.4642

	(-0.5572)	(1.5495)	(0.7992)	(0.5690)	(0.4746)	(-0.2461)	(0.1337)	(-0.3539)	(1.0819)
MCAP(-2)	-0.4840	-0.6577	-0.0933	0.6176	-0.1438	0.8382	-0.2076	0.5039*	-0.1526
	(-0.0318)	(-0.9939)	(-1.0141)	(0.7122)	(-0.9118)	(0.6126)	(-0.3206)	(1.8329)	(-0.3686)

	AR	**GFCE**	**CET**	**RQS**	**ST**	**VOLATILITY**	**VOL**	**RET**	**MCAP**
C	0.0354	0.0523	0.0988	-0.0088	0.0086	-0.0221	0.0043**	-0.1609	0.0013
	(0.7460)	(1.3016)	(0.8806)	(-0.5597)	(1.1738)	(-0.2573)	(2.1115)	(-1.1000)	(0.9999)
AR(-1)	-0.7137***	-0.5183**	0.7835	-0.0085	-0.0616	-0.8160*	-0.0120	0.3233	0.0002
	(-2.8030)	(-2.4024)	(1.3012)	(-0.1010)	(-1.5599)	(-1.7740)	(-1.0928)	(0.4118)	(0.0329)
AR(-2)	-0.1391	0.0737	-0.1432	0.0895	0.0384	-0.1453	0.0154	-0.6329	0.0057
	(-0.4728)	(0.2957)	(-0.2058)	(0.9183)	(0.8425)	(-0.2733)	(1.2148)	(-0.6977)	(0.7305)
GFCE(-1)	-0.0455	-0.7217***	-0.5806	0.0001	-0.0053	0.0494	-0.0083	-0.0721	-0.0021
	(-0.2314)	(-4.3331)	(-1.2491)	(0.0020)	(-0.1753)	(0.1391)	(-0.9777)	(-0.1189)	(-0.3953)
GFCE(-2)	0.0951	-0.7047***	0.4707	0.0090	-0.0034	-0.3623	-0.0033	-0.1060	-0.0027
	(0.4188)	(-3.6641)	(0.8770)	(0.1198)	(-0.0978)	(-0.8835)	(-0.3386)	(-0.1515)	(-0.4557)
CET(-1)	-0.0258	-0.1147	-0.2470	0.0082	0.0113	-0.0841	0.0059	0.0532	0.0018
	(-0.2099)	(-1.1007)	(-0.8494)	(0.2006)	(0.5906)	(-0.3787)	(1.1194)	(0.1402)	(0.5592)
CET(-2)	-0.0890	0.0564	-0.1157	0.0406	0.0215	0.0988	0.0099**	0.0237	0.0025
	(-0.9393)	(0.7025)	(-0.5163)	(1.2933)	(1.4605)	(0.5770)	(2.4153)	(0.0810)	(0.9838)
RQS(-1)	-0.1831	-0.2692	0.7287	-0.2972	0.0325	-0.3994	0.0200	0.0610	0.0439
	(-0.1357)	(-1.1101)	(0.8552)	(-0.6650)	(0.1555)	(-0.9844)	(0.3435)	(0.0147)	(1.2253)
RQS(-2)	-0.1772	0.3019	0.2888	0.1200	-0.0226	0.4854	0.0055	0.3644	0.0078
	(-0.1965)	(0.3952)	(0.1355)	(0.4019)	(-0.1618)	(0.9120)	(0.1406)	(0.1311)	(0.3263)
ST(-1)	-0.5799	-0.6233	0.4527	0.4220	0.4026	0.6425	0.0031	-0.2700	-0.0249
	(-0.1471)	(-1.0849)	(0.9068)	(0.3232)	(0.6589)	(1.0733)	(0.0185)	(-0.3514)	(-0.2377)
ST(-2)	0.3651	0.6240	-0.7674	0.1240	0.2181	-0.7237	0.0843	0.3557	-0.0111

	(0.1197)	(0.2413)	(-0.7992)	(0.1227)	(0.4611)	(-0.3127)	(0.6402)	(0.6755)	(-0.1375)
VOLATILITY(-1)	0.2033	0.3955*	-0.4197	-0.0274	-0.0105	-0.4501	0.0052	-0.0156	-0.0018
	(0.8390)	(1.9264)	(-0.7324)	(-0.3420)	(-0.2798)	(-1.0283)	(0.4936)	(-0.0208)	(-0.2747)
VOLATILITY(-2)	0.2002	-0.0156	-0.1397	-0.0523	0.0077	-0.1798	0.0027	0.0924	0.0019
	(1.0285)	(-0.0946)	(-0.3035)	(-0.8110)	(0.2566)	(-0.5112)	(0.3201)	(0.1540)	(0.3696)
VOL(-1)	-0.9916	0.4761	-0.6283	-0.5856	-0.0868	-0.1733	-0.5719	0.7437	-0.0551
	(-0.0750)	(0.5781)	(-1.5553)	(-0.1337)	(-1.0181)	(-0.6771)	(-1.0022)	(0.4108)	(-0.1570)
VOL(-2)	-0.0756	0.8254	0.0352	-0.5029	-0.2122	0.5695	-0.2230	-0.8050	0.0360
	(-0.3137)	(0.0994)	(0.5190)	(-0.1549)	(-0.1396)	(0.2580)	(-0.5269)	(-0.8206)	(0.1380)
RET(-1)	-0.0953	-0.1509	0.0263	-0.0122	0.0148	0.0645	-0.0026	-0.6569**	-0.0019
	(-0.9170)	(-1.7132)	(0.1072)	(-0.3541)	(0.9205)	(0.3435)	(-0.5738)	(-2.0501)	(-0.6846)
RET(-2)	-0.0888	-0.1262*	-0.0503	0.0202	0.0323**	-0.0875	0.0069*	-0.4828*	0.0012
	(-1.0421)	(-1.7466)	(-0.2497)	(0.7140)	(2.4434)	(-0.5682)	(1.8794)	(-1.8367)	(0.5369)
MCAP(-1)	-0.1750	0.9488	0.9857	0.8795	0.2807	0.9301	0.5795	0.2188	0.4578
	(-0.0819)	(0.9010)	(0.5303)	(1.0273)	(1.0259)	(0.2289)	(0.9362)	(0.4799)	(1.2016)
MCAP(-2)	-0.1368	-0.3244	-0.7304	0.9702	-0.9463	0.0606	-0.4821	0.4667	-0.0959
	(-0.5283)	(-0.4079)	(-0.9260)	(0.3862)	(-1.2338)	(0.4334)	(-0.7252)	(1.0838)	(-0.2344)

	AR	**GFCF**	**CET**	**RQS**	**ST**	**VOLATILITY**	**VOL**	**RET**	**MCAP**
C	0.0374	0.0367***	0.0709	-0.0006	0.0107	-0.0485	0.0054***	-0.1526	0.0017*
	(0.9204)	(3.5883)	(0.7727)	(-0.0436)	(1.4844)	(-0.7486)	(2.6080)	(-1.2123)	(1.7601)
AR(-1)	-0.4242***	-0.0143	0.7614**	-0.0779	-0.1003***	-0.6674***	-0.0223***	0.3183***	-0.0051
	(-2.5157)	(-0.3374)	(2.0008)	(-1.4065)	(-3.3446)	(-2.4834)	(-2.6088)	(2.5265)	(-1.3011)
GFCF(-1)	-0.6585	-0.2672	0.2087	-0.0555	-0.1149	0.9840	-0.0494	-0.3786	-0.0202
	(-0.9074)	(-1.4657)	(0.1274)	(-0.2327)	(-0.8909)	(0.8508)	(-1.3438)	(-0.6139)	(-1.1882)
CET(-1)	0.0052	-0.0310*	-0.4095***	0.0120	0.0054	-0.0809	0.0044	0.1917	0.0007

	(0.0714)	(-1.6816)	(-2.4721)	(0.4982)	(0.4142)	(-0.6913)	(1.1845)	(0.8440)	(0.4292)
RQS(-1)	-0.0461	-0.0147	0.0311	-0.1213	-0.1262	-0.2198	0.0007	0.9190*	0.0242
	(-0.0639)	(-0.0811)	(0.6336)	(-0.5119)	(-0.9847)	(-1.0614)	(0.0184)	(1.8011)	(1.4304)
ST(-1)	-0.4519	-0.4506	0.3834	0.9830*	0.9005**	0.8332**	0.1254	-0.3341	-0.0893
	(-0.1890)	(-0.7503)	(0.6270)	(1.7605)	(2.1187)	(2.3182)	(1.0366)	(-0.8562)	(-1.5923)
VOLATILITY(-1)	0.1031	0.0139	-0.2464	-0.0807*	-0.0518**	-0.5211**	-0.0112	-0.0600	-0.0028
	(0.7380)	(0.3963)	(-0.7814)	(-1.7575)	(-2.0868)	(-2.3395)	(-1.5898)	(-0.1387)	(-0.8452)
VOL(-1)	0.8297	0.3223	-0.9266*	-0.2589	-0.4951*	-0.4782	-0.5840	0.3190	0.2207
	(0.1093)	(0.6932)	(-1.7753)	(-1.3061)	(-1.8482)	(-1.6094)	(-1.5192)	(0.9072)	(1.2391)
RET(-1)	-0.1030*	-0.0093	-0.1075	0.0094	0.0130	0.1395	-0.0011	-0.4707***	-0.0021
	(-1.7538)	(-0.6332)	(-0.8112)	(0.4859)	(1.2409)	(1.4909)	(-0.3603)	(-2.5911)	(-1.5424)
MCAP(-1)	-0.2266	-0.7854	-0.5926	0.6801**	-0.2815	0.9820*	-0.4511	0.6085**	0.1406
	(-1.0772)	(-0.8298)	(-0.0824)	(2.0181)	(-0.8415)	(1.7054)	(-1.0404)	(2.0149)	(0.6995)

	AR	**IMP**	**CET**	**RQS**	**ST**	**VOLATILITY**	**VOL**	**RET**	**MCAP**
C	-0.0138	0.0297**	0.0772	0.0041	0.0097	0.0043	0.0041*	-0.2491**	0.0011
	(-0.3571)	(2.2228)	(0.8442)	(0.3148)	(1.3353)	(0.0671)	(1.9525)	(-2.0145)	(1.1267)
AR(-1)	-0.3293**	-0.0124	0.7553*	-0.0915	-0.1026***	-0.7526***	-0.0214**	0.7913***	-0.0046
	(-1.9872)	(-0.2159)	(1.9260)	(-1.6307)	(-3.2949)	(-2.7237)	(-2.3546)	(2.8107)	(-1.1011)
IMP(-1)	0.9000*	-0.2186	-0.0240	-0.1973	-0.0629	-0.8686	-0.0016	0.9363	0.0017
	(1.9168)	(-1.1112)	(-0.0178)	(-1.0248)	(-0.5888)	(-0.9160)	(-0.0522)	(1.0634)	(0.1196)
CET(-1)	0.0096	-0.0119	-0.4065***	0.0084	0.0027	-0.0770	0.0036	0.1960	0.0004
	(0.1376)	(-0.4960)	(-2.4690)	(0.3581)	(0.2070)	(-0.6635)	(0.9420)	(0.8801)	(0.2500)
RQS(-1)	0.3149	-0.1383	0.0225	-0.1860	-0.1466	-0.5089	0.0003	0.8608**	0.0248
	(0.4417)	(-0.5609)	(0.6061)	(-0.7710)	(-1.0945)	(-1.2695)	(0.0077)	(2.0420)	(1.3822)
ST(-1)	-0.0434	-0.0695	3.2306	0.9383*	0.9901**	0.8678**	0.1621	-0.4538	-0.0745

	(-0.0195)	(-1.3906)	(0.6141)	(1.9116)	(2.3715)	(2.2038)	(1.3320)	(-0.7663)	(-1.3295)
VOLATILITY(-1)	0.0501	0.0331	-0.2470	-0.0696	-0.0475*	-0.4828**	-0.0107	-0.1523	-0.0027
	(0.3668)	(0.7011)	(-0.7636)	(-1.5045)	(-1.8488)	(-2.1190)	(-1.4341)	(-0.3482)	(-0.7804)
VOL(-1)	-0.9555	0.0627	-0.7591*	-0.5007	-0.8867**	-0.5703	-0.7441**	0.4722	0.1559
	(-0.1386)	(1.2845)	(-1.8246)	(-1.5007)	(-2.2300)	(-1.4420)	(-1.9723)	(0.7919)	(0.8975)
RET(-1)	-0.1037*	-0.0055	-0.1081	0.0101	0.0135	0.1385	-0.0009	-0.4714***	-0.0021
	(-1.8531)	(-0.2864)	(-0.8163)	(0.5340)	(1.2866)	(1.4842)	(-0.2921)	(-2.6302)	(-1.4597)
MCAP(-1)	-0.8687	-0.0802	-0.0349	0.8052**	-0.0352	0.2250	-0.3463	0.6641**	0.1834
	(-0.9790)	(-0.7480)	(-0.1070)	(2.1336)	(-0.6857)	(1.5837)	(-0.7869)	(2.1863)	(0.9057)

	AR	**PFCE**	**CET**	**RQS**	**ST**	**VOLATILITY**	**VOL**	**RET**	**MCAP**
C	0.0748	0.0616***	0.0543	-0.0075	0.0096	0.0119	0.0036	-0.0509	0.0014
	(1.4862)	(5.1730)	(0.3773)	(-0.4068)	(1.1190)	(0.1173)	(1.5145)	(-0.3126)	(0.9620)
AR(-1)	-0.6915***	0.0726	0.7049	-0.0100	-0.0585	-0.6866	-0.0102	0.4807	0.0016
	(-3.1770)	(1.4094)	(1.1322)	(-0.1242)	(-1.5726)	(-1.5600)	(-0.9877)	(0.6826)	(0.2407)
AR(-2)	-0.1741	0.1033	0.1045	0.0953	0.0355	-0.1496	0.0150	-0.7023	0.0064
	(-0.6602)	(1.6566)	(0.1386)	(0.9812)	(0.7876)	(-0.2805)	(1.1949)	(-0.8232)	(0.8190)
PFCE(-1)	-0.2957	-0.5711***	0.3445	-0.0481	0.0057	-0.3431	0.0298	-0.7333	-0.0078
	(-0.4421)	(-3.6099)	(0.7027)	(-0.1953)	(0.0495)	(-0.9929)	(0.9346)	(-0.8008)	(-0.3925)
PFCE(-2)	-0.8900	-0.6860***	0.8485	0.0491	-0.0854	-0.1139	-0.0191	0.7759	0.0025
	(-2.2055)	(-3.5739)	(0.7963)	(0.1642)	(-0.6152)	(-0.0694)	(-0.4952)	(-1.4378)	(0.1048)
CET(-1)	-0.0854	-0.0217	-0.4010	0.0044	0.0109	-0.0218	0.0065	-0.0207	0.0021
	(-0.8444)	(-0.9073)	(-1.3855)	(0.1190)	(0.6291)	(-0.1065)	(1.3550)	(-0.0633)	(0.6863)
CET(-2)	-0.2081**	-0.0223	0.0461	0.0435	0.0156	0.0470	0.0088*	-0.2650	0.0023
	(-2.0483)	(-0.9261)	(0.1585)	(1.1627)	(0.8968)	(0.2286)	(1.8114)	(-0.8060)	(0.7626)
RQS(-1)	-0.7350	0.1281	0.7091	-0.2832	0.0180	-0.4046	0.0207	-0.2195	0.0547

	(-0.6461)	(0.4762)	(0.8326)	(-0.6755)	(0.0925)	(-0.6106)	(0.3831)	(-0.0596)	(1.6210)
RQS(-2)	0.1439	-0.0536	0.5150	0.0978	-0.0040	0.9418	0.0178	0.5702	0.0038
	(0.1711)	(-0.2692)	(0.2140)	(0.3155)	(-0.0281)	(0.5537)	(0.4446)	(0.2095)	(0.1512)
ST(-1)	-0.2343	0.1617	0.9669	0.4606	0.3369	0.2271	-0.0186	-0.3522	-0.0114
	(-0.6280)	(0.1922)	(0.7828)	(0.3514)	(0.5538)	(1.2825)	(-0.1098)	(-0.5518)	(-0.1081)
ST(-2)	0.4297	-0.1941	-0.4092	0.1281	0.2164	-0.9729	0.1146	0.6691	-0.0192
	(0.1590)	(-0.3037)	(-0.1823)	(0.1286)	(0.4683)	(-0.7269)	(0.8906)	(0.5339)	(-0.2389)
VOLATILITY(-1)	0.0984	-0.0453	-0.3181	-0.0233	-0.0181	-0.5779	0.0014	-0.3437	-0.0032
	(0.4823)	(-0.9381)	(-0.5450)	(-0.3095)	(-0.5191)	(-1.4003)	(0.1424)	(-0.5205)	(-0.5299)
VOLATILITY(-2)	0.0267	0.0446	0.0158	-0.0422	-0.0031	-0.1469	-0.0023	-0.2373	0.0023
	(0.1365)	(0.9620)	(0.0282)	(-0.5843)	(-0.0922)	(-0.3707)	(-0.2516)	(-0.3743)	(0.3913)
VOL(-1)	0.4104	0.5248	-0.9865	-0.8496	-0.6671	-0.8370	-0.4637	0.9906	-0.1005
	(0.6746)	(0.5171)	(-1.5139)	(-0.1850)	(-0.7821)	(-0.7869)	(-0.7814)	(0.8178)	(-0.2718)
VOL(-2)	-0.1489	-0.8214	-0.4977	-0.6534	-0.0684	0.9807	-0.2961	-0.2521	0.0643
	(-0.1343)	(-0.4061)	(-0.3882)	(-0.2073)	(-0.0468)	(0.8083)	(-0.7272)	(-0.4788)	(0.2534)
RET(-1)	-0.1651*	0.0067	0.0216	-0.0098	0.0118	0.1365	-0.0037	-0.7398**	-0.0012
	(-1.7162)	(0.2939)	(0.0784)	(-0.2776)	(0.7200)	(0.7017)	(-0.7978)	(-2.3772)	(-0.4314)
RET(-2)	-0.1070	0.0042	-0.0744	0.0206	0.0320***	-0.0299	0.0070*	-0.4709*	0.0018
	(-1.4653)	(0.2428)	(-0.3563)	(0.7656)	(2.5676)	(-0.2025)	(2.0065)	(-1.9937)	(0.8184)
MCAP(-1)	-0.1366	-0.3424	0.6541	0.5216	0.4238	0.1133	0.2250	-0.0932	0.5343
	(-1.2084)	(-0.3782)	(0.5044)	(0.9984)	(0.5548)	(0.4980)	(0.3149)	(-0.1255)	(1.2003)
MCAP(-2)	0.2149	0.3346	-0.2824	0.4694	-0.2440	-0.4712	-0.2233	0.1108	-0.2312
	(0.5518)	(0.9471)	(-0.7346)	(0.2679)	(-0.8815)	(-0.1153)	(-0.3151)	(1.4969)	(-0.5236)

Source: Authors' calculations.
Note: Figures represent the coefficients; t-statistics in ( ); ***Significant at 1% Level, **Significant at 5% Level, *Significant at 10% Level.

Vector Autoregression estimates for monthly variables.

	AR	BRENT	CET	MCAP	RET	RQS	ST	VOL	VOLATILITY
C	0.0020	-0.0038	0.0092	0.0004	-0.1048	-0.0092	-0.0015	0.0009	-0.0191
	(0.1306)	(-0.3047)	(0.3149)	(0.9209)	(-1.6870)	(-1.1515)	(-0.2899)	(0.6849)	(-0.3265)
AR(-1)	-0.7911***	-0.0248	-0.1959	0.0010	0.9087***	-0.0314	-0.0844	-0.0138	0.0691
	(-5.0148)	(-0.1895)	(-0.6369)	(0.2142)	(3.2397)	(-0.3745)	(-1.5858)	(-0.9562)	(0.1125)
AR(-2)	-0.3685*	0.0408	0.4314	0.0047	0.8863	-0.0730	-0.1262*	-0.0219	-0.8527
	(-1.8442)	(0.2460)	(1.1074)	(0.7856)	(1.0749)	(-0.6885)	(-1.8727)	(-1.1929)	(-1.0959)
AR(-3)	-0.4941**	0.0971	0.5082	0.0016	0.4155	0.0046	-0.1298*	-0.0145	-0.6715
	(-2.3241)	(0.5500)	(1.2261)	(0.2430)	(1.6135)	(0.0407)	(-1.8103)	(-0.7443)	(-0.8111)
AR(-4)	-0.4940**	0.3715*	0.4374	0.0022	0.9618	0.0209	-0.0035	0.0178	-1.5283*
	(-2.0621)	(1.8679)	(0.9367)	(0.3098)	(0.9730)	(0.1644)	(-0.0430)	(0.8082)	(-1.6385)
AR(-5)	-0.2785	0.0701	0.2742	-0.0008	0.6024	0.2748**	0.0894	0.0306	-0.4219
	(-1.0818)	(0.3281)	(0.5462)	(-0.1037)	(0.5670)	(2.0113)	(1.0298)	(1.2949)	(-0.4209)
AR(-6)	-0.0334	0.1238	-0.1723	0.0011	-0.4039	0.2431**	0.0805	0.0319	-0.0343
	(-0.1426)	(0.6363)	(-0.3772)	(0.1558)	(-0.4176)	(1.9542)	(1.0179)	(1.4828)	(-0.0376)
AR(-7)	-0.2474	0.1621	-0.0881	0.0034	-0.6912	0.1824	0.1338*	0.0447**	0.3706
	(-1.1170)	(0.8813)	(-0.2039)	(0.5087)	(-0.7562)	(1.5521)	(1.7910)	(2.2019)	(0.4297)
AR(-8)	-0.1808	-0.0479	0.0678	-0.0010	0.3735	0.1420	0.0346	0.0187	0.2656
	(-1.0174)	(-0.3245)	(0.1959)	(-0.1891)	(0.5094)	(1.5061)	(0.5768)	(1.1449)	(0.3839)
BRENT(-1)	0.1073	0.3404**	0.0165	-0.0007	-0.5954	-0.0849	-0.0466	-0.0124	0.2493
	(0.5681)	(2.1712)	(0.0449)	(-0.1282)	(-0.7639)	(-0.8473)	(-0.7311)	(-0.7170)	(0.3390)
BRENT(-2)	-0.2128	-0.0098	0.1851	-0.0001	0.8671	-0.1103	-0.0283	-0.9275	-0.4231
	(-1.0882)	(-0.0603)	(0.4856)	(-0.0181)	(1.0748)	(-1.0627)	(-0.4292)	(-0.5538)	(-0.5558)
BRENT(-3)	0.0437	0.0650	-0.2948	0.0032	-0.1490	-0.0955	-0.0369	-0.0076	-0.1404

	(0.2267)	(0.4060)	(-0.7841)	(0.5560)	(-1.4438)	(-0.9330)	(-0.5679)	(-0.4313)	(-0.1870)
BRENT(-4)	-0.2535	-0.0269	0.1287	-0.0026	0.0460	0.0141	-0.0308	0.0051	-0.1758
	(-1.4159)	(-0.1811)	(0.3688)	(-0.4835)	(1.4159)	(0.1479)	(-0.5108)	(0.3098)	(-0.2521)
BRENT(-5)	0.2289	0.1189	-0.2806	0.0159**	-0.3761	-0.1109	0.0170	0.0181	-0.2677
	(1.0186)	(0.6374)	(-0.6406)	(2.3371)	(-1.4841)	(-0.9304)	(0.2238)	(0.8775)	(-1.4488)
BRENT(-6)	-0.1381	-0.1788	-0.0988	-0.0052	-0.2460	0.1496	0.0981	0.0108	0.2484
	(-0.5717)	(-0.8917)	(-0.2098)	(-0.7068)	(-0.2469)	(1.1675)	(1.2041)	(0.4867)	(1.3276)
BRENT(-7)	-0.0212	0.0641	0.0069	-0.0152**	0.7055	0.0652	-0.1422	-0.0480***	0.7426
	(-0.0992)	(0.3607)	(0.0164)	(-2.3495)	(0.7985)	(0.5741)	(-1.9695)	(-2.4427)	(0.8906)
BRENT(-8)	0.0151	0.0022	0.9084	0.0128*	-0.0449	-0.1599	0.0055	0.0142	-0.6578
	(0.0681)	(0.0117)	(2.0987)	(1.9071)	(-0.0490)	(-1.3569)	(0.0732)	(0.6955)	(-0.7609)
CET(-1)	-0.0434	-0.0769	-0.6628***	-0.0013	-0.1544	0.0596	0.0455*	0.0147	0.2494
	(-0.5810)	(-1.2408)	(-4.5539)	(-0.5918)	(-0.5011)	(1.5056)	(1.8085)	(2.1543)	(0.8579)
CET(-2)	-0.1079	-0.1538**	-0.6425***	0.0025	-0.2760	-0.0027	-0.0152	0.0016	-0.3732
	(-1.2368)	(-2.1231)	(-3.7774)	(0.9331)	(-0.7667)	(-0.0582)	(-0.5167)	(0.1967)	(-1.0986)
CET(-3)	-0.0403	-0.1194	-0.5156***	0.0000	-0.0688	0.0400	0.0082	0.0123	0.2591
	(-0.3735)	(-1.3322)	(-2.4506)	(-0.0126)	(-0.1545)	(0.6976)	(0.2256)	(1.2397)	(0.6166)
CET(-4)	-0.0679	-0.1191	-0.1737	0.0033	0.1421	-0.0210	-0.0242	0.0101	0.0344
	(-0.6726)	(-1.4211)	(-0.8825)	(1.0953)	(0.3411)	(-0.3929)	(-0.7120)	(1.0913)	(0.0874)
CET(-5)	-0.2356**	-0.0011	-0.5775***	-0.0006	0.1906	0.0368	0.0153	0.0179*	0.3935
	(-2.1705)	(-0.0125)	(-2.7297)	(-0.1853)	(0.4256)	(0.6392)	(0.4192)	(1.7942)	(0.9313)
CET(-6)	-0.1349	-0.1184	-0.1919	-0.0002	0.5925	0.0295	-0.0098	0.0169*	0.4967
	(-1.2333)	(-1.3041)	(-0.8999)	(-0.0646)	(1.3129)	(0.5086)	(-0.2666)	(1.6824)	(1.1662)
CET(-7)	-0.2012**	-0.1009	-0.2235	0.0071**	-0.1103	-0.0281	-0.0382	0.0044	-0.3463
	(-1.9589)	(-1.1839)	(-1.1164)	(2.2953)	(-0.2603)	(-0.5156)	(-1.1031)	(0.4632)	(-0.8661)

CET(-8)	0.0188	-0.0603	-0.4359*	0.0016	0.4992	0.0099	-0.0230	0.0059	0.8146*
	(0.1595)	(-0.6164)	(-1.8989)	(0.4444)	(1.0274)	(0.1584)	(-0.5791)	(0.5484)	(1.7765)
MCAP(-1)	-0.3733	-0.2913	-0.3053	0.2150	-0.2762	-0.5693	0.4517	-0.3033	-0.7614
	(-2.2898)	(-0.5810)	(-0.3635)	(0.8003)	(-0.1710)	(-0.5442)	(0.1505)	(-0.3717)	(-0.6859)
MCAP(-2)	0.2334	0.2817	-0.1773	0.3718	-0.6160	0.4131	-0.5150	0.1864	-0.9752
	(1.0267)	(0.3056)	(-0.6945)	(1.3689)	(-0.2052)	(0.0866)	(-0.1698)	(0.2260)	(-0.3705)
MCAP(-3)	0.8145	-0.7245	0.0663	0.0083	0.6630	0.0155	0.8831	0.5490	0.8436
	(0.6082)	(-0.2624)	(0.1339)	(0.0346)	(0.0815)	(0.7179)	(0.3308)	(0.7563)	(0.7087)
MCAP(-4)	-0.5758	-0.0114	0.6796	0.1830	-0.2567	0.7131	0.6280	0.3478	0.5418
	(-0.4758)	(-0.3224)	(0.5242)	(0.8065)	(-0.1373)	(0.6803)	(0.6424)	(0.5046)	(0.3944)
MCAP(-5)	-0.4073	-0.4331	0.2476	-0.4906**	0.9330***	0.2552	-0.8489	-0.0164	0.2617
	(-0.9140)	(-0.0644)	(0.9017)	(-2.0042)	(2.8088)	(1.2219)	(-0.6765)	(-0.0220)	(1.5927)
MCAP(-6)	0.4384**	-0.2855	-0.2549	0.0779	0.7494*	0.9212	-0.7839	-0.5854	-0.9530
	(2.2874)	(-0.7492)	(-1.1018)	(0.3036)	(1.7324)	(0.2043)	(-0.6225)	(-0.7512)	(-0.6937)
MCAP(-7)	0.6910*	0.9019	0.7939	0.3725	-0.1809	-0.5774	0.7550	0.1643	-0.1614
	(1.8810)	(0.4190)	(0.2948)	(1.4787)	(-0.1215)	(-0.5822)	(0.9794)	(1.5220)	(-0.6207)
MCAP(-8)	-0.3160**	0.5156	-0.0426*	-0.2930	-0.0190	0.4661	0.9090	0.4458	0.6220
	(-2.0247)	(0.8783)	(-1.6980)	(-1.2827)	(-0.1288)	(1.1126)	(0.3563)	(0.6427)	(0.2927)
RET(-1)	-0.1037**	-0.0371	0.0459	-0.0025	-0.7603***	-0.0114	-0.0146	-0.0098**	0.2827
	(-1.9830)	(-0.8545)	(0.4505)	(-1.5919)	(-3.5231)	(-0.4124)	(-0.8286)	(-2.0506)	(1.3880)
RET(-2)	-0.1534**	-0.0285	0.0814	0.0000	-0.9764***	-0.0846**	-0.0255	-0.0143**	0.0563
	(-2.0706)	(-0.4640)	(0.5635)	(0.0047)	(-3.1945)	(-2.1520)	(-1.0198)	(-2.1089)	(0.1953)
RET(-3)	-0.1533*	-0.0521	0.1085	0.0001	-0.7159*	-0.0923*	-0.0426	-0.0197**	0.1296
	(-1.6986)	(-0.6951)	(0.6166)	(0.0199)	(-1.9222)	(-1.9275)	(-1.4010)	(-2.3781)	(0.3688)
RET(-4)	-0.1404	0.0074	0.1295	0.0017	-0.8617**	-0.1212**	-0.0521*	-0.0212***	-0.3376

	(-1.4921)	(0.0949)	(0.7061)	(0.6078)	(-2.2198)	(-2.4274)	(-1.6427)	(-2.4608)	(-0.9217)
RET(-5)	-0.1683*	-0.0075	0.1977	0.0022	-0.6505*	-0.0787*	-0.0244	-0.0091	-0.1794
	(-1.9278)	(-0.1040)	(1.1614)	(0.8254)	(-1.8056)	(-1.6982)	(-0.8274)	(-1.1311)	(-0.5277)
RET(-6)	-0.1098*	0.0068	0.0841	-0.0003	-0.4086	-0.0258	-0.0218	-0.0065	-0.0606
	(-1.6816)	(0.1261)	(0.6608)	(-0.1520)	(-1.5172)	(-0.7446)	(-0.9926)	(-1.0883)	(-0.2383)
RET(-7)	-0.0493	0.0319	0.0623	0.0002	-0.2450	-0.0071	0.0037	0.0000	0.0539
	(-1.1012)	(0.8572)	(0.7130)	(0.1790)	(-1.3257)	(-0.3001)	(0.2445)	(-0.0057)	(0.3090)
RET(-8)	-0.0062	0.0214	0.0776	0.0000	0.0376	0.0028	0.0047	0.0004	0.1223
	(-0.2196)	(0.9083)	(1.4031)	(0.0076)	(0.3218)	(0.1879)	(0.4874)	(0.1530)	(1.1081)
RQS(-1)	-0.3704	0.0193	-0.5514	0.0028	-0.6745	-0.6376**	-0.1156	-0.0425	-0.8674
	(-2.2560)	(0.0382)	(-0.4656)	(0.1500)	(-1.4660)	(-1.9780)	(-0.5644)	(-0.7635)	(-1.6351)
RQS(-2)	-0.1133	-0.0839	-0.4129	0.0394**	-0.4671*	-0.5384*	-0.1915	-0.0104	-0.6704
	(-0.1835)	(-0.1637)	(-0.3430)	(2.1115)	(-1.7531)	(-1.6428)	(-0.9198)	(-0.1844)	(-1.1106)
RQS(-3)	0.2449	0.2073	-0.5483	0.0271	-0.5773**	-0.3760	-0.0811	0.0049	-0.9725
	(0.4069)	(0.4148)	(-0.4673)	(1.4912)	(-2.1653)	(-1.1774)	(-0.3994)	(0.0886)	(-0.4150)
RQS(-4)	-0.6455*	-0.3062	0.4891	0.0176	-0.5867	-0.1886	-0.0320	0.0144	0.4814
	(-1.7882)	(-0.6309)	(1.3063)	(0.9989)	(-1.4866)	(-0.6078)	(-0.1625)	(0.2688)	(0.2115)
RQS(-5)	-0.7018**	0.1671	0.9927	-0.0006	0.0293	-0.1535	-0.4055**	-0.0957*	0.3141
	(-2.1590)	(0.3616)	(0.9147)	(-0.0367)	(0.0127)	(-0.5197)	(-2.1602)	(-1.8747)	(0.6063)
RQS(-6)	-0.3173	-0.5144	0.7110*	0.0001	0.4828	-0.0581	-0.0836	-0.0171	0.9152
	(-0.5567)	(-1.0871)	(1.8995)	(0.0077)	(0.6304)	(-0.1920)	(-0.4349)	(-0.3279)	(0.8629)
RQS(-7)	0.1694	-0.4471	0.5857*	0.0252*	-0.5957	-0.5468**	-0.2905*	-0.0573	-0.7636
	(0.3441)	(-1.0941)	(1.6523)	(1.6980)	(-0.7856)	(-2.0933)	(-1.7498)	(-1.2696)	(-1.4418)
RQS(-8)	-0.6750***	0.2977	0.2489	-0.0051	-0.3842	-0.1409	-0.0478	-0.0113	-0.0592
	(-2.9181)	(0.8905)	(0.3171)	(-0.4155)	(-0.8331)	(-0.6592)	(-0.3517)	(-0.3060)	(-0.0378)

ST(-1)	-0.4991	0.0541	-0.1591	0.0058	0.7965	-0.1737	-0.1960	0.0808	0.2191
	(-0.5230)	(1.3307)	(-0.6230)	(0.2017)	(0.2023)	(-0.3430)	(-0.6092)	(0.9236)	(0.8664)
ST(-2)	-0.8088**	-0.1267	0.6995	0.0183	-1.2034	-0.4733	-0.2308	-0.0125	-0.4854
	(-2.3538)	(-0.1627)	(0.3823)	(0.6459)	(-0.3108)	(-0.9505)	(-0.7294)	(-0.1450)	(-0.1328)
ST(-3)	-0.0266	-0.0900	-0.1309	-0.0182	-0.0527	-0.0002	-0.5591*	-0.1210	0.5940
	(-1.0320)	(-1.3200)	(-0.0675)	(-0.6069)	(-0.2565)	(-0.0003)	(-1.6668)	(-1.3265)	(0.4116)
ST(-4)	0.5657	-0.4295	0.3204	0.0196	-0.0485	-0.5215	-0.2509	-0.0292	0.1394
	(0.5721)	(-0.5231)	(1.2036)	(0.6560)	(-0.7471)	(-0.9937)	(-0.7523)	(-0.3225)	(0.2959)
ST(-5)	-0.4050	0.2283	0.7201	0.0209	-0.7283	-0.7921*	0.0520	0.0446	-0.4218
	(-0.4614)	(0.3133)	(0.4208)	(0.7871)	(-1.5814)	(-1.7003)	(0.1757)	(0.5536)	(-0.4159)
ST(-6)	-0.4238	0.1918	-0.2297	-0.0123	-0.5362	-0.1158	0.1126	0.0210	0.9347
	(-0.4730)	(1.6024)	(-0.1315)	(-0.4528)	(-0.1451)	(-0.2436)	(0.3727)	(0.2555)	(0.2679)
ST(-7)	-0.4182	0.3284	-0.3561	0.0047	-0.4406	-0.3321	-0.1992	-0.0398	-0.6631
	(-0.4703)	(0.4448)	(-0.2054)	(0.1761)	(-0.3926)	(-0.7038)	(-0.6642)	(-0.4880)	(-1.3469)
ST(-8)	0.6282	-0.5532	-0.9679	0.0168	-0.3615	0.0233	0.2544	0.1531**	0.3636
	(0.7774)	(-0.8247)	(-1.2493)	(0.6894)	(-0.7083)	(0.0544)	(0.9336)	(2.0657)	(0.7513)
VOL(-1)	0.4394	-0.3042	0.4965	-0.0372	0.0144	0.9585	-0.0676	-0.5386**	0.4112
	(1.2394)	(-0.5661)	(1.2008)	(-0.4443)	(0.0013)	(0.6509)	(-0.0722)	(-2.1166)	(0.6859)
VOL(-2)	0.9693**	0.9289	0.1364	-0.0699	0.1561	0.5102	0.1482	-0.3848	0.4196
	(2.0141)	(0.7840)	(0.8889)	(-0.7804)	(0.5852)	(0.3244)	(0.1483)	(-1.4160)	(0.4696)
VOL(-3)	-0.3936	0.7927	0.7088	0.0314	0.5661	-0.2430	0.2182	-0.0779	-0.2987
	(-0.1202)	(1.3946)	(0.5807)	(0.3177)	(0.3378)	(-0.1398)	(1.1027)	(-0.2593)	(-0.8858)
VOL(-4)	-0.0291	0.4926	-0.6269*	-0.1043	0.2269	0.4685	-0.2134	-0.2574	-0.9102
	(-0.0099)	(0.2007)	(-1.7916)	(-1.1677)	(1.5760)	(0.9360)	(-0.2140)	(-0.9496)	(-0.1659)
VOL(-5)	0.2382	0.4994	-0.9517	-0.0436	0.5119	0.9649	0.5753	-0.0764	-0.2865

	(1.3258)	(0.5650)	(-1.1154)	(-0.4521)	(0.3421)	(1.1583)	(0.5336)	(-0.2606)	(-0.2640)
VOL(-6)	-0.6407	-0.8191	-0.0650	-0.0272	-0.2779	0.8408	0.4662	0.0161	0.5860
	(-0.8260)	(-0.3086)	(-0.1709)	(-0.2812)	(-0.5517)	(0.4956)	(0.4325)	(0.0548)	(0.1274)
VOL(-7)	-0.6407	0.2014	-0.4381	-0.0508	0.4719	0.8538	0.8271	0.0584	0.7176
	(-0.8841)	(0.0812)	(-0.2470)	(-0.5635)	(0.2817)	(1.1696)	(0.8211)	(0.2134)	(1.3514)
VOL(-8)	-0.5561	0.5836	0.7798***	0.0057	0.3682	-0.0150	-0.1321	-0.3220	0.3210
	(-0.2241)	(0.2834)	(2.4355)	(0.0764)	(1.2082)	(-0.0114)	(-0.1579)	(-1.4154)	(0.0332)
VOLATILITY(-1)	0.0446	-0.0300	-0.0802	-0.0011	-0.0976	0.0578*	0.0086	0.0024	-0.2668
	(0.7790)	(-0.6307)	(-0.7184)	(-0.6131)	(-0.4133)	(1.9030)	(0.4433)	(0.4479)	(-1.1968)
VOLATILITY(-2)	0.0684	-0.0168	-0.0901	-0.0031	0.2199	0.0708**	0.0110	0.0026	-0.2069
	(1.0741)	(-0.3168)	(-0.7257)	(-1.6256)	(0.8367)	(2.0942)	(0.5116)	(0.4376)	(-0.8342)
VOLATILITY(-3)	0.0276	0.0640	-0.1238	-0.0030	0.1970	0.0390	0.0196	0.0074	0.0531
	(0.4138)	(1.1563)	(-0.9524)	(-1.4669)	(0.7158)	(1.1031)	(0.8732)	(1.2147)	(0.2043)
VOLATILITY(-4)	-0.0254	0.0017	-0.1051	-0.0012	0.1955	0.0408	0.0366	0.0088	-0.1412
	(-0.3525)	(0.0281)	(-0.7468)	(-0.5379)	(0.6565)	(1.0652)	(1.5056)	(1.3317)	(-0.5023)
VOLATILITY(-5)	0.0450	-0.0507	-0.2226*	-0.0007	0.1277	0.0239	0.0145	0.0074	-0.0634
	(0.6768)	(-0.9182)	(-1.7155)	(-0.3498)	(0.4651)	(0.6772)	(0.6453)	(1.2111)	(-0.2445)
VOLATILITY(-6)	0.0794	-0.1247***	-0.2548**	0.0003	-0.0608	0.0034	0.0104	0.0040	-0.2653
	(1.3521)	(-2.5560)	(-2.2250)	(0.1523)	(-0.2510)	(0.1076)	(0.5258)	(0.7502)	(-1.1597)
VOLATILITY(-7)	0.1007*	-0.0610	-0.2706**	-0.0002	0.0126	-0.0006	-0.0043	0.0001	0.0996
	(1.6824)	(-1.2278)	(-2.3179)	(-0.1327)	(0.0508)	(-0.0184)	(-0.2114)	(0.0099)	(0.4271)
VOLATILITY(-8)	0.0644	-0.0185	-0.1267	-0.0007	-0.0827	-0.0060	-0.0080	-0.0022	-0.1733
	(1.3649)	(-0.4727)	(-1.3768)	(-0.4931)	(-0.4244)	(-0.2400)	(-0.5026)	(-0.5179)	(-0.9426)
	AR	**CPI**	**CET**	**MCAP**	**RET**	**RQS**	**ST**	**VOL**	**VOLATILITY**
C	0.0278	0.0046**	0.0481	0.0016	-0.2295*	-0.0100	0.0007	0.0027	-0.0068

	(0.9183)	(2.0376)	(0.7526)	(1.5410)	(-1.7239)	(-0.5394)	(0.0626)	(0.9867)	(-0.0523)
AR(-1)	-0.6774***	-0.0219	-0.1959	0.0037	0.8769***	0.0093	-0.0214	0.0015	-0.2546
	(-3.6590)	(-1.5823)	(-0.5020)	(0.5881)	(3.5380)	(0.0823)	(-0.3289)	(0.0897)	(-0.3185)
AR(-2)	-0.2916	-0.0121	0.4494	0.0024	0.8394*	-0.0461	-0.1616**	-0.0368**	-0.5044
	(-1.4801)	(-0.8167)	(1.0823)	(0.3583)	(1.6634)	(-0.3834)	(-2.3332)	(-2.0832)	(-0.5929)
AR(-3)	-0.5550***	-0.0238	0.7496*	-0.0005	0.7206**	0.0372	-0.0696	-0.0011	-0.3870
	(-2.6633)	(-1.5248)	(1.7067)	(-0.0689)	(2.2077)	(0.2926)	(-0.9508)	(-0.0579)	(-0.4301)
AR(-4)	-0.4877**	-0.0131	0.4897	-0.0019	0.9466**	0.0320	0.0046	0.0212	-0.3349
	(-2.2083)	(-0.7945)	(1.0519)	(-0.2585)	(2.0066)	(0.2375)	(0.0596)	(1.0684)	(-1.3996)
AR(-5)	-0.1434	-0.0097	0.5020	0.0006	0.9238	0.1925	0.0275	0.0172	-0.5910
	(-0.6269)	(-0.5682)	(1.0412)	(0.0709)	(0.9196)	(1.3791)	(0.3416)	(0.8378)	(-0.5983)
AR(-6)	-0.0348	-0.0169	0.1477	0.0101	-0.4156	0.1252	0.0815	0.0476***	-0.4219
	(-0.1639)	(-1.0603)	(0.3303)	(1.4060)	(-0.4459)	(0.9669)	(1.0924)	(2.5000)	(-0.4604)
AR(-7)	-0.1591	-0.0174	-0.1882	0.0091	-0.9235	0.1263	0.1498**	0.0670***	0.0564
	(-0.7679)	(-1.1189)	(-0.4311)	(1.2890)	(-1.0151)	(0.9992)	(2.0574)	(3.6045)	(0.0631)
AR(-8)	-0.1129	-0.0037	0.0904	0.0022	0.1666	0.0910	0.0235	0.0252*	-0.0612
	(-0.7127)	(-0.3152)	(0.2708)	(0.4178)	(0.2395)	(0.9418)	(0.4230)	(1.7736)	(-0.0895)
CPI(-1)	0.6466	0.3560**	-0.4663	-0.1324	0.6966	0.1991	-0.1917	-0.2288	-0.6094
	(-2.0904)	(1.9683)	(-1.0742)	(-1.6162)	(0.8202)	(0.1352)	(-0.2260)	(-1.0555)	(-0.3462)
CPI(-2)	0.6571	0.1861	-0.6897	-0.0350	0.5705*	0.4985	0.3614	-0.0413	0.5003
	(1.1555)	(1.0804)	(-0.1423)	(-0.4482)	(1.6406)	(0.3553)	(0.4471)	(-0.2000)	(0.0504)
CPI(-3)	0.0759	-0.0666	0.3936	0.0797	-0.0501	-0.1737	-0.0165	-0.1611	0.5516
	(0.0302)	(-0.3535)	(0.2629)	(0.9346)	(-1.1813)	(-0.7648)	(-1.1498)	(-0.7135)	(0.3270)
CPI(-4)	-0.3028	-0.3462*	0.1402	0.0270	0.1379	0.9019	0.9055***	0.7254***	0.0450
	(-0.5355)	(-1.8994)	(0.8074)	(0.3267)	(0.3872)	(0.6076)	(2.4623)	(3.3211)	(0.1947)

CPI(-5)	0.3534	-0.0097	-0.3289	-0.0358	-0.1985	-0.5873	-0.6622*	-0.2612	-0.4036
	(1.1686)	(-0.0641)	(-1.0198)	(-0.5243)	(-0.3616)	(-0.4779)	(-1.7833)	(-1.4446)	(-0.1614)
CPI(-6)	-0.0270	0.3798**	0.0795	-0.1176	-0.1484	0.6216	0.0519	-0.3335*	0.6063
	(-1.4009)	(2.3461)	(0.0175)	(-1.6044)	(-0.1210)	(0.4715)	(0.0683)	(-1.7193)	(0.0650)
CPI(-7)	0.1258	-0.3358**	0.0843	0.0248	0.6347	-0.2343	-0.3101	0.0117	-0.1994
	(0.0604)	(-2.1512)	(0.2469)	(0.3503)	(1.0527)	(-0.1843)	(-0.4235)	(0.0625)	(-0.3556)
CPI(-8)	0.0213	0.0393	-0.3404	-0.0132	-0.3479	0.1074	-0.1129	-0.0846	-0.2050
	(0.0114)	(0.2816)	(-1.1059)	(-0.2097)	(-0.1648)	(0.0946)	(-0.1725)	(-0.5061)	(-0.3986)
CET(-1)	-0.0806	0.0060	-0.6153***	-0.0033	0.0066	0.0599	0.0362	0.0080	0.3116
	(-1.0771)	(1.0762)	(-3.9028)	(-1.2876)	(0.0201)	(1.3117)	(1.3775)	(1.1949)	(0.9648)
CET(-2)	-0.1082	0.0074	-0.5398***	0.0039	-0.1558	-0.0231	-0.0112	0.0049	-0.4282
	(-1.2723)	(1.1555)	(-3.0112)	(1.3520)	(-0.4171)	(-0.4446)	(-0.3752)	(0.6367)	(-1.1662)
CET(-3)	-0.0023	0.0024	-0.4355**	0.0018	0.1256	0.0432	0.0211	0.0185**	0.1515
	(-0.0231)	(0.3217)	(-2.0719)	(0.5338)	(0.2868)	(0.7095)	(0.6009)	(2.0607)	(0.3518)
CET(-4)	-0.0516	-0.0031	-0.0879	0.0059	-0.0777	-0.0217	-0.0197	0.0170*	-0.0258
	(-0.5268)	(-0.4225)	(-0.4257)	(1.7753)	(-0.1806)	(-0.3628)	(-0.5733)	(1.9327)	(-0.0611)
CET(-5)	-0.2006**	-0.0036	-0.5392***	0.0022	0.1250	0.0642	0.0501	0.0321***	0.1938
	(-1.9760)	(-0.4767)	(-2.5195)	(0.6403)	(0.2803)	(1.0358)	(1.4052)	(3.5241)	(0.4421)
CET(-6)	-0.0341	0.0027	-0.2071	0.0016	0.4387	0.0439	-0.0092	0.0159*	0.3867
	(-0.3151)	(0.3382)	(-0.9093)	(0.4361)	(0.9242)	(0.6656)	(-0.2421)	(1.6421)	(0.8286)
CET(-7)	-0.1675*	-0.0052	-0.1334	0.0070**	-0.1859	0.0023	-0.0371	0.0016	-0.1344
	(-1.6432)	(-0.6823)	(-0.6205)	(2.0331)	(-0.4151)	(0.0370)	(-1.0356)	(0.1773)	(-0.3052)
CET(-8)	0.0277	-0.0138	-0.3430	0.0037	0.7520	0.0128	-0.0144	0.0115	0.5627
	(0.2384)	(-1.5818)	(-1.4001)	(0.9362)	(1.4732)	(0.1811)	(-0.3531)	(1.1044)	(1.1211)
MCAP(-1)	0.9881***	0.5907	-0.9712	-0.1051	-0.2257	0.2173	0.8505	-0.7930	-0.6244

	(-2.6289)	(0.9876)	(-0.8302)	(-0.3880)	(-0.1490)	(0.2499)	(0.3031)	(-1.1064)	(-0.0471)
MCAP(-2)	0.0348	0.4694	-0.8634	0.3791	0.6661	0.6979	-0.0334	-0.0365	-0.4647
	(1.1979)	(0.7479)	(-0.3887)	(1.3342)	(0.6432)	(0.1365)	(-0.3510)	(-0.0486)	(-0.6763)
MCAP(-3)	0.2674	-0.8340	0.3878	0.2820	-0.3667	-0.7891	-0.2179	0.6284	0.2131
	(1.1148)	(-1.5011)	(0.6646)	(1.1211)	(-0.7174)	(-0.1744)	(-0.0836)	(0.9438)	(0.5063)
MCAP(-4)	-0.8728	-0.5205	0.7109	0.1819	-0.8921	0.3085	0.5222	0.9448	0.0903
	(-1.2306)	(-0.9635)	(0.4416)	(0.7437)	(-0.0598)	(0.5247)	(0.9953)	(1.4595)	(0.1314)
MCAP(-5)	-0.8792	-0.2988	0.0573	-0.3395	0.8634***	0.8273	-0.2990	-0.0039	0.1514
	(-0.6833)	(-0.5584)	(0.1367)	(-1.4015)	(2.7602)	(0.8784)	(-0.9160)	(-0.0061)	(0.5562)
MCAP(-6)	0.8542**	0.2979	-0.3643	-0.2194	0.9349*	4.9087	-0.9335	-0.1124*	0.9089
	(2.1680)	(0.5438)	(-1.4509)	(-0.8845)	(1.9284)	(1.1001)	(-0.3632)	(-1.6944)	(0.2821)
MCAP(-7)	0.0272	0.5686	0.2484	0.1404	0.0925	-0.7100	-0.4321	0.1567	-0.1655
	(1.4805)	(0.9342)	(0.4233)	(0.5096)	(0.3950)	(-0.5467)	(-0.5016)	(0.2149)	(-0.0332)
MCAP(-8)	-0.6806	-0.5084	-0.7774	0.0863	-0.9715	0.9630	0.1776	0.7738***	0.3013
	(-1.2506)	(-0.8767)	(-0.4154)	(0.3288)	(-0.9698)	(0.4156)	(1.1679)	(2.5523)	(0.2184)
RET(-1)	-0.1300**	-0.0079*	-0.0343	-0.0025	-0.7782***	-0.0048	0.0025	-0.0068	0.1425
	(-2.3860)	(-1.9372)	(-0.2990)	(-1.3299)	(-3.2517)	(-0.1433)	(0.1305)	(-1.3937)	(0.6055)
RET(-2)	-0.2222***	-0.0071	-0.1262	-0.0030	-0.6332*	-0.0446	-0.0094	-0.0164**	-0.0515
	(-2.5634)	(-1.0882)	(-0.6910)	(-1.0205)	(-1.6635)	(-0.8431)	(-0.3087)	(-2.1121)	(-0.1376)
RET(-3)	-0.1929*	-0.0085	-0.1222	-0.0028	-0.2580	-0.0492	-0.0294	-0.0252***	-0.0447
	(-1.7739)	(-1.0416)	(-0.5332)	(-0.7646)	(-0.5403)	(-0.7417)	(-0.7701)	(-2.5832)	(-0.0953)
RET(-4)	-0.2133**	-0.0058	-0.0242	-0.0015	-0.3215	-0.0711	-0.0233	-0.0234**	-0.3021
	(-1.9699)	(-0.7179)	(-0.1061)	(-0.4194)	(-0.6758)	(-1.0757)	(-0.6132)	(-2.4022)	(-0.6460)
RET(-5)	-0.1975**	-0.0081	0.0956	-0.0004	-0.0624	-0.0452	-0.0035	-0.0093	-0.1690
	(-1.9898)	(-1.0901)	(0.4567)	(-0.1214)	(-0.1432)	(-0.7468)	(-0.1005)	(-1.0415)	(-0.3942)

RET(-6)	-0.1266*	-0.0073	0.0968	-0.0007	-0.0634	-0.0170	-0.0010	-0.0035	-0.1027
	(-1.8243)	(-1.3965)	(0.6620)	(-0.2798)	(-0.2081)	(-0.4024)	(-0.0425)	(-0.5655)	(-0.3427)
RET(-7)	-0.0923*	-0.0061	0.0500	-0.0003	-0.0388	0.0012	0.0198	0.0028	0.0194
	(-1.8453)	(-1.6176)	(0.4746)	(-0.2009)	(-0.1767)	(0.0407)	(1.1284)	(0.6262)	(0.0897)
RET(-8)	-0.0256	-0.0019	0.0649	0.0000	0.1874	0.0021	0.0127	0.0030	0.0412
	(-0.7792)	(-0.7695)	(0.9379)	(0.0032)	(1.2996)	(0.1048)	(1.0968)	(1.0199)	(0.2904)
RQS(-1)	-0.0455*	0.0260	-0.0961	-0.0024	-0.7236	-0.4808	-0.0746	-0.0406	-0.4544
	(-1.9387)	(0.6429)	(-0.0846)	(-0.1314)	(-1.5721)	(-1.4613)	(-0.3935)	(-0.8381)	(-1.0540)
RQS(-2)	0.0984	0.0108	0.0478	0.0333*	-0.2655	-0.4044	-0.0441	-0.0030	-0.2099
	(0.1866)	(0.2723)	(0.0430)	(1.8638)	(-1.4100)	(-1.2570)	(-0.2380)	(-0.0635)	(-0.9706)
RQS(-3)	0.3326	0.0031	-0.2485	0.0205	-0.6528**	-0.4870	-0.1681	-0.0265	-0.7943
	(0.6649)	(0.0829)	(-0.2357)	(1.2112)	(-2.0271)	(-1.5957)	(-0.9564)	(-0.5908)	(-0.3678)
RQS(-4)	-0.8356***	-0.0503	0.4416	0.0156	-0.9702	-0.2822	0.0096	0.0233	-0.7632
	(-2.4833)	(-1.3501)	(1.3745)	(0.9243)	(-1.3591)	(-0.9295)	(0.0548)	(0.5219)	(-0.3552)
RQS(-5)	-0.8457**	-0.0131	-0.1865	0.0072	0.4035	-0.1978	-0.2854	-0.0564	-0.2651
	(-2.3341)	(-0.3283)	(-0.1658)	(0.3980)	(0.5988)	(-0.6073)	(-1.5215)	(-1.1773)	(-0.5490)
RQS(-6)	-0.1412	-0.0076	0.3832	-0.0119	0.2007	0.1830	0.0535	-0.0308	0.8800
	(-0.2534)	(-0.1815)	(0.3262)	(-0.6313)	(0.8991)	(0.5381)	(0.2733)	(-0.6157)	(0.7812)
RQS(-7)	0.0009	0.0190	0.1170	0.0132	-0.7428	-0.4383	-0.3505**	-0.0788**	-0.4327
	(0.0019)	(0.5736)	(1.1956)	(0.8774)	(-0.3816)	(-1.6208)	(-2.2498)	(-1.9813)	(-0.7486)
RQS(-8)	-0.9479**	-0.0097	0.3024	-0.0067	-0.9668	0.0667	0.1519	0.0465	0.5079
	(-2.1648)	(-0.2959)	(0.3276)	(-0.4488)	(-0.5027)	(0.2498)	(0.9873)	(1.1829)	(0.2686)
ST(-1)	-0.0449	-0.0888	-0.3604	-0.0364	0.6530	0.3340	0.0307	0.0663	0.9852
	(-1.1423)	(-1.2960)	(-1.2243)	(-1.1736)	(0.4115)	(0.5985)	(0.0956)	(0.8069)	(1.2622)
ST(-2)	-0.8744***	0.0222	0.4004	-0.0203	0.7427	-0.4370	-0.4448	-0.1093	0.0719

	(-3.1456)	(0.3244)	(0.2079)	(-0.6547)	(0.4342)	(-0.7837)	(-1.3850)	(-1.3323)	(0.0182)
ST(-3)	-0.5786	-0.0823	-0.2686	-0.0109	0.0564	0.0075	-0.3734	-0.1029	-0.6658
	(-0.5367)	(-1.0194)	(-0.1182)	(-0.2976)	(0.6455)	(0.0114)	(-0.9854)	(-1.0631)	(-0.1430)
ST(-4)	-0.1234	-0.0522	0.9557	-0.0027	-0.2067	-0.3705	-0.2710	-0.0859	0.0569
	(-0.1274)	(-0.7199)	(0.4680)	(-0.0831)	(-0.5186)	(-0.6269)	(-0.7958)	(-0.9879)	(0.4917)
ST(-5)	-0.0186	-0.1174*	0.1680	0.0044	-0.0014	-0.5113	0.2684	0.1191	-0.0641
	(-1.1706)	(-1.8009)	(0.0916)	(0.1507)	(-0.7854)	(-0.9631)	(0.8776)	(1.5248)	(-0.5494)
ST(-6)	-0.1767	0.0140	-0.1455	-0.0075	-0.6438	-0.0838	0.1052	0.0132	-0.5684
	(-0.2191)	(0.2323)	(-0.6740)	(-0.2727)	(-0.1818)	(-0.1704)	(0.3713)	(0.1817)	(-0.4505)
ST(-7)	-0.2080	-0.0267	-0.4947	0.0022	-0.4265	-0.2140	-0.1752	-0.0854	-0.9009
	(-0.2659)	(-0.4558)	(-0.3001)	(0.0839)	(-0.7063)	(-0.4485)	(-0.6372)	(-1.2163)	(-1.1550)
ST(-8)	0.2868	-0.0515	-0.2755	0.0051	-0.3573	0.0127	0.1417	0.0932	0.3164
	(0.3743)	(-0.8962)	(-1.4087)	(0.1966)	(-0.1062)	(0.0272)	(0.5261)	(1.3540)	(0.7000)
VOL(-1)	0.9406	0.0135	0.9150	0.0024	0.0139	0.4243	0.0600	-0.4702**	0.0994
	(0.7235)	(0.0672)	(1.0463)	(0.0259)	(0.4256)	(0.2593)	(0.0636)	(-1.9528)	(0.0949)
VOL(-2)	0.6923**	-0.1985	0.0455	-0.0266	0.4875	0.5143	0.5194	-0.2211	0.7554
	(2.3539)	(-0.9606)	(0.0078)	(-0.2840)	(0.4530)	(0.3056)	(0.5357)	(-0.8929)	(0.2314)
VOL(-3)	-0.5807	0.0320	0.1675	-0.0509	0.2075	0.2812	0.9547	-0.2282	-0.6260
	(-0.7908)	(0.1309)	(0.1697)	(-0.4596)	(0.0145)	(0.1412)	(0.8323)	(-0.7789)	(-0.2573)
VOL(-4)	0.0881	0.0095	-0.1581	-0.0757	0.7119**	0.0221	-0.1093	-0.1448	-0.8655
	(0.0308)	(0.0445)	(-1.1894)	(-0.7811)	(2.1300)	(0.5867)	(-0.1089)	(-0.5648)	(-0.2324)
VOL(-5)	0.5888	0.3608	-0.5596	-0.0851	0.9460	0.8914	0.3718	-0.2623	0.8979
	(1.4605)	(1.5328)	(-0.6885)	(-0.7986)	(0.5033)	(0.9866)	(0.3367)	(-0.9297)	(0.4347)
VOL(-6)	-0.4091	0.0178	0.5023	-0.0005	-0.8602	-0.3226	-0.0330	0.0591	0.2408
	(-1.0690)	(0.0747)	(0.6698)	(-0.0045)	(-0.6325)	(-0.1658)	(-0.0295)	(0.2063)	(0.5258)

VOL(-7)	-0.0421	-0.1265	0.2277	0.0287	0.8910	0.5222	0.0636**	0.5917	0.6946
	(-1.0302)	(-0.5718)	(0.1973)	(0.2869)	(0.5313)	(0.8449)	(1.9883)	(2.2318)	(0.7603)
VOL(-8)	0.6120	0.0537	0.1548**	0.0427	0.3635	-0.4564	-0.4409	-0.3131	-0.7801
	(0.2644)	(0.3095)	(2.0817)	(0.5444)	(0.7244)	(-0.3232)	(-0.5420)	(-1.5067)	(-0.1781)
VOLATILITY(-1)	0.0485	0.0073*	-0.0255	-0.0008	0.0462	0.0394	-0.0140	-0.0029	-0.3475
	(0.9535)	(1.9026)	(-0.2379)	(-0.4775)	(0.2067)	(1.2697)	(-0.7828)	(-0.6255)	(-1.5820)
VOLATILITY(-2)	0.0875	0.0068	-0.0391	-0.0003	0.0660	0.0512	0.0087	0.0053	-0.3486
	(1.5044)	(1.5612)	(-0.3187)	(-0.1625)	(0.2584)	(1.4424)	(0.4239)	(1.0097)	(-1.3885)
VOLATILITY(-3)	0.0360	0.0018	-0.0667	-0.0007	0.0132	0.0354	0.0191	0.0131**	0.0522
	(0.5366)	(0.3645)	(-0.4719)	(-0.2992)	(0.0447)	(0.8657)	(0.8093)	(2.1781)	(0.1802)
VOLATILITY(-4)	0.0364	-0.0002	-0.0812	0.0007	-0.1253	0.0410	0.0349	0.0119**	-0.1640
	(0.5356)	(-0.0359)	(-0.5676)	(0.3043)	(-0.4202)	(0.9899)	(1.4641)	(1.9584)	(-0.5597)
VOLATILITY(-5)	0.0466	0.0024	-0.1080	-0.0001	0.0131	0.0141	0.0030	0.0042	-0.0154
	(0.7406)	(0.5117)	(-0.8139)	(-0.0483)	(0.0473)	(0.3662)	(0.1336)	(0.7424)	(-0.0568)
VOLATILITY(-6)	0.0969*	-0.0004	-0.1851	0.0000	-0.0386	-0.0041	-0.0060	-0.0014	-0.2476
	(1.7028)	(-0.0909)	(-1.5427)	(-0.0058)	(-0.1546)	(-0.1183)	(-0.3014)	(-0.2805)	(-1.0073)
VOLATILITY(-7)	0.0479	0.0011	-0.1677	0.0001	0.1027	-0.0130	-0.0160	-0.0029	0.0127
	(0.9323)	(0.2760)	(-1.5477)	(0.0555)	(0.4547)	(-0.4153)	(-0.8864)	(-0.6242)	(0.0571)
VOLATILITY(-8)	0.0554	0.0003	-0.1057	0.0004	-0.0567	-0.0038	0.0057	0.0038	-0.2729
	(1.2851)	(0.0987)	(-1.1618)	(0.3041)	(-0.2992)	(-0.1449)	(0.3730)	(0.9921)	(-1.4649)

	AR	**FER**	**CET**	**MCAP**	**RET**	**RQS**	**ST**	**VOL**	**VOLATILITY**
C	-0.0025	-0.0003	0.0150	0.0007	-0.1981**	-0.0134	-0.0012	0.0003	-0.0617
	(-0.1252)	(-0.0551)	(0.3350)	(1.0540)	(-2.3707)	(-1.2396)	(-0.1610)	(0.1618)	(-0.8391)
AR(-1)	-0.8134***	0.0302	-0.2554	-0.0026	0.9149***	0.0399	-0.0279	-0.0107	0.2762
	(-4.8449)	(0.6824)	(-0.6793)	(-0.4606)	(2.7370)	(0.4419)	(-0.4482)	(-0.6038)	(0.4485)

AR(-2)	-0.4752***	0.0551	0.4317	-0.0045	0.3780*	0.0470	-0.1033	-0.0313	-0.2278
	(-2.5222)	(1.1112)	(1.0229)	(-0.7114)	(1.7552)	(0.4637)	(-1.4774)	(-1.5670)	(-0.3297)
AR(-3)	-0.4980***	0.0618	0.6013	-0.0021	0.2636	0.0418	-0.1266*	-0.0209	-0.8001
	(-2.5525)	(1.2025)	(1.3760)	(-0.3251)	(1.5542)	(0.3986)	(-1.7485)	(-1.0122)	(-1.1181)
AR(-4)	-0.5607***	0.1148**	0.4956	-0.0043	0.1543	0.0921	0.0147	0.0123	-0.2211
	(-2.5774)	(2.0032)	(1.0173)	(-0.5779)	(1.2735)	(0.7871)	(0.1823)	(0.5314)	(-1.5305)
AR(-5)	-0.3257	0.1179*	0.4116	-0.0072	0.9642	0.2837**	0.0508	0.0189	-0.4410
	(-1.3617)	(1.8710)	(0.7683)	(-0.8862)	(0.9674)	(2.2051)	(0.5722)	(0.7452)	(-0.5027)
AR(-6)	-0.0589	0.0499	0.0465	0.0064	-0.8227	0.1879	0.0732	0.0413*	-0.1582
	(-0.2688)	(0.8651)	(0.0948)	(0.8675)	(-0.9012)	(1.5939)	(0.9010)	(1.7786)	(-1.4414)
AR(-7)	-0.2088	0.0422	-0.2500	0.0061	-0.5467	0.2553**	0.1813**	0.0626*	-0.2571
	(-0.8910)	(0.6837)	(-0.4763)	(0.7751)	(-1.5840)	(2.0253)	(2.0850)	(2.5200)	(-0.2991)
AR(-8)	-0.2016	-0.0062	-0.0267	-0.0026	0.3837	0.1971*	0.0526	0.0273	0.3199
	(-1.0604)	(-0.1242)	(-0.0627)	(-0.4033)	(0.4844)	(1.9274)	(0.7460)	(1.3539)	(0.4588)
FER(-1)	-0.8365	0.1138	-0.5543	0.0124	0.8473	0.2116	0.2433	0.0243	0.9813
	(-1.1398)	(0.5887)	(-0.3372)	(0.5012)	(0.2771)	(0.5360)	(0.8935)	(0.3128)	(0.7361)
FER(-2)	0.2679	0.0705	-0.4023	-0.0377	0.5504	0.1913	0.0540	0.0092	0.0968
	(0.3636)	(0.3630)	(-0.2438)	(-1.5124)	(0.1793)	(0.4825)	(0.1975)	(0.1172)	(0.7759)
FER(-3)	0.4744	-0.0156	-0.5086	0.0065	0.0042	0.1091	0.0803	0.0446	0.9468
	(2.0560)	(-0.0828)	(-0.3167)	(0.2666)	(0.0014)	(0.2829)	(0.3020)	(0.5863)	(1.5006)
FER(-4)	0.2603	-0.2485	1.2343	0.0496*	-1.0310	-0.6435	-0.3458	0.0213	-0.2956***
	(0.3354)	(-1.2156)	(0.7101)	(1.8888)	(-0.3188)	(-1.5412)	(-1.2010)	(0.2587)	(-2.5631)
FER(-5)	0.0015	0.0702	-0.0468	-0.0269	0.4904	0.4632	0.3153	0.0036	0.5467**
	(0.0019)	(0.3443)	(-0.0270)	(-1.0264)	(1.0823)	(1.1125)	(1.0983)	(0.0445)	(1.9541)
FER(-6)	-0.1976	0.0785	-0.7133	-0.0397	0.5997***	-0.1037	-0.3530	-0.0854	3.7470

	(-1.4636)	(0.3640)	(-0.3892)	(-1.4360)	(2.5222)	(-0.2356)	(-1.1628)	(-0.9850)	(1.2486)
FER(-7)	0.8636	-0.0004	0.1811	0.0330	-0.2419*	-0.7248	-0.1913	-0.0189*	-0.7933***
	(1.1367)	(-0.0019)	(0.6941)	(1.2834)	(-1.6558)	(-1.7734)	(-0.6787)	(-0.2343)	(-2.6174)
FER(-8)	-0.5868	0.2674	-0.3941	-0.0299	0.6049	0.2520	0.3876	0.0934	0.3428
	(-0.8256)	(1.4283)	(-0.8757)	(-1.2424)	(1.5547)	(3.2742)	(1.4700)	(1.2396)	(1.2823)
CET(-1)	-0.0008	-0.0113	-0.5720***	-0.0008	-0.2289	0.0319	0.0305	0.0119	0.0935
	(-0.0115)	(-0.6326)	(-3.7566)	(-0.3530)	(-0.8080)	(0.8734)	(1.2079)	(1.6504)	(0.3751)
CET(-2)	-0.0688	-0.0132	-0.5920***	0.0044*	-0.3477	-0.0259	-0.0172	0.0036	-0.5560
	(-0.8617)	(-0.6291)	(-3.3126)	(1.6427)	(-1.0458)	(-0.6045)	(-0.5811)	(0.4248)	(-1.9000)
CET(-3)	-0.0246	0.0146	-0.4770**	0.0000	0.0678	0.0591	0.0214	0.0167	0.2064
	(-0.2665)	(0.6006)	(-2.3075)	(0.0067)	(0.1763)	(1.1905)	(0.6244)	(1.7049)	(0.6098)
CET(-4)	0.0068	0.0242	-0.1782	0.0044	0.2085	-0.0365	-0.0325	0.0117	-0.0557*
	(0.0739)	(1.0021)	(-0.8684)	(1.4291)	(0.5461)	(-0.7409)	(-0.9559)	(1.2002)	(-0.1658)
CET(-5)	-0.1680*	0.0178	-0.5257**	0.0032	0.1731	0.0188	0.0093	0.0237**	-0.1286
	(-1.6594)	(0.6659)	(-2.3177)	(0.9200)	(0.4103)	(0.3446)	(0.2475)	(2.2041)	(-0.3463)
CET(-6)	-0.0772	0.0359	-0.1625	0.0016	0.4092	0.0453	0.0064	0.0200*	0.2642
	(-0.7403)	(1.3078)	(-0.6959)	(0.4447)	(0.9418)	(0.8068)	(0.1662)	(1.8131)	(0.6907)
CET(-7)	-0.2403***	-0.0086	-0.2239	0.0042	0.2602	0.0324	-0.0372	0.0022	-0.2017
	(-2.5279)	(-0.3441)	(-1.0517)	(1.3056)	(0.6569)	(0.6343)	(-1.0561)	(0.2157)	(-0.5785)
CET(-8)	-0.0114	0.0219	-0.3591	0.0022	0.4737	0.0380	-0.0070	0.0065	0.6179
	(-0.1065)	(0.7798)	(-1.5029)	(0.6194)	(1.0656)	(0.6622)	(-0.1756)	(0.5749)	(1.5792)
MCAP(-1)	-0.8815*	0.1382	-0.6026	0.1000	-0.0503	-0.1302	0.1120	-0.3423	0.9908
	(-1.8633)	(0.5303)	(-0.6358)	(0.3627)	(-0.4138)	(-0.0297)	(0.3679)	(-0.3964)	(0.1336)
MCAP(-2)	0.9112	-0.7234	-0.0594	0.3048	0.9854	0.2788	-0.3412	0.0861	-0.1810
	(0.4727)	(-0.3319)	(-0.2191)	(1.0893)	(0.3476)	(0.2873)	(-0.4369)	(0.0982)	(-1.2252)

MCAP(-3)	0.5335	0.0369	0.1115	0.1354	-0.5734	0.3539	0.3549	0.6185	0.4976
	(1.2933)	(0.0190)	(0.1885)	(0.5432)	(-0.8651)	(0.5936)	(0.8611)	(0.7917)	(1.0541)
MCAP(-4)	-0.0477	-0.9784	0.3287	0.2415	0.6737	0.4322	0.0797	0.4856	-0.6685
	(-1.2629)	(-1.0484)	(0.4567)	(0.9969)	(0.4915)	(0.1121)	(0.0300)	(0.6397)	(-0.2157)
MCAP(-5)	-0.1635	0.8749	0.2323	-0.2739	0.7350**	0.3590	-0.6514	0.2039	0.7075
	(-0.7128)	(0.9826)	(0.5690)	(-1.1180)	(2.3533)	(0.8620)	(-0.2424)	(0.2656)	(1.0053)
MCAP(-6)	0.7297*	0.2517	-0.6060*	-0.2939	0.4709***	0.6558	-0.8654	-0.9097	0.1896
	(1.7887)	(1.2011)	(-1.6377)	(-1.2209)	(3.1181)	(1.2160)	(-0.7065)	(-1.2061)	(0.7352)
MCAP(-7)	0.6327**	0.5816	0.2122	0.2595	0.0630	-0.6240	-0.8843	0.4770	-0.1583
	(2.0040)	(1.3422)	(0.8079)	(1.0507)	(0.4951)	(-0.9226)	(-0.3264)	(0.6164)	(-1.4622)
MCAP(-8)	-0.3206	0.1658	-0.2496	-0.0742	-0.4892	0.6480	0.8244	0.1107	-0.3593
	(-1.1827)	(0.6291)	(-1.0312)	(-0.3120)	(-0.5625)	(1.2281)	(0.6990)	(1.4897)	(-0.2077)
RET(-1)	-0.0514	-0.0121	-0.0179	-0.0016	-0.0144***	-0.0122	-0.0064	-0.0064	0.2490
	(-1.0760)	(-0.9620)	(-0.1678)	(-0.9835)	(-5.1008)	(-0.4758)	(-0.3587)	(-1.2704)	(1.4225)
RET(-2)	-0.1415**	-0.0379**	-0.0103	0.0001	-0.0703***	-0.0606*	-0.0099	-0.0115*	0.2259
	(-2.1516)	(-2.1877)	(-0.0698)	(0.0260)	(-3.9056)	(-1.7122)	(-0.4039)	(-1.6434)	(0.9367)
RET(-3)	-0.1659**	-0.0562***	0.0313	-0.0002	-0.8348***	-0.0703	-0.0274	-0.0199**	0.2385
	(-2.0202)	(-2.5976)	(0.1702)	(-0.0795)	(-2.4398)	(-1.5920)	(-0.8992)	(-2.2837)	(0.7919)
RET(-4)	-0.1853**	-0.0575**	0.0702	-0.0004	-0.8676**	-0.0802*	-0.0208	-0.0222**	0.1012
	(-2.0501)	(-2.4167)	(0.3470)	(-0.1308)	(-2.3039)	(-1.6493)	(-0.6197)	(-2.3170)	(0.3055)
RET(-5)	-0.1956**	-0.0450*	0.1177	-0.0009	-0.6651*	-0.0420	-0.0044	-0.0123	0.2233
	(-2.0972)	(-1.8299)	(0.5637)	(-0.2959)	(-1.7114)	(-0.8373)	(-0.1263)	(-1.2467)	(0.6528)
RET(-6)	-0.1025	-0.0307*	0.0940	-0.0006	-0.5460*	-0.0174	-0.0022	-0.0054	0.0704
	(-1.4964)	(-1.7025)	(0.6127)	(-0.2721)	(-1.9134)	(-0.4714)	(-0.0854)	(-0.7418)	(0.2802)
RET(-7)	-0.0351	-0.0100	0.0150	-0.0002	-0.3542*	0.0079	0.0193	0.0016	0.1776

	(-0.7460)	(-0.8035)	(0.1421)	(-0.1475)	(-1.8077)	(0.3118)	(1.1036)	(0.3116)	(1.0298)
RET(-8)	0.0084	-0.0028	0.0562	0.0002	-0.0393	-0.0019	0.0071	0.0012	0.1404
	(0.2949)	(-0.3725)	(0.8849)	(0.1898)	(-0.3329)	(-0.1277)	(0.6713)	(0.3946)	(1.3502)
RQS(-1)	-0.8324**	-0.2062	-0.1273	-0.0064	-0.7465	-0.5672*	-0.1203	-0.0613	-0.6984
	(-2.0504)	(-1.4176)	(-0.1030)	(-0.3446)	(-1.1935)	(-1.9091)	(-0.5873)	(-1.0472)	(-1.3322)
RQS(-2)	-0.2384	-0.0581	0.0233	0.0359**	-0.5198**	-0.4582	-0.1149	-0.0231	-0.1157
	(-0.4412)	(-0.4084)	(0.0192)	(1.9629)	(-2.0070)	(-1.5759)	(-0.5729)	(-0.4034)	(-1.5718)
RQS(-3)	0.3334	-0.0259	-0.4053	0.0139	-0.7465***	-0.2595	-0.0004	-0.0026	-0.5603
	(0.6335)	(-0.1870)	(-0.3438)	(0.7789)	(-2.6199)	(-0.9164)	(-0.0023)	(-0.0458)	(-0.2902)
RQS(-4)	-0.7982*	-0.1656	0.2323	0.0215	-0.5171*	-0.3401	-0.0542	0.0193	0.2354
	(-1.6376)	(-1.2901)	(1.1288)	(1.3035)	(-1.7317)	(-1.2971)	(-0.2999)	(0.3746)	(0.1317)
RQS(-5)	-0.2561***	-0.2542**	0.7296	0.0206	-0.0729	-0.4880**	-0.3949**	-0.0760	-0.9230
	(-2.6867)	(-2.0644)	(0.6967)	(1.3041)	(-0.5507)	(-1.9404)	(-2.2764)	(-1.5339)	(-1.1214)
RQS(-6)	-0.7078	0.0878	0.6670	-0.0167	0.6468	0.2783	0.1458	-0.0151	0.2724**
	(-1.3577)	(0.6396)	(0.5712)	(-0.9460)	(0.7581)	(0.9922)	(0.7536)	(-0.2731)	(2.2346)
RQS(-7)	-0.3347	0.0385	0.9608	-0.0036	0.0136	-0.4396*	-0.3861**	-0.0974**	-0.9536
	(-0.7296)	(0.3187)	(0.9350)	(-0.2291)	(0.5302)	(-1.7810)	(-2.2682)	(-2.0038)	(-0.5667)
RQS(-8)	-0.7130*	0.0118	0.3619	-0.0039	-0.0364	-0.0632	-0.0138	-0.0018	-0.1616
	(-1.8276)	(0.1146)	(0.4142)	(-0.2951)	(-1.2526)	(-0.3011)	(-0.0954)	(-0.0439)	(-0.1129)
ST(-1)	0.2809	0.1004	-0.6325	0.0133	-0.3048	-0.3211	-0.3278	0.0569	0.4856
	(0.3128)	(0.4243)	(-0.8118)	(0.4387)	(-0.6161)	(-0.6648)	(-0.9842)	(0.5978)	(0.4512)
ST(-2)	-0.3503***	0.0188	0.2511	0.0028	0.9979	-0.6735	-0.5340	-0.0931	0.8762
	(-2.5614)	(0.0776)	(0.6088)	(0.0917)	(0.5225)	(-1.3644)	(-1.5687)	(-0.9573)	(0.2604)
ST(-3)	-0.6234*	-0.2170	0.3545	-0.0227	0.6164	-0.1907	-0.6028*	-0.1654*	0.5160
	(-1.7269)	(-0.8763)	(0.1684)	(-0.7151)	(0.4127)	(-0.3771)	(-1.7285)	(-1.6608)	(0.4397)

ST(-4)	-0.1862	0.0221	0.8542	0.0097	-0.3715	-0.4976	-0.2081	-0.0672	0.0121
	(-0.2020)	(0.0909)	(0.8978)	(0.3108)	(-0.8775)	(-1.0031)	(-0.6085)	(-0.6873)	(0.2993)
ST(-5)	-0.6730	-0.1582	-0.2963	0.0034	-0.9858	-0.4732	0.0920	0.0516	-0.1948
	(-0.8657)	(-0.7723)	(-0.1702)	(0.1290)	(-1.5390)	(-1.1315)	(0.3189)	(0.6266)	(-0.4190)
ST(-6)	-0.1600	-0.3011	-0.2530	0.0070	-0.9726	-0.0720	0.2436	0.0622	-0.5133
	(-0.2125)	(-1.5183)	(-0.1500)	(0.2763)	(-0.6288)	(-0.1779)	(0.8722)	(0.7802)	(-0.1859)
ST(-7)	-0.8067	-0.1920	-0.4329	0.0058	-0.5271	-0.0361	0.0142	-0.0160	-0.3483
	(-1.0763)	(-0.9725)	(-0.2579)	(0.2298)	(-0.8092)	(-0.0896)	(0.0510)	(-0.2020)	(-1.5819)
ST(-8)	0.4629	-0.1676	-0.4443	-0.0126	-0.0389	0.4812	0.4641	0.1327	0.6077
	(0.5987)	(-0.8229)	(-1.4114)	(-0.4813)	(-0.9432)	(1.1568)	(1.6179)	(1.6191)	(1.6248)
VOL(-1)	0.5956	-0.5176	0.9368	-0.0612	0.2666	0.6396	0.5342	-0.4655	0.0659
	(0.2124)	(-0.7008)	(0.7861)	(-0.6449)	(0.4507)	(1.0870)	(0.5135)	(-1.5666)	(1.1733)
VOL(-2)	0.3421**	-0.2681	0.4818	-0.0204	-0.5820	0.6914	0.9468	-0.1928	0.2306
	(2.1789)	(-0.3497)	(0.0739)	(-0.2070)	(-0.6251)	(0.4415)	(0.8768)	(-0.6250)	(0.3963)
VOL(-3)	0.2803	0.0904	0.1526	0.0013	0.3809	0.5867	0.3513	-0.0054	-0.3381
	(0.0919)	(0.1126)	(0.1687)	(0.0125)	(0.0300)	(0.3576)	(1.1943)	(-0.0168)	(-0.3878)
VOL(-4)	0.3903	0.0789	-0.8709	-0.1296	0.5158	0.6978	-0.0739	-0.2402	0.5042
	(0.4961)	(0.1068)	(-1.4132)	(-1.3670)	(1.6712)	(1.1262)	(-0.0711)	(-0.8087)	(0.6328)
VOL(-5)	0.1960*	0.4788	-0.5405	-0.0356	0.4529	0.1593	0.1456	-0.1848	0.5502
	(1.7558)	(0.6142)	(-0.5342)	(-0.3558)	(0.2800)	(0.7282)	(0.1327)	(-0.5893)	(0.0507)
VOL(-6)	-0.9106	0.6937	0.8114	-0.0065	-0.3438	-0.4899	-0.3381	-0.0443	-0.4940
	(-0.3110)	(0.8993)	(0.2762)	(-0.0658)	(-0.8477)	(-0.3110)	(-0.3112)	(-0.1429)	(-0.2322)
VOL(-7)	-0.1265	0.5877	-0.8892	-0.0093	0.3755	0.2474	0.9213	0.1908	0.2790*
	(-0.0476)	(0.8386)	(-0.3170)	(-0.1031)	(0.2143)	(0.8715)	(0.9334)	(0.6765)	(1.6682)
VOL(-8)	-0.5876	0.7372	0.9600	0.0727	0.5405	-0.4874	-0.8243	-0.3425	-0.9180

	(-0.2464)	(1.1736)	(2.2391)	(0.9012)	(1.2620)	(-1.1594)	(-0.9317)	(-1.3553)	(-0.6766)
VOLATILITY(-1)	0.0189	0.0187	-0.0374	-0.0028	0.0997	0.0891***	0.0165	0.0030	-0.1161
	(0.3517)	(1.3209)	(-0.3117)	(-1.5478)	(0.4465)	(3.0906)	(0.8304)	(0.5315)	(-0.5907)
VOLATILITY(-2)	0.0812	0.0160	-0.0973	-0.0014	0.1127	0.0665**	0.0108	0.0067	-0.3891*
	(1.4615)	(1.0947)	(-0.7824)	(-0.7274)	(0.4870)	(2.2270)	(0.5236)	(1.1404)	(-1.9104)
VOLATILITY(-3)	0.0452	0.0195	-0.1082	-0.0017	0.0206	0.0456	0.0243	0.0117*	-0.1230
	(0.7229)	(1.1801)	(-0.7720)	(-0.7894)	(0.0789)	(1.3560)	(1.0467)	(1.7631)	(-0.5361)
VOLATILITY(-4)	0.0076	0.0064	-0.1350	-0.0006	0.1236	0.0592*	0.0356	0.0108	-0.1371
	(0.1201)	(0.3840)	(-0.9493)	(-0.2638)	(0.4670)	(1.7337)	(1.5102)	(1.6061)	(-0.5888)
VOLATILITY(-5)	0.0187	0.0202	-0.1028	-0.0003	0.1273	0.0237	0.0141	0.0071	-0.1199
	(0.3349)	(1.3696)	(-0.8200)	(-0.1522)	(0.5459)	(0.7879)	(0.6802)	(1.1887)	(-0.5840)
VOLATILITY(-6)	0.1155**	0.0027	-0.2093*	0.0000	-0.1617	0.0098	0.0069	0.0027	-0.2500
	(2.1297)	(0.1916)	(-1.7229)	(0.0010)	(-0.7155)	(0.3367)	(0.3449)	(0.4682)	(-1.2570)
VOLATILITY(-7)	0.1028**	0.0007	-0.1518	0.0020	0.0029	-0.0200	-0.0131	0.0019	-0.1721
	(2.0133)	(0.0500)	(-1.3269)	(1.1710)	(0.0136)	(-0.7274)	(-0.6915)	(0.3489)	(-0.9189)
VOLATILITY(-8)	0.1061***	-0.0026	-0.0942	0.0019	-0.3158*	-0.0246	-0.0083	0.0006	-0.4714***
	(2.4437)	(-0.2267)	(-0.9687)	(1.2901)	(-1.7461)	(-1.0525)	(-0.5144)	(0.1301)	(-2.9614)

	AR	**GOLD**	**CET**	**MCAP**	**RET**	**RQS**	**ST**	**VOL**	**VOLATILITY**
C	0.0095	0.0064	0.0234	0.0006	-0.1422*	-0.0026	0.0042	0.0025	-0.0139
	(0.5639)	(1.0050)	(0.6355)	(1.1367)	(-1.8489)	(-0.2722)	(0.6563)	(1.4881)	(-0.2008)
AR(-1)	-0.8847***	-0.0983	0.0966	-0.0023	0.5875***	0.0671	-0.0785	-0.0161	-0.2029
	(-5.4138)	(-1.5909)	(0.2704)	(-0.4215)	(3.4678)	(0.7254)	(-1.2717)	(-0.9784)	(-0.3021)
AR(-2)	-0.6076***	-0.0302	0.7223*	-0.0088	0.0571**	0.1279	-0.1135	-0.0387**	0.0826
	(-3.2386)	(-0.4259)	(1.7616)	(-1.3950)	(2.4015)	(1.2054)	(-1.6012)	(-2.0511)	(0.1072)
AR(-3)	-0.6784***	-0.0638	0.9381**	-0.0049	0.9482**	0.0635	-0.1571**	-0.0284	-0.7371

	(-3.5002)	(-0.8712)	(2.2146)	(-0.7591)	(2.2016)	(0.5795)	(-2.1452)	(-1.4554)	(-0.9252)
AR(-4)	-0.7340***	-0.0127	0.7275	-0.0079	0.8322*	0.1249	-0.0294	-0.0020	-0.1276
	(-3.3882)	(-0.1547)	(1.5365)	(-1.0917)	(1.8523)	(1.0192)	(-0.3591)	(-0.0910)	(-1.2663)
AR(-5)	-0.4122*	0.0568	0.8873*	-0.0051	0.0967	0.2883**	0.0289	0.0181	-0.7327
	(-1.8563)	(0.6769)	(1.8284)	(-0.6874)	(1.0817)	(2.2955)	(0.3448)	(0.8128)	(-0.8028)
AR(-6)	-0.1841	-0.0996	0.3961	0.0061	-0.3795	0.1995*	0.0801	0.0436**	-0.7988
	(-0.9216)	(-1.3192)	(0.9069)	(0.9109)	(-0.4160)	(1.7649)	(1.0604)	(2.1708)	(-0.9726)
AR(-7)	-0.3275	-0.0653	0.1736	0.0044	-0.0298	0.2046*	0.1018	0.0459**	-0.1427
	(-1.5114)	(-0.7977)	(0.3665)	(0.6041)	(-1.0410)	(1.6695)	(1.2438)	(2.1086)	(-0.1602)
AR(-8)	-0.1627	-0.0205	0.5650	0.0051	-0.2148	0.0573	-0.0371	0.0243	-0.1263
	(-0.8618)	(-0.2865)	(1.3688)	(0.8064)	(-0.2491)	(0.5363)	(-0.5195)	(1.2783)	(-1.4510)
GOLD(-1)	0.1596	0.1900	0.0472	0.0115	-0.9391	-0.1327	-0.1772	-0.0173	-0.5139
	(0.3242)	(1.0215)	(0.0439)	(0.6962)	(-0.8628)	(-0.4768)	(-0.9528)	(-0.3487)	(-0.2540)
GOLD(-2)	0.7704	-0.2389	0.0906	0.0032	-0.0072	0.5057*	-0.3271*	-0.0610	-0.6763*
	(1.6276)	(-1.3355)	(0.0876)	(0.1998)	(-0.0033)	(-1.8887)	(-1.8285)	(-1.2806)	(-1.8896)
GOLD(-3)	0.3771	0.2538	-0.2324**	-0.0100	0.9193	0.0363	0.1303	-0.0258	0.7121**
	(0.7287)	(1.2977)	(-1.9737)	(-0.5760)	(0.3891)	(0.1239)	(0.6664)	(-0.4952)	(2.2153)
GOLD(-4)	-0.0402	-0.0637	0.1368	0.0184	0.7878	-0.1314	-0.0280	0.0653	-0.7943
	(-0.0870)	(-0.3646)	(0.1355)	(1.1825)	(0.3735)	(-0.5029)	(-0.1602)	(1.4054)	(-1.4717)
GOLD(-5)	-0.1576	0.1751	-0.6467	-0.0137	0.4080	0.0334	0.0584	-0.0364	0.7598
	(-0.3441)	(1.0114)	(-0.6459)	(-0.8873)	(0.6732)	(0.1288)	(0.3374)	(-0.7910)	(0.9346)
GOLD(-6)	-0.2389	0.1142	0.8402	0.0033	-0.4169	-0.2719	-0.0131	0.0056	-0.9958
	(-0.5345)	(0.6760)	(0.8601)	(0.2192)	(-0.6943)	(-1.0757)	(-0.0775)	(0.1238)	(-0.5421)
GOLD(-7)	-0.7963	-0.1968	-0.7241	0.0047	-0.3327	-0.0945	0.0088	-0.0299	0.2407
	(-1.8951)	(-1.2392)	(-0.7884)	(0.3350)	(-0.1734)	(-0.3978)	(0.0552)	(-0.7066)	(0.1393)

GOLD(-8)	-0.4644	-0.1603	0.8528	-0.0347**	0.2686	0.5977**	-0.1307	-0.0492	0.5414
	(-1.0581)	(-0.9662)	(0.8889)	(-2.3510)	(1.6310)	(2.4073)	(-0.7879)	(-1.1158)	(0.3001)
CET(-1)	-0.0241	0.0534**	-0.6658***	-0.0028	0.1007	0.0535	0.0397	0.0121*	0.3350
	(-0.3347)	(1.9630)	(-4.2318)	(-1.1366)	(0.3065)	(1.3141)	(1.4583)	(1.6770)	(1.1323)
CET(-2)	-0.1183	0.0003	-0.6749***	0.0041	-0.1952	-0.0289	-0.0005	0.0063	-0.4216
	(-1.3995)	(0.0084)	(-3.6536)	(1.4438)	(-0.5058)	(-0.6050)	(-0.0167)	(0.7446)	(-1.2136)
CET(-3)	-0.1043	0.0527	-0.4458**	-0.0013	0.3282	0.0663	0.0158	0.0130	0.2118
	(-1.1236)	(1.5012)	(-2.1978)	(-0.4173)	(0.7745)	(1.2624)	(0.4499)	(1.3967)	(0.5553)
CET(-4)	-0.1024	0.0235	-0.1700	0.0038	0.1730	-0.0244	-0.0158	0.0127	-0.1561
	(-1.1296)	(0.6850)	(-0.8577)	(1.2436)	(0.4179)	(-0.4757)	(-0.4619)	(1.3907)	(-0.4188)
CET(-5)	-0.2741***	0.0219	-0.6393***	-0.0003	0.3213	0.0845	0.0424	0.0220**	0.4037
	(-2.8366)	(0.5987)	(-3.0267)	(-0.0883)	(0.7280)	(1.5457)	(1.1612)	(2.2600)	(1.0164)
CET(-6)	-0.1465	0.0312	-0.1096	-0.0016	0.7561	0.1078*	0.0027	0.0190*	0.4767
	(-1.4152)	(0.7966)	(-0.4845)	(-0.4591)	(1.6000)	(1.8409)	(0.0685)	(1.8210)	(1.1206)
CET(-7)	-0.2361***	-0.0353	-0.1862	0.0036	0.1864	0.0520	-0.0180	0.0037	-0.0003
	(-2.5879)	(-1.0247)	(-0.9338)	(1.1867)	(0.4475)	(1.0081)	(-0.5219)	(0.4078)	(-0.0007)
CET(-8)	-0.0178	-0.0126	-0.2269	-0.0003	0.8461*	0.0674	-0.0298	0.0032	0.7498*
	(-0.1662)	(-0.3106)	(-0.9702)	(-0.0806)	(1.7318)	(1.1141)	(-0.7378)	(0.2975)	(1.7049)
MCAP(-1)	-0.5535**	0.6465	-0.9174	0.1946	-0.5272	-0.4748	0.4059	-0.2517	0.4027
	(-2.3048)	(0.5561)	(-0.9297)	(0.7391)	(-0.9654)	(-0.5585)	(0.4749)	(-0.3196)	(0.0746)
MCAP(-2)	0.3177	-0.7832	0.9763	0.2519	0.1504	0.1147	-0.9814	-0.1319	-0.8338
	(0.9053)	(-1.2382)	(0.1685)	(0.9271)	(0.7085)	(0.4625)	(-0.6486)	(-0.1622)	(-0.9882)
MCAP(-3)	0.5333	-0.6785	-0.5784	-0.0900	0.0026	0.9391	0.3892	0.0018	0.8016
	(0.8879)	(-1.3226)	(-0.0360)	(-0.3641)	(0.0894)	(0.7061)	(0.1399)	(0.0024)	(1.4812)
MCAP(-4)	-0.3427	-0.0439	0.3421	0.4952**	-0.5466	-0.1244	-0.3590	0.8233	-0.9317

	(-0.4539)	(-0.7343)	(0.6425)	(2.0007)	(-0.5218)	(-0.5100)	(-0.1290)	(1.1117)	(-1.1210)
MCAP(-5)	-0.6246	0.5183	0.1110	-0.4076*	0.9855***	0.3344	-0.8277	-0.2720	0.3176
	(-0.5040)	(1.2942)	(0.1979)	(-1.6864)	(2.9964)	(1.0654)	(-1.0403)	(-0.3760)	(0.8902)
MCAP(-6)	0.9855**	-0.9234	-0.1609	-0.1422	0.2962*	0.0440	0.1982	-0.4561	0.4330
	(2.2967)	(-0.3303)	(-1.6184)	(-0.5721)	(1.7856)	(0.7277)	(0.0709)	(-0.6132)	(0.4419)
MCAP(-7)	0.5180	0.9666	-0.3317	0.1786	0.6372	-0.3636	0.5903	0.6377	0.5012
	(1.1074)	(1.0204)	(-0.1387)	(0.6907)	(0.5876)	(-0.5433)	(0.5471)	(0.8244)	(0.2373)
MCAP(-8)	-0.9789**	-0.4022	-0.8514	-0.1094	-0.1332	0.7947	-0.0353	0.4842	-0.7152
	(-2.2251)	(-0.1647)	(-1.0515)	(-0.5039)	(-0.2079)	(0.2174)	(-0.0145)	(0.7452)	(-0.5540)
RET(-1)	-0.0759	-0.0237	0.0387	-0.0008	-0.9113***	-0.0208	-0.0153	-0.0074	0.0784
	(-1.5921)	(-1.3142)	(0.3717)	(-0.4938)	(-4.6444)	(-0.7722)	(-0.8478)	(-1.5371)	(0.3998)
RET(-2)	-0.1491**	-0.0349	0.0415	-0.0005	-0.9743***	-0.0499	-0.0179	-0.0125*	0.0724
	(-2.2291)	(-1.3817)	(0.2838)	(-0.2177)	(-3.5180)	(-1.3181)	(-0.7084)	(-1.8656)	(0.2633)
RET(-3)	-0.1265	-0.0617**	0.1041	-0.0005	-0.7909**	-0.0487	-0.0382	-0.0192**	0.0915
	(-1.5368)	(-1.9836)	(0.5787)	(-0.1919)	(-2.1035)	(-1.0459)	(-1.2287)	(-2.3160)	(0.2703)
RET(-4)	-0.1322	-0.0817***	0.1558	0.0002	-0.8714**	-0.0702	-0.0421	-0.0220***	-0.1876
	(-1.5944)	(-2.6081)	(0.8597)	(0.0678)	(-2.3015)	(-1.4968)	(-1.3419)	(-2.6346)	(-0.5504)
RET(-5)	-0.1402	-0.0681**	0.2486	-0.0001	-0.6245	-0.0542	-0.0437	-0.0176**	-0.1696
	(-1.6474)	(-2.1165)	(1.3361)	(-0.0268)	(-1.6065)	(-1.1253)	(-1.3596)	(-2.0566)	(-0.4847)
RET(-6)	-0.0833	-0.0479**	0.1706	-0.0004	-0.3954	-0.0287	-0.0387	-0.0112*	-0.2067
	(-1.2902)	(-1.9637)	(1.2093)	(-0.1794)	(-1.3420)	(-0.7856)	(-1.5854)	(-1.7300)	(-0.7791)
RET(-7)	-0.0219	-0.0316*	0.0538	-0.0005	-0.1990	0.0029	-0.0082	-0.0039	0.0057
	(-0.4705)	(-1.7982)	(0.5299)	(-0.3105)	(-0.9378)	(0.1109)	(-0.4666)	(-0.8325)	(0.0301)
RET(-8)	0.0207	-0.0071	0.0853	0.0003	0.0031	0.0000	-0.0043	-0.0007	0.0361
	(0.7116)	(-0.6480)	(1.3405)	(0.2777)	(0.0234)	(0.0020)	(-0.3908)	(-0.2390)	(0.3021)

RQS(-1)	-0.9136**	0.0878	-0.8467	-0.0031	-0.4220	-0.5831*	-0.0022	-0.0470	-0.0120
	(-2.2363)	(0.4279)	(-0.7138)	(-0.1722)	(-1.3810)	(-1.8995)	(-0.0109)	(-0.8613)	(-0.9020)
RQS(-2)	-0.1265	-0.2546	0.3400	0.0289*	-0.1774	-0.3512	-0.1213	-0.0202	-0.9962
	(-0.2488)	(-1.3252)	(0.3060)	(1.6918)	(-1.3688)	(-1.2213)	(-0.6314)	(-0.3944)	(-0.9553)
RQS(-3)	0.1674	-0.2604	-0.2081	0.0133	-0.9023*	-0.3426	-0.1597	-0.0431	-0.4365
	(0.3368)	(-1.3862)	(-0.1916)	(0.7942)	(-1.8081)	(-1.2189)	(-0.8503)	(-0.8631)	(-0.2137)
RQS(-4)	-0.7328	-0.1452	0.5407	0.0215	-0.5971*	-0.4271	-0.1722	0.0013	-0.6524
	(-1.5355)	(-0.8052)	(1.4771)	(1.3430)	(-1.6508)	(-1.5824)	(-0.9546)	(0.0273)	(-0.8424)
RQS(-5)	-0.9906**	-0.1177	0.1479	0.0173	-0.3773	-0.2644	-0.3230*	-0.0512	-0.6466
	(-2.1934)	(-0.6893)	(0.1498)	(1.1375)	(-0.1830)	(-1.0351)	(-1.8922)	(-1.1268)	(-0.3483)
RQS(-6)	-0.2528	-0.0841	0.9824	-0.0141	0.0765	0.2355	0.0028	-0.0150	0.3972
	(-0.5194)	(-0.4571)	(0.9233)	(-0.8628)	(0.9342)	(0.8553)	(0.0153)	(-0.3068)	(1.1980)
RQS(-7)	-0.0520	0.0018	0.1155	0.0138	-0.3308	-0.4970**	-0.2663*	-0.0646	-0.7987
	(-0.1219)	(0.0113)	(1.1963)	(0.9606)	(-0.6832)	(-2.0596)	(-1.6518)	(-1.5056)	(-1.0257)
RQS(-8)	-0.9024***	0.0565	0.0800	-0.0053	-0.3026	-0.1959	-0.0430	-0.0169	-0.3472
	(-3.1995)	(0.3980)	(0.0974)	(-0.4174)	(-0.7591)	(-0.9216)	(-0.3026)	(-0.4483)	(-0.2248)
ST(-1)	-0.1743	-0.3110	-0.9645*	-0.0123	0.1775	0.0323	-0.2519	0.0589	0.0480
	(-0.2097)	(-0.9895)	(-1.6863)	(-0.4392)	(0.3102)	(0.0687)	(-0.8017)	(0.7042)	(1.1845)
ST(-2)	-0.8843**	0.1736	0.1969	0.0048	-0.9557	-0.6112	-0.4100	-0.0636	0.2285
	(-2.1741)	(0.5299)	(0.1039)	(0.1655)	(-0.2415)	(-1.2468)	(-1.2518)	(-0.7298)	(0.3448)
ST(-3)	-0.8267	-0.4134	0.5207	-0.0038	-0.6245	-0.3920	-0.5996*	-0.1238	-0.0050
	(-0.9097)	(-1.2035)	(0.2622)	(-0.1238)	(-0.1505)	(-0.7626)	(-1.7459)	(-1.3545)	(-0.2691)
ST(-4)	0.0111	-0.5453*	0.0060	0.0000	-0.3915	-0.3456	-0.2059	-0.0763	0.9495
	(0.0127)	(-1.6399)	(0.5232)	(-0.0017)	(-0.5954)	(-0.6945)	(-0.6193)	(-0.8624)	(1.0923)
ST(-5)	-0.4424	-0.5666*	0.2813	0.0178	-0.8422	-0.9455**	-0.3110	-0.0158	-0.5714

	(-0.5352)	(-1.8136)	(0.1557)	(0.6415)	(-1.5480)	(-2.0223)	(-0.9957)	(-0.1902)	(-1.3455)
ST(-6)	0.2764	-0.2404	-0.6537	0.0072	-0.2058	-0.3438	0.0113	0.0041	-0.0062
	(0.3578)	(-0.8234)	(-0.3872)	(0.2755)	(-0.6253)	(-0.7868)	(0.0388)	(0.0529)	(-0.3169)
ST(-7)	-0.0868	-0.3045	-0.8293	0.0076	-0.9874	-0.2248	-0.1197	-0.0313	-0.2618
	(-0.1190)	(-1.1050)	(-0.5204)	(0.3114)	(-0.5969)	(-0.5451)	(-0.4343)	(-0.4271)	(-1.0883)
ST(-8)	0.7275	-0.4071	-0.0556	-0.0089	-0.0061	0.1851	0.0912	0.0664	0.2155
	(1.0520)	(-1.5574)	(-1.3599)	(-0.3822)	(-0.0019)	(0.4732)	(0.3491)	(0.9546)	(1.1312)
VOL(-1)	0.1578	-0.1772	0.0981	-0.0500	0.0155	0.4030	0.2181	-0.5057**	0.3757
	(0.8466)	(-0.1840)	(1.6332)	(-0.5837)	(0.4310)	(0.9732)	(0.2264)	(-1.9731)	(0.6086)
VOL(-2)	0.2660	-0.6335	0.6255	-0.0374	0.7285	0.4856	0.9054	-0.1775	0.9284
	(1.6098)	(-0.6324)	(0.2806)	(-0.4199)	(0.3081)	(0.9910)	(0.9040)	(-0.6659)	(0.5442)
VOL(-3)	-0.2905	0.2302	0.1356	-0.0188	0.0068	0.8701	0.0624	-0.0732	-0.4293
	(-0.4433)	(0.2092)	(0.6499)	(-0.1916)	(0.3014)	(0.5284)	(0.9655)	(-0.2499)	(-0.7879)
VOL(-4)	0.7797	0.8695	-0.4157	-0.1000	0.3561	0.9552	-0.3894	-0.3200	-0.7731
	(0.2911)	(0.8589)	(-0.9252)	(-1.1110)	(1.4193)	(0.6305)	(-0.3847)	(-1.1881)	(-0.2519)
VOL(-5)	0.2217	0.3415	-0.3078	-0.0697	0.1408	0.0294	0.9897	-0.0746	0.5324
	(1.1116)	(0.3118)	(-0.8379)	(-0.7157)	(0.4640)	(1.2379)	(0.9036)	(-0.2559)	(0.5483)
VOL(-6)	-0.3009	0.6582	0.4768	-0.0492	-0.7598	0.5671	-0.1573	-0.0762	0.2108
	(-1.2115)	(0.6392)	(0.0801)	(-0.5369)	(-0.2218)	(0.3679)	(-0.1528)	(-0.2780)	(0.1974)
VOL(-7)	-0.2909	0.0441	0.7399	-0.0012	0.0538	0.0366	0.5886	0.1407	0.6844
	(-0.5017)	(1.0735)	(0.1316)	(-0.0140)	(0.2599)	(0.7122)	(0.6053)	(0.5439)	(0.4429)
VOL(-8)	-0.3548	0.0254	0.8298	0.0629	0.5775	-0.4253	0.4774	-0.1352	0.3094
	(-0.1582)	(1.2097)	(2.0055)	(0.8342)	(0.6424)	(-0.3353)	(0.5633)	(-0.5994)	(0.1421)
VOLATILITY(-1)	0.0226	0.0353*	0.0293	-0.0019	0.0412	0.0496*	0.0002	-0.0011	-0.2050
	(0.4646)	(1.9199)	(0.2751)	(-1.1731)	(0.1854)	(1.8010)	(0.0117)	(-0.2310)	(-1.0241)

VOLATILITY(-2)	0.0601	0.0076	-0.0522	-0.0007	0.1059	0.0487	0.0135	0.0074	-0.4425*
	(1.0767)	(0.3592)	(-0.4281)	(-0.3847)	(0.4154)	(1.5415)	(0.6385)	(1.3106)	(-1.9278)
VOLATILITY(-3)	-0.0233	0.0333	-0.1261	-0.0036*	0.2681	0.0725**	0.0305	0.0100*	0.1956
	(-0.3831)	(1.4486)	(-0.9490)	(-1.7464)	(0.9654)	(2.1080)	(1.3249)	(1.6420)	(0.7826)
VOLATILITY(-4)	-0.0115	0.0300	-0.0343	0.0001	0.0193	0.0451	0.0367	0.0133**	-0.3062
	(-0.1823)	(1.2530)	(-0.2477)	(0.0650)	(0.0669)	(1.2584)	(1.5316)	(2.0943)	(-1.1763)
VOLATILITY(-5)	-0.0074	0.0276	-0.0754	-0.0012	0.1817	0.0392	0.0282	0.0077	0.1387
	(-0.1289)	(1.2777)	(-0.6038)	(-0.6319)	(0.6962)	(1.2121)	(1.3037)	(1.3377)	(0.5904)
VOLATILITY(-6)	0.0471	0.0012	-0.1409	-0.0006	-0.0345	0.0078	0.0010	0.0007	-0.2627
	(0.8913)	(0.0620)	(-1.2197)	(-0.3172)	(-0.1431)	(0.2611)	(0.0503)	(0.1230)	(-1.2096)
VOLATILITY(-7)	0.0596	0.0060	-0.1731	-0.0004	0.1804	0.0065	-0.0076	-0.0008	0.1026
	(1.2293)	(0.3279)	(-1.6331)	(-0.2730)	(0.8144)	(0.2372)	(-0.4146)	(-0.1721)	(0.5145)
VOLATILITY(-8)	0.0718*	0.0088	-0.1479	-0.0002	-0.0394	0.0079	-0.0050	0.0006	-0.2290
	(1.7179)	(0.5602)	(-1.6202)	(-0.1351)	(-0.2066)	(0.3344)	(-0.3141)	(0.1527)	(-1.3335)

	AR	**IR**	**CET**	**MCAP**	**RET**	**RQS**	**ST**	**VOL**	**VOLATILITY**
C	0.0106	0.0061	0.0071	0.0005	-0.1249**	-0.0089	-0.0003	0.0014	-0.0300
	(0.6981)	(0.3496)	(0.2377)	(1.1926)	(-1.9916)	(-1.1536)	(-0.0512)	(1.0378)	(-0.5641)
AR(-1)	-0.7226***	-0.1771	-0.2588	0.0034	0.9968***	-0.0088	-0.0465	0.0053	-0.2726
	(-4.1742)	(-0.8884)	(-0.7598)	(0.6602)	(2.9454)	(-0.1004)	(-0.8070)	(0.3406)	(-0.4525)
AR(-2)	-0.4450**	-0.1343	0.5929	0.0003	0.7701**	0.0030	-0.1184*	-0.0166	-0.4738
	(-2.2122)	(-0.5799)	(1.4980)	(0.0571)	(2.1399)	(0.0299)	(-1.7704)	(-0.9166)	(-0.6768)
AR(-3)	-0.4981**	0.3568	0.7464*	-0.0007	0.8707**	-0.0005	-0.1430*	-0.0090	-0.6352
	(-2.2011)	(1.3690)	(1.6764)	(-0.0980)	(2.0103)	(-0.0046)	(-1.9003)	(-0.4401)	(-0.8065)
AR(-4)	-0.5293**	0.1415	0.5990	0.0024	0.2786	-0.0241	-0.0323	0.0286	-0.8225***
	(-2.1278)	(0.4940)	(1.2239)	(0.3266)	(1.2499)	(-0.1916)	(-0.3906)	(1.2790)	(-2.4516)

AR(-5)	-0.3439	-0.3580	0.4259	0.0000	0.6503	0.2273*	0.0214	0.0366	-0.8159
	(-1.3312)	(-1.2035)	(0.8380)	(-0.0052)	(1.5537)	(1.7404)	(0.2488)	(1.5766)	(-0.9075)
AR(-6)	-0.1703	-0.0046	0.2669	0.0076	0.2487	0.1565	0.0689	0.0469**	-0.4264
	(-0.7197)	(-0.0170)	(0.5735)	(1.0649)	(0.2556)	(1.3092)	(0.8761)	(2.2067)	(-0.5179)
AR(-7)	-0.2473	-0.2796	-0.0363	0.0059	-0.5083	0.1386	0.1117	0.0583***	-0.0506
	(-1.1078)	(-1.0875)	(-0.0826)	(0.8876)	(-0.5538)	(1.2283)	(1.5042)	(2.9064)	(-0.0651)
AR(-8)	-0.1483	-0.3732*	0.0868	-0.0006	0.6248	0.1240	0.0133	0.0247	0.0849
	(-0.8559)	(-1.8709)	(0.2547)	(-0.1165)	(0.8771)	(1.4161)	(0.2301)	(1.5857)	(0.1408)
IR(-1)	0.0269	-0.6845***	-0.0541	-0.0098***	0.6319	0.1234*	0.0377	-0.0121	0.4917***
	(0.2056)	(-4.5432)	(-0.2104)	(-2.4999)	(1.1747)	(1.8662)	(0.8661)	(-1.0271)	(3.2765)
IR(-2)	0.1258	-0.4218**	0.1891	-0.0053	-0.6245	0.0329	0.0230	-0.0189	0.4450
	(0.8135)	(-2.3685)	(0.6217)	(-1.1469)	(-0.9823)	(0.4213)	(0.4476)	(-1.3627)	(0.8271)
IR(-3)	0.1671	0.0505	-0.0919	-0.0054	-0.5716	-0.0200	-0.0404	-0.0320**	0.2232
	(1.0037)	(0.2632)	(-0.2806)	(-1.0706)	(-0.8350)	(-0.2380)	(-0.7289)	(-2.1373)	(0.3853)
IR(-4)	-0.0132	0.2470	-0.2028	-0.0005	-0.5787	-0.0360	-0.0035	-0.0200	0.0358
	(-0.0835)	(1.3556)	(-0.6515)	(-0.1042)	(-0.8897)	(-0.4502)	(-0.0672)	(-1.4098)	(0.0650)
IR(-5)	-0.0386	0.3515**	-0.2047	0.0045	-0.2502	-0.0415	0.0103	0.0009	-0.3201
	(-0.2636)	(2.0863)	(-0.7112)	(1.0250)	(-0.4159)	(-0.5615)	(0.2118)	(0.0653)	(-0.6288)
IR(-6)	-0.1851	0.2273	-0.0450	0.0004	0.4954	0.0577	0.0304	0.0123	0.1425
	(-1.2970)	(1.3834)	(-0.1604)	(0.1022)	(0.8443)	(0.8004)	(0.6397)	(0.9557)	(0.2870)
IR(-7)	-0.1234	0.0602	0.2020	0.0032	0.1237	-0.0580	-0.0328	0.0029	-0.2163
	(-0.9183)	(0.3890)	(0.7640)	(0.7892)	(0.2239)	(-0.8533)	(-0.7340)	(0.2440)	(-0.4625)
IR(-8)	-0.0402	0.0772	-0.0934	-0.0026	0.3233	0.0364	0.0249	0.0108	0.4672
	(-0.3576)	(0.5971)	(-0.4227)	(-0.7815)	(0.6999)	(0.6419)	(0.6657)	(1.0734)	(1.1953)
CET(-1)	-0.0801	-0.0329	-0.6275***	-0.0034	0.1846	0.0875**	0.0521*	0.0112	0.5989**

	(-0.9879)	(-0.3519)	(-3.9341)	(-1.4141)	(0.5536)	(2.1341)	(1.9319)	(1.5365)	(2.1225)
CET(-2)	-0.0988	0.1402	-0.5301***	0.0037	-0.3746	-0.0236	-0.0140	0.0014	-0.5264*
	(-1.1227)	(1.3839)	(-3.0629)	(1.4075)	(-1.0355)	(-0.5302)	(-0.4794)	(0.1781)	(-1.7196)
CET(-3)	-0.0624	-0.1702	-0.5035***	-0.0003	0.2236	0.0550	0.0104	0.0155*	0.1932
	(-0.6240)	(-1.4769)	(-2.5575)	(-0.1024)	(0.5435)	(1.0877)	(0.3129)	(1.7189)	(0.5547)
CET(-4)	-0.0699	0.0048	-0.1945	0.0037	0.2300	-0.0130	-0.0216	0.0115	0.0516
	(-0.7210)	(0.0430)	(-1.0193)	(1.2613)	(0.5766)	(-0.2661)	(-0.6680)	(1.3137)	(0.1528)
CET(-5)	-0.1706	-0.0257	-0.6192***	0.0021	0.0568	0.0658	0.0498	0.0327***	0.0893
	(-1.5982)	(-0.2094)	(-2.9488)	(0.6510)	(0.1295)	(1.2193)	(1.4043)	(3.4064)	(0.2404)
CET(-6)	-0.0876	-0.1683	-0.1886	0.0004	0.6232	0.0583	-0.0076	0.0197**	0.4529
	(-0.7950)	(-1.3259)	(-0.8698)	(0.1233)	(1.3753)	(1.0474)	(-0.2061)	(1.9847)	(1.1810)
CET(-7)	-0.1858*	0.1166	-0.1365	0.0061**	-0.1833	-0.0151	-0.0362	0.0027	-0.2372
	(-1.8825)	(1.0254)	(-0.7029)	(2.0574)	(-0.4517)	(-0.3035)	(-1.1012)	(0.3008)	(-0.6905)
CET(-8)	0.0759	-0.1007	-0.4212*	0.0020	0.6327	0.0176	-0.0219	0.0118	0.5892
	(0.6434)	(-0.7410)	(-1.8145)	(0.5764)	(1.3040)	(0.2958)	(-0.5592)	(1.1174)	(1.4350)
MCAP(-1)	-0.8530**	0.1182	-0.1245	0.0699	-0.6889	-0.3599	0.2037	-0.8060	-0.2985
	(-2.3328)	(1.1212)	(-0.6567)	(0.2705)	(-0.6408)	(-0.3125)	(0.0711)	(-1.0417)	(-0.2769)
MCAP(-2)	0.5441	-0.8538*	-0.6036	0.3983	0.7077	0.2024	0.2194	0.4409	-0.4174
	(0.9829)	(-1.7234)	(-0.5030)	(1.5261)	(0.3835)	(0.2736)	(0.0759)	(0.5644)	(-0.6749)
MCAP(-3)	0.6145	-0.9832	0.3246	-0.1073	0.7496	0.2262	0.7395	0.2548	0.3204*
	(0.5761)	(-0.3234)	(0.2744)	(-0.4462)	(0.5693)	(0.7969)	(0.2776)	(0.3540)	(1.7335)
MCAP(-4)	-0.6730	0.1707	0.9238	0.3410	-0.0119	-0.7786	0.3966	0.5804	-0.6661
	(-0.3375)	(0.6766)	(0.9578)	(1.4341)	(-0.7987)	(-0.1945)	(0.5303)	(0.8156)	(-0.6410)
MCAP(-5)	-0.5110	-0.5749	0.2920	-0.2926	0.3562***	0.8724	-0.4661	0.3193	0.7168
	(-0.3238)	(-0.9600)	(0.0847)	(-1.2564)	(2.5509)	(0.9877)	(-0.9561)	(0.4581)	(0.6193)

MCAP(-6)	0.2380*	0.4194	-0.5957	0.0162	0.9369	0.0669	-0.0350	-0.7205	-0.6351
	(1.8686)	(1.4153)	(-1.2405)	(0.0707)	(1.4662)	(0.5367)	(-0.4084)	(-1.0523)	(-0.0617)
MCAP(-7)	0.3385	0.3349	0.8504	0.0972	0.0023	-0.3116	0.7688	0.5878	-0.4981
	(1.3668)	(0.4976)	(0.6619)	(0.4279)	(1.1253)	(-0.0815)	(0.3056)	(0.8647)	(-0.1709)
MCAP(-8)	-0.6336**	-0.5811	-0.9959	-0.1450	-0.9755	0.3261	0.6818	0.7156	0.2967
	(-2.1906)	(-0.9224)	(-1.0680)	(-0.6766)	(-0.0332)	(0.9220)	(0.2873)	(1.1158)	(0.1730)
RET(-1)	-0.0731	0.0522	-0.0379	-0.0022	-0.9499***	-0.0158	-0.0102	-0.0102**	0.2919*
	(-1.4569)	(0.9026)	(-0.3840)	(-1.4283)	(-4.6038)	(-0.6209)	(-0.6116)	(-2.2639)	(1.6715)
RET(-2)	-0.1316*	0.0301	-0.0405	0.0000	-0.2602***	-0.0731*	-0.0090	-0.0135*	0.0282
	(-1.6992)	(0.3377)	(-0.2661)	(0.0179)	(-3.9575)	(-1.8670)	(-0.3499)	(-1.9355)	(0.1046)
RET(-3)	-0.1067	-0.0252	-0.0731	-0.0006	-0.8419**	-0.0576	-0.0239	-0.0189**	0.2150
	(-1.1111)	(-0.2279)	(-0.3867)	(-0.2174)	(-2.1320)	(-1.1874)	(-0.7485)	(-2.1845)	(0.6432)
RET(-4)	-0.1385	0.1584	0.0707	0.0005	-0.9427**	-0.0798*	-0.0192	-0.0204**	-0.0519
	(-1.4433)	(1.4339)	(0.3745)	(0.1629)	(-2.3894)	(-1.6459)	(-0.6021)	(-2.3641)	(-0.1553)
RET(-5)	-0.1357	0.0846	0.1489	0.0015	-0.7301*	-0.0677	-0.0156	-0.0087	-0.1910
	(-1.4450)	(0.7821)	(0.8060)	(0.5232)	(-1.8904)	(-1.4265)	(-0.4978)	(-1.0340)	(-0.5843)
RET(-6)	-0.1020	0.0157	0.0989	0.0003	-0.3752	-0.0266	-0.0125	-0.0030	-0.1168
	(-1.4601)	(0.1948)	(0.7196)	(0.1556)	(-1.3068)	(-0.7526)	(-0.5379)	(-0.4745)	(-0.4806)
RET(-7)	-0.0527	0.0472	0.0538	0.0006	-0.2504	-0.0098	0.0087	0.0018	0.0405
	(-1.0833)	(0.8422)	(0.5620)	(0.3772)	(-1.2520)	(-0.3982)	(0.5360)	(0.4170)	(0.2395)
RET(-8)	0.0056	0.0148	0.0802	0.0009	-0.0469	-0.0105	0.0056	0.0025	0.0196
	(0.1837)	(0.4204)	(1.3341)	(0.9611)	(-0.3731)	(-0.6806)	(0.5479)	(0.8936)	(0.1839)
RQS(-1)	-0.8658**	0.8631	-0.6367	-0.0056	-0.8941	-0.3335	0.0414	-0.0149	-0.5063
	(-2.0353)	(1.3085)	(-0.5650)	(-0.3234)	(-1.2288)	(-1.1517)	(0.2171)	(-0.2891)	(-1.2573)
RQS(-2)	0.0158	-0.2542	0.0365	0.0386**	-0.3908	-0.4167	-0.1052	0.0061	-0.5078

	(0.0282)	(-0.3944)	(0.0331)	(2.2961)	(-1.4734)	(-1.4729)	(-0.5652)	(0.1211)	(-1.2876)
RQS(-3)	0.2959	0.3520	-0.2066	0.0165	-0.4473	-0.3866	-0.0816	0.0046	0.1605
	(0.5162)	(0.5331)	(-0.1832)	(0.9584)	(-1.4624)	(-1.3340)	(-0.4281)	(0.0893)	(0.0804)
RQS(-4)	-0.7263	-0.9407	0.3488	0.0239	-0.8376	-0.3272	0.0035	0.0528	-0.2688
	(-1.3123)	(-1.4758)	(1.2386)	(1.4363)	(-1.6862)	(-1.1694)	(0.0189)	(1.0617)	(-0.6587)
RQS(-5)	-0.7602	-0.4766	0.0003	0.0071	-0.0976	-0.1103	-0.2748	-0.0362	-0.1118
	(-1.3803)	(-0.7513)	(0.0003)	(0.4291)	(-0.0431)	(-0.3962)	(-1.5002)	(-0.7313)	(-0.0583)
RQS(-6)	-0.2006	-0.0424	0.2350	-0.0045	0.1649	0.1139	0.0489	-0.0003	0.1940
	(-0.3839)	(-0.0705)	(1.2012)	(-0.2846)	(0.0767)	(0.4313)	(0.2811)	(-0.0061)	(1.2063)
RQS(-7)	0.2797	0.6828	0.3983	0.0185	-0.9744	-0.5680**	-0.3665**	-0.0680	-0.5515**
	(0.5642)	(1.1960)	(1.4338)	(1.2409)	(-0.9686)	(-2.2668)	(-2.2235)	(-1.5253)	(-2.0587)
RQS(-8)	-0.8526***	-0.8617*	-0.3177	-0.0189	0.3876	0.2232	0.0353	0.0102	0.1701
	(-2.8732)	(-1.7162)	(-0.3704)	(-1.4456)	(0.2162)	(1.0127)	(0.2434)	(0.2593)	(0.7712)
ST(-1)	-0.4343	0.5063	-0.3770	-0.0047	-0.1914	-0.0976	-0.1994	0.0746	0.6401
	(-0.4828)	(0.4886)	(-1.3429)	(-0.1740)	(-0.3220)	(-0.2145)	(-0.6664)	(0.9224)	(1.1626)
ST(-2)	-0.8109**	0.8671	0.6816	-0.0018	-0.8293	-0.3685	-0.2910	-0.0410	0.8729
	(-2.4268)	(1.1123)	(0.3802)	(-0.0658)	(-0.2214)	(-0.8002)	(-0.9603)	(-0.5003)	(0.2753)
ST(-3)	-0.8176	-0.8182***	0.2145	0.0019	-0.0497	-0.1731	-0.5372	-0.0821	-0.6833
	(-0.7823)	(-2.5074)	(0.1043)	(0.0592)	(-0.4769)	(-0.3277)	(-1.5456)	(-0.8743)	(-0.4628)
ST(-4)	0.1379	0.3923	0.6116	-0.0223	-0.6260	-0.1311	-0.1551	-0.0905	0.4041**
	(0.1308)	(0.3231)	(0.7769)	(-0.7029)	(-0.1444)	(-0.2461)	(-0.4423)	(-0.9547)	(2.0179)
ST(-5)	0.0143	-0.4498	0.4175	0.0237	-0.2539**	-0.8553*	0.1328	0.0640	-0.7705
	(0.0144)	(-0.3923)	(0.2131)	(0.7924)	(-2.2605)	(-1.6997)	(0.4011)	(0.7151)	(-1.0883)
ST(-6)	0.4587	-0.1566	-0.3062	-0.0081	-0.2081	0.1405	0.2119	0.0387	0.0712
	(0.4887)	(-1.0699)	(-0.7073)	(-0.2869)	(-0.3130)	(0.2961)	(0.6790)	(0.4588)	(0.3279)

ST(-7)	-0.5215	0.1230	0.3970	0.0013	-0.9974	-0.1412	-0.0207	-0.0817	-0.6583
	(-0.5880)	(0.1204)	(0.2276)	(0.0502)	(-0.8220)	(-0.3149)	(-0.0702)	(-1.0251)	(-0.5373)
ST(-8)	0.1441	0.8717	-0.7110	0.0163	-0.0463	-0.2693	0.1466	0.1076	0.6993
	(1.3678)	(0.9049)	(-1.0397)	(0.6477)	(-1.1764)	(-0.6370)	(0.5270)	(1.4318)	(0.5838)
VOL(-1)	0.5073	0.6498	0.9601	-0.0132	-0.3179	0.7571	0.2843	-0.5058**	0.9373
	(1.2867)	(0.5255)	(1.2978)	(-0.1608)	(-0.0284)	(0.5495)	(0.3136)	(-2.0646)	(0.6259)
VOL(-2)	0.6008**	-0.8768	0.2458	-0.0034	-0.7855	-0.2763	0.0829	-0.3618	-0.5479
	(2.2180)	(-0.5476)	(0.2128)	(-0.0383)	(-0.3093)	(-0.1836)	(0.0837)	(-1.3530)	(-0.3426)
VOL(-3)	-0.0035	0.6368	0.5406	-0.0453	0.0595	0.6665	0.1812	-0.2669	0.9087
	(-0.6024)	(1.4716)	(0.0826)	(-0.4532)	(0.5893)	(0.3964)	(1.0679)	(-0.8928)	(0.0785)
VOL(-4)	-0.3110	-0.5951	-0.6772	-0.0206	0.1159	0.7475	-0.3251	-0.1692	-0.5502
	(-0.1019)	(-0.1693)	(-1.2786)	(-0.2253)	(1.3639)	(0.4845)	(-0.3203)	(-0.6169)	(-1.0875)
VOL(-5)	0.5827	0.0816	-0.6491	-0.0968	0.7573	0.3993	0.2833	-0.2264	0.3041
	(0.4817)	(0.2858)	(-0.5645)	(-0.9810)	(1.2402)	(1.4446)	(0.2592)	(-0.7668)	(0.6387)
VOL(-6)	-0.8177	0.0534	0.1002	-0.0566	-0.2473	-0.1368	-0.2967	-0.1556	0.9559
	(-1.5274)	(0.5653)	(0.4996)	(-0.5973)	(-0.1733)	(-0.0858)	(-0.2829)	(-0.5489)	(0.2693)
VOL(-7)	-0.6455	-0.7324	-0.0212	0.0248	-0.6629	0.6725	0.7388	0.2265	0.3669
	(-0.5705)	(-0.8226)	(-0.7087)	(0.2859)	(-0.0559)	(0.4613)	(0.7703)	(0.8741)	(0.3354)
VOL(-8)	-0.8347	-0.9689**	0.7784*	-0.0054	0.6666	0.7103	0.1373	-0.3037	0.9056
	(-0.7022)	(-2.3161)	(1.7077)	(-0.0686)	(1.5513)	(0.5378)	(0.1580)	(-1.2936)	(0.4295)
VOLATILITY(-1)	-0.0085	-0.0968	-0.0042	-0.0025	0.3019	0.0658**	-0.0020	-0.0008	-0.0841
	(-0.1470)	(-1.4597)	(-0.0375)	(-1.4298)	(1.2755)	(2.2609)	(-0.1052)	(-0.1482)	(-0.4199)
VOLATILITY(-2)	0.0709	0.0033	-0.0155	-0.0009	0.0980	0.0406	0.0070	0.0038	-0.3788*
	(1.1634)	(0.0463)	(-0.1289)	(-0.5153)	(0.3910)	(1.3175)	(0.3462)	(0.6967)	(-1.7856)
VOLATILITY(-3)	0.0099	-0.0675	-0.1318	-0.0037*	0.2822	0.0505	0.0180	0.0073	0.1254

	(0.1533)	(-0.9080)	(-1.0377)	(-1.9201)	(1.0632)	(1.5475)	(0.8404)	(1.2625)	(0.5581)
VOLATILITY(-4)	0.0075	-0.0231	-0.1068	-0.0004	-0.0114	0.0330	0.0279	0.0055	-0.1980
	(0.1093)	(-0.2909)	(-0.7876)	(-0.1878)	(-0.0402)	(0.9479)	(1.2155)	(0.8871)	(-0.8250)
VOLATILITY(-5)	0.0224	0.0773	-0.1295	-0.0013	0.2433	0.0285	0.0158	0.0038	0.1223
	(0.3612)	(1.0825)	(-1.0610)	(-0.7092)	(0.9539)	(0.9092)	(0.7678)	(0.6778)	(0.5665)
VOLATILITY(-6)	0.0713	0.0234	-0.1903*	0.0011	-0.1128	-0.0235	-0.0069	0.0001	-0.4145**
	(1.2345)	(0.3523)	(-1.6738)	(0.6059)	(-0.4746)	(-0.8057)	(-0.3609)	(0.0193)	(-2.0610)
VOLATILITY(-7)	0.0597	0.0462	-0.2244**	-0.0002	0.2901	-0.0008	-0.0028	0.0012	0.1827
	(1.0613)	(0.7136)	(-2.0288)	(-0.0944)	(1.2549)	(-0.0273)	(-0.1479)	(0.2413)	(0.9338)
VOLATILITY(-8)	0.0711	0.0934*	-0.1333	0.0009	-0.1776	-0.0045	0.0080	0.0032	-0.2807*
	(1.4578)	(1.6634)	(-1.3888)	(0.6285)	(-0.8856)	(-0.1834)	(0.4905)	(0.7396)	(-1.6540)
	AR	**M1**	**CET**	**MCAP**	**RET**	**RQS**	**ST**	**VOL**	**VOLATILITY**
C	-0.0106	0.0040	0.0048	0.0003	-0.0719	-0.0045	0.0010	0.0014	0.0117
	(-0.6343)	(0.5736)	(0.1556)	(0.5548)	(-1.1470)	(-0.5356)	(0.1798)	(1.0001)	(0.1892)
AR(-1)	-0.8561***	-0.0267	-0.2902	0.0023	0.1915***	-0.0006	-0.0282	-0.0020	0.0816
	(-5.0592)	(-0.3806)	(-0.9371)	(0.4327)	(3.4509)	(-0.0065)	(-0.5046)	(-0.1364)	(0.1308)
AR(-2)	-0.3641*	-0.0442	0.5935	-0.0006	0.8785	-0.0251	-0.0997	-0.0210	-0.6274
	(-1.7426)	(-0.5097)	(1.5520)	(-0.0930)	(1.1204)	(-0.2368)	(-1.4445)	(-1.1843)	(-0.8147)
AR(-3)	-0.4861**	0.0221	0.5712	-0.0002	0.3162*	0.0266	-0.0984	-0.0113	-0.5299
	(-2.3232)	(0.2543)	(1.4915)	(-0.0294)	(1.6761)	(0.2507)	(-1.4224)	(-0.6370)	(-0.6870)
AR(-4)	-0.4802**	0.0781	0.6225	-0.0024	0.1947	0.0216	0.0029	0.0130	-0.3745
	(-2.0764)	(0.8148)	(1.4707)	(-0.3327)	(1.3766)	(0.1840)	(0.0378)	(0.6615)	(-1.6125)
AR(-5)	-0.1756	-0.0380	0.5496	-0.0024	0.6474	0.2561**	0.0586	0.0259	-0.3600
	(-0.7243)	(-0.3779)	(1.2384)	(-0.3179)	(0.7115)	(2.0816)	(0.7317)	(1.2610)	(-0.4028)
AR(-6)	-0.0131	-0.0686	-0.0824	0.0027	-0.2576	0.2160*	0.1033	0.0319*	0.1783

	(-0.0587)	(-0.7414)	(-0.2016)	(0.3931)	(-0.3074)	(1.9064)	(1.3994)	(1.6861)	(0.2166)
AR(-7)	-0.1877	0.0105	-0.6052	-0.0013	-0.3919	0.2441**	0.1582**	0.0434	0.9571
	(-0.8721)	(0.1173)	(-1.5367)	(-0.2013)	(-0.4853)	(2.2357)	(2.2251)	(2.3812)	(1.2066)
AR(-8)	-0.1413	-0.0011	-0.3002	-0.0042	0.1225	0.2024**	0.0183	0.0131	0.7694
	(-0.7627)	(-0.0141)	(-0.8853)	(-0.7366)	(1.6143)	(2.1530)	(0.2988)	(0.8348)	(1.1266)
M1(-1)	-0.2268	0.1314	-0.4101*	0.0101	-0.8872***	0.0261	0.2623*	0.0919***	-0.8141
	(-0.5374)	(0.7510)	(-1.8252)	(0.7749)	(-2.5801)	(0.1220)	(1.8804)	(2.5708)	(-0.5232)
M1(-2)	-0.3761	-0.2047	0.6971**	-0.0212	0.7858**	0.5421	0.1131	-0.0226	0.1101**
	(-0.7880)	(-1.0344)	(-1.9429)	(-1.4378)	(2.3369)	(2.2384)	(0.7173)	(-0.5577)	(2.3364)
M1(-3)	0.5332	-0.1487	-0.5248	-0.0137	-0.7392	-0.2844	-0.1901	-0.0954***	-0.1152
	(1.1691)	(-0.7862)	(-0.6286)	(-0.9729)	(-0.4318)	(-1.2287)	(-1.2610)	(-2.4687)	(-0.0685)
M1(-4)	0.2070	-0.1667	-0.0420	0.0181	-0.4962	-0.0711	-0.0736	0.0410	-0.2724
	(0.4397)	(-0.8541)	(-0.0487)	(1.2408)	(-0.2808)	(-0.2974)	(-0.4728)	(1.0276)	(-1.3095)
M1(-5)	-0.1098	0.1304	0.6987	0.0250*	-0.7800*	-0.4157*	-0.0188	-0.0250	-0.9235
	(-0.2468)	(0.7071)	(0.8582)	(1.8138)	(-1.6653)	(-1.8416)	(-0.1280)	(-0.6646)	(-1.1731)
M1(-6)	0.3060	0.0347	-0.3942	-0.0192	0.7800*	0.3274	0.1902	0.0257	0.4599
	(0.7666)	(0.2094)	(-0.5396)	(-1.5554)	(1.8559)	(1.6164)	(1.4417)	(0.7607)	(0.9923)
M1(-7)	0.7170*	-0.4127**	-0.3833	-0.0097	-0.2433	0.0519	-0.0875	-0.0371	0.2069
	(1.7105)	(-2.3744)	(-0.4997)	(-0.7465)	(-1.4261)	(0.2439)	(-0.6319)	(-1.0461)	(0.7811)
M1(-8)	-0.0361	0.0954	-0.5809	0.0156	-0.1924	-0.1072	0.0650	0.0389	-0.6407
	(-0.0869)	(0.5535)	(-0.7636)	(1.2157)	(-0.1233)	(-0.5084)	(0.4729)	(1.1052)	(-1.0709)
CET(-1)	-0.0018	0.0559*	-0.6037***	-0.0035	0.2348	0.0578	0.0124	0.0038	0.3383
	(-0.0233)	(1.7149)	(-4.1975)	(-1.4468)	(0.7964)	(1.4508)	(0.4776)	(0.5753)	(1.1681)
CET(-2)	-0.0582	0.0337	-0.4818***	0.0039	-0.1226	-0.0671	-0.0666**	-0.0132*	-0.5954*
	(-0.6158)	(0.8601)	(-2.7843)	(1.3272)	(-0.3454)	(-1.3980)	(-2.1326)	(-1.6486)	(-1.7085)

CET(-3)	-0.0189	0.0884**	-0.2098	0.0032	0.1225	-0.0291	-0.0220	0.0100	-0.3936
	(-0.1735)	(1.9571)	(-1.0527)	(0.9601)	(0.2998)	(-0.5265)	(-0.6109)	(1.0884)	(-0.9806)
CET(-4)	-0.0271	0.0481	0.0703	0.0069**	-0.0003	-0.0599	-0.0457	0.0086	-0.3831
	(-0.2498)	(1.0709)	(0.3544)	(2.0586)	(-0.0008)	(-1.0900)	(-1.2746)	(0.9316)	(-0.9591)
CET(-5)	-0.1933*	0.0480	-0.4502**	0.0037	-0.1228	0.0253	0.0500	0.0304***	-0.0222
	(-1.6926)	(1.0140)	(-2.1534)	(1.0351)	(-0.2865)	(0.4363)	(1.3255)	(3.1407)	(-0.0528)
CET(-6)	-0.0854	-0.0302	-0.3372*	-0.0013	0.5694	0.1022*	0.0265	0.0234***	0.8664**
	(-0.7631)	(-0.6515)	(-1.6457)	(-0.3703)	(1.3555)	(1.7998)	(0.7159)	(2.4651)	(2.0999)
CET(-7)	-0.2229**	-0.0447	-0.3890**	0.0049	-0.2403	0.0228	-0.0124	0.0073	-0.0194
	(-2.0650)	(-0.9981)	(-1.9690)	(1.4811)	(-0.5933)	(0.4161)	(-0.3472)	(0.8020)	(-0.0486)
CET(-8)	-0.0572	0.0463	-0.5373***	0.0023	0.7028	0.0336	0.0008	0.0142	0.7550*
	(-0.4799)	(0.9354)	(-2.4618)	(0.6240)	(1.5704)	(0.5550)	(0.0194)	(1.4096)	(1.7175)
MCAP(-1)	-0.8683***	-0.8756	-0.2306	-0.0199	-0.3307	0.4264	0.0431	-0.3009	0.2886
	(-2.6391)	(-0.8146)	(-1.3625)	(-0.0754)	(-0.1668)	(0.5617)	(0.3707)	(-0.4173)	(0.3597)
MCAP(-2)	4.4655	0.7464	-0.0088	0.2972	0.2495	-0.6025	-0.5102	-0.3674	-0.4170
	(0.4859)	(0.7206)	(-0.4166)	(1.0451)	(0.7610)	(-0.1292)	(-0.4972)	(-0.4719)	(-0.4846)
MCAP(-3)	0.4295	-0.6182	0.6070	0.1061	-0.3196	-0.1800	0.0083	0.3427	0.4913
	(0.9782)	(-1.1488)	(0.6911)	(0.4517)	(-0.3620)	(-0.0467)	(0.0033)	(0.5328)	(0.3747)
MCAP(-4)	-0.6692	-0.0394	0.2816	0.2794	-0.7607	0.4012	0.6780	0.8225	-0.0548
	(-0.7937)	(-0.0133)	(0.2510)	(1.2643)	(-0.5133)	(0.3866)	(1.1344)	(1.3595)	(-0.0401)
MCAP(-5)	-0.1901	0.3935	0.4552	-0.3050	0.7959***	0.9845	0.0389	0.6386	0.4077
	(-0.8587)	(0.1317)	(0.0345)	(-1.3674)	(3.1342)	(1.6361)	(0.0163)	(1.0459)	(1.4078)
MCAP(-6)	0.6364***	-0.5341	-0.7917*	-0.1346	0.7925	0.4718	-0.1507	-0.7056	0.7400
	(2.7383)	(-1.1885)	(-1.6603)	(-0.6068)	(1.4414)	(0.9541)	(-0.4855)	(-1.1616)	(0.1415)
MCAP(-7)	0.8007**	0.8443	0.8934	0.0663	0.1186	-0.2541	-0.0660	0.2461	-0.3502

	(2.0455)	(1.2001)	(0.9827)	(0.2774)	(0.9009)	(-0.3200)	(-0.4175)	(0.3761)	(-0.4689)
MCAP(-8)	-0.8055	0.1264	-0.7174	0.1237	-0.2900	-0.5964	-0.0442	0.6321	-0.2656
	(-1.5928)	(0.0411)	(-0.2003)	(0.5394)	(-1.1608)	(-0.1586)	(-0.0181)	(1.0069)	(-0.7052)
RET(-1)	-0.1309**	0.0095	-0.1100	-0.0023	-0.6001***	0.0075	-0.0021	-0.0086*	0.4078*
	(-2.2766)	(0.3985)	(-1.0452)	(-1.2936)	(-2.7809)	(0.2586)	(-0.1095)	(-1.7721)	(1.9239)
RET(-2)	-0.1736**	0.0149	-0.0748	-0.0018	-0.7133***	-0.0525	-0.0164	-0.0151**	0.2191
	(-2.2850)	(0.4738)	(-0.5378)	(-0.7802)	(-2.5015)	(-1.3615)	(-0.6521)	(-2.3490)	(0.7823)
RET(-3)	-0.1557*	0.0067	0.0003	0.0004	-0.6222*	-0.0647	-0.0309	-0.0161**	0.0990
	(-1.7055)	(0.1762)	(0.0017)	(0.1343)	(-1.8159)	(-1.3960)	(-1.0255)	(-2.0874)	(0.2941)
RET(-4)	-0.1640*	0.0146	0.1285	0.0015	-0.7459**	-0.0979**	-0.0251	-0.0183**	-0.2739
	(-1.7273)	(0.3722)	(0.7394)	(0.5079)	(-2.0940)	(-2.0335)	(-0.8011)	(-2.2764)	(-0.7829)
RET(-5)	-0.1590*	0.0095	0.1585	0.0000	-0.4251	-0.0460	-0.0050	-0.0082	-0.0500
	(-1.7464)	(0.2514)	(0.9509)	(-0.0119)	(-1.2441)	(-0.9948)	(-0.1657)	(-1.0641)	(-0.1490)
RET(-6)	-0.0974	-0.0024	0.1152	0.0001	-0.3570	-0.0236	-0.0079	-0.0035	-0.1057
	(-1.5345)	(-0.0910)	(0.9918)	(0.0433)	(-1.4991)	(-0.7338)	(-0.3769)	(-0.6435)	(-0.4517)
RET(-7)	-0.0591	0.0055	0.0269	0.0010	-0.2993*	-0.0128	0.0145	0.0026	-0.0402
	(-1.2673)	(0.2823)	(0.3159)	(0.7187)	(-1.7114)	(-0.5395)	(0.9442)	(0.6596)	(-0.2342)
RET(-8)	-0.0163	0.0121	0.0255	0.0003	0.0524	0.0007	0.0096	0.0011	0.1095
	(-0.5528)	(0.9849)	(0.4704)	(0.3368)	(0.4724)	(0.0470)	(0.9864)	(0.4475)	(1.0052)
RQS(-1)	-0.0769*	-0.0272	-0.3194	0.0023	-0.6729**	-0.4799*	-0.0280	-0.0030	-0.8166*
	(-1.8665)	(-0.1136)	(-0.3025)	(0.1275)	(-2.1580)	(-1.6393)	(-0.1466)	(-0.0618)	(-1.7946)
RQS(-2)	-0.2685	0.1078	-0.4061	0.0325*	-0.7978	-0.3530	-0.0702	-0.0200	-0.9552
	(-0.4571)	(0.4426)	(-0.3777)	(1.7899)	(-1.2691)	(-1.1843)	(-0.3615)	(-0.4026)	(-0.4412)
RQS(-3)	0.3456	0.0368	-0.3155	0.0060	-0.6877	-0.4672	-0.1451	-0.0628	-0.0856
	(0.5811)	(0.1491)	(-0.2899)	(0.3237)	(-1.2042)	(-1.5484)	(-0.7384)	(-1.2466)	(-0.0390)

RQS(-4)	-0.6821	0.1818	0.4157	0.0251	-0.4742*	-0.4301	-0.1533	0.0176	-0.6796
	(-1.2626)	(0.8114)	(1.4317)	(1.4988)	(-1.7135)	(-1.5688)	(-0.8585)	(0.3839)	(-0.8434)
RQS(-5)	-0.4072***	0.1332	0.0398	0.0326*	-0.9802	-0.4015	-0.2429	-0.0253	-0.8039
	(-2.5334)	(0.5782)	(1.0227)	(1.8992)	(-0.4702)	(-1.4245)	(-1.3232)	(-0.5367)	(-0.8810)
RQS(-6)	-0.2790	-0.0047	0.2606	-0.0100	0.9622	0.1664	0.1872	0.0262	0.5970
	(-0.4652)	(-0.0189)	(1.1485)	(-0.5402)	(0.4275)	(0.5467)	(0.9444)	(0.5165)	(1.1749)
RQS(-7)	0.2072	-0.1064	0.6690	-0.0091	0.1433	-0.0411	-0.2018	-0.0619	0.3331
	(0.4245)	(-0.5254)	(0.7487)	(-0.6040)	(0.0782)	(-0.1657)	(-1.2506)	(-1.4956)	(0.1851)
RQS(-8)	-0.0147***	0.2030	0.2600	-0.0080	-0.7995	0.0275	-0.0028	0.0089	-0.0287
	(-2.6089)	(1.2584)	(0.3653)	(-0.6626)	(-0.5477)	(0.1394)	(-0.0216)	(0.2690)	(-0.0200)
ST(-1)	-0.0797	0.3847	-0.1490	0.0055	-0.2967	-0.1022	-0.1382	0.1036	0.9122
	(-1.1766)	(1.0110)	(-1.2795)	(0.1946)	(-0.3765)	(-0.2195)	(-0.4556)	(1.3335)	(0.8610)
ST(-2)	-0.6727***	0.0960	0.1429	-0.0050	0.6160	-0.4082	-0.4305	-0.0825	0.4627
	(-2.9324)	(0.2541)	(0.6851)	(-0.1770)	(0.4724)	(-0.8827)	(-1.4293)	(-1.0684)	(0.4354)
ST(-3)	-0.1687	-0.7805*	0.5224	0.0018	-0.7022	-0.1227	-0.3473	-0.0369	-0.2549
	(-1.1575)	(-1.8642)	(0.2827)	(0.0563)	(-0.7131)	(-0.2396)	(-1.0406)	(-0.4312)	(-0.0685)
ST(-4)	-0.2182	-0.2169	0.3880	0.0071	-0.6556	-0.1099	0.1665	0.0508	0.1753
	(-0.2158)	(-0.5172)	(0.2096)	(0.2284)	(-1.2267)	(-0.2142)	(0.4983)	(0.5925)	(0.8519)
ST(-5)	-0.7357	0.1213	-0.1411	-0.0045	-0.8645	-0.3559	0.1586	0.0300	0.9162
	(-0.8189)	(0.3258)	(-1.3022)	(-0.1619)	(-0.8496)	(-0.7807)	(0.5343)	(0.3942)	(0.2767)
ST(-6)	0.2453	0.0284	-0.9666	0.0044	-0.7874	-0.0988	0.1009	0.0434	-0.4404
	(0.2858)	(0.0797)	(-0.6153)	(0.1668)	(-0.2444)	(-0.2269)	(0.3557)	(0.5972)	(-0.1392)
ST(-7)	-0.1024	-0.3658	0.7540	0.0314	-0.4362	-0.6495	-0.2817	-0.0601	-0.0480**
	(-0.1251)	(-1.0770)	(0.5029)	(1.2403)	(-1.4429)	(-1.5625)	(-1.0404)	(-0.8667)	(-2.0029)
ST(-8)	0.4255	-0.2345	-0.3775	0.0238	-0.1721	-0.2973	0.2700	0.1312*	0.6502

	(0.5161)	(-0.6858)	(-0.9127)	(0.9322)	(-1.0251)	(-0.7107)	(0.9909)	(1.8790)	(0.2139)
VOL(-1)	0.5195*	0.2289	0.6621*	-0.0155	0.1920	0.1326	-0.2827	-0.5713**	0.0938
	(1.8882)	(1.0138)	(1.8059)	(-0.1710)	(0.4733)	(0.0894)	(-0.2926)	(-2.3076)	(0.0087)
VOL(-2)	0.3921***	0.6431	0.8285	0.0258	-0.0263	-0.4053	0.0701	-0.2806	-0.2220
	(2.6867)	(0.4965)	(1.1944)	(0.2665)	(-0.3434)	(-0.2557)	(0.0679)	(-1.0603)	(-0.4535)
VOL(-3)	0.1955	0.4612**	0.9408	0.0321	0.9303	-0.7822	0.4874	-0.2346	-0.0713
	(0.3396)	(2.3710)	(1.2324)	(0.2943)	(0.2975)	(-0.4379)	(0.4189)	(-0.7869)	(-1.1614)
VOL(-4)	0.4428	0.4882	0.2277	-0.0819	0.0199**	0.6395	-0.2195	-0.4473	-0.5370
	(0.7304)	(1.0731)	(0.0372)	(-0.7909)	(1.9932)	(0.3768)	(-1.1032)	(-1.5789)	(-0.4491)
VOL(-5)	0.0169*	0.2241	0.5682	-0.0322	-0.9337	0.4948	-0.4569	-0.2687	-0.4919
	(1.6777)	(0.1507)	(0.8483)	(-0.2901)	(-0.0694)	(0.2719)	(-0.3855)	(-0.8845)	(-0.6423)
VOL(-6)	-0.5107	0.7096	0.1009	-0.0140	-0.5860	-0.3584	-0.4587	-0.0857	-0.1236
	(-1.0602)	(1.2451)	(0.8417)	(-0.1370)	(-0.4495)	(-0.2133)	(-0.4191)	(-0.3056)	(-0.2559)
VOL(-7)	-0.0523	0.6072	-0.5005	0.0141	0.2558	0.2602	0.8790	0.1932	0.9143
	(-1.4106)	(1.3491)	(-0.0952)	(0.1583)	(0.5802)	(0.8645)	(0.9258)	(0.7939)	(0.9362)
VOL(-8)	-0.1935	0.4752	0.4931***	-0.0005	0.9970	-0.0759	-0.3764	-0.3931*	0.8186
	(-0.4936)	(1.4713)	(2.5969)	(-0.0070)	(1.5424)	(-0.0618)	(-0.4710)	(-1.9191)	(0.2040)
VOLATILITY(-1)	0.0156	-0.0302	0.0026	-0.0021	0.0996	0.0635**	0.0031	0.0000	-0.1587
	(0.2923)	(-1.3634)	(0.0265)	(-1.2772)	(0.4970)	(2.3440)	(0.1735)	(0.0064)	(-0.8065)
VOLATILITY(-2)	0.0676	-0.0259	-0.1582	-0.0025	0.1645	0.0665**	0.0144	0.0035	-0.2229
	(1.1618)	(-1.0758)	(-1.4859)	(-1.3595)	(0.7538)	(2.2546)	(0.7475)	(0.7029)	(-1.0398)
VOLATILITY(-3)	0.0047	-0.0054	-0.2234*	-0.0039	0.2637	0.0604	0.0192	0.0075	0.1854
	(0.0730)	(-0.2022)	(-1.8949)	(-1.9745)	(1.0910)	(1.8469)	(0.9030)	(1.3684)	(0.7811)
VOLATILITY(-4)	-0.0123	0.0010	-0.1996	-0.0006	0.0915	0.0476	0.0278	0.0075	-0.0994
	(-0.1801)	(0.0369)	(-1.5995)	(-0.2722)	(0.3577)	(1.3763)	(1.2342)	(1.2953)	(-0.3956)

VOLATILITY(-5)	0.0146	-0.0146	-0.1477	-0.0016	0.3190	0.0329	0.0136	0.0032	0.1686
	(0.2363)	(-0.5685)	(-1.3039)	(-0.8312)	(1.3731)	(1.0485)	(0.6666)	(0.6167)	(0.7390)
VOLATILITY(-6)	0.0910	-0.0199	-0.2892***	-0.0012	-0.0647	0.0045	0.0025	-0.0009	-0.1398
	(1.6262)	(-0.8575)	(-2.8226)	(-0.6964)	(-0.3080)	(0.1570)	(0.1332)	(-0.1853)	(-0.6778)
VOLATILITY(-7)	0.0870*	0.0114	-0.2647***	-0.0002	0.1890	0.0023	-0.0082	0.0006	0.0782
	(1.6467)	(0.5199)	(-2.7357)	(-0.1104)	(0.9528)	(0.0854)	(-0.4690)	(0.1411)	(0.4015)
VOLATILITY(-8)	0.0869**	0.0078	-0.1340*	0.0009	-0.2133	-0.0220	-0.0115	-0.0014	-0.3426**
	(2.0436)	(0.4436)	(-1.7211)	(0.6759)	(-1.3360)	(-1.0179)	(-0.8183)	(-0.3881)	(-2.1848)
	AR	**M3**	**CET**	**MCAP**	**RET**	**RQS**	**ST**	**VOL**	**VOLATILITY**
C	-0.0318	0.0068	0.0339	-0.0004	0.0528	0.0014	0.0075	0.0035*	0.1227
	(-1.4436)	(1.6006)	(0.6791)	(-0.5014)	(0.5302)	(0.1066)	(0.9358)	(1.6420)	(1.3388)
AR(-1)	-0.7092***	-0.0249	0.0030	0.0030	0.4088***	-0.0686	-0.1044*	-0.0175	-0.4865
	(-4.7026)	(-0.8629)	(0.0087)	(0.5461)	(3.5388)	(-0.7831)	(-1.8967)	(-1.1959)	(-0.7764)
AR(-2)	-0.4981***	-0.0212	0.7617*	-0.0028	0.5821*	0.0148	-0.0971	-0.0153	-0.9875
	(-2.6026)	(-0.5802)	(1.7609)	(-0.3988)	(1.8313)	(0.1335)	(-1.3898)	(-0.8238)	(-1.2416)
AR(-3)	-0.4045**	0.0032	0.8776**	-0.0028	0.7289**	0.0262	-0.1243*	-0.0161	-0.9006
	(-2.0599)	(0.0856)	(1.9775)	(-0.3977)	(1.9506)	(0.2296)	(-1.7345)	(-0.8420)	(-1.1037)
AR(-4)	-0.3833*	-0.0076	0.8567*	-0.0046	0.2622	-0.0091	-0.0031	0.0123	-0.8238*
	(-1.6678)	(-0.1739)	(1.6493)	(-0.5565)	(1.2167)	(-0.0681)	(-0.0365)	(0.5504)	(-1.9097)
AR(-5)	-0.0206	-0.0316	0.6498	0.0016	0.1422	0.1975	0.0705	0.0341	-0.9421
	(-0.0879)	(-0.7064)	(1.2280)	(0.1844)	(0.1346)	(1.4519)	(0.8255)	(1.5000)	(-0.9683)
AR(-6)	0.1741	-0.0213	0.2407	0.0050	-0.8812	0.1459	0.0971	0.0378*	-0.4757
	(0.8453)	(-0.5407)	(0.5173)	(0.6717)	(-0.9480)	(1.2199)	(1.2915)	(1.8861)	(-0.5560)
AR(-7)	-0.0334	-0.0068	-0.2946	0.0026	-0.0994	0.1407	0.1534**	0.0460**	0.4327
	(-0.1699)	(-0.1801)	(-0.6631)	(0.3710)	(-1.2389)	(1.2321)	(2.1378)	(2.4083)	(0.5297)

AR(-8)	-0.0639	0.0102	-0.1620	0.0022	-0.0714	0.1022	0.0297	0.0194	0.2930
	(-0.3998)	(0.3339)	(-0.4483)	(0.3843)	(-0.0989)	(1.0997)	(0.5088)	(1.2498)	(0.4409)
M3(-1)	0.4484	-0.0198	0.6181*	0.0217	-0.9642*	0.5260	0.3918	0.1139	0.8264
	(0.4770)	(-0.1100)	(-1.7030)	(0.6368)	(-1.6413)	(0.9633)	(1.1419)	(1.2467)	(0.7236)
M3(-2)	-0.7138	0.1341	-0.5717	-0.0213	0.8852	0.7797	0.1031	-0.0307	0.3385
	(-0.7211)	(0.7083)	(-0.7025)	(-0.5929)	(0.8695)	(1.3559)	(0.2853)	(-0.3192)	(1.2979)
M3(-3)	-0.3697	0.1516	-0.8399	-0.0213	-0.4631	-0.7066	-0.3450	-0.1761**	-0.3311
	(-0.4104)	(0.8804)	(-0.9039)	(-0.6501)	(-0.1139)	(-1.3505)	(-1.0495)	(-2.0112)	(-0.6229)
M3(-4)	-0.6916	0.0837	-0.1133	0.0601*	-0.2573	-0.3138	-0.5280	-0.0414	-0.0259*
	(-0.7070)	(0.4477)	(-0.0513)	(1.6922)	(-0.2848)	(-0.5523)	(-1.4790)	(-0.4354)	(-1.7286)
M3(-5)	0.2454	-0.0322	0.3267	0.0050	-0.1669	-0.8702*	-0.5532	-0.1499	-0.8847**
	(0.2184)	(-0.1498)	(1.3099)	(0.1234)	(-0.4272)	(-1.3330)	(-1.3487)	(-1.3721)	(-2.1168)
M3(-6)	0.4239	-0.2244	0.2735	0.0032	0.0660	0.3045	0.3044	0.1320	-0.9292
	(1.4868)	(-1.2255)	(0.1264)	(0.0927)	(0.2466)	(0.5473)	(0.8708)	(1.4175)	(-0.7361)
M3(-7)	0.2504	-0.0886	-0.3128	0.0127	-0.9136***	-0.0831	0.1686	-0.0327	0.4310
	(1.2724)	(-0.4715)	(-0.5911)	(0.3559)	(-2.4604)	(-0.1456)	(0.4702)	(-0.3427)	(0.1056)
M3(-8)	0.7697***	-0.0260	-0.5944	0.0625*	-0.5076	-0.8400	0.6233*	-0.1513*	-0.9361
	(3.3607)	(-0.1440)	(-0.2788)	(1.8253)	(-1.0588)	(-1.5332)	(-1.8107)	(-1.6497)	(-0.7492)
CET(-1)	-0.0680	0.0144	-0.6301***	-0.0014	-0.1125	0.0578	0.0300	0.0109	0.1419
	(-1.0318)	(1.1435)	(-4.2323)	(-0.5825)	(-0.3784)	(1.5094)	(1.2493)	(1.7025)	(0.5183)
CET(-2)	-0.0894	0.0173	-0.5727***	0.0032	-0.3253	-0.0511	-0.0422	-0.0079	-0.6420**
	(-1.1411)	(1.1528)	(-3.2350)	(1.1082)	(-0.9201)	(-1.1226)	(-1.4772)	(-1.0412)	(-1.9724)
CET(-3)	-0.0434	0.0160	-0.3544	0.0018	0.1353	-0.0100	-0.0296	0.0057	-0.4725
	(-0.4366)	(0.8428)	(-1.5774)	(0.4897)	(0.3016)	(-0.1724)	(-0.8144)	(0.5932)	(-1.1440)
CET(-4)	-0.0068	-0.0018	-0.0118	0.0047	-0.1222	-0.0634	-0.0484	0.0051	-0.6662

	(-0.0657)	(-0.0916)	(-0.0502)	(1.2441)	(-0.2616)	(-1.0540)	(-1.2814)	(0.5114)	(-1.5495)
CET(-5)	-0.0489	-0.0298	-0.4597*	0.0025	-0.2207	0.0180	0.0239	0.0224	-0.1637
	(-0.4616)	(-1.4704)	(-1.9189)	(0.6465)	(-0.4612)	(0.2925)	(0.6184)	(2.1733)	(-0.3716)
CET(-6)	0.0749	-0.0218	-0.2816	0.0014	-0.1442	0.0573	0.0246	0.0212**	0.6302
	(0.6713)	(-1.0209)	(-1.1168)	(0.3476)	(-0.2863)	(0.8845)	(0.6048)	(1.9565)	(1.3592)
CET(-7)	-0.0543	-0.0152	-0.3857	0.0049	-0.3859	0.0303	-0.0113	0.0016	0.3416
	(-0.5151)	(-0.7543)	(-1.6207)	(1.2897)	(-0.8119)	(0.4945)	(-0.2949)	(0.1526)	(0.7805)
CET(-8)	0.0891	0.0129	-0.4460*	0.0020	0.5418	-0.0068	-0.0458	-0.0045	0.8158*
	(0.8526)	(0.6463)	(-1.8888)	(0.5373)	(1.1490)	(-0.1119)	(-1.2005)	(-0.4385)	(1.8792)
MCAP(-1)	-0.0202*	0.4831	-0.3936	0.1807	-0.4814	0.7563	0.7475	0.2323	0.4083
	(-1.8550)	(0.2926)	(-1.4035)	(0.5766)	(-0.6280)	(0.5494)	(0.8717)	(0.2766)	(0.7359)
MCAP(-2)	0.1757	0.2181	0.4325	0.3156	0.1886	-0.6387	-0.0863	-0.6838	-0.8467
	(0.3809)	(0.7640)	(0.0760)	(1.0429)	(0.6958)	(-0.1319)	(-1.0141)	(-0.8435)	(-0.5151)
MCAP(-3)	0.0249	-0.1381	0.3407	-0.0835	0.9503	-0.7640	-0.2764	0.3146	-0.2420
	(0.1332)	(-0.0938)	(0.8244)	(-0.2987)	(0.6894)	(-0.1709)	(-0.0984)	(0.4205)	(-0.0701)
MCAP(-4)	-0.8492	0.1503	0.6489	0.1599	0.1300	0.8473	0.3333	1.0929*	0.4077
	(-1.3376)	(0.1188)	(0.3778)	(0.6658)	(0.1718)	(1.0011)	(1.3804)	(1.6991)	(0.3422)
MCAP(-5)	-0.0118	-0.7215	0.6175	-0.3114	0.1953**	0.8046	-0.3317	-0.1492	0.9922
	(-0.5984)	(-0.5628)	(0.8327)	(-1.2797)	(2.2534)	(0.4633)	(-0.9529)	(-0.2289)	(0.7535)
MCAP(-6)	0.4331***	-0.6234	-0.5313	-0.1741	0.5542**	0.2993	0.2561	0.0971	0.8468
	(2.6229)	(-0.4905)	(-1.5665)	(-0.7216)	(2.1851)	(1.6315)	(0.5178)	(0.1502)	(0.5738)
MCAP(-7)	0.2155	0.3078	0.5495	-0.0599	0.0102	0.4342	0.6746	0.8437	0.1400
	(0.5874)	(0.9529)	(0.4038)	(-0.2301)	(0.6177)	(0.5839)	(1.0210)	(1.2091)	(0.3400)
MCAP(-8)	-0.5535	-0.2037	-0.6392	-0.0246	-0.2072	-0.3244	-0.0476	0.3284	-0.3607
	(-1.4096)	(-0.1755)	(-1.0674)	(-0.1117)	(-0.9203)	(-0.0920)	(-0.0215)	(0.5567)	(-0.1333)

RET(-1)	-0.0342	-0.0031	-0.0326	-0.0010	-0.8839***	-0.0269	-0.0192	-0.0113**	0.2262
	(-0.7144)	(-0.3358)	(-0.3016)	(-0.5696)	(-4.0902)	(-0.9685)	(-1.0956)	(-2.4217)	(1.1371)
RET(-2)	-0.1047	-0.0064	-0.0711	0.0010	-0.0643***	-0.0726*	-0.0227	-0.0135**	0.0773
	(-1.6205)	(-0.5153)	(-0.4864)	(0.4241)	(-3.6480)	(-1.9337)	(-0.9631)	(-2.1513)	(0.2879)
RET(-3)	-0.0748	-0.0128	-0.0123	0.0025	-0.8546**	-0.0737	-0.0475	-0.0195***	0.0695
	(-0.9092)	(-0.8133)	(-0.0664)	(0.8269)	(-2.3013)	(-1.5425)	(-1.5812)	(-2.4311)	(0.2032)
RET(-4)	-0.0943	-0.0070	0.0852	0.0017	-0.7597**	-0.0845*	-0.0410	-0.0198***	-0.2306
	(-1.1253)	(-0.4374)	(0.4499)	(0.5618)	(-2.0080)	(-1.7352)	(-1.3403)	(-2.4319)	(-0.6622)
RET(-5)	-0.1274*	-0.0056	0.1352	0.0015	-0.4803	-0.0551	-0.0277	-0.0118	-0.1153
	(-1.6439)	(-0.3777)	(0.7723)	(0.5482)	(-1.3734)	(-1.2238)	(-0.9778)	(-1.5684)	(-0.3582)
RET(-6)	-0.0653	-0.0020	0.1271	0.0010	-0.3820	-0.0470	-0.0340	-0.0101*	-0.2347
	(-1.1400)	(-0.1855)	(0.9820)	(0.4651)	(-1.4785)	(-1.4141)	(-1.6265)	(-1.8208)	(-0.9865)
RET(-7)	-0.0164	-0.0024	0.0763	0.0008	-0.2121	-0.0195	-0.0055	-0.0023	-0.1028
	(-0.4006)	(-0.3011)	(0.8233)	(0.5064)	(-1.1457)	(-0.8170)	(-0.3644)	(-0.5720)	(-0.6034)
RET(-8)	0.0083	0.0011	0.0778	0.0002	-0.0433	-0.0123	0.0002	-0.0015	0.0311
	(0.3220)	(0.2184)	(1.3387)	(0.2324)	(-0.3728)	(-0.8209)	(0.0230)	(-0.5993)	(0.2908)
RQS(-1)	-0.1340*	0.1099	-0.9794	0.0136	-0.4908	-0.3335	0.0216	0.0136	-0.9433
	(-1.8540)	(0.9401)	(-0.7085)	(0.6128)	(-1.6266)	(-0.9386)	(0.0968)	(0.2295)	(-0.7646)
RQS(-2)	-0.1713	0.0541	0.8171	0.0338*	-0.5819	-0.4641	-0.2388	-0.0406	-0.6637
	(-0.3019)	(0.4982)	(0.6372)	(1.6399)	(-0.6176)	(-1.4080)	(-1.1528)	(-0.7360)	(-0.7056)
RQS(-3)	0.0151	-0.0513	0.3046	0.0056	-0.9806	-0.5411*	-0.1206	-0.0183	-0.2386
	(0.0272)	(-0.4849)	(0.2435)	(0.2779)	(-0.7928)	(-1.6828)	(-0.5971)	(-0.3407)	(-0.5386)
RQS(-4)	-0.1411**	-0.0147	0.1273	0.0296*	-0.4736	-0.2156	0.0137	0.0635	-0.2552
	(-2.3116)	(-0.1557)	(1.0105)	(1.6528)	(-1.5590)	(-0.7518)	(0.0760)	(1.3229)	(-0.1244)
RQS(-5)	-0.8942*	-0.1847*	0.9889	0.0111	0.0135	-0.3056	-0.3306*	-0.0630	-0.1535

	(-1.7774)	(-1.9200)	(0.8697)	(0.6052)	(0.0060)	(-1.0457)	(-1.8005)	(-1.2885)	(-0.0734)
RQS(-6)	-0.3217	-0.1867*	0.6174	-0.0136	0.1338	0.4040	0.2533	0.0716	0.7998*
	(-0.6302)	(-1.9128)	(0.5351)	(-0.7315)	(0.9260)	(1.3624)	(1.3596)	(1.4432)	(1.7912)
RQS(-7)	-0.3093	-0.0037	0.0523	0.0006	-0.0030	0.0274	-0.0335	-0.0208	0.4130
	(-0.6699)	(-0.0417)	(0.0501)	(0.0370)	(-0.4813)	(0.1020)	(-0.1990)	(-0.4628)	(0.7365)
RQS(-8)	-0.0185***	0.0405	-0.1873	-0.0035	-0.1738	-0.0194	-0.0762	-0.0177	0.4783
	(-2.7160)	(0.5643)	(-0.2210)	(-0.2603)	(-0.1027)	(-0.0889)	(-0.5565)	(-0.4867)	(0.3069)
ST(-1)	-0.6497	-0.1670	-0.5762	-0.0422	0.8060	0.1706	-0.1109	0.0517	0.3953
	(-0.7680)	(-1.0322)	(-0.8243)	(-1.3740)	(0.4729)	(0.3472)	(-0.3591)	(0.6285)	(1.5347)
ST(-2)	-0.0486**	-0.0732	-0.2454	-0.0059	-0.4277	-0.2261	-0.1078	0.0016	0.0290
	(-2.4069)	(-0.4498)	(-0.1275)	(-0.1907)	(-0.6319)	(-0.4573)	(-0.3470)	(0.0191)	(0.8564)
ST(-3)	-0.4936	-0.3441**	0.0705	0.0127	-0.2914	0.0057	-0.5005	-0.0859	0.5692
	(-0.5453)	(-1.9881)	(0.0345)	(0.3854)	(-0.5609)	(0.0109)	(-1.5152)	(-0.9756)	(0.4172)
ST(-4)	0.6095	-0.1130	0.1697	-0.0049	-0.4114	-0.1364	-0.0363	-0.0121	0.8787
	(0.6768)	(-0.6562)	(0.5747)	(-0.1490)	(-0.5932)	(-0.2607)	(-0.1105)	(-0.1382)	(1.0365)
ST(-5)	-0.4921	0.0299	-0.6142	0.0075	-0.3872	-0.3171	0.1859	0.0692	0.9834
	(-0.5980)	(0.1900)	(-0.8679)	(0.2526)	(-1.1811)	(-0.6633)	(0.6189)	(0.8647)	(0.5800)
ST(-6)	-0.1251	0.2518*	-0.2391	0.0194	-0.3284	-0.3242	0.0677	0.0124	0.2117
	(-0.1597)	(1.6802)	(-0.6997)	(0.6820)	(-0.9410)	(-0.7122)	(0.2368)	(0.1631)	(0.0650)
ST(-7)	-0.6838	0.0147	0.5816	0.0105	0.4174	-0.4053	-0.3173	-0.0718	-0.7319
	(-0.9063)	(0.1017)	(0.3411)	(0.3826)	(0.1226)	(-0.9249)	(-1.1524)	(-0.9793)	(-1.5094)
ST(-8)	0.1987	-0.1200	-0.0919	-0.0008	-0.6610	-0.3014	0.0144	0.0646	0.2383
	(0.2687)	(-0.8484)	(-0.6534)	(-0.0312)	(-0.1980)	(-0.7017)	(0.0533)	(0.8983)	(0.0776)
VOL(-1)	0.7354	0.5705	0.6041	0.0923	0.0388	-0.4112	-0.7802	-0.5539**	-0.0778
	(1.4651)	(1.1701)	(1.4932)	(0.9971)	(0.0903)	(-0.2777)	(-0.8384)	(-2.2347)	(-0.8568)

VOL(-2)	0.4886**	-0.1909	0.6664	-0.0247	0.3735	-0.3916	-0.1404	-0.4096	-0.7719
	(2.3679)	(-0.3644)	(1.0764)	(-0.2482)	(0.3536)	(-0.2460)	(-0.1404)	(-1.5373)	(-0.7704)
VOL(-3)	0.2983	0.7004	0.8610	0.0041	-0.2035	-0.0049	0.1780	-0.0689	-0.0713
	(0.1025)	(1.2585)	(0.2829)	(0.0385)	(-0.0155)	(-0.0029)	(1.1090)	(-0.2436)	(-1.0808)
VOL(-4)	0.1818	0.4022	-0.4479	-0.0267	0.3587	0.1305	-0.2155	-0.4677*	-0.4255
	(0.4351)	(0.7744)	(-0.7245)	(-0.2712)	(1.2527)	(0.0827)	(-1.2261)	(-1.7710)	(-1.0123)
VOL(-5)	0.4635	0.1389	0.1977	-0.0741	0.8952	0.6770	-0.2015	-0.3151	-0.4732
	(1.5102)	(0.2457)	(0.1793)	(-0.6903)	(0.4419)	(0.3943)	(-0.1868)	(-1.0966)	(-1.0156)
VOL(-6)	-0.2560	-0.1485	0.1796	-0.0377	-0.3820	-0.0026	-0.2531	-0.1023	-0.6263
	(-0.8049)	(-0.2771)	(0.5019)	(-0.3709)	(-0.5044)	(-0.0016)	(-0.2474)	(-0.3753)	(-0.3972)
VOL(-7)	0.4262	-0.1221	-0.2523	0.0532	-0.1670	-0.0123	0.3682	0.0030	0.1874
	(0.1650)	(-0.2472)	(-0.0432)	(0.5668)	(-0.7860)	(-0.0082)	(0.3904)	(0.0119)	(0.2037)
VOL(-8)	0.7632	0.2071	0.2435**	0.0385	0.8735	0.2472	0.1483	-0.1997	-0.2399
	(0.3505)	(0.4975)	(2.2849)	(0.4866)	(0.9029)	(0.1955)	(0.1866)	(-0.9434)	(-0.0265)
VOLATILITY(-1)	0.0228	-0.0090	0.0209	-0.0007	0.0167	0.0434	-0.0041	0.0007	-0.4486**
	(0.4861)	(-1.0056)	(0.1976)	(-0.4155)	(0.0789)	(1.5936)	(-0.2405)	(0.1540)	(-2.3017)
VOLATILITY(-2)	0.1216**	0.0009	-0.0722	-0.0011	-0.0428	0.0354	0.0000	0.0007	-0.5456**
	(2.1934)	(0.0812)	(-0.5760)	(-0.5536)	(-0.1711)	(1.1001)	(-0.0013)	(0.1252)	(-2.3673)
VOLATILITY(-3)	0.0491	0.0071	-0.1533	-0.0026	0.0574	0.0332	0.0153	0.0062	-0.0980
	(0.7908)	(0.5956)	(-1.0926)	(-1.1440)	(0.2050)	(0.9217)	(0.6755)	(1.0312)	(-0.3801)
VOLATILITY(-4)	0.0704	0.0069	-0.1567	0.0009	-0.2810	0.0162	0.0203	0.0046	-0.3203
	(1.1014)	(0.5612)	(-1.0851)	(0.4007)	(-0.9743)	(0.4354)	(0.8716)	(0.7414)	(-1.2065)
VOLATILITY(-5)	0.0705	0.0054	-0.0878	0.0004	0.0439	0.0065	0.0019	0.0032	-0.1517
	(1.2846)	(0.5191)	(-0.7081)	(0.1878)	(0.1772)	(0.2044)	(0.0939)	(0.6036)	(-0.6658)
VOLATILITY(-6)	0.1231***	0.0014	-0.1953*	0.0001	-0.1541	-0.0179	-0.0074	-0.0023	-0.3459*

	(2.4817)	(0.1461)	(-1.7422)	(0.0814)	(-0.6881)	(-0.6208)	(-0.4104)	(-0.4657)	(-1.6784)
VOLATILITY(-7)	0.1049**	0.0067	-0.2053*	0.0012	0.0228	-0.0101	-0.0103	0.0006	-0.0265
	(2.2126)	(0.7349)	(-1.9159)	(0.6751)	(0.1066)	(-0.3658)	(-0.5936)	(0.1351)	(-0.1347)
VOLATILITY(-8)	0.0892**	0.0012	-0.1198	0.0006	-0.2931	-0.0160	-0.0097	-0.0019	-0.2988*
	(2.1992)	(0.1547)	(-1.3072)	(0.3779)	(-1.6006)	(-0.6774)	(-0.6560)	(-0.4800)	(-1.7725)

	AR	**REER**	**CET**	**MCAP**	**RET**	**RQS**	**ST**	**VOL**	**VOLATILITY**
C	0.0030	-0.0008	0.0133	0.0003	-0.0846	-0.0050	0.0005	0.0006	-0.0059
	(0.1924)	(-0.3000)	(0.4181)	(0.6754)	(-1.2770)	(-0.5892)	(0.0891)	(0.4036)	(-0.0998)
AR(-1)	-0.8595***	-0.0145	-0.0415	0.0005	0.3601***	0.0194	-0.0531	-0.0106	0.0053
	(-5.0759)	(-0.4725)	(-0.1192)	(0.0901)	(3.2508)	(0.2070)	(-0.8870)	(-0.6386)	(0.0082)
AR(-2)	-0.5652***	-0.0395	0.5646	-0.0041	0.4902*	0.0488	-0.0903	-0.0286	-0.2083
	(-2.7306)	(-1.0549)	(1.3275)	(-0.5989)	(1.6792)	(0.4269)	(-1.2351)	(-1.4035)	(-0.2653)
AR(-3)	-0.5635***	-0.0697*	0.6636	-0.0062	0.7496*	0.1422	-0.0716	-0.0149	0.2462
	(-2.5408)	(-1.7373)	(1.4564)	(-0.8457)	(1.8402)	(1.1620)	(-0.9138)	(-0.6847)	(0.2927)
AR(-4)	-0.5866***	-0.0733*	0.5492	-0.0064	0.4713	0.1588	0.0484	0.0146	-0.6564
	(-2.5109)	(-1.7345)	(1.1443)	(-0.8331)	(1.4691)	(1.2316)	(0.5859)	(0.6340)	(-0.7408)
AR(-5)	-0.3678	-0.1031**	0.6360	-0.0059	0.1468	0.3519***	0.1098	0.0229	0.0906
	(-1.4914)	(-2.3109)	(1.2550)	(-0.7265)	(1.0846)	(2.5846)	(1.2595)	(0.9419)	(0.0968)
AR(-6)	-0.1529	-0.0856**	0.1179	0.0004	-0.2216	0.3009**	0.1490*	0.0403*	0.1103
	(-0.6628)	(-2.0529)	(0.2487)	(0.0506)	(-0.2241)	(2.3635)	(1.8283)	(1.7760)	(0.1260)
AR(-7)	-0.2705	-0.0906**	-0.1759	0.0005	-0.0366	0.3176***	0.2214***	0.0564***	0.8558
	(-1.1517)	(-2.1329)	(-0.3645)	(0.0629)	(-1.0294)	(2.4497)	(2.6670)	(2.4406)	(0.9605)
AR(-8)	-0.1138	-0.0391	0.2977	-0.0007	0.2624	0.2256**	0.0839	0.0271	0.7049
	(-0.5912)	(-1.1243)	(0.7527)	(-0.1160)	(0.3179)	(2.1230)	(1.2332)	(1.4333)	(0.9652)
REER(-1)	-0.0651	0.2363	0.3271	-0.0538	0.1955	0.8737	0.3495	-0.0524	0.4412

	(-0.0564)	(1.1313)	(0.1378)	(-1.4076)	(0.8472)	(1.6839)	(0.8563)	(-0.4614)	(1.4700)
REER(-2)	-0.5634	-0.2441	-0.1890	0.0473	0.6855	-0.2889	-0.0661	0.0173	-0.9293
	(-0.4662)	(-1.1167)	(-0.4788)	(1.1839)	(0.3253)	(-0.4331)	(-0.1548)	(0.1455)	(-0.6389)
REER(-3)	-0.9874	-0.3242	0.3156	-0.0639*	0.1885	0.5344	0.0268	-0.1503	-0.6493
	(-0.8883)	(-1.6132)	(1.4518)	(-1.7375)	(0.6691)	(0.8710)	(0.0684)	(-1.3745)	(-0.1540)
REER(-4)	-0.2611	-0.0106	-0.9389	-0.0186	-0.1511	0.7823	0.7283	0.1296	0.0156**
	(-0.2180)	(-0.0488)	(-0.7877)	(-0.4704)	(-0.4188)	(1.1831)	(1.7204)	(1.0998)	(2.2039)
REER(-5)	0.9042	-0.2950	0.3708	0.0036	-0.2661	0.5194	0.1349	0.0500	-0.7706
	(0.7468)	(-1.3474)	(0.1490)	(0.0900)	(-0.0513)	(0.7772)	(0.3154)	(0.4200)	(-0.6032)
REER(-6)	0.2989	-0.0743	0.0153	-0.0121	-0.3806	0.2141	0.3506	-0.0059	0.6233
	(0.2479)	(-0.3409)	(0.0062)	(-0.3040)	(-1.0409)	(0.3218)	(0.8229)	(-0.0499)	(0.7922)
REER(-7)	0.3071	0.2743	0.2598	0.0246	0.3708	-0.0077	0.0757	0.0655	0.6095
	(1.1579)	(1.3435)	(0.9742)	(0.6588)	(0.2832)	(-0.0123)	(0.1897)	(0.5898)	(1.5435)
REER(-8)	0.2626	0.2254	-0.9281	0.0113	-0.1580	-0.1221	-0.6170	-0.0718	-0.7322**
	(0.2318)	(1.1000)	(-0.8282)	(0.3029)	(-0.2384)	(-1.7942)	(-1.5410)	(-0.6441)	(-2.2644)
CET(-1)	-0.0328	-0.0025	-0.5770***	-0.0021	-0.0479	0.0528	0.0305	0.0106	0.1782
	(-0.4541)	(-0.1882)	(-3.8848)	(-0.8961)	(-0.1544)	(1.3228)	(1.1955)	(1.4912)	(0.6500)
CET(-2)	-0.0812	0.0261*	-0.6027***	0.0042	-0.3693	-0.0458	-0.0298	0.0014	-0.5524*
	(-0.9599)	(1.7040)	(-3.4684)	(1.4923)	(-1.0186)	(-0.9812)	(-0.9967)	(0.1627)	(-1.7220)
CET(-3)	-0.0492	0.0074	-0.4358**	0.0015	0.0646	0.0072	-0.0105	0.0133	-0.0781
	(-0.4867)	(0.4065)	(-2.0973)	(0.4611)	(0.1490)	(0.1285)	(-0.2945)	(1.3395)	(-0.2036)
CET(-4)	-0.0344	0.0069	-0.2102	0.0052	0.0799	-0.0630	-0.0494	0.0112	-0.2563
	(-0.3342)	(0.3680)	(-0.9934)	(1.5306)	(0.1810)	(-1.1078)	(-1.3562)	(1.1027)	(-0.6559)
CET(-5)	-0.1918*	0.0060	-0.6443***	0.0027	0.3241	0.0146	-0.0013	0.0223**	-0.0313
	(-1.6812)	(0.2891)	(-2.7482)	(0.7276)	(0.6626)	(0.2312)	(-0.0313)	(1.9890)	(-0.0722)

CET(-6)	-0.1367	-0.0109	-0.2207	0.0023	0.6668	0.0021	-0.0349	0.0134	-0.0266
	(-1.1652)	(-0.5136)	(-0.9154)	(0.5915)	(1.3255)	(0.0318)	(-0.8424)	(1.1611)	(-0.0599)
CET(-7)	-0.2552***	0.0153	-0.1631	0.0052	0.2110	-0.0098	-0.0521	-0.0033	-0.2099
	(-2.4958)	(0.8296)	(-0.7765)	(1.5330)	(0.4814)	(-0.1735)	(-1.4409)	(-0.3244)	(-0.5412)
CET(-8)	-0.0505	-0.0088	-0.3436	0.0022	0.8475*	0.0046	-0.0380	0.0028	0.5620
	(-0.4407)	(-0.4223)	(-1.4596)	(0.5688)	(1.7253)	(0.0722)	(-0.9387)	(0.2444)	(1.2931)
MCAP(-1)	-0.3327**	-0.4164	-0.0006	0.0254	-0.9804	0.5992	0.4215	-0.2015	0.2366
	(-2.1327)	(-0.2833)	(-0.8384)	(0.0945)	(-0.5734)	(0.1336)	(0.4950)	(-0.2520)	(0.1699)
MCAP(-2)	0.5163	0.8212	-0.3528	0.3347	0.8403	0.4894	-0.6720	0.0585	-0.1098
	(1.0370)	(0.5530)	(-0.0802)	(1.2329)	(0.4499)	(0.3286)	(-0.2316)	(0.0724)	(-0.5172)
MCAP(-3)	0.1083	0.9405	0.4068	0.1945	-0.0517	-0.9126	0.3796	0.5702	0.3439
	(0.8170)	(0.6956)	(0.0916)	(0.7867)	(-0.5944)	(-0.2211)	(0.1437)	(0.7751)	(0.5763)
MCAP(-4)	-0.4655	0.8487	0.5115	0.2807	0.0627	-0.2629	0.0709	0.4629	-0.5904
	(-0.3309)	(1.3722)	(0.8827)	(1.1395)	(0.1585)	(-0.0639)	(0.0269)	(0.6315)	(-0.1978)
MCAP(-5)	-0.8056	-0.6543	0.2768	-0.1997	0.2499***	-0.0409	-0.6498	0.0669	-0.7035
	(-1.1501)	(-0.4726)	(0.0812)	(-0.7888)	(2.5057)	(-0.0097)	(-1.3490)	(0.0888)	(-0.0587)
MCAP(-6)	0.2293**	0.5684	-0.6808	-0.1562	0.2226**	0.1576	-0.5728	-0.7781	0.8865
	(1.9489)	(0.4305)	(-1.5119)	(-0.6470)	(2.2754)	(1.0316)	(-0.6096)	(-1.0831)	(0.0320)
MCAP(-7)	0.8145	-0.0036	-0.5239	0.1521	0.6866	-0.1922	0.3440	0.5729	-0.5582
	(1.0988)	(-0.6919)	(-0.1531)	(0.5735)	(0.3980)	(-0.4951)	(0.1214)	(0.7259)	(-0.8728)
MCAP(-8)	-0.6162	-0.8932	-0.2661	-0.1463	-0.0085	0.8017	0.1647	0.7975	0.2225
	(-1.6355)	(-0.6954)	(-0.7035)	(-0.6231)	(-0.5586)	(1.2248)	(0.8625)	(1.1413)	(0.4908)
RET(-1)	-0.0539	-0.0070	0.0202	-0.0017	-0.9507***	-0.0084	-0.0062	-0.0074	0.2918
	(-1.0539)	(-0.7593)	(0.1918)	(-1.0081)	(-4.3343)	(-0.2977)	(-0.3420)	(-1.4731)	(1.5037)
RET(-2)	-0.1163	0.0144	0.0116	-0.0001	-0.9196***	-0.0577	-0.0095	-0.0112	0.2903

	(-1.5979)	(1.0907)	(0.0777)	(-0.0255)	(-3.2672)	(-1.4365)	(-0.3706)	(-1.5578)	(1.0513)
RET(-3)	-0.1111	0.0200	0.0892	0.0006	-0.6542*	-0.0797	-0.0422	-0.0198**	0.1048
	(-1.2658)	(1.2633)	(0.4944)	(0.2123)	(-1.7388)	(-1.6442)	(-1.3617)	(-2.2911)	(0.3148)
RET(-4)	-0.1467	0.0285*	0.1421	0.0005	-0.7838**	-0.1033**	-0.0427	-0.0225***	-0.2439
	(-1.6467)	(1.7703)	(0.7762)	(0.1576)	(-2.0515)	(-2.0995)	(-1.3545)	(-2.5710)	(-0.7215)
RET(-5)	-0.1741**	0.0250	0.2201	0.0000	-0.5295	-0.0451	-0.0116	-0.0100	0.0564
	(-1.9804)	(1.5756)	(1.2185)	(-0.0013)	(-1.4052)	(-0.9301)	(-0.3739)	(-1.1580)	(0.1690)
RET(-6)	-0.1093*	0.0135	0.1756	-0.0006	-0.3607	-0.0146	-0.0099	-0.0048	-0.0499
	(-1.6480)	(1.1257)	(1.2881)	(-0.2707)	(-1.2680)	(-0.3992)	(-0.4233)	(-0.7311)	(-0.1983)
RET(-7)	-0.0488	0.0061	0.0743	-0.0007	-0.3090	0.0101	0.0175	0.0013	0.1637
	(-1.0072)	(0.6911)	(0.7469)	(-0.4304)	(-1.4879)	(0.3782)	(1.0225)	(0.2685)	(0.8910)
RET(-8)	0.0113	0.0032	0.0868	0.0004	-0.0286	0.0106	0.0150	0.0035	0.2425
	(0.3537)	(0.5530)	(1.3203)	(0.3868)	(-0.2085)	(0.6015)	(1.3237)	(1.1136)	(1.9985)
RQS(-1)	-0.1830**	0.1409	-0.2029	-0.0096	-0.5244	-0.4177	-0.0661	-0.0495	-0.4861
	(-2.1019)	(1.3844)	(-0.1755)	(-0.5166)	(-1.0462)	(-1.3445)	(-0.3323)	(-0.8940)	(-1.1644)
RQS(-2)	-0.1522	0.0770	-0.0460	0.0341*	-0.4633	-0.4850	-0.1662	-0.0236	-0.3721
	(-0.2741)	(0.7666)	(-0.0403)	(1.8604)	(-1.4551)	(-1.5827)	(-0.8471)	(-0.4321)	(-1.6012)
RQS(-3)	0.2242	0.0058	0.0206	0.0142	-0.0481**	-0.3608	-0.0610	-0.0183	-0.2199
	(0.4187)	(0.0597)	(0.0188)	(0.8032)	(-2.1992)	(-1.2209)	(-0.3222)	(-0.3480)	(-0.1083)
RQS(-4)	-0.6814	0.2117**	0.5933	0.0235	-0.2192	-0.3407	-0.0505	0.0277	0.9250
	(-1.2440)	(2.1368)	(1.4156)	(1.2998)	(-1.3708)	(-1.1268)	(-0.2610)	(0.5133)	(0.4452)
RQS(-5)	-0.0957*	0.1251	0.2774	0.0255	0.5711	-0.6628**	-0.5935***	-0.0823	-0.7490*
	(-1.8696)	(1.1808)	(0.2304)	(1.3165)	(0.2273)	(-2.0490)	(-2.8657)	(-1.4276)	(-1.6864)
RQS(-6)	-0.6960	0.0288	0.9095	-0.0095	0.5375	-0.0678	-0.1122	-0.0412	0.6182
	(-1.2637)	(0.2897)	(0.8037)	(-0.5216)	(0.6512)	(-0.2230)	(-0.5766)	(-0.7597)	(0.2959)

RQS(-7)	-0.1474	0.0270	0.0876	0.0144	-0.2121	-0.4264*	-0.3036*	-0.0571	-0.4756
	(-0.3129)	(0.3164)	(1.1233)	(0.9237)	(-0.1050)	(-1.6395)	(-1.8231)	(-1.2325)	(-0.8255)
RQS(-8)	-0.1595***	0.0064	0.0704	-0.0131	-0.7281	-0.0243	-0.0725	-0.0175	-0.9948
	(-2.8480)	(0.0868)	(0.0841)	(-0.9744)	(-0.4171)	(-0.1082)	(-0.5037)	(-0.4364)	(-0.6441)
ST(-1)	0.0048	-0.1326	-0.4724	-0.0159	0.9132	-0.0782	-0.4101	0.0188	0.5787
	(0.0050)	(-0.7706)	(-1.2648)	(-0.5064)	(0.2239)	(-0.1490)	(-1.2200)	(0.2011)	(0.9917)
ST(-2)	-0.9152*	0.1199	0.7421	0.0129	0.6947	-0.8913	-0.6574*	-0.1151	-0.2004
	(-1.8331)	(0.6347)	(0.3457)	(0.3738)	(0.1551)	(-1.5455)	(-1.7807)	(-1.1192)	(-0.0506)
ST(-3)	-0.2910	0.1948	0.7589	0.0022	0.8117	-0.5070	-0.8262**	-0.1714	-0.2218
	(-1.1684)	(0.9749)	(0.3343)	(0.0601)	(0.5935)	(-0.8312)	(-2.1161)	(-1.5766)	(-0.5301)
ST(-4)	-0.4222	-0.1419	0.5797	-0.0088	-0.6868	-0.5100	-0.3271	-0.0950	-0.9663
	(-0.4067)	(-0.7559)	(0.7407)	(-0.2552)	(-0.3790)	(-0.8900)	(-0.8916)	(-0.9298)	(-0.2454)
ST(-5)	-0.4319	0.0006	0.2015	-0.0048	-0.1492	-0.1083	0.3459	0.0772	0.8929
	(-0.4665)	(0.0036)	(0.1059)	(-0.1572)	(-1.2974)	(-0.2119)	(1.0575)	(0.8472)	(0.8238)
ST(-6)	0.2212	0.1592	0.1392	0.0086	-0.8519	0.1228	0.2806	0.0726	-0.3760
	(0.2625)	(1.0444)	(0.0804)	(0.3078)	(-0.2358)	(0.2641)	(0.9421)	(0.8757)	(-0.1176)
ST(-7)	-0.5088	0.0462	-0.0149	0.0060	-0.7886	-0.2842	-0.0879	-0.0540	-0.9896
	(-0.6108)	(0.3068)	(-0.0087)	(0.2179)	(-0.7808)	(-0.6181)	(-0.2988)	(-0.6588)	(-1.5791)
ST(-8)	0.2768	0.1345	-0.0361	-0.0154	-0.0421	0.4500	0.4150	0.1109	0.2187**
	(0.3400)	(0.9137)	(-0.6193)	(-0.5721)	(-0.2985)	(1.0013)	(1.4422)	(1.3843)	(2.0134)
VOL(-1)	0.4982	0.3244	0.1866	0.0028	-0.3129	0.3483	0.9203	-0.3487	0.9644
	(0.4931)	(0.5904)	(1.1512)	(0.0277)	(-0.0240)	(0.8040)	(0.8571)	(-1.1666)	(0.8646)
VOL(-2)	0.6473*	-0.3946	0.2887	-0.0554	-0.2204	0.7351	0.3627	-0.0962	0.3601
	(1.7652)	(-0.6821)	(0.3482)	(-0.5242)	(-0.1619)	(0.9825)	(1.2053)	(-0.3056)	(0.5241)
VOL(-3)	0.2073	-0.4703	0.3889	-0.0510	-0.7232	0.5041	0.1712*	0.0459	0.2090

	(0.0609)	(-0.7642)	(0.1986)	(-0.4529)	(-0.4608)	(0.8007)	(1.8054)	(0.1370)	(0.2486)
VOL(-4)	0.6283	-0.0696	-0.0608	-0.0772	0.0216	0.1516	0.4100	-0.0877	0.7432
	(0.5430)	(-0.1283)	(-1.1460)	(-0.7786)	(1.2463)	(1.3000)	(0.3869)	(-0.2973)	(0.7687)
VOL(-5)	0.0706	-0.0109	-0.2614	-0.0715	0.5445	0.7394	0.4088	-0.1661	-0.7205
	(1.3479)	(-0.0199)	(-0.8479)	(-0.7165)	(0.1965)	(1.0435)	(0.3831)	(-0.5589)	(-0.2375)
VOL(-6)	-0.3850	-0.7825	0.8225	-0.0398	-0.5032	-0.0480	0.1002	-0.0268	0.6063
	(-0.7753)	(-1.4067)	(0.1301)	(-0.3913)	(-0.9480)	(-0.0282)	(0.0922)	(-0.0884)	(0.4804)
VOL(-7)	-0.6131	0.1226	-0.4156	-0.0131	0.9957	0.6256	0.1133	0.2362	0.2728
	(-0.2041)	(0.2257)	(-0.0674)	(-0.1315)	(0.0773)	(0.9805)	(1.0488)	(0.7992)	(1.6038)
VOL(-8)	0.3892	-0.6341	0.6706	0.1114	0.5982	-0.5876	-0.6054	-0.2071	-0.7905
	(0.1477)	(-1.3308)	(1.4168)	(1.2786)	(0.5841)	(-1.0915)	(-0.6502)	(-0.7987)	(-0.9795)
VOLATILITY(-1)	-0.0208	-0.0172*	0.0075	-0.0024	0.0396	0.0749**	0.0150	0.0013	-0.1786
	(-0.3658)	(-1.6734)	(0.0646)	(-1.2896)	(0.1621)	(2.3832)	(0.7482)	(0.2345)	(-0.8274)
VOLATILITY(-2)	0.0610	-0.0224*	-0.0700	-0.0023	0.1465	0.1000***	0.0345	0.0082	-0.0745
	(0.9288)	(-1.8855)	(-0.5192)	(-1.0633)	(0.5207)	(2.7607)	(1.4863)	(1.2734)	(-0.2990)
VOLATILITY(-3)	-0.0035	-0.0270**	-0.1347	-0.0038	0.1761	0.0810**	0.0399	0.0104	0.2161
	(-0.0505)	(-2.1465)	(-0.9422)	(-1.6301)	(0.5903)	(2.1096)	(1.6235)	(1.5175)	(0.8187)
VOLATILITY(-4)	0.0138	-0.0159	-0.0875	-0.0007	0.1062	0.0740*	0.0490**	0.0109	0.0903
	(0.1951)	(-1.2487)	(-0.6042)	(-0.3098)	(0.3513)	(1.9010)	(1.9663)	(1.5653)	(0.3375)
VOLATILITY(-5)	0.0126	-0.0243**	-0.1091	-0.0012	0.2123	0.0338	0.0193	0.0056	0.0061
	(0.2117)	(-2.2648)	(-0.8940)	(-0.6105)	(0.8334)	(1.0315)	(0.9200)	(0.9613)	(0.0270)
VOLATILITY(-6)	0.0811	-0.0094	-0.2128*	-0.0009	-0.0357	0.0317	0.0194	0.0027	-0.0006
	(1.3663)	(-0.8782)	(-1.7441)	(-0.4697)	(-0.1402)	(0.9671)	(0.9270)	(0.4604)	(-0.0024)
VOLATILITY(-7)	0.0908*	-0.0090	-0.1605	0.0002	0.1419	0.0093	-0.0003	0.0010	0.0953
	(1.6881)	(-0.9301)	(-1.4529)	(0.0954)	(0.6159)	(0.3120)	(-0.0159)	(0.1913)	(0.4672)

VOLATILITY(-8)	0.0899**	0.0023	-0.1299	0.0002	-0.1419	-0.0030	-0.0037	-0.0007	-0.1969
	(2.0359)	(0.2909)	(-1.4325)	(0.1103)	(-0.7496)	(-0.1249)	(-0.2339)	(-0.1573)	(-1.1761)
	AR	**SILVER**	**CET**	**MCAP**	**RET**	**RQS**	**ST**	**VOL**	**VOLATILITY**
C	0.0128	0.0024	0.0020	0.0007	-0.1356**	-0.0087	0.0004	0.0015	-0.0354
	(0.8637)	(0.2239)	(0.0700)	(1.4149)	(-2.2764)	(-1.0893)	(0.0694)	(1.0544)	(-0.6211)
AR(-1)	-0.8016***	-0.0553	0.0689	-0.0003	0.3317***	0.0074	-0.0757	-0.0120	-0.0039
	(-5.0472)	(-0.4776)	(0.2222)	(-0.0503)	(3.6488)	(0.0861)	(-1.3288)	(-0.7907)	(-0.0064)
AR(-2)	-0.4800***	-0.0667	0.7361**	-0.0059	0.0800***	0.0513	-0.1452**	-0.0383**	-0.0303
	(-2.5997)	(-0.4956)	(2.0405)	(-1.0247)	(2.7997)	(0.5139)	(-2.1924)	(-2.1742)	(-0.0425)
AR(-3)	-0.5386***	-0.0221	0.7318*	-0.0055	0.0812***	0.0285	-0.1566**	-0.0271	-0.4625
	(-2.7169)	(-0.1526)	(1.8897)	(-0.8802)	(2.6093)	(0.2655)	(-2.2016)	(-1.4337)	(-0.6057)
AR(-4)	-0.6062***	0.1664	0.6097	-0.0065	0.0418**	0.0601	-0.0369	0.0023	-0.9719
	(-2.7399)	(1.0315)	(1.4105)	(-0.9405)	(2.2935)	(0.5022)	(-0.4647)	(0.1103)	(-1.1403)
AR(-5)	-0.2773	0.2143	0.4671	-0.0035	0.0929	0.2033*	0.0446	0.0208	-0.4386
	(-1.2151)	(1.2878)	(1.0477)	(-0.4865)	(1.1902)	(1.6465)	(0.5450)	(0.9556)	(-0.4989)
AR(-6)	-0.0814	-0.0298	0.0466	0.0066	-0.3877	0.1454	0.0993	0.0461**	-0.3463
	(-0.3814)	(-0.1918)	(0.1119)	(0.9907)	(-0.4517)	(1.2603)	(1.2982)	(2.2630)	(-0.4215)
AR(-7)	-0.3399	0.1422	0.1441	0.0061	-0.1145	0.1229	0.1032	0.0433**	0.1556
	(-1.5590)	(0.8943)	(0.3384)	(0.9022)	(-1.2706)	(1.0418)	(1.3195)	(2.0802)	(0.1853)
AR(-8)	-0.2017	0.0718	0.3820	0.0037	-0.4607	0.0286	-0.0012	0.0184	-0.5166
	(-1.1166)	(0.5450)	(1.0822)	(0.6475)	(-0.6337)	(0.2925)	(-0.0190)	(1.0686)	(-0.7423)
SILVER(-1)	-0.1505	0.4690***	0.2502	0.0054	-0.2957	-0.0846	-0.1410*	-0.0253	-0.6968
	(-0.6661)	(2.8477)	(0.5670)	(0.7581)	(-0.3254)	(-0.6922)	(-1.7408)	(-1.1757)	(-0.8010)
SILVER(-2)	0.2348	-0.3528*	-0.1678	-0.0104	0.1924	-0.0450	-0.0346	-0.0146	-0.9099
	(0.9316)	(-1.9195)	(-0.3409)	(-1.3174)	(0.1898)	(-0.3300)	(-0.3824)	(-0.6086)	(-0.9372)

SILVER(-3)	0.2245	0.3424*	-0.7520**	0.0040	0.8264	-0.0866	-0.0356	-0.0223	0.6959
	(0.7923)	(1.6572)	(-2.0809)	(0.4467)	(0.7249)	(-0.5651)	(-0.3500)	(-0.8242)	(0.6376)
SILVER(-4)	-0.1224	-0.0473	-0.0440	-0.0037	0.2094	0.0710	0.0499	0.0373	-0.0581
	(-0.4585)	(-0.2428)	(-0.0843)	(-0.4430)	(0.1949)	(0.4915)	(0.5213)	(1.4630)	(-1.0288)
SILVER(-5)	0.0114	0.2811	-0.2811	-0.0038	0.4384	0.0732	0.0266	-0.0030	0.5357
	(0.0445)	(1.5061)	(-0.5621)	(-0.4770)	(1.3967)	(0.5286)	(0.2894)	(-0.1227)	(1.5576)
SILVER(-6)	-0.1506	-0.1315	0.2842	-0.0018	-0.2984	-0.0914	0.0245	-0.0088	0.2722
	(-0.6082)	(-0.7280)	(0.5875)	(-0.2285)	(-1.3031)	(-0.6823)	(0.2763)	(-0.3734)	(0.2854)
SILVER(-7)	-0.2693	0.1046	0.2440	0.0148*	-0.4573	-0.1688	-0.0379	0.0040	-0.5242
	(-1.0724)	(0.5710)	(0.4974)	(1.8816)	(-0.4526)	(-1.2427)	(-0.4206)	(0.1675)	(-0.5419)
SILVER(-8)	-0.3951	-0.3465*	0.7283**	-0.0218***	0.1886**	0.3251**	-0.0303	-0.0258	0.6402*
	(-1.5420)	(-1.8549)	(2.0544)	(-2.7198)	(2.1231)	(2.3458)	(-0.3301)	(-1.0566)	(1.6621)
CET(-1)	-0.0432	0.0415	-0.6921***	-0.0024	0.0623	0.0603	0.0371	0.0131*	0.2389
	(-0.5882)	(0.7745)	(-4.8253)	(-1.0531)	(0.2110)	(1.5179)	(1.4100)	(1.8726)	(0.8446)
CET(-2)	-0.0878	0.0020	-0.6961***	0.0032	-0.2417	-0.0236	-0.0108	0.0050	-0.5146
	(-1.0270)	(0.0313)	(-4.1676)	(1.1882)	(-0.7027)	(-0.5109)	(-0.3517)	(0.6100)	(-1.5626)
CET(-3)	-0.0501	0.0797	-0.5216***	0.0001	0.1820	0.0351	0.0039	0.0122	0.1752
	(-0.5174)	(1.1293)	(-2.7590)	(0.0324)	(0.4675)	(0.6700)	(0.1132)	(1.3234)	(0.4701)
CET(-4)	-0.0541	0.0017	-0.2425	0.0042	0.0650	-0.0329	-0.0258	0.0124	-0.2081
	(-0.5851)	(0.0246)	(-1.3418)	(1.4362)	(0.1746)	(-0.6572)	(-0.7773)	(1.4043)	(-0.5840)
CET(-5)	-0.2054**	0.0804	-0.6257***	0.0006	0.3597	0.0625	0.0205	0.0210**	0.3115
	(-2.0682)	(1.1099)	(-3.2242)	(0.1841)	(0.9001)	(1.1632)	(0.5749)	(2.2137)	(0.8143)
CET(-6)	-0.0694	0.0632	-0.2147	-0.0010	0.5841	0.0642	-0.0001	0.0193**	0.4552
	(-0.6724)	(0.8391)	(-1.0645)	(-0.2994)	(1.4060)	(1.1496)	(-0.0019)	(1.9541)	(1.1445)
CET(-7)	-0.1620*	0.0215	-0.3085*	0.0047	0.0943	0.0181	-0.0255	0.0038	-0.0401

	(-1.6970)	(0.3090)	(-1.6543)	(1.5813)	(0.2457)	(0.3498)	(-0.7455)	(0.4161)	(-0.1092)
CET(-8)	0.0299	0.0290	-0.2718	0.0004	0.7296*	0.0299	-0.0333	0.0038	0.7322*
	(0.2792)	(0.3703)	(-1.2976)	(0.1186)	(1.6914)	(0.5150)	(-0.8649)	(0.3730)	(1.7731)
MCAP(-1)	-0.8467*	0.9850	-0.7826*	0.2246	-0.1603	-0.4644	0.6445	-0.3697	-0.2560
	(-1.8367)	(0.3155)	(-1.6482)	(0.8330)	(-0.7824)	(-0.7423)	(0.5313)	(-0.4489)	(-0.0679)
MCAP(-2)	0.9901	-0.9699	0.0245	0.3309	0.1558	0.2554	-0.0663	0.1818	-0.2146
	(0.3527)	(-0.3186)	(0.3034)	(1.2489)	(0.4443)	(0.2737)	(-0.3506)	(0.2247)	(-0.6190)
MCAP(-3)	0.5287	-0.0019	0.3230	-0.0934	0.4769	0.3370	-0.5429	0.1282	0.1656
	(0.3329)	(-1.0834)	(1.0998)	(-0.3936)	(0.6372)	(0.8120)	(-0.1992)	(0.1769)	(0.9625)
MCAP(-4)	-0.2192	0.2938	0.6828	0.1713	-0.0090	0.5424	0.8449	0.2285	0.2281
	(-0.8967)	(0.4535)	(0.6408)	(0.7901)	(-0.0362)	(0.4111)	(0.3396)	(0.3452)	(0.1583)
MCAP(-5)	-0.3197	0.5086	0.3385	-0.2650	0.3036***	0.5800	-0.7181	0.4366	0.4246
	(-0.6149)	(0.6849)	(0.6075)	(-1.2072)	(2.7347)	(0.9420)	(-0.6817)	(0.6511)	(0.4591)
MCAP(-6)	0.3426***	-0.6834	-0.3688**	-0.1889	0.5440***	0.1798	-0.1462	-0.5290	0.9973
	(2.4617)	(-0.5223)	(-1.9885)	(-0.8581)	(2.5240)	(1.6216)	(-0.0578)	(-0.7867)	(0.7737)
MCAP(-7)	0.6504	0.7022	0.3925	0.0349	0.3922	-0.6357	0.7274	0.4655	-0.3397
	(1.5505)	(0.1282)	(0.3674)	(0.1486)	(0.7738)	(-0.1564)	(0.2699)	(0.6491)	(-0.1154)
MCAP(-8)	-0.0974*	0.1085	-0.3937	0.0252	-0.4886	-0.6946	0.8184	0.6809	-0.8806
	(-1.8038)	(1.0446)	(-1.4802)	(0.1205)	(-1.0187)	(-0.1915)	(0.3402)	(1.0637)	(-0.3825)
RET(-1)	-0.0687	-0.0295	0.0021	-0.0006	-0.0682***	-0.0319	-0.0109	-0.0078	0.1142
	(-1.3721)	(-0.8090)	(0.0218)	(-0.3618)	(-5.3043)	(-1.1779)	(-0.6053)	(-1.6279)	(0.5926)
RET(-2)	-0.1464**	-0.0496	0.0194	0.0006	-0.1639***	-0.0763**	-0.0185	-0.0135**	0.0355
	(-2.0839)	(-0.9689)	(0.1416)	(0.2858)	(-4.1187)	(-2.0072)	(-0.7338)	(-2.0110)	(0.1312)
RET(-3)	-0.1298	-0.0881	0.0919	0.0005	-0.8338**	-0.0724	-0.0386	-0.0188**	0.0234
	(-1.4706)	(-1.3689)	(0.5331)	(0.1814)	(-2.3477)	(-1.5159)	(-1.2197)	(-2.2317)	(0.0688)

RET(-4)	-0.1476*	-0.1264**	0.1724	0.0001	-0.7213**	-0.0723	-0.0420	-0.0216***	-0.1901
	(-1.6633)	(-1.9531)	(0.9941)	(0.0435)	(-2.0200)	(-1.5055)	(-1.3195)	(-2.5449)	(-0.5561)
RET(-5)	-0.1592*	-0.0474	0.2438	0.0001	-0.4792	-0.0572	-0.0371	-0.0155*	-0.1535
	(-1.8599)	(-0.7591)	(1.4577)	(0.0364)	(-1.3916)	(-1.2363)	(-1.2095)	(-1.8918)	(-0.4654)
RET(-6)	-0.0946	-0.0334	0.1439	-0.0004	-0.2786	-0.0290	-0.0276	-0.0083	-0.1872
	(-1.4606)	(-0.7072)	(1.1373)	(-0.2133)	(-1.0689)	(-0.8276)	(-1.1882)	(-1.3406)	(-0.7500)
RET(-7)	-0.0350	-0.0132	0.0366	-0.0005	-0.1044	0.0020	-0.0004	-0.0013	0.0053
	(-0.7770)	(-0.4026)	(0.4162)	(-0.3591)	(-0.5764)	(0.0814)	(-0.0232)	(-0.2981)	(0.0304)
RET(-8)	0.0107	0.0004	0.0604	0.0002	0.0253	-0.0034	0.0014	0.0003	0.0292
	(0.3965)	(0.0192)	(1.1421)	(0.2360)	(0.2319)	(-0.2339)	(0.1453)	(0.1213)	(0.2799)
RQS(-1)	-0.3058**	0.1203	-0.6238	0.0028	-0.1791	-0.5707*	-0.0289	-0.0412	-0.3728
	(-2.2145)	(0.2798)	(-0.5415)	(0.1499)	(-1.3400)	(-1.7894)	(-0.1365)	(-0.7322)	(-1.0447)
RQS(-2)	-0.2901	-0.1563	0.6119	0.0294	-0.7617	-0.3473	-0.0992	-0.0044	-0.5765
	(-0.5083)	(-0.3756)	(0.5489)	(1.6509)	(-1.2028)	(-1.1251)	(-0.4844)	(-0.0799)	(-0.7172)
RQS(-3)	-0.1269	0.0001	0.6878	0.0093	-0.7458	-0.2388	-0.1336	-0.0300	0.5785
	(-0.2341)	(0.0002)	(0.6496)	(0.5507)	(-1.2592)	(-0.8145)	(-0.6872)	(-0.5791)	(0.2771)
RQS(-4)	-0.1193**	-0.0499	0.9236*	0.0165	-0.3799	-0.3111	-0.0612	0.0082	-0.3692
	(-2.1781)	(-0.1330)	(1.9162)	(1.0291)	(-1.6347)	(-1.1193)	(-0.3321)	(0.1664)	(-0.1865)
RQS(-5)	-0.2715***	0.1246	0.8195	0.0160	-0.4619	-0.1823	-0.2887*	-0.0401	-0.4517
	(-2.5998)	(0.3493)	(0.8577)	(1.0479)	(-0.2347)	(-0.6890)	(-1.6452)	(-0.8592)	(-0.2398)
RQS(-6)	-0.4205	-0.2964	0.7326*	-0.0179	0.1649	0.3754	0.0465	0.0026	0.2569
	(-0.7957)	(-0.7691)	(1.6780)	(-1.0829)	(1.0181)	(1.3130)	(0.2451)	(0.0507)	(1.5998)
RQS(-7)	-0.0924	0.1091	0.3327	0.0127	-0.3361	-0.3999*	-0.2890*	-0.0809*	-0.2184
	(-0.2076)	(0.3361)	(1.5322)	(0.9109)	(-0.7458)	(-1.6604)	(-1.8095)	(-1.9028)	(-0.7105)
RQS(-8)	-0.1933***	0.0733	0.4256	-0.0052	-0.6730	-0.0990	-0.0280	-0.0054	-0.4855

	(-3.1427)	(0.2646)	(0.5737)	(-0.4417)	(-1.0950)	(-0.4821)	(-0.2053)	(-0.1482)	(-0.3320)
ST(-1)	-0.4080	-0.0168	-0.4161	-0.0340	0.5108	0.2778	-0.2608	0.0446	0.8379
	(-0.4592)	(-0.0260)	(-1.3917)	(-1.2246)	(0.4226)	(0.5780)	(-0.8181)	(0.5259)	(1.4134)
ST(-2)	-0.9732**	0.5669	0.0985	0.0069	-0.1032	-0.7707	-0.4876	-0.1014	0.3725
	(-2.1709)	(0.8553)	(0.0554)	(0.2435)	(-0.5751)	(-1.5674)	(-1.4954)	(-1.1685)	(0.1064)
ST(-3)	-0.8804	-0.3252	0.2237	-0.0057	-0.0300	-0.3120	-0.5599	-0.1234	-0.1394
	(-0.9229)	(-0.4674)	(0.1200)	(-0.1924)	(-0.2684)	(-0.6046)	(-1.6362)	(-1.3556)	(-0.0379)
ST(-4)	-0.1044	-0.8362	0.0319	-0.0035	-0.1170	-0.1648	-0.2584	-0.0561	0.5185
	(-0.1134)	(-1.2462)	(1.1303)	(-0.1199)	(-0.0316)	(-0.3311)	(-0.7827)	(-0.6382)	(0.9927)
ST(-5)	-0.9601	-0.2887	0.1188	0.0046	-0.1763	-0.6364	-0.1592	-0.0005	-0.8344
	(-1.1356)	(-0.4683)	(0.6773)	(0.1744)	(-1.2277)	(-1.3915)	(-0.5248)	(-0.0058)	(-0.5633)
ST(-6)	0.0074	0.1454	-0.0998	0.0118	-0.2825	-0.2950	0.0928	0.0311	-0.2679
	(0.0093)	(0.2503)	(-0.0641)	(0.4741)	(-0.7120)	(-0.6845)	(0.3245)	(0.4087)	(-0.4131)
ST(-7)	-0.1781	-0.1889	-0.5078	0.0026	-0.1638	-0.1245	-0.0748	-0.0203	-0.4551
	(-0.2318)	(-0.3373)	(-0.3384)	(0.1087)	(-0.3766)	(-0.2998)	(-0.2716)	(-0.2766)	(-1.1678)
ST(-8)	0.8133	-0.3436	-0.1246	-0.0102	0.5195	0.2453	0.2086	0.1039	0.8971
	(1.1261)	(-0.6525)	(-1.5058)	(-0.4508)	(0.1788)	(0.6279)	(0.8053)	(1.5070)	(1.4009)
VOL(-1)	0.9738	-0.2478	0.8452	0.0072	0.7837	0.5439	0.3345	-0.4192	0.8454
	(1.0840)	(-1.1236)	(1.4638)	(0.0841)	(0.0710)	(0.3665)	(0.3398)	(-1.6010)	(0.2693)
VOL(-2)	0.9440*	-0.6472	0.7122	-0.0437	0.7063	0.5257	0.7625	-0.1710	0.5254
	(1.7416)	(-0.3126)	(0.4891)	(-0.4921)	(0.7623)	(0.9936)	(0.7487)	(-0.6309)	(0.5968)
VOL(-3)	-0.5258	-0.5347	0.3530	-0.0354	0.8418	0.1838	0.4842	-0.0105	-0.7078
	(-0.5003)	(-0.6900)	(0.5627)	(-0.3716)	(0.3945)	(0.7175)	(1.3564)	(-0.0360)	(-0.4007)
VOL(-4)	0.8473	0.6844	-0.5662	-0.0546	0.5020	0.5487	-0.3766	-0.2922	-0.5390
	(0.3049)	(0.3378)	(-1.3937)	(-0.6287)	(1.2971)	(0.3650)	(-0.3778)	(-1.1018)	(-0.3306)

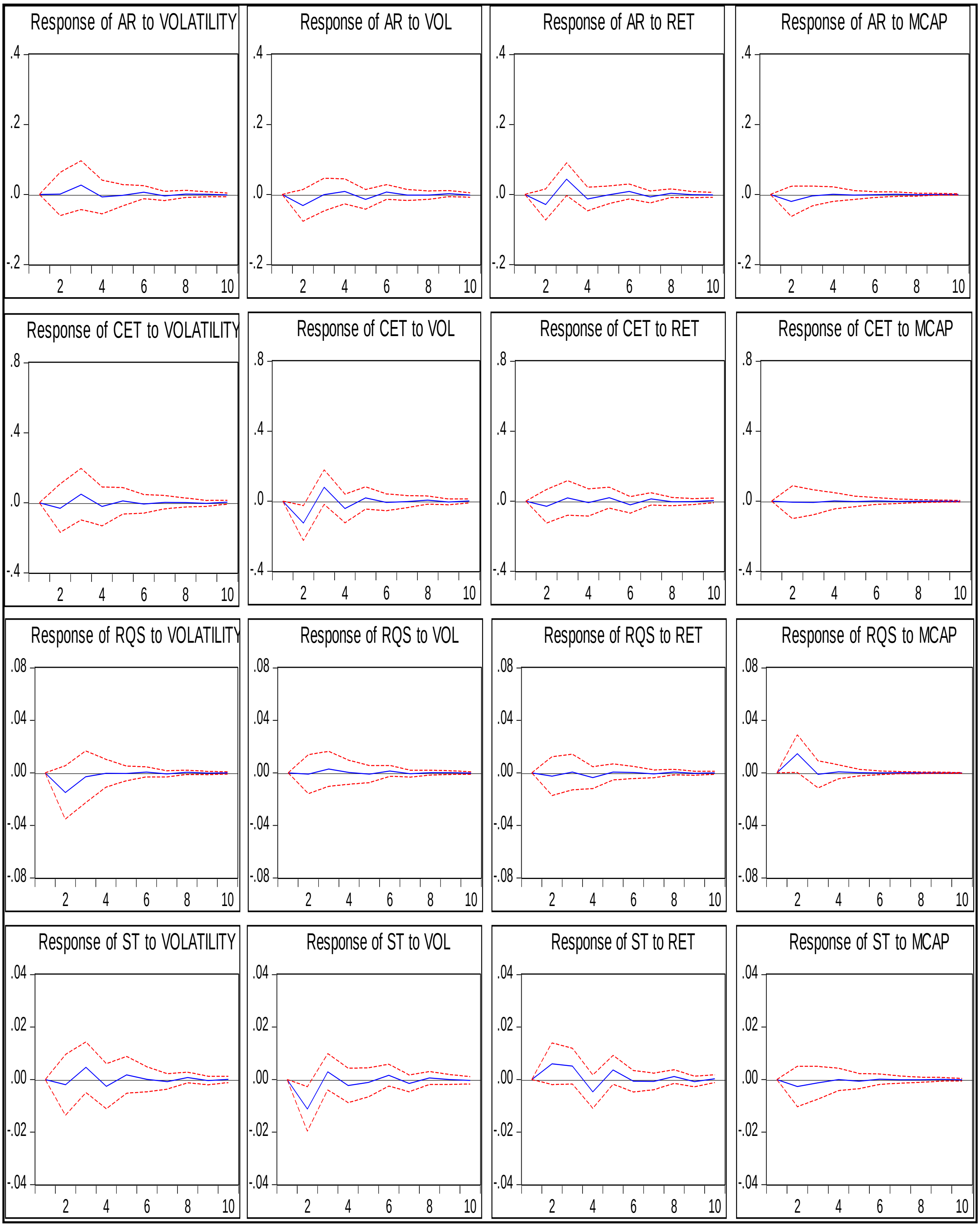
VOL(-5)	0.9715	-0.2402	-0.5800	-0.0772	0.6160	0.7173	0.5561	-0.1741	0.9288
	(1.3585)	(-0.5817)	(-0.9770)	(-0.8445)	(0.3924)	(1.0859)	(0.5302)	(-0.6238)	(0.0825)
VOL(-6)	-0.1000	0.8275	-0.2785	-0.0337	-0.1116	-0.3265	-0.3549	-0.1502	-0.5707
	(-1.0881)	(0.3983)	(-0.2297)	(-0.3780)	(-0.3587)	(-0.2119)	(-0.3472)	(-0.5525)	(-0.0520)
VOL(-7)	-0.1709	0.4916	-0.7863	-0.0156	0.7545	0.0078	0.7430	0.1120	0.2897
	(-0.8248)	(0.2561)	(-0.3474)	(-0.1896)	(0.2601)	(0.7078)	(0.7869)	(0.4458)	(0.7190)
VOL(-8)	-0.6118	0.1424	0.6866**	0.0588	0.4147	-0.3373	0.0049	-0.2176	-0.8782
	(-0.2642)	(0.0843)	(2.1407)	(0.8129)	(0.9029)	(-0.2692)	(0.0059)	(-0.9843)	(-0.2105)
VOLATILITY(-1)	0.0594	0.0439	-0.0723	-0.0009	0.0607	0.0379	-0.0026	-0.0001	-0.3238
	(1.1505)	(1.1651)	(-0.7166)	(-0.5758)	(0.2920)	(1.3568)	(-0.1419)	(-0.0250)	(-1.6272)
VOLATILITY(-2)	0.1179**	-0.0181	-0.1823	-0.0011	0.0621	0.0420	0.0151	0.0074	-0.4899**
	(1.9792)	(-0.4171)	(-1.5668)	(-0.5773)	(0.2591)	(1.3045)	(0.7081)	(1.2942)	(-2.1353)
VOLATILITY(-3)	0.0465	0.0686	-0.2445*	-0.0016	0.1251	0.0242	0.0179	0.0094	-0.0282
	(0.6813)	(1.3787)	(-1.8335)	(-0.7375)	(0.4555)	(0.6558)	(0.7314)	(1.4415)	(-0.1071)
VOLATILITY(-4)	0.0411	0.0426	-0.2175*	0.0003	-0.1096	0.0186	0.0372	0.0114	-0.3139
	(0.6056)	(0.8607)	(-1.6401)	(0.1210)	(-0.4014)	(0.5076)	(1.5284)	(1.7539)	(-1.2006)
VOLATILITY(-5)	0.0535	0.0425	-0.1917	0.0003	0.1296	0.0060	0.0186	0.0076	0.0348
	(0.8743)	(0.9535)	(-1.6041)	(0.1655)	(0.5264)	(0.1801)	(0.8481)	(1.2987)	(0.1478)
VOLATILITY(-6)	0.0717	-0.0007	-0.2054**	-0.0001	-0.0401	-0.0078	0.0024	0.0011*	-0.2263
	(1.3433)	(-0.0168)	(-1.9688)	(-0.0825)	(-0.1868)	(-0.2696)	(0.1253)	(0.2088)	(-1.0999)
VOLATILITY(-7)	0.0710	0.0021	-0.1886*	0.0007	0.1413	-0.0162	-0.0096	0.0003	0.0209
	(1.4198)	(0.0567)	(-1.9305)	(0.4407)	(0.7024)	(-0.5984)	(-0.5331)	(0.0682)	(0.1085)
VOLATILITY(-8)	0.0519	-0.0050	-0.1082	-0.0005	-0.0462	0.0039	-0.0059	0.0006	-0.2573
	(1.1690)	(-0.1535)	(-1.2475)	(-0.3263)	(-0.2586)	(0.1641)	(-0.3719)	(0.1344)	(-1.5047)

Source: Authors' calculations.

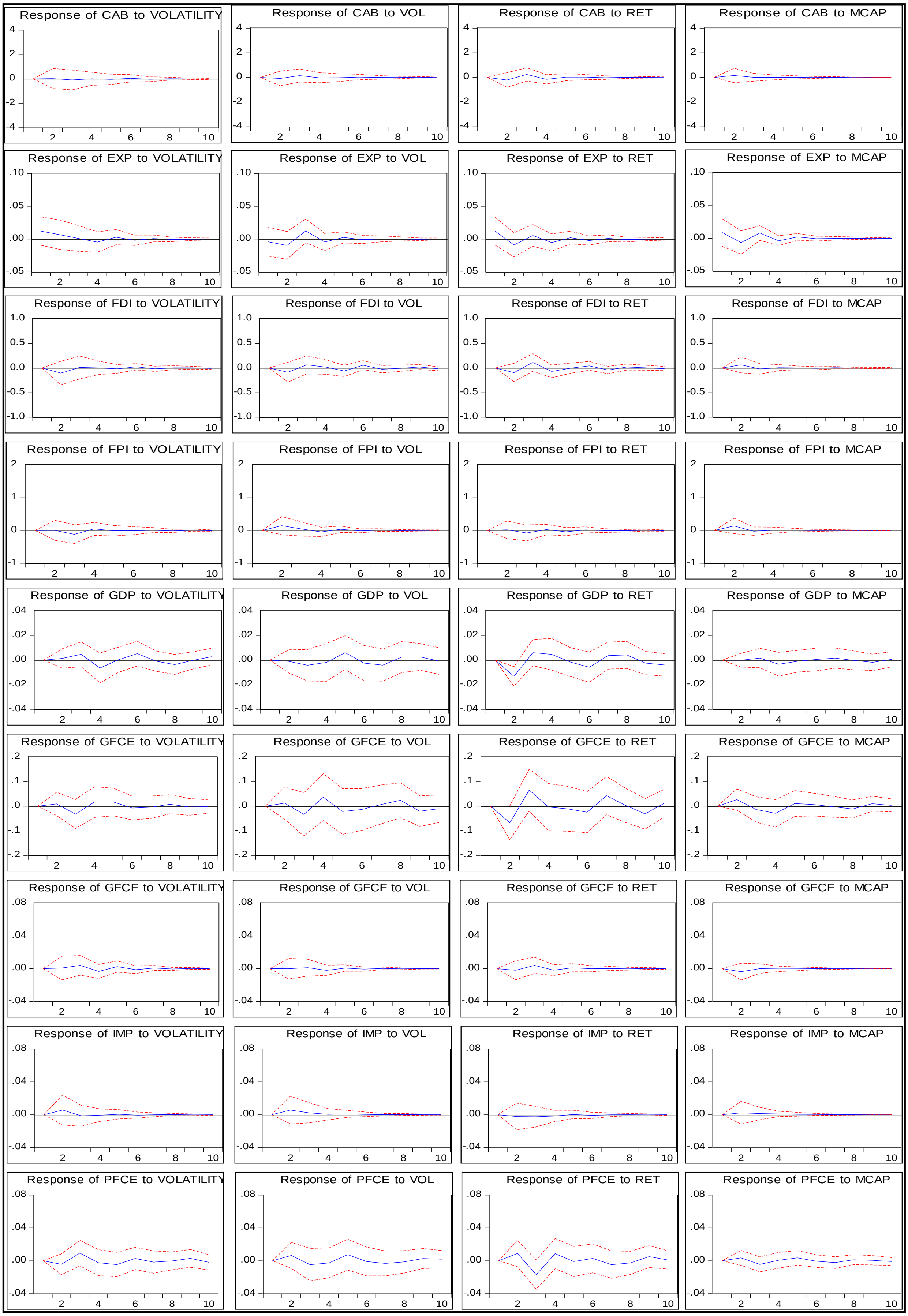
Note: Figures represent the coefficients; t-statistics in ( ); ***Significant at 1% Level, **Significant at 5% Level, *Significant at 10% Level.

Annexure III: Impulse Response Analysis for Macroeconomic Indicators, Market Liquidity and Control Variables

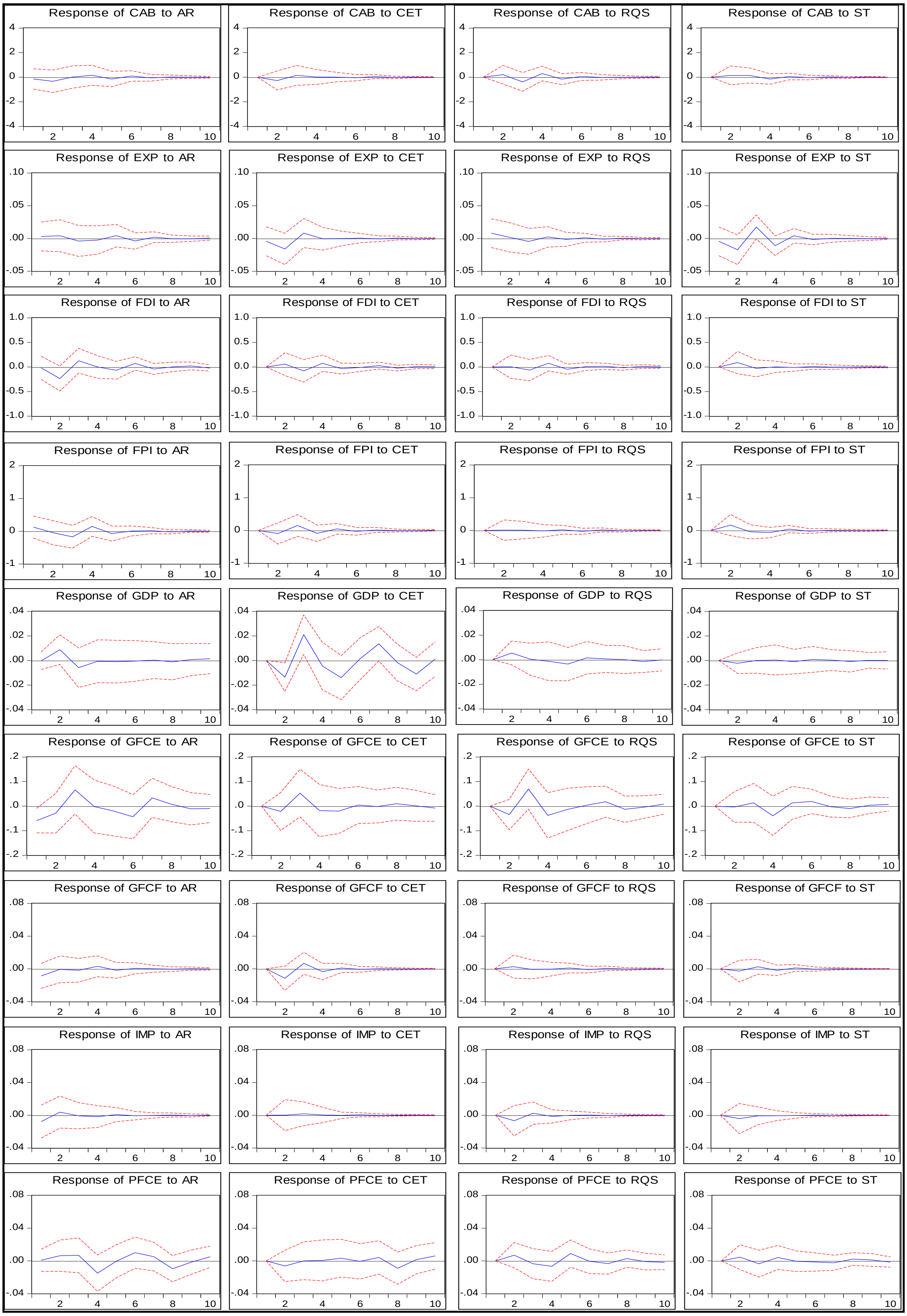
Impulse response analysis for quarterly variables.



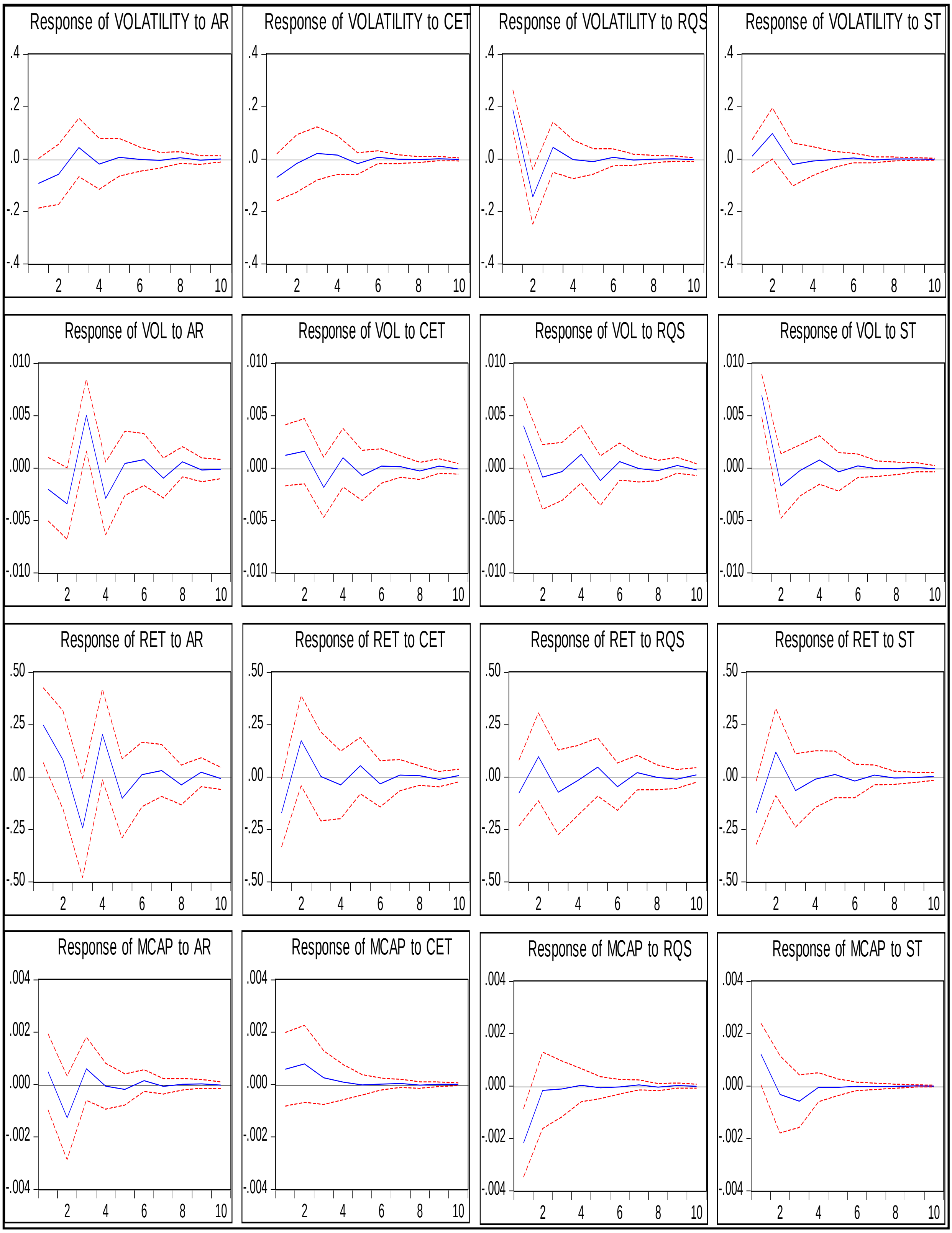
Impulse responses of market liquidity to a shock in the control variables (Quarterly)



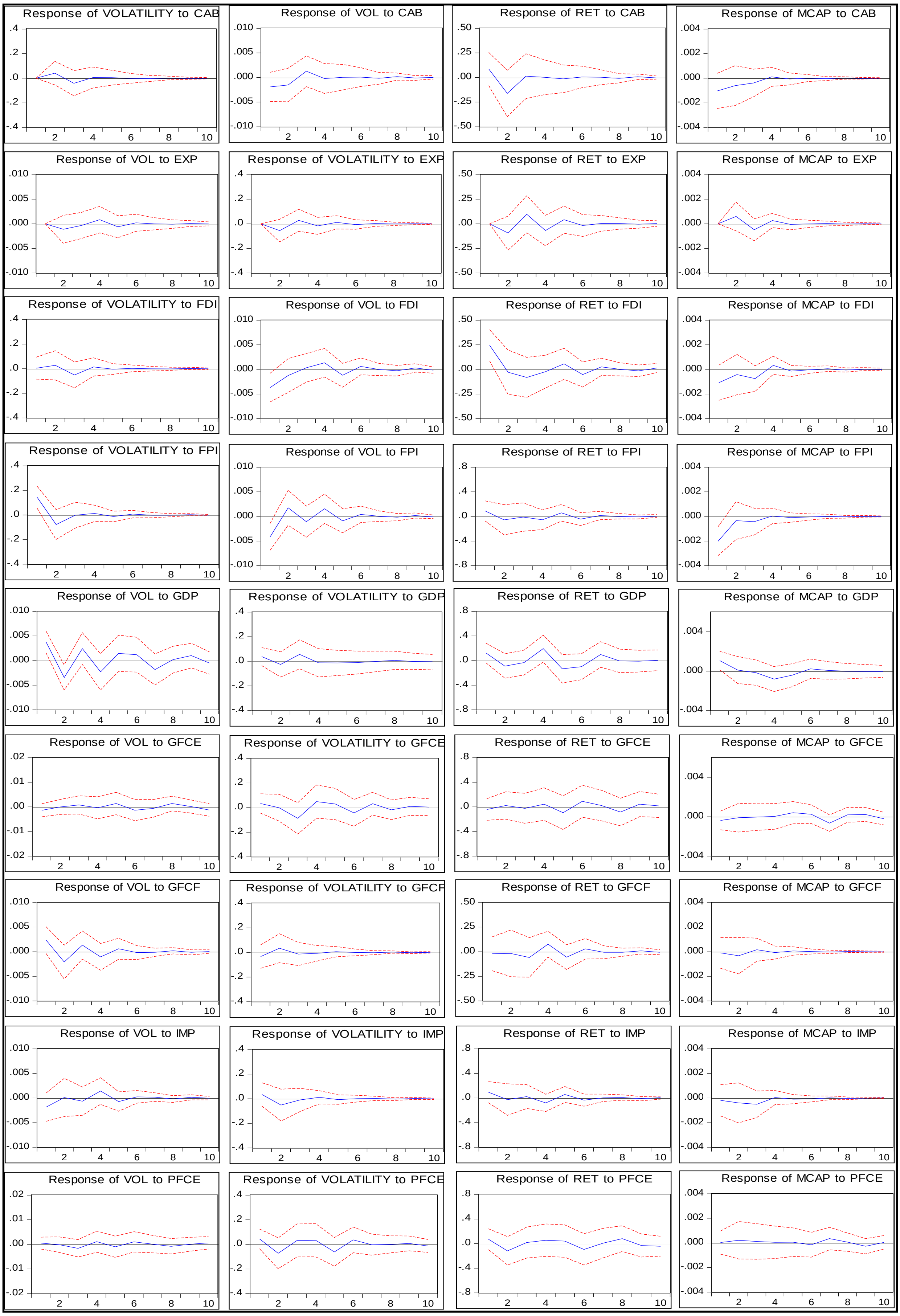
Impulse responses of macroeconomic indicators to a shock in the control variables (Quarterly)



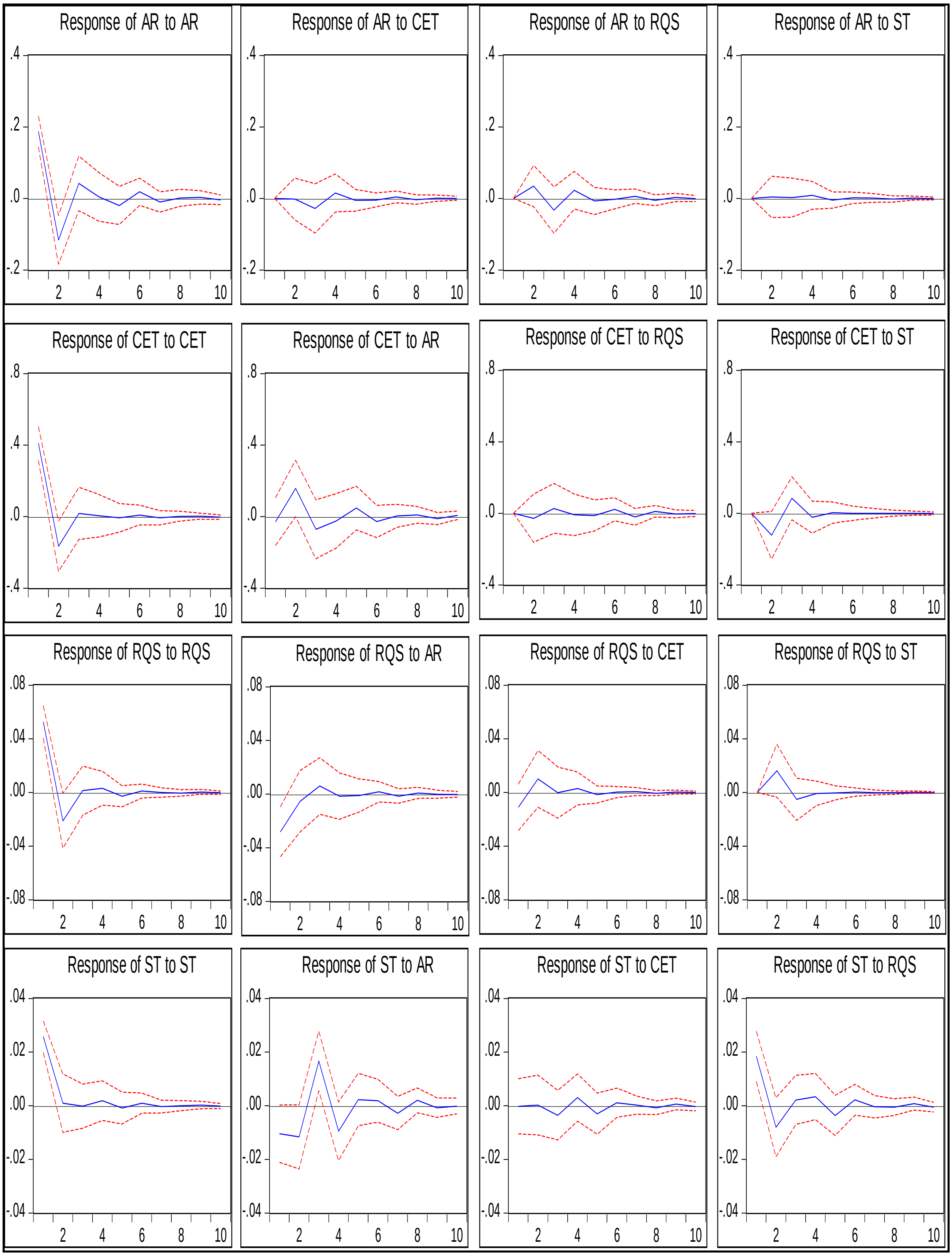
Impulse responses of macroeconomic indicators to a shock in the market liquidity (Quarterly)



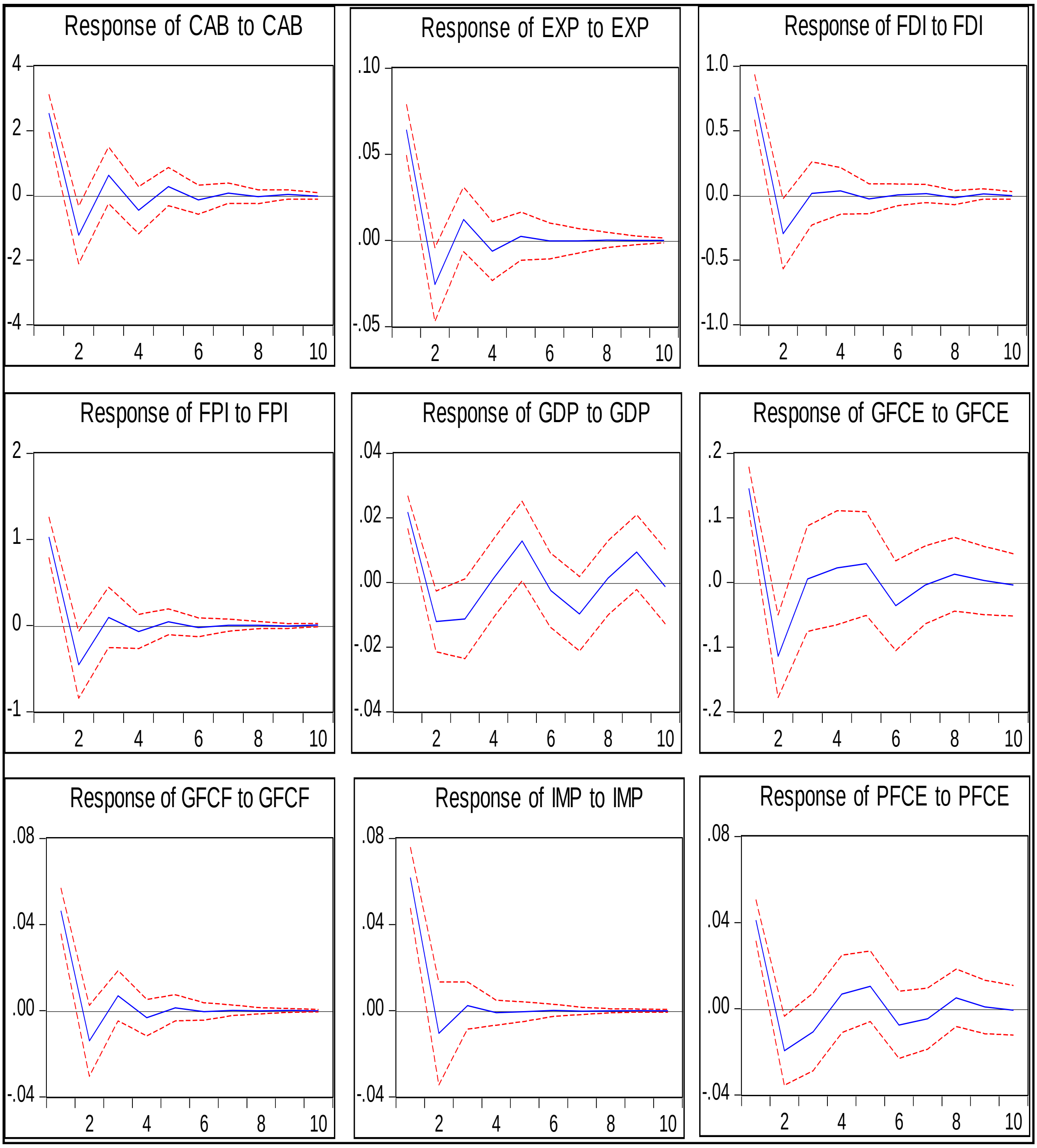
Impulse responses of control variables to a shock in the market liquidity (Quarterly)



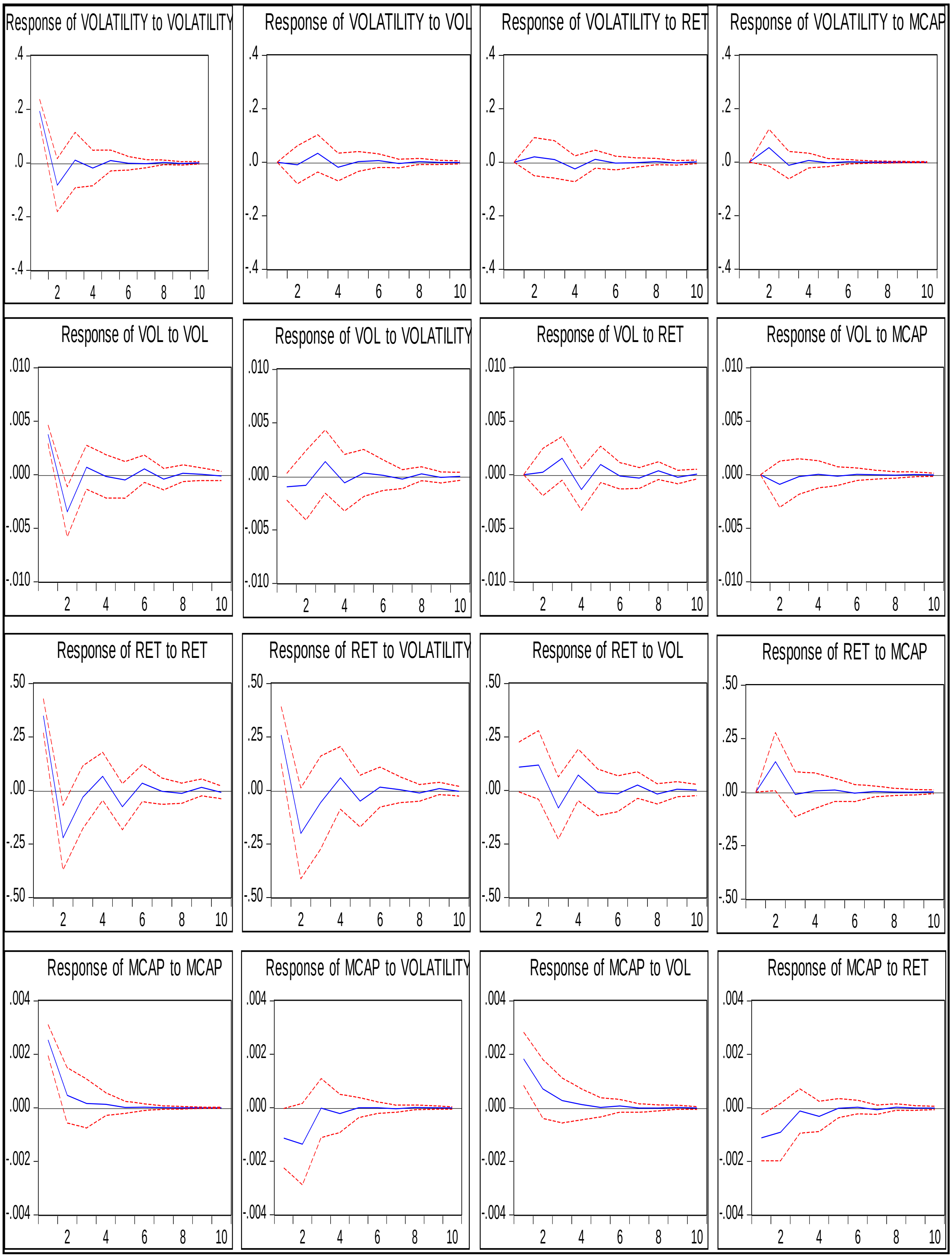
Impulse responses of control variables to a shock in the macroeconomic indicators (Quarterly)



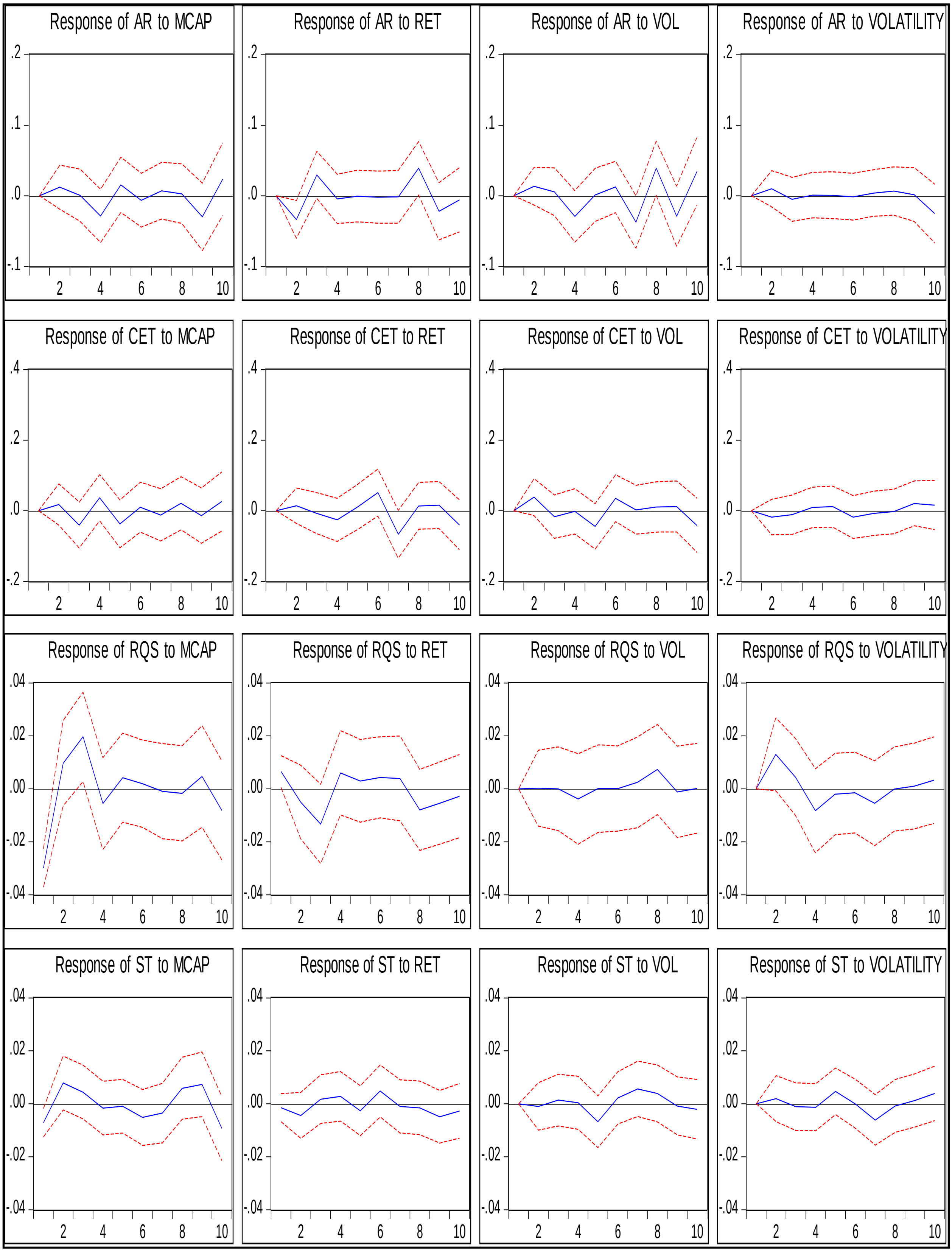
Impulse responses of market liquidity to a shock in the market liquidity (Quarterly)



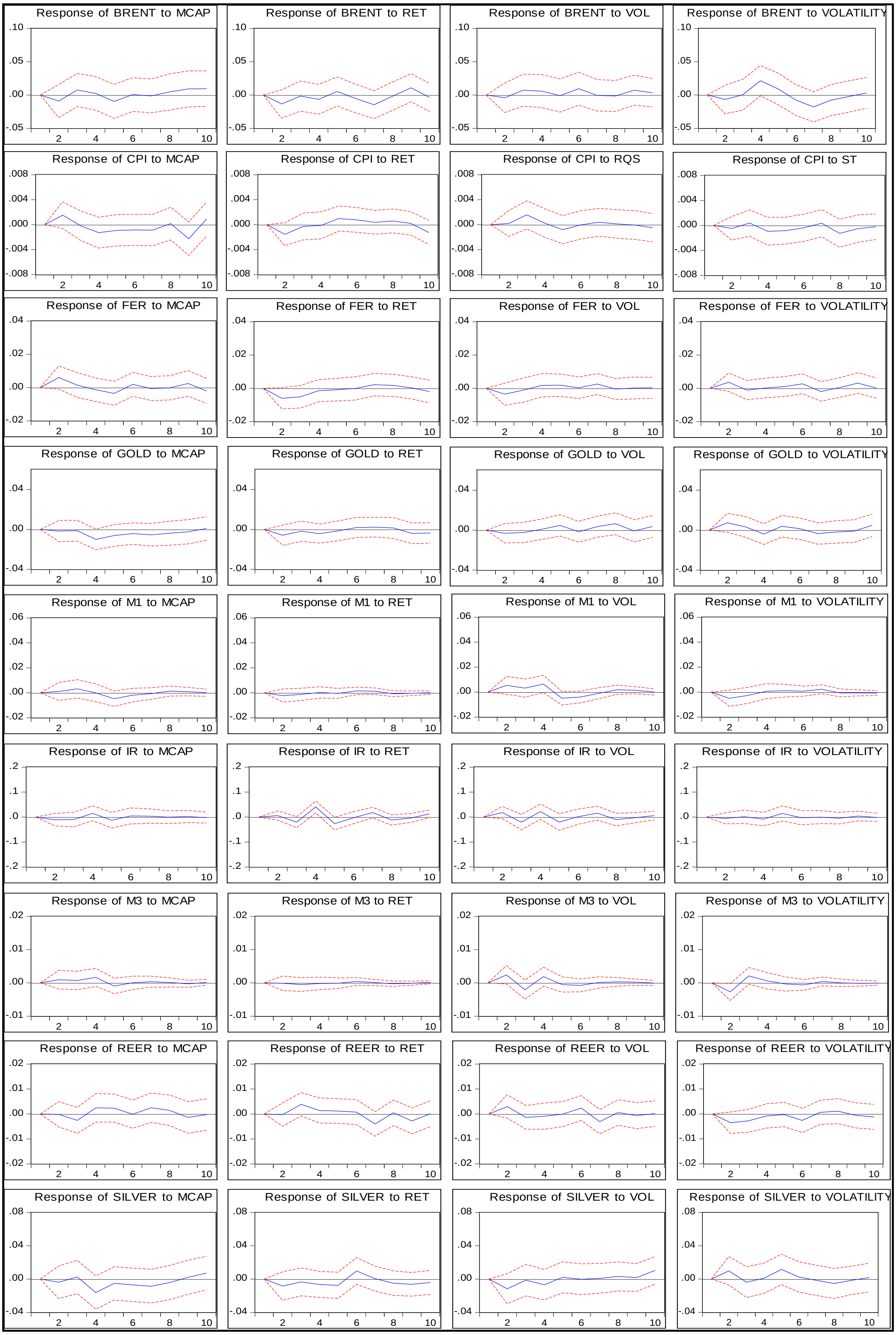
Impulse responses of macroeconomic indicators to a shock in macroeconomic indicators (Quarterly)



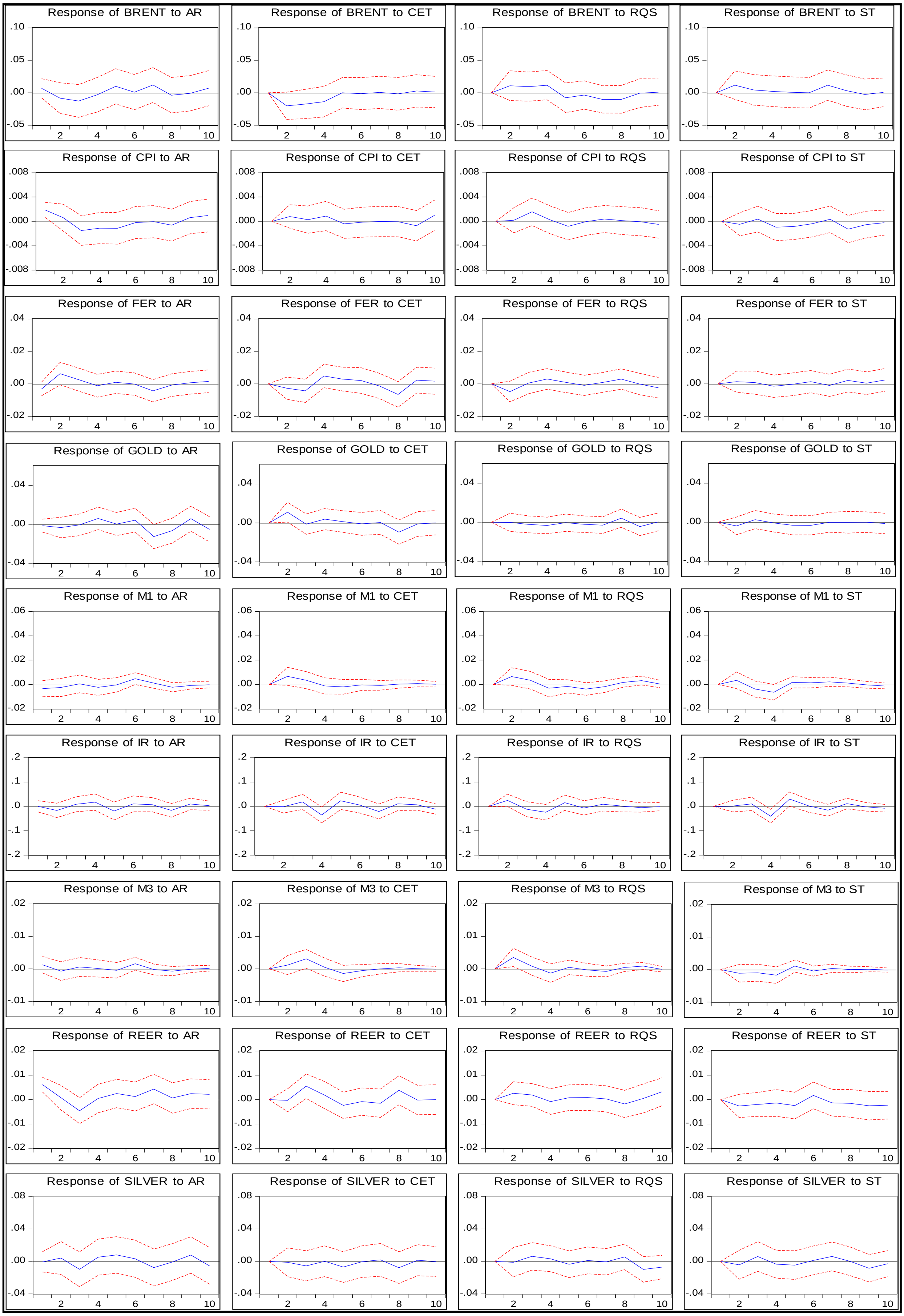
Impulse responses of control variables to a shock in control variables (Quarterly)



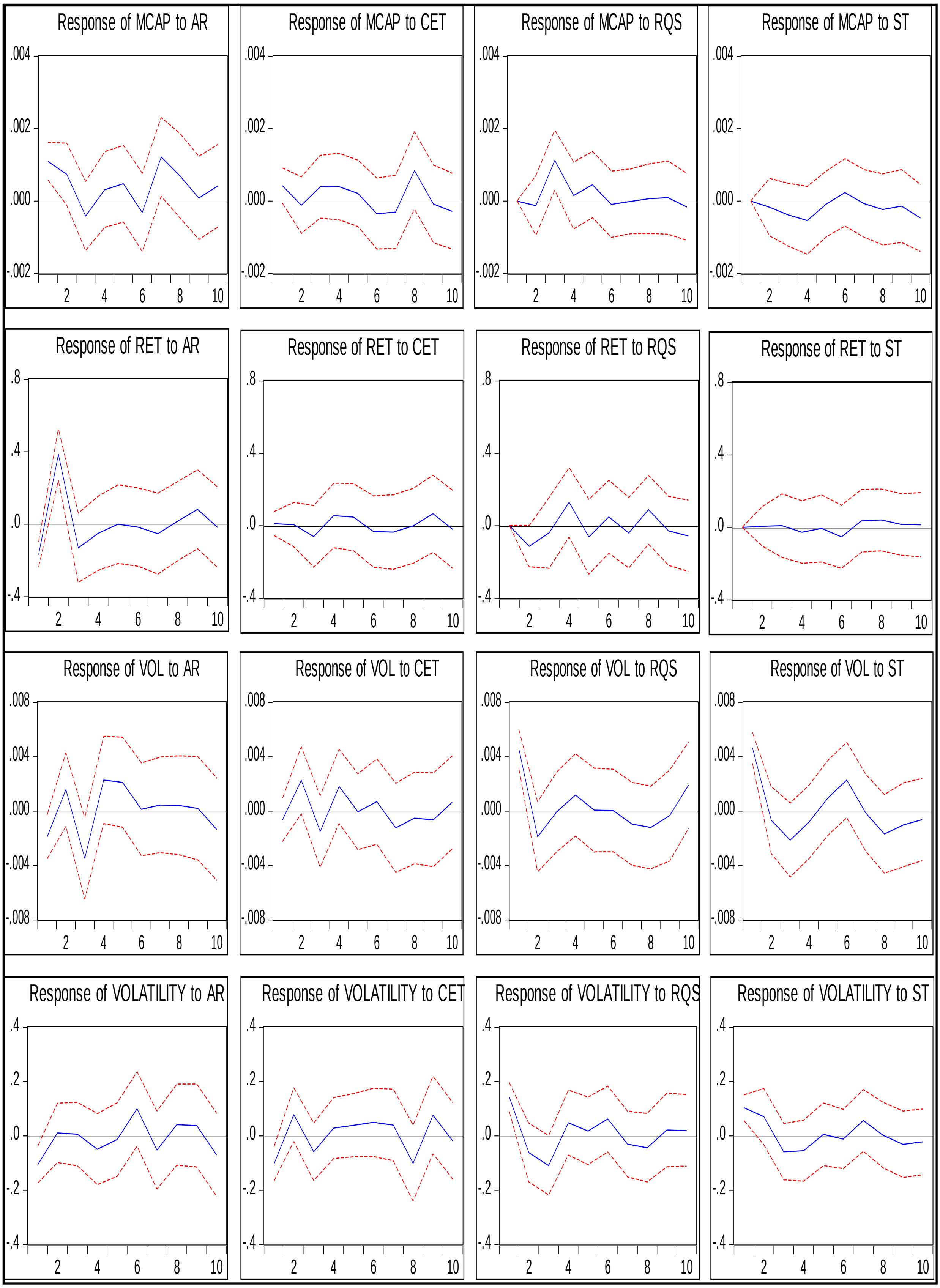
Impulse responses of market liquidity to a shock in the control variables (Monthly)



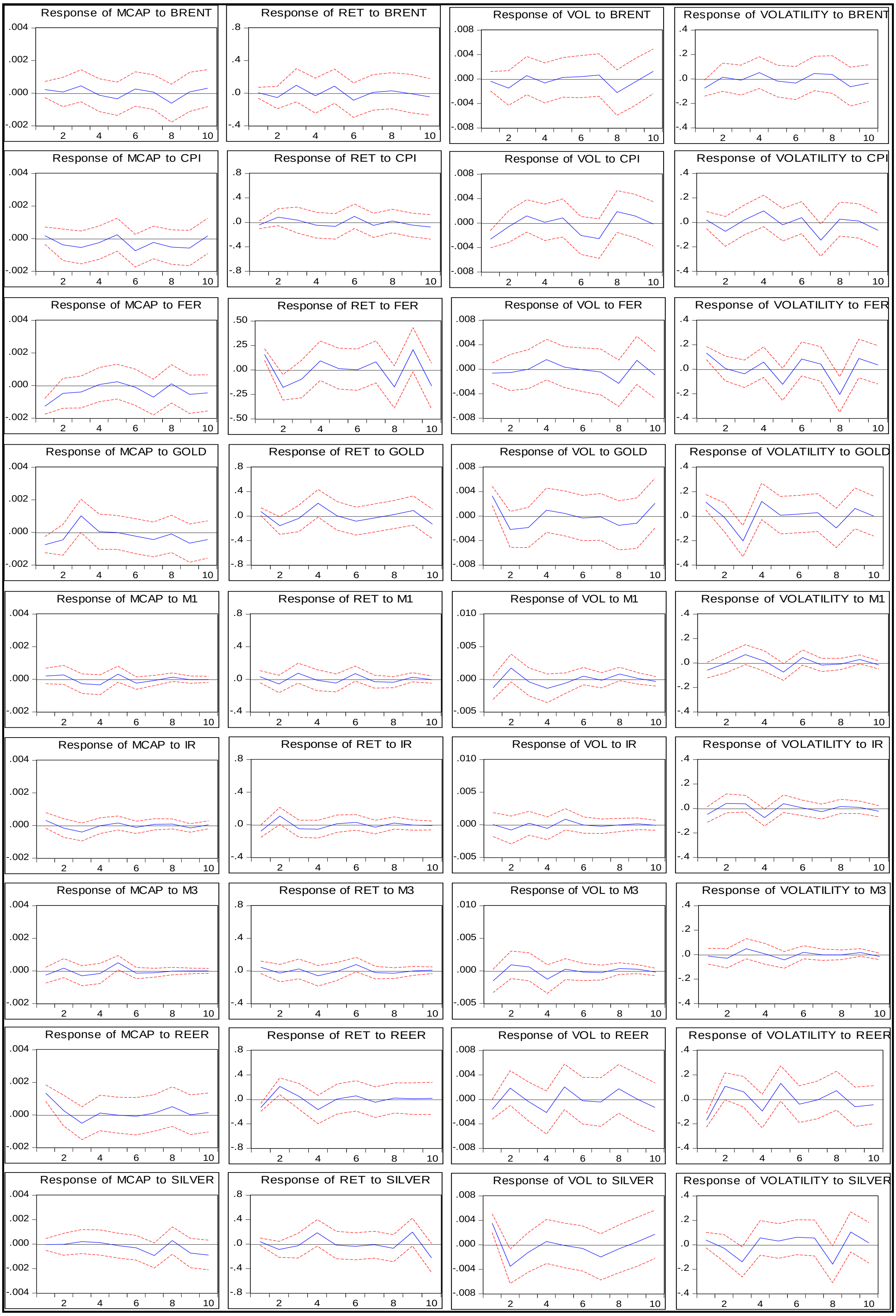
Impulse responses of macroeconomic indicators to a shock in the control variables (Monthly)



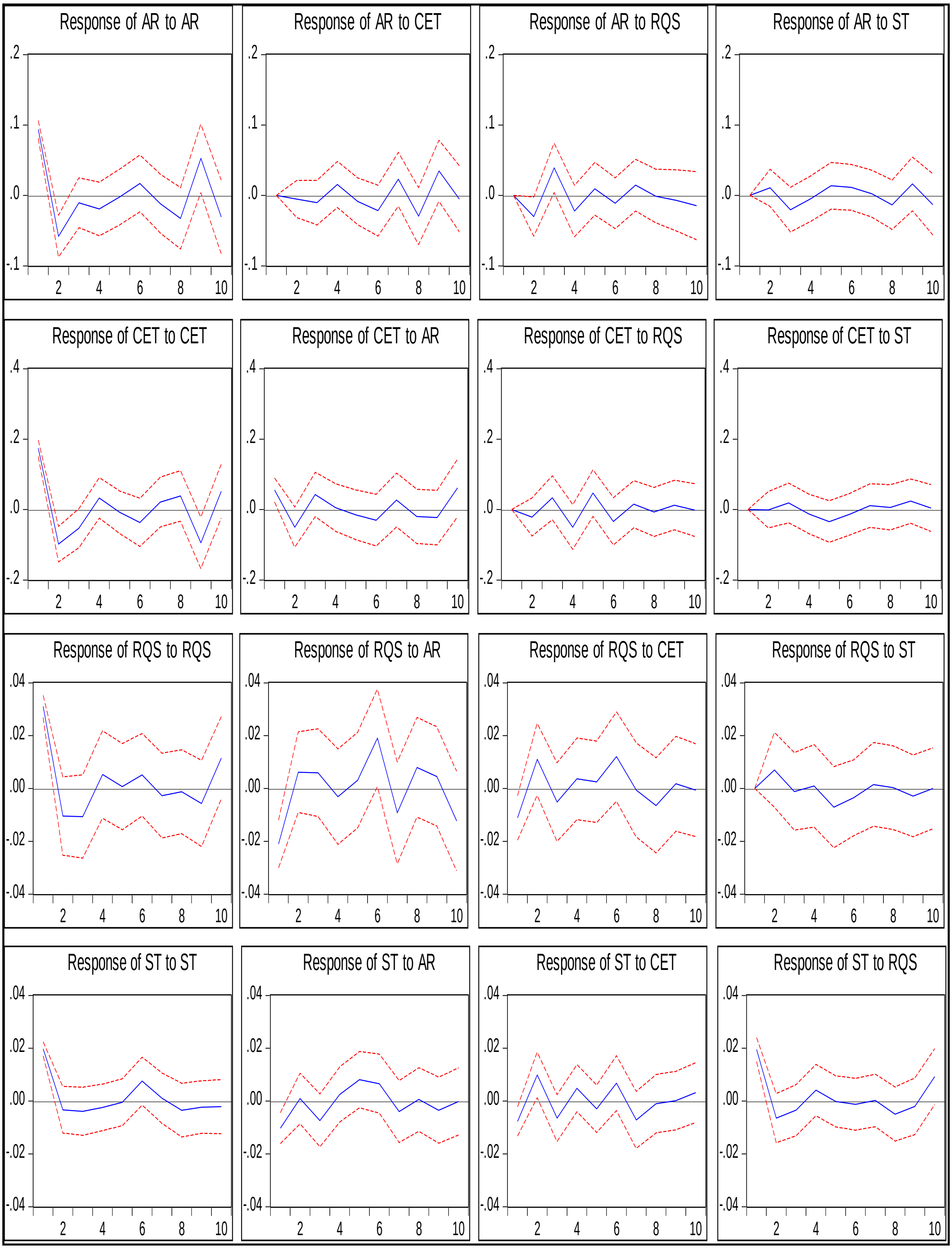
Impulse responses of macroeconomic indicators to a shock in the market liquidity (Monthly)



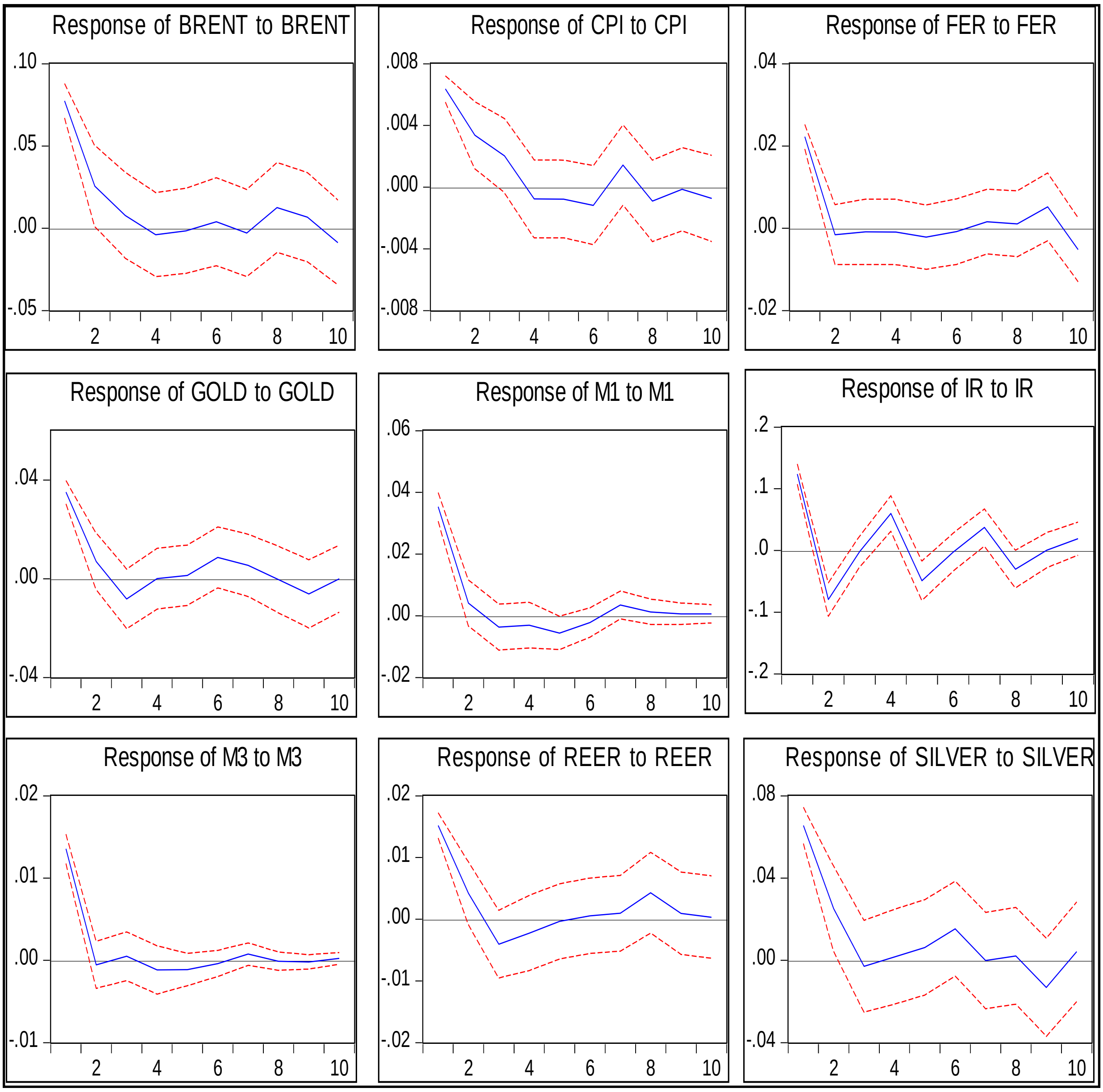
Impulse responses of control variables to a shock in the market liquidity (Monthly)



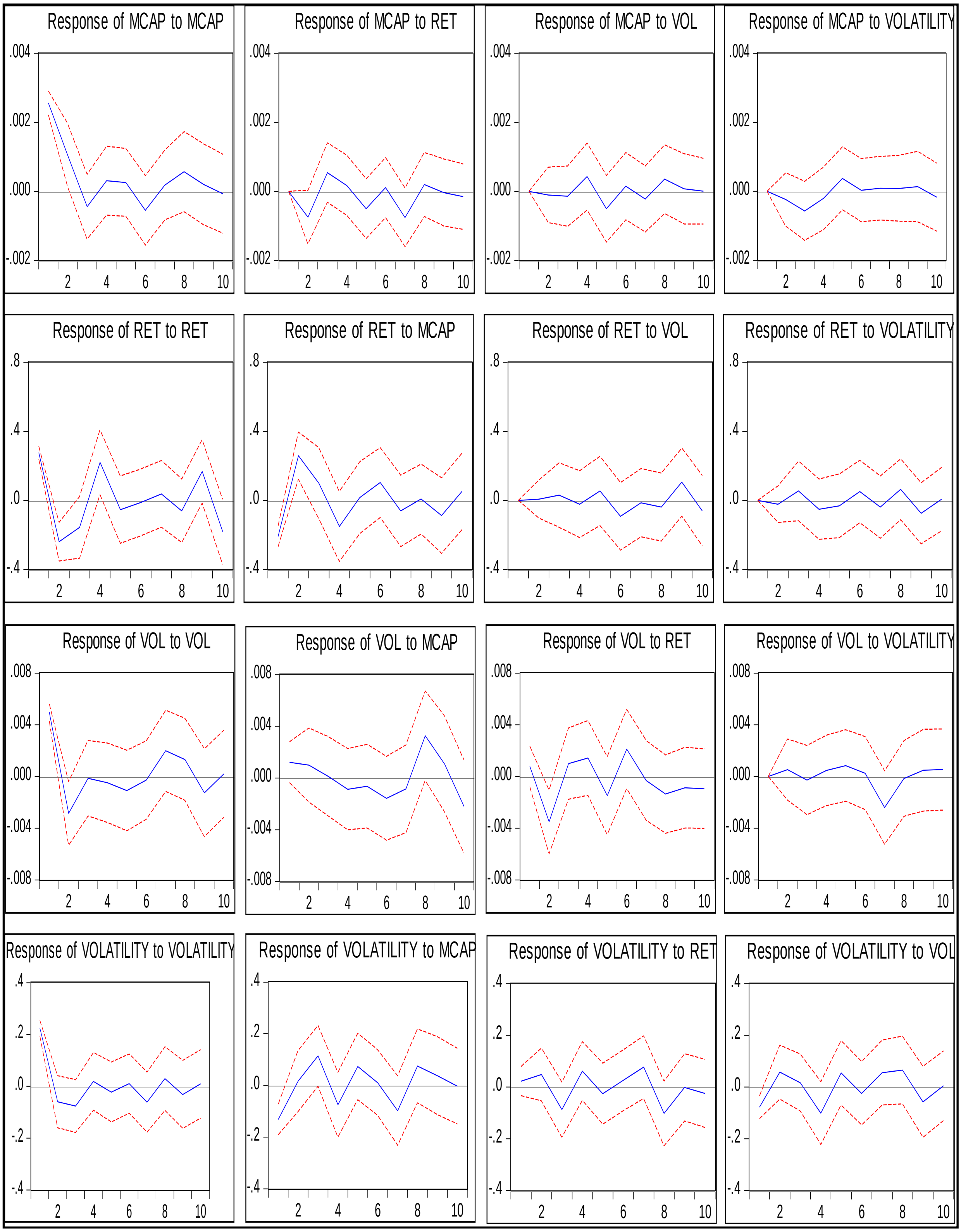
Impulse responses of control variables to a shock in the macroeconomic indicators (Monthly)



Impulse responses of market liquidity to a shock in the market liquidity (Monthly)

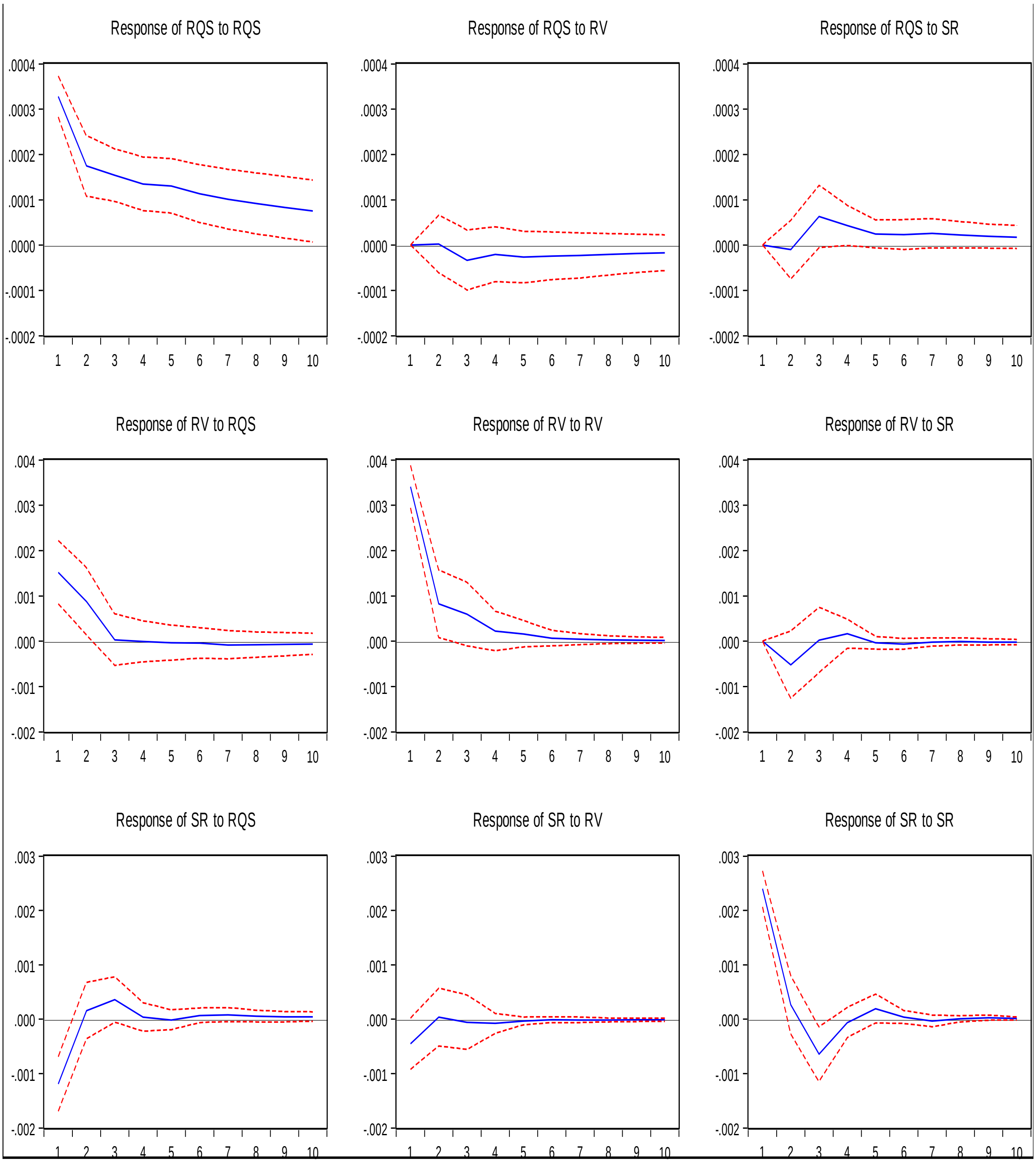


Impulse responses of macroeconomic indicators to a shock in macroeconomic indicators (Monthly)

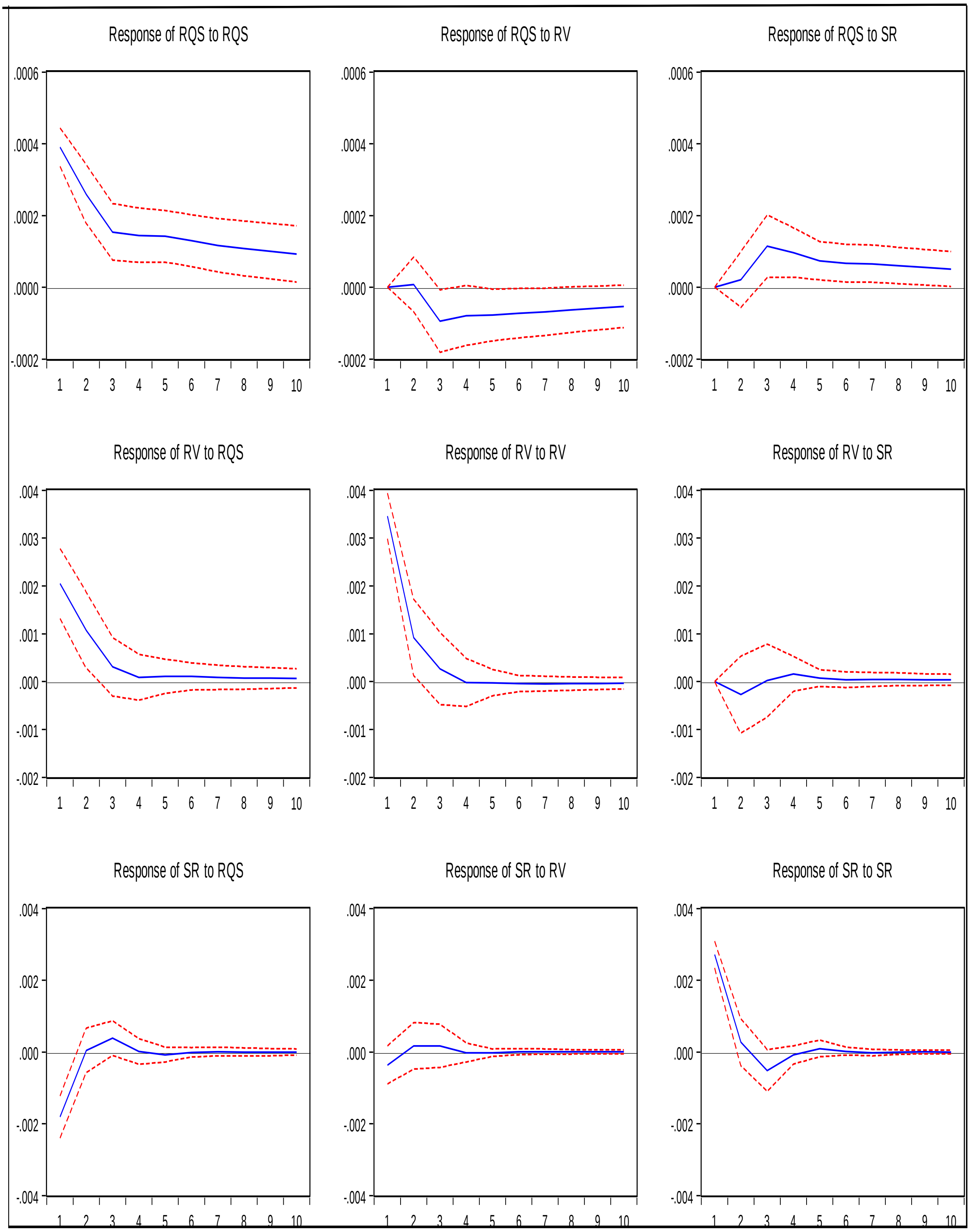


Impulse responses of control variables to a shock in control variables (Monthly)

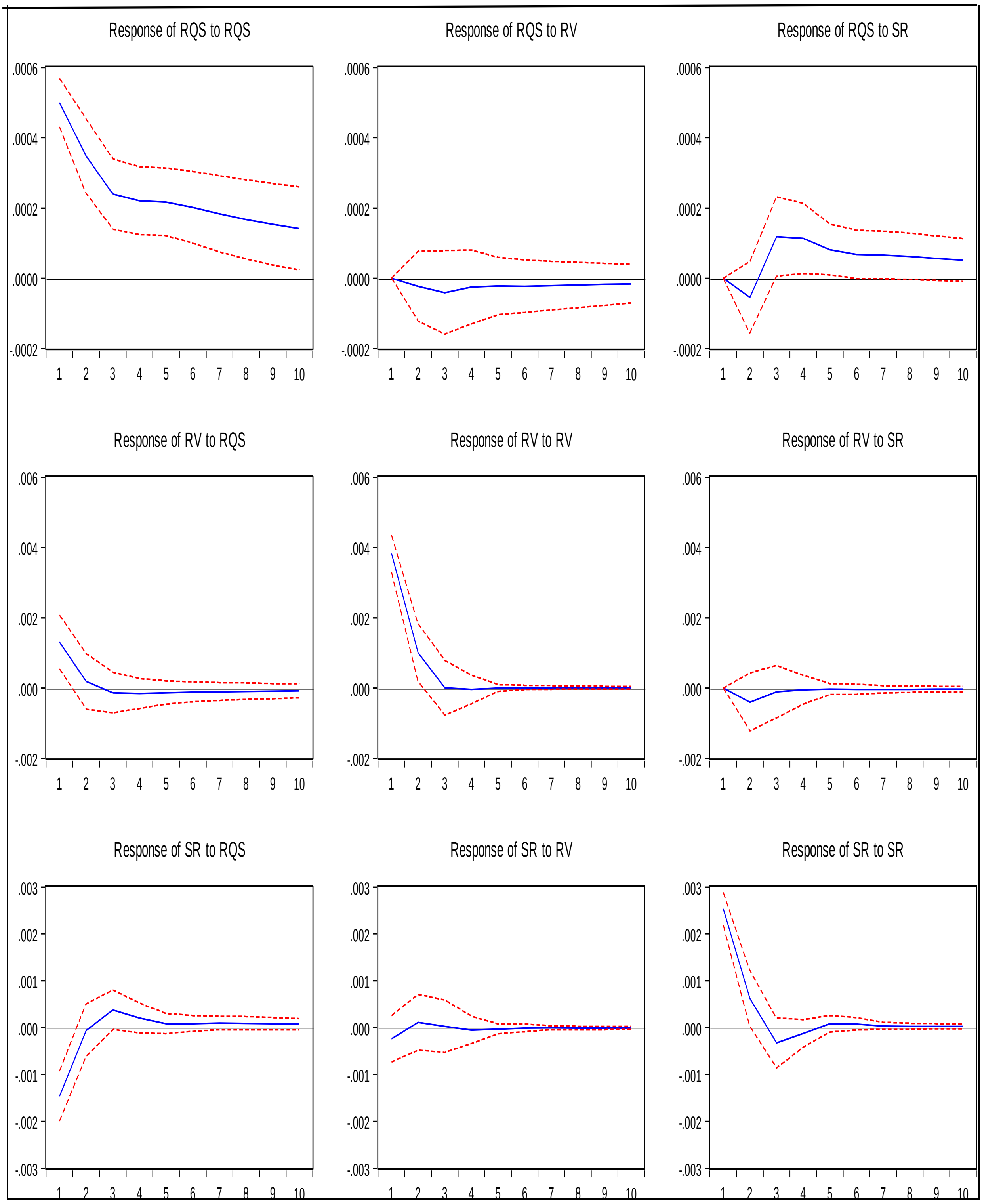
Annexure IV: Impulse Response Analysis for liquidity, volatility, and return across the quintile portfolios



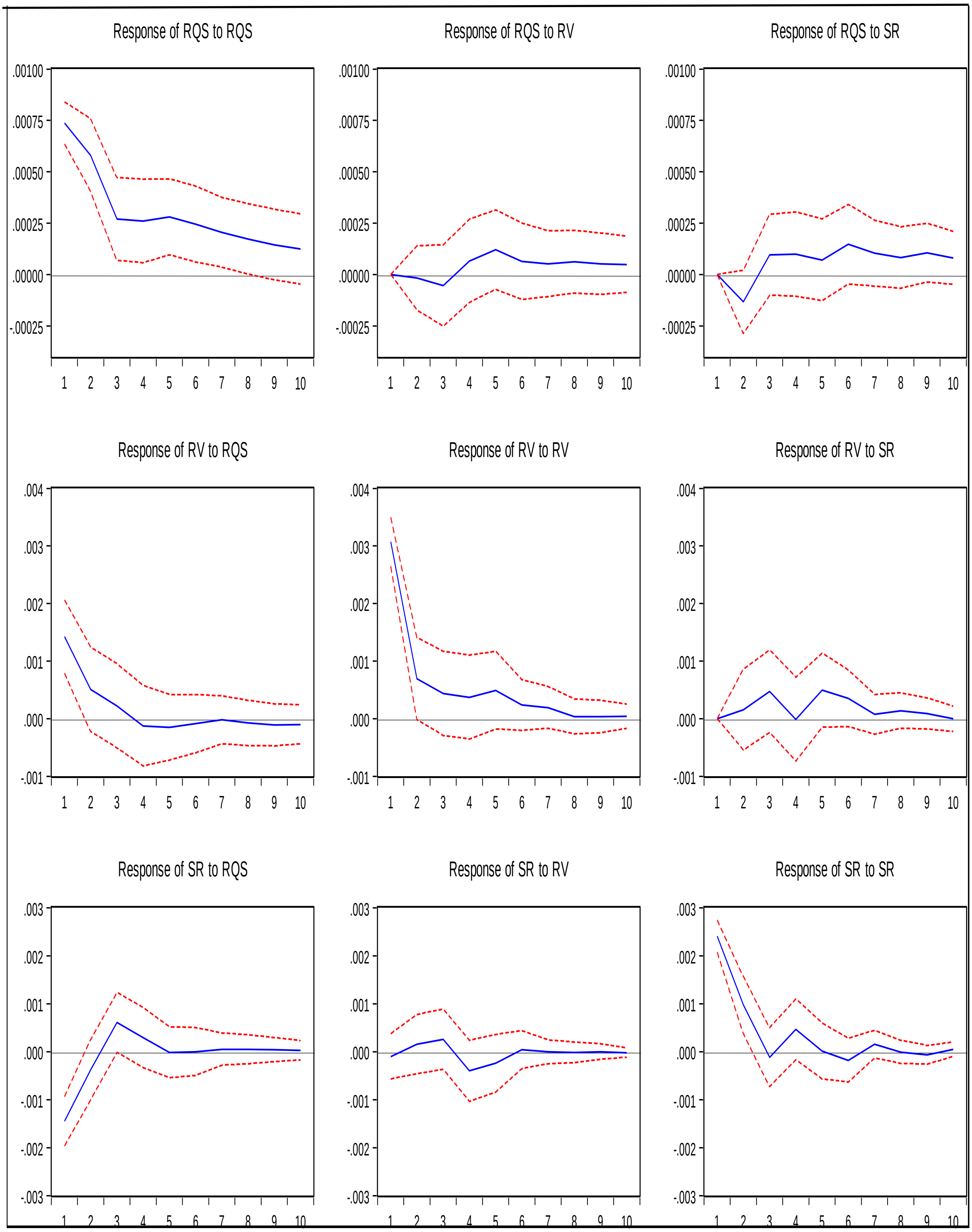
Impulse Response liquidity, volatility, and return for LiqQn1



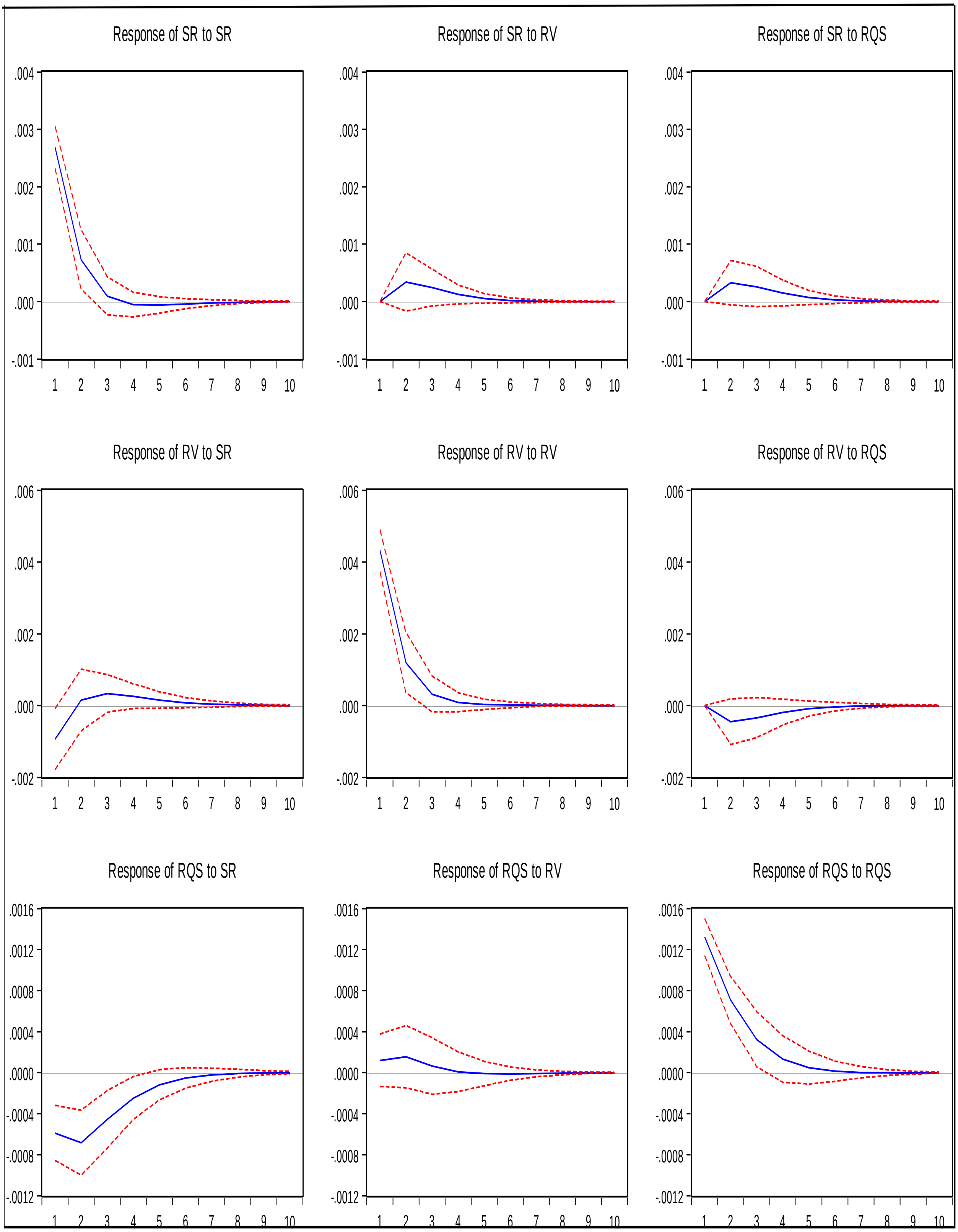
Impulse Response liquidity, volatility, and return for LiqQn2



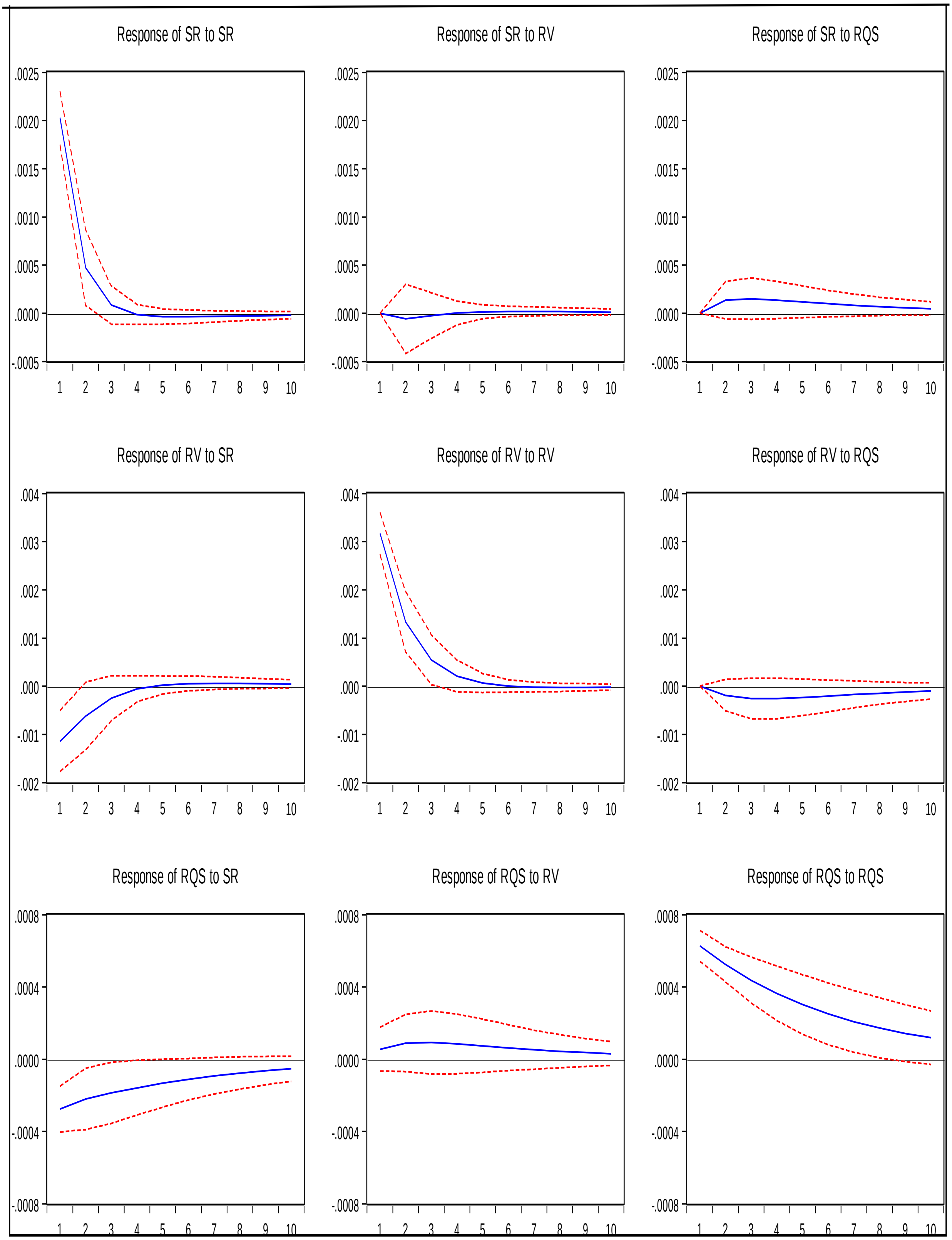
Impulse Response liquidity, volatility, and return for LiqQn3



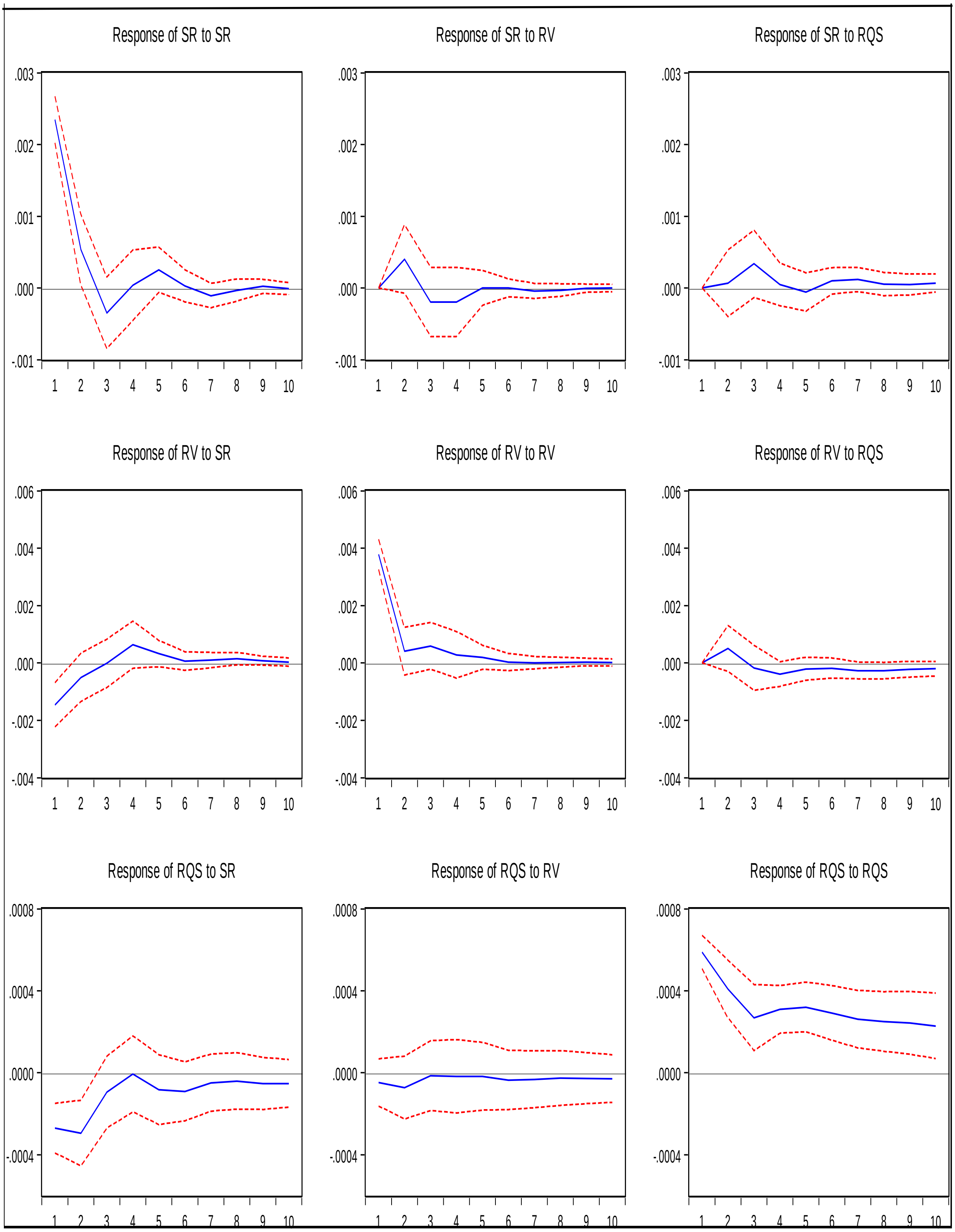
Impulse Response liquidity, volatility, and return for LiqQn4



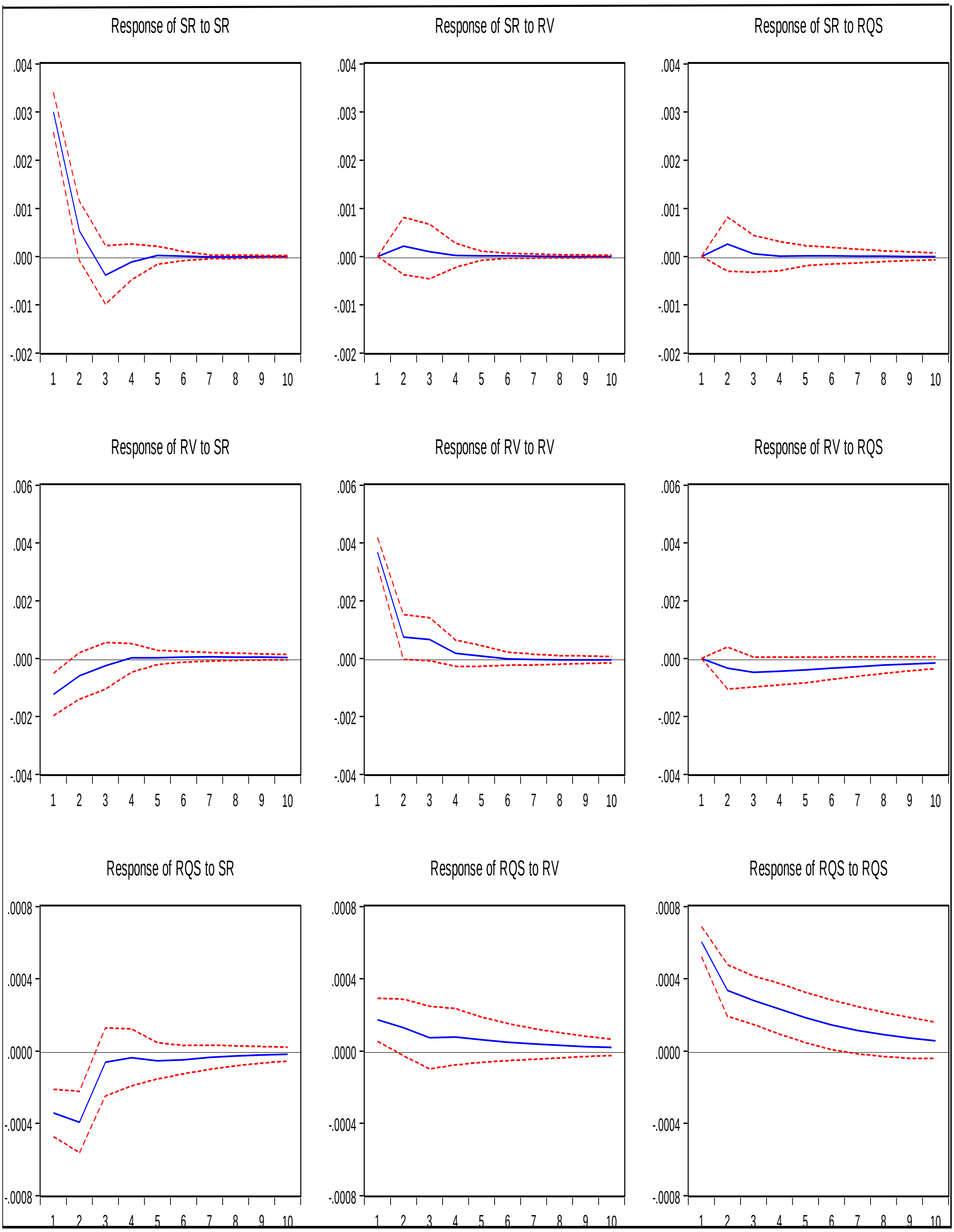
Impulse Response liquidity, volatility, and return for LiqQn5



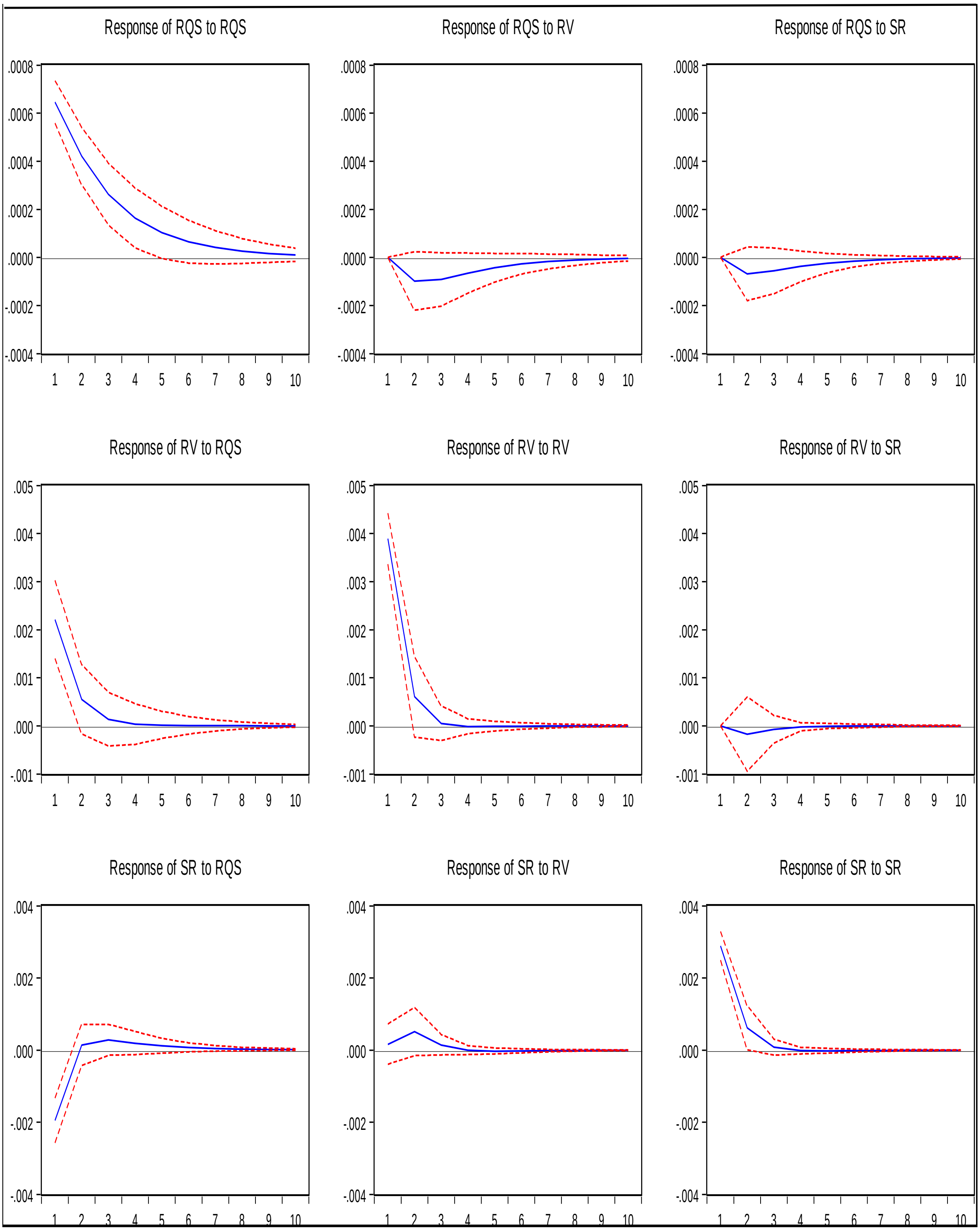
Impulse Response liquidity, volatility, and return for VolQn1



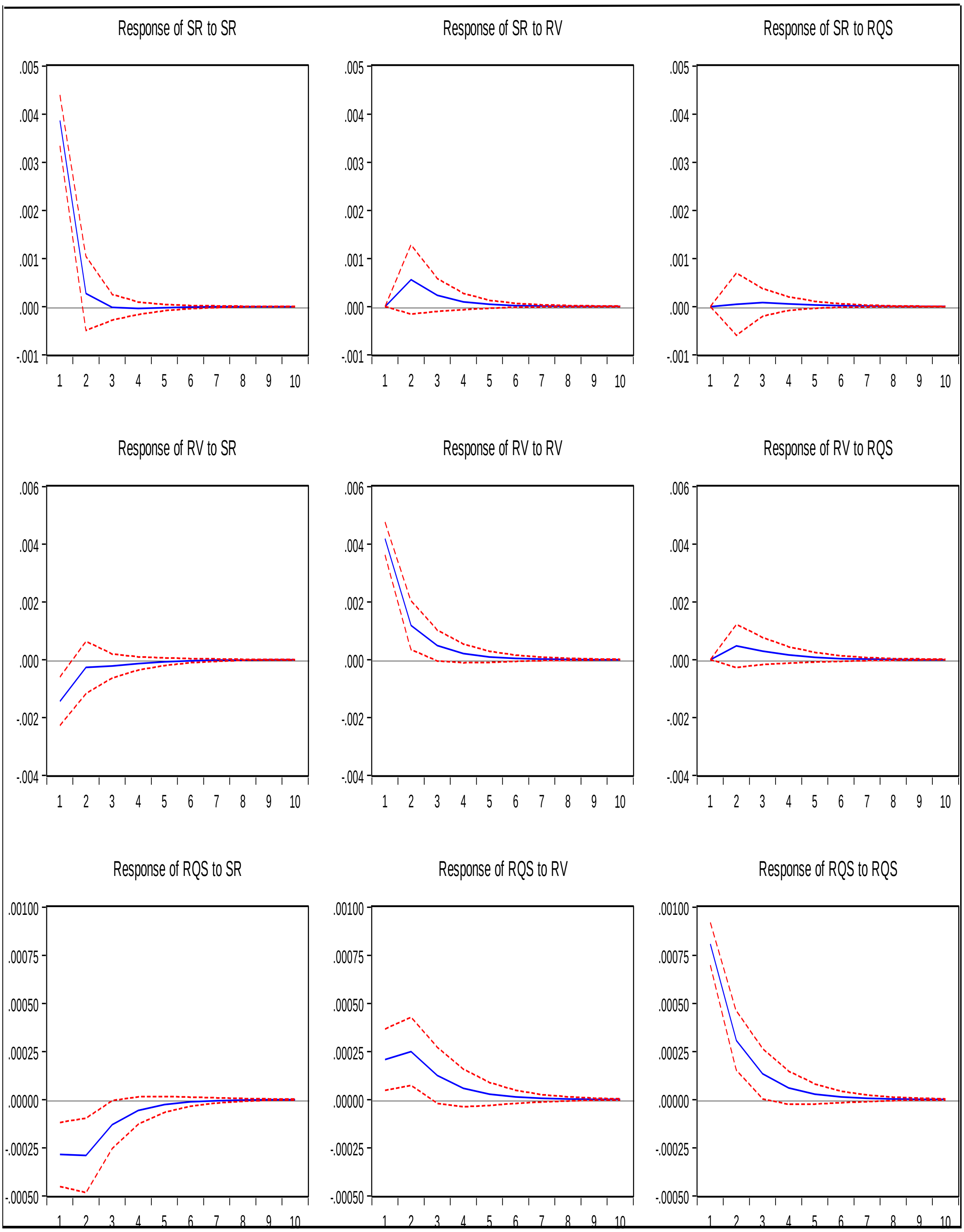
Impulse Response liquidity, volatility, and return for VolQn2



Impulse Response liquidity, volatility, and return for VolQn3



Impulse Response liquidity, volatility, and return for VolQn4



Impulse Response liquidity, volatility, and return for VolQn5

Annexure V: Description of portfolios

Portfolio	Description
S1	Big size portfolio
S2	Small size portfolio
S1V1	Big size and high value portfolio
S1V2	Big size and low value portfolio
S2V1	Small size and high value portfolio
S2V2	Small size and low value portfolio
S1V1AR1	Big size, high value and illiquid (higher Amihud illiquidity ratio) portfolio
S1V1AR2	Big size, high value and liquid (lower Amihud illiquidity ratio) portfolio
S1V2AR1	Big size, low value and illiquid (higher Amihud illiquidity ratio) portfolio
S1V2AR2	Big size, low value and liquid (lower Amihud illiquidity ratio) portfolio
S2V1AR1	Small size, high value and illiquid (higher Amihud illiquidity ratio) portfolio
S2V1AR2	Small size, high value and liquid (lower Amihud illiquidity ratio) portfolio
S2V2AR1	Small size, low value and illiquid (higher Amihud illiquidity ratio) portfolio
S2V2AR2	Small size, low value and liquid (lower Amihud illiquidity ratio) portfolio
S1V1CET1	Big size, high value and liquid (higher Coefficient of Elasticity of Trading) portfolio
S1V1CET2	Big size, high value and illiquid (lower Coefficient of Elasticity of Trading) portfolio
S1V2CET1	Big size, low value and liquid (higher Coefficient of Elasticity of Trading) portfolio
S1V2CET2	Big size, low value and illiquid (lower Coefficient of Elasticity of Trading) portfolio
S2V1CET1	Small size, high value and liquid (higher Coefficient of Elasticity of Trading) portfolio
S2V1CET2	Small size, high value and illiquid (lower Coefficient of Elasticity of Trading) portfolio
S2V2CET1	Small size, low value and liquid (higher Coefficient of Elasticity of Trading) portfolio
S2V2CET2	Small size, low value and illiquid (lower Coefficient of Elasticity of Trading) portfolio
S1V1RQS1	Big size, high value and illiquid (higher Relative Quoted Spread) portfolio
S1V1RQS2	Big size, high value and liquid (lower Relative Quoted Spread) portfolio
S1V2RQS1	Big size, low value and illiquid (higher Relative Quoted Spread) portfolio
S1V2RQS2	Big size, low value and liquid (lower Relative Quoted Spread) portfolio
S2V1RQS1	Small size, high value and illiquid (higher Relative Quoted Spread) portfolio
S2V1RQS2	Small size, high value and liquid (lower Relative Quoted Spread) portfolio
S2V2RQS1	Small size, low value and illiquid (higher Relative Quoted Spread) portfolio

S2V2RQS2	Small size, low value and liquid (lower Relative Quoted Spread) portfolio
S1V1ST1	Big size, high value and liquid (higher Share Turnover) portfolio
S1V1ST2	Big size, high value and illiquid (lower Share Turnover) portfolio
S1V2ST1	Big size, low value and liquid (higher Share Turnover) portfolio
S1V2ST2	Big size, low value and illiquid (lower Share Turnover) portfolio
S2V1ST1	Small size, high value and liquid (higher Share Turnover) portfolio
S2V1ST2	Small size, high value and illiquid (lower Share Turnover) portfolio
S2V2ST1	Small size, low value and liquid (higher Share Turnover) portfolio
S2V2ST2	Small size, low value and illiquid (lower Share Turnover) portfolio
MER_t	Excess average monthly market return
SMB_t	Small Minus Big - computed as the difference between the monthly average returns on small and big size portfolios.
HML_t	High Minus Low - computed as the difference between the monthly average returns on high and low-value portfolios.
$IML(AR)_t$	Illiquid Minus Liquid - computed as the difference between the monthly average returns on higher and lower Amihud illiquidity ratio portfolios.
$IML(CET)_t$	Illiquid Minus Liquid - computed as the difference between the monthly average returns on lower and higher Coefficient of Elasticity of Trading portfolios.
$IML(RQS)_t$	Illiquid Minus Liquid - computed as the difference between the monthly average returns on higher and lower Relative Quoted Spread portfolios.
$IML(ST)_t$	Illiquid Minus Liquid - computed as the difference between the monthly average returns on lower and higher Share Turnover portfolios.
LiqQn1	1st Quintile based on stock liquidity (RQS)
LiqQn2	2nd Quintile based on stock liquidity (RQS)
LiqQn3	3rd Quintile based on stock liquidity (RQS)
LiqQn4	4th Quintile based on stock liquidity (RQS)
LiqQn5	5th Quintile based on stock liquidity (RQS)
VolQn1	1st Quintile based on stock volatility (RV)
VolQn2	2nd Quintile based on stock volatility (RV)
VolQn3	3rd Quintile based on stock volatility (RV)
VolQn4	4th Quintile based on stock volatility (RV)
VolQn5	5th Quintile based on stock volatility (RV)