

MONETARY POLICY AND STOCK MARKET LIQUIDITY IN EMERGING MARKET ECONOMIES: A LITERATURE REVIEW

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ABSTRACT

In the era of globalization, the financial systems of all countries have faced severe challenges and their negative impacts such as overheated economy, high inflation, stock market crash, financial crisis, and other financial collapses. It has raised significant concerns influencing the effects of macroeconomic policies and responses of the financial system of each country all over the world even in normal times and turbulent times in various respects. And stock markets in emerging market economies are no exceptions. Indeed, it is proven by more and more studies that have been implemented to assess stock market liquidity in emerging market economies in different periods and the impacts of certain macroeconomic drivers on monetary policy. This study aimed to systematically review the literature on monetary policy and stock market liquidity measures and how monetary policy affects stock market liquidity. The study summarized the essential findings and approaches in the extant literature. Numerous reputable academic databases were used via a systematic methodology of literature review. Generally, this study sheds light on the crucial macroeconomic role of monetary policy as a potential determinant of stock market liquidity in different timelines. Recommendations and theoretical discussions given by researchers provide an overall review of the relationship between monetary policy and stock market liquidity in emerging market economies.

Keywords: Monetary policy, stock market liquidity, emerging market economies, impact of monetary policy on liquidity

INTRODUCTION

The lack of liquidity of markets directly impacts the whole financial system and indirectly impacts the whole economy, impeding their usual and operational way of functioning. As a “prism” to observe economic developments, the stock market is one of the most vital areas of an economy. Accordingly, stock market liquidity is of prime importance even to the economy and can be considered as an indicator of investment sentiment and a direction of money flow. Ellington (2018) stated that lower liquidity levels adversely hold economic growth back during the period of crisis. In line with a supportive view, studies of Nas *et al.* (2011) and Smimou (2014) defined stock market liquidity as a relevant parameter in forecasting the future state of the economy. Meanwhile, a country's macroeconomic environment is influenced

by its monetary policy, which impacts the financial markets (*Gust & López-Salido, 2014*). Furthermore, the severe challenges that all countries' financial systems have faced in the era of globalisation and one of the severe consequences, namely the Global Financial Crisis of 2007-2009, have indicated the outstanding importance of the liquidity of financial system in general and stock market liquidity in particular. More specifically, aligning with the growing importance of market-oriented economies and economic alliance with developed markets, enhancing stock market liquidity in emerging market economies has become more significant to attract high capital inflow from the rest of the world, provide “an efficient and viable alternative to bank financing”, and help boost and sustain growth.

As a result, it drove questions of the insight correlation between macroeconomic policies and stock market liquidity to the limelight. This is proven by more and more studies implemented to assess the stock market liquidity in emerging market economies in different periods and which macroeconomic drivers affect it. A great number of theoretical and empirical researchers have continuously addressed liquidity issues via its macroeconomic and microeconomic drivers. Thereby, the relationship between monetary policy and stock market liquidity has become one of the hot topics in financial research as many economists consider the monetary policy the most important macroeconomic policy (*Maskay, 2007*). As such, how monetary policy influences the stock market liquidity in emerging market economies has been of vital interest to policymakers, investors and scholars during normal times and even more so during times of crisis.

The primary aim of this study is to systematically disclose the distinct influences of monetary policy on stock market liquidity in emerging market economies. Based on theoretical and empirical studies, this research classifies and organises the literature and provides an important review of the relation between macroeconomic management policies (monetary policy in specific) and stock market liquidity from different perspectives.

With the above brief overview about the importance of stock market liquidity and crucial macroeconomic role of monetary policy in the field of financial research, the study has had an extensive review of the literature with the significant focus on the concept of monetary policy and liquidity measurement, transmission mechanisms of monetary policy and the stock market, factors impacting stock market liquidity and the relationship between monetary policy and stock market liquidity in emerging market economies in different timelines.

MONETARY POLICY MEASURES, AND TRANSMISSION MECHANISM OF MONETARY POLICY AND STOCK MARKET

Monetary policy measures

Conducting monetary policy (MOP) is crucial for central banks or a country's monetary authority to achieve price stability (low and stable inflation) and control economic fluctuations. MOP is defined as monetary measures conducted by the Central Bank to impact economic activities, price stability, employment and stability of the long-term interest rates (*Okpara, 2010*). There are two common types of MOP

comprising contractionary MOP (called a tight MOP) and expansionary MOP (called an easy MOP)¹. The contractionary MOP is applied when inflation is a problem, and the economy needs to slow down by curtailing money supply. In contrast, expansionary MOP is employed when the economy is in recession, and unemployment is a big problem.

MOP responses have their most direct and immediate impacts on the larger financial markets: government and corporate bond markets, mortgage markets, markets for consumer credit, foreign exchange markets, stock markets, and many others. MOP influences financial markets (stock market in particular) and economic activity differently.

Many studies have assessed the connection between financial markets (especially the stock market) and MOP under the different circumstances of domestic and international monetary policies. These have used various MOP variables as indicators of MOP's impact to estimate their correlation. More specifically, from different perspectives, different researchers have investigated the relationship between MOP and stock market liquidity (SML) in different quantity and quality of MOP measures, relating to influential features of MOP. For instance, only one MOP measure (*Chu*, 2015; *Hervany et al.*, 2017; *Marozya*, 2020); three MOP measures (*Onyele et al.*, 2020); four measures (*Octavio et al.*, 2013; *Debata & Mahakud*, 2018; *Igbinosa & Ubummwangho*, 2019); six MOP measures (*Goyenko & Ukhov*, 2009); and so forth. It is noted that it is the same quantity of MOP measures, but different quality features are considered in different studies.

Researchers have commonly employed several MOP measures as standard indicators that could capture the results of MOP's influence, such as the interest rate, monetary aggregates, exchange rate, economic growth rate, inflation rate (CPI) and the Treasury bill rate.

Transmission mechanisms of monetary policy and stock market

MOP transmission is a process in which MOP changes are expected to affect aggregate demand, output and price level in the economy (*Meltzer*, 1995), and the stock market is no exception. There are at least six main sub channels in three channels relating to MOP transmission to economic activities (especially a stock market) (*Mishkin*, 2013).

Interest rate channel: The traditional view reflects a decrease in nominal interest rate (i), a fall in real interest rate would cause a rise in investment spending (I), increasing aggregate demand and a rise in output (Y). The critical point is that a fall in the actual cost of borrowing would promote investment.

$$M \uparrow \Rightarrow i \downarrow \Rightarrow I \uparrow \Rightarrow Y \uparrow$$

Interest rates are a type of asset price and are considered the primary transmission channel in Keynesian conception.

Exchange rate channel: MOP impacts the exchange rate via interest rates. An expansionary MOP would increase the money supply, causing a reduction in interest

¹ <https://businessjargons.com/types-of-monetary-policy.html>

rates. Under conditions of perfect capital mobility and substitutability of financial assets, capital would flow out, and domestic currency would depreciate (E). Accordingly, depreciation would make the country's exports more attractive to foreigners; an increase in net exports (NX) would result in greater aggregate demand leading to a rise in output (*Mishkin*, 2006).

$$M \uparrow \Rightarrow i \downarrow \Rightarrow E \uparrow \Rightarrow NX \uparrow \Rightarrow Y \uparrow$$

Tobin's q theory channel:

Tobin index = $Q = \text{market value of the company} / \text{replacement cost}$

If $Q > 1$ and high mean that the stock's market value is higher than the replacement cost of the company's assets. If the index $Q < 1$ and low, the new investment demand will decrease. As the central bank expands its money supply M , Stock prices (P_s) tends to increase, increasing Q and demand for new investments:

$$M \uparrow \Rightarrow P_s \uparrow \Rightarrow Q \uparrow \Rightarrow I \uparrow \Rightarrow Y \uparrow$$

Bank lending channel: An increase in money supply via a rise in bank reserves would raise the banks' ability to enlarge lending. Banks would provide available loans to new borrowers dependent on bank loans. This will encourage more consumption spending in purchasing semi-durables and business investments. When investment increases, it will stimulate investment demand in the stock market.

$$M \uparrow \Rightarrow \text{Bank reserves} \uparrow \Rightarrow \text{Bank deposits} \uparrow \Rightarrow \text{Bank loans} \uparrow \Rightarrow I \uparrow \Rightarrow Y \uparrow$$

Balance sheet channel: The balance sheet channel emphasises collateral's role in decreasing moral hazards. An expansionary MOP causes rises in financial and physical asset prices, raising the market net worth of companies and the value of collateral, company cash flow and ultimately the company's creditworthiness. Moreover, an increase in asset prices raises the ratio of liquid financial assets to household debt, thus lowering the probability of financial distress and increasing consumption and housing investment (*Mishkin*, 2001).

$$M \uparrow \Rightarrow i \downarrow \Rightarrow P_s \uparrow \Rightarrow \text{Firms' net worth} \uparrow \Rightarrow \text{Adverse selection} \downarrow,$$

$$\text{Moral hazard} \downarrow \Rightarrow \text{Lending} \uparrow \Rightarrow I \uparrow \Rightarrow Y \uparrow$$

Cash flow (Money supply) channel: The money supply channel viewpoint is that an expansionary MOP increases bank reserves and releases the constraints to banks' ability to create more loans, and as a result, the short-term interest rate falls (e.g., *King*, 1986; *Ramey*, 1993; *Romer et al.*, 1990; *Thornton*, 1994).

STOCK MARKET LIQUIDITY MEASURES AND FACTORS IMPACTING STOCK MARKET LIQUIDITY

Stock market liquidity measures

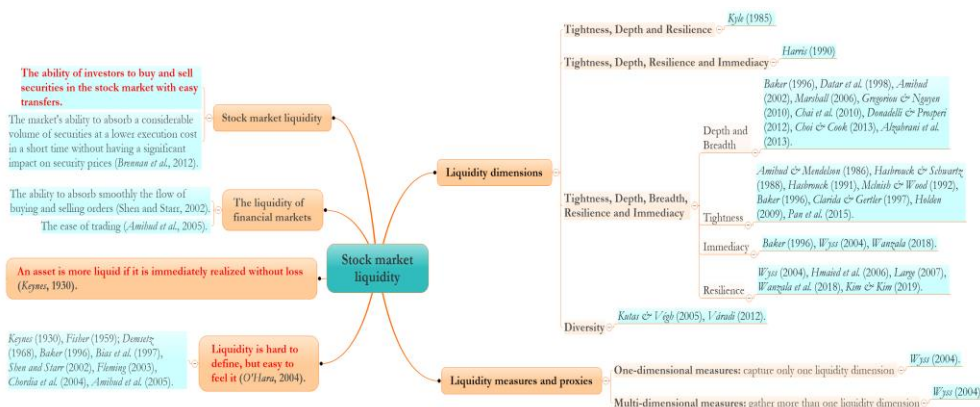
Liquidity has become a topic of many investigations in the financial literature for many years, especially SML. More importantly, SML is primarily essential to the national economy and is regarded as a relevant parameter in forecasting the future state of the economy (*Nas et al.*, 2011; *Smimou*, 2014). Nevertheless, *O'Hara* (2004)

stated that “liquidity is hard to define but easy to feel it”. An early definition of liquidity can be found in *Keynes* (1930), and it has been identified with different angles in research (e.g. *Shen & Starr*, 2002; *Amihud et al.*, 2005; *Brennan et al.*, 2012). SML is an essential market characteristic whose presence enhances the well functioning of the market and vice versa. In the stock exchanges, SML reflects the investors’ ability to buy and sell securities in the stock market with easy transfers.

Liquidity is a large concept covering multiple dimensions. In general, there are mainly four dimensions in market liquidity, including Depth, Width /or Tightness, Immediacy, and Resiliency. Market depth essentially demonstrates the level of supply and demand of the securities traded in a financial market. Market tightness is defined at a minimum conversion cost. Market immediacy indicates the speed of transactions of a given size at a given time. Market resilience is defined as the ability of the market to restore a reasonable market price during a flow of newly generated orders. However, depending on the liquidity proxies used, the relationships are not consistently correlated, suggesting that liquidity is an elusive multidimensional concept (*Stoll*, 2000; *Chai et al.*, 2010). Due to its multidimensional nature, many measures have been employed to assess overall market liquidity. First and most notably, *Kyle* (1985) refers to an asset's static dimensions (tightness and depth) and resilience. *Harris* (1990) completes the dynamic dimensions with immediacy. Following *Kyle* (1985) and *Harris* (1990), *Baker* (1996) conceded that market liquidity is a function of three characteristics of a liquid market, namely depth, breadth, and resiliency. Moreover, *Baker* (1996) concurred that immediacy reflects the processing of the order and the speed of settlement, and tightness implies low transaction costs. More specifically, the measurements of the “depth” and “breadth” dimensions have been enormously utilised compared to the other dimensions. The “tightness” dimension has been concerned with adequately assessing liquidity measurement while the “immediacy” dimension is implicit. Additionally, the “resilience” dimension has been employed by several studies. Lastly, the “diversity” dimension is disclosed by *Kutas & Végh* (2005) and *Váradi* (2012). It is not easy to measure and capture all aspects of liquidity in a single measure due to its multidimensional characteristics; hence, there are different liquidity measures. (*Wjss*, 2004). The results from multiple measures of liquidity can point to various conclusions (*Benić & Franić*, 2008).

Furthermore, liquidity measures are divided into one-dimensional and multidimensional ones (*Wjss*, 2004). These measures were evaluated based either on intraday (high-frequency) data or daily, weekly, monthly, quarterly, yearly (low-frequency) data. Although measures based on high-frequency data have mostly been employed in reality, they offer more accurate estimations of liquidity proxies. *Hasbrouck* (2009) and *Goyenko et al.* (2009) evidenced that low-frequency measures can be fairly used over high-frequency ones to measure liquidity. Some liquidity measures have been benchmarked using high frequency and order-driven developed countries' stock markets. However, low-frequency measures can be evaluated against benchmarked measures in emerging market economies (EMEs). (*Figure 1*)

Figure 1. Definitions and measures of stock market liquidity



Factors impacting stock market liquidity

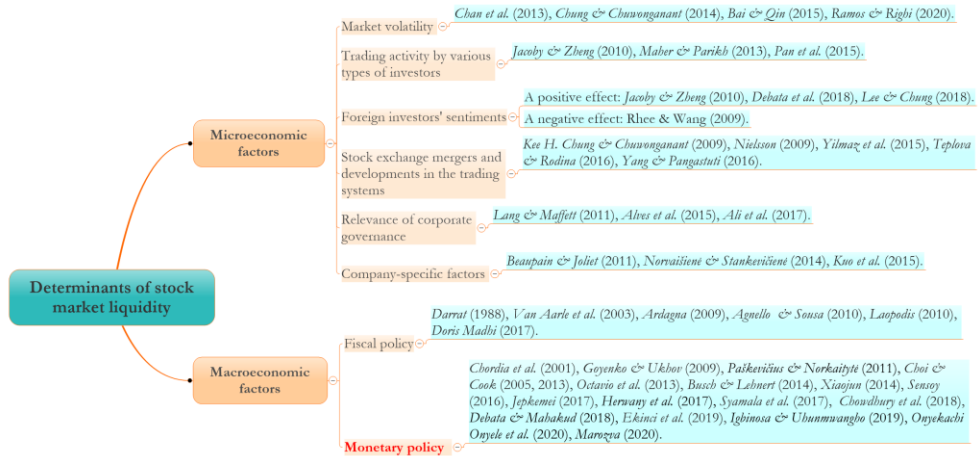
Numerous research in market liquidity provides analyses of the different factors posing a threat to market liquidity or enhancing market liquidity. In general, although liquidity and its components have crucial importance in the healthy functioning of the financial markets, its measurement remains complex and not complete. Hence, it is not surprised to assume that the microeconomic factors are not the only liquidity determinants but also macroeconomic factors (primarily MOP) that may influence the liquidity quantity and quality in the market.

For microeconomic factors, there are some common factors determining market liquidity. Market volatility has been defined as a significant determinant of stock liquidity. Besides, trading activity by various types of investors is determining factor, especially institutional investors. Moreover, foreign investors' sentiments have a positive effect on market liquidity or a negative effect on market liquidity. Additionally, the impacts of stock exchange mergers and developments in the trading systems have been considered as prominent factors of SML. Some studies have also presented evidence that the relevance of corporate governance determines SML. Furthermore, company-specific factors have been identified as a significant impact on stock liquidity. (Figure 2)

For macroeconomic factors, studies have found that macroeconomic policy announcements have significant impact on liquidity, including fiscal policy and MOP. Many economists consider MOP as the most critical macroeconomic policy (Maskey, 2007). More and more research has conceded the influential role of MOP on SML in various contexts. Octavio et al. (2013) indicated that an expansionary MOP announcement positively affects the SML of small-sized stocks. Busch & Lehnert (2014) revealed that expansionary MOP measures and imposition of short-selling bans in the stock market improve stock liquidity. Regarding the EMEs, Syamala et al. (2017) explored that the Indian SML is strongly affected by the policies regulated and announced by its government and financial institutions. By contrast, Sensoy (2016) and Ekinici et al. (2019) conceded that EME is extremely sensitive to the

macroeconomic announcements made by developed countries, particularly announcements concerning MOP. In terms of macroeconomic policies, *Chowdhury et al.* (2018) disclosed that MOP mainly determines market liquidity across different stock market sectors along with the fiscal policy. (Figure 2)

Figure 2. Factors impacting stock market liquidity



EMERGING MARKET ECONOMIES

EMEs and their alternatives such as “emerging markets or emerging economies or emerging economy countries” have become familiar concepts for businesses, policymakers and academic researchers in recent decades even though no official definition of an emerging market exists. EMEs have enormously contributed to the global economy via the critical role of being the primary driver of global growth, particularly GDP growth and consumption.

During the changing of the world economy, the term “emerging markets” is increasingly common in the news and reports. This term was coined by World Bank economist Antoine van Agtmael in 1981 when he worked for the International Finance Corporation (IFC), a division of the World Bank. Mr Agtmael spent the weekend dreaming up the term “emerging markets”, with the hope of evocation in “progress, uplift and dynamism”². It is obvious that the label has proven wildly successful. Figuratively speaking, the World Bank created “emerging markets”, dramatically influencing the global business world (*Gwynne et al.*, 2003). Emerging markets are the countries whose economies are increasing fast, and they are in a transition phase to a market economy (*Simon*, 1997).

Generally, an emerging economy can be identified by five significant characteristics. An emerging market economy has low to middle per capita income. It is a nation whose economy mimics a developed nation but does not fully meet the classified

² https://en.wikipedia.org/wiki/Emerging_market#cite_note-veconomist-9

requirements³. Besides, they have rapid growth, meaning a high economy's growth rate. From 1980 to the present, although there has been a significant fluctuation in the economic growth of the EMEs and developing economies, their real GDP growth rate is always higher than in advanced economies (*Figure 3*). Furthermore, their third characteristic is high volatility. It can be caused by three factors: natural disasters, external price shocks, and domestic policy instability. The growth of these economies requires a lot of investment capital. Nevertheless, capital markets are less mature in emerging economies than what is seen in the developed markets. It is the fourth characteristic: currency swings. They do not have a good achievement of foreign direct investment. It is usually hard to get complete information about listed companies on their stock markets. Selling debt (e.g. corporate bonds) may not be easy on the secondary market. All these components increase the risk. It also means that investors, who are willing to do ground-level research, can get a greater reward⁴. If it is successful, the rapid growth can also lead to the investors' fifth characteristic, higher-than-average return. It is because many of these countries somewhat concentrate on an export-driven strategy. The companies pursuing this strategy will profit, boosting higher stock prices for investors. A higher stock price a higher return on bonds cost more to cover the additional risk of emerging market companies⁵. This quality makes EMEs attractive to investors. Not all EMEs are set up to become breakout nations; thus, suitable investments. They must also have little debt, growing labour market, and a not corrupt government. In addition, the most powerful EMEs are like through a series of characteristics such as massive natural reserves as both volume and diversity, competitiveness is more visible in the industrial sector, and agricultural and consumer markets are robust (*Sechel & Ciobanu., 2014*).

Figure 3. Real GDP growth of emerging market and developing economies (2000, 2018 and 2021)



Source: https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOORLD

³ <https://www.investopedia.com/articles/03/073003.asp>

⁴ <http://www.nasdaq.com/article/what-is-the-difference-between-a-developed-emerging-and-frontier-market-cm140649>

⁵ <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.385.6473&rep=rep1&type=pdf>

DISCUSSIONS ON THE RELATIONSHIP OF MONETARY POLICY AND STOCK MARKET LIQUIDITY IN EMERGING MARKET ECONOMIES

Regulators and policymakers have recognized that the stock market plays an essential role in transmitting the effects of MOP on actual economic activities. Changes in MOP implementation made by a Central Bank of each country can significantly influence financial markets. If the Central Bank adopts a countercyclical MOP, it will result in a negative relation between inflation and stock returns, while if it adopts a procyclical MOP, a positive relationship will be observed (*Sellin, 2001*). The relation between the stock market and MOP has been explained through asset pricing theory. As a result, extensive literature on MOP (including mainly MOP shocks, MOP adjustments, MOP announcement, the transmission mechanism of MOP) and stock market (such as stock price, stock index, stock returns, stock market performance, stock market volatility, etc.) has been explored and conceded time by time (*Figure 4*). MOP can influence the stock market via different channels, such as the interest rate channel, the credit channel, the asset price channel, the exchange rate channel and the expectations channel (*ECB, 2010*).

Figure 4. The relationship between monetary policy and stock market



Likewise, related studies in developed and developing countries, mixed evidence of the impact of MOP on liquidity have been gathered in EMEs from the theoretical and empirical literature. More specifically, MOP variables may positively or negatively influence the SML in the short- and long run, or during crisis periods; or no relationship between these two variables exists; or a causal relationship between them exists.

Many studies of the MOP-SML nexus tend to focus on a specific single market of EMEs (like China, India) to evaluate the precise impact of MOP on SML. Besides the single market, areas (like Asian-Pacific Region, Latin American Markets, Southeast Asian stock markets, ASEAN-5 Countries) or groups of some correlated

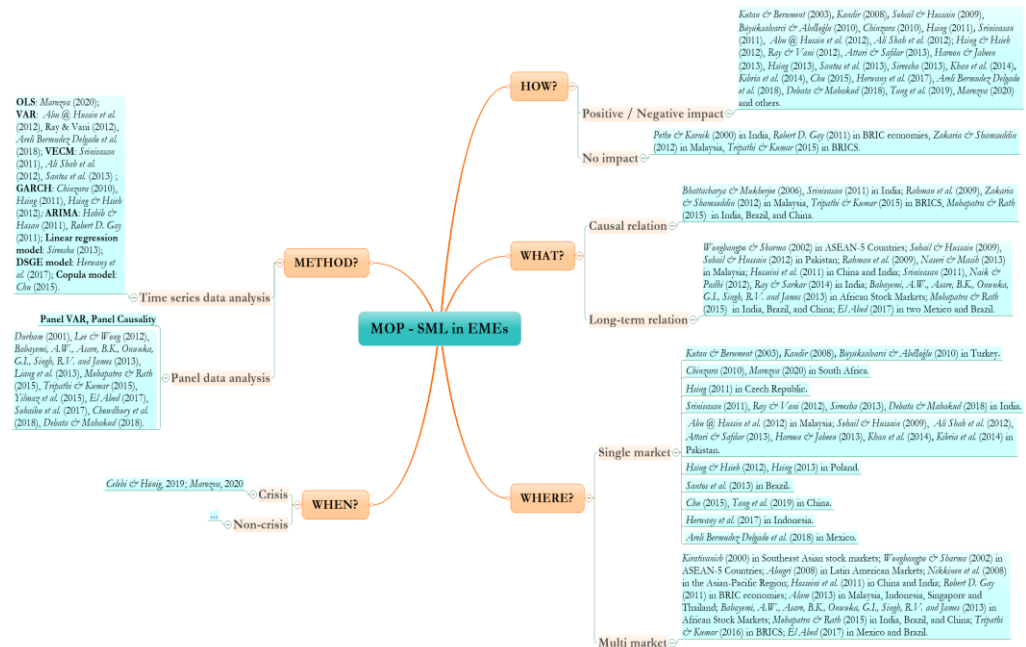
economies (like BRICS) are commonly selected to investigate the potential correlation between MOP and SML.

Moreover, a majority of studies examining the relationship between MOP and SML have been conducted with a focus on advanced economies (e.g., *Watanabe, 2004; Chordia et al., 2005; Bredin et al., 2007; Gregoriou et al., 2009; Jain et al., 2011; Ciccarelli et al., 2013; Jannsen et al., 2019*; and others).

In addition, most of the research has no significant timeline separation for crisis periods, for instance, between the Global Financial Crisis period and the Normal period (e.g., *Celebi & Hönig, 2019; Marozza, 2020*).

Numerous authors have studied the linkage between MOP and liquidity in the stock market via different econometric models. Methodologically, with the data sample selection, most existing studies have investigated the connection between MOP and SML in developed, developing and EMEs, focusing entirely on time-series analysis. Especially some typical models preferred to apply are Vector Autoregressive (VAR) or Ordinary Least Squares (OLS), or Vector Error Correction Model (VECM) (*Figure 5*).

Figure 5. The relationship between monetary policy and stock market in emerging market economies



CONCLUSION

The current study has summarized literature on liquidity in stock markets of EMEs and the macroeconomic management of MOP using a systematic literature review methodology.

Firstly, this study gave a deeper understanding of liquidity and MOP by reviewing the existing theoretical and empirical research on the topic. Many researchers have created multiplicities of proxies (measures) on SML to summarise different characteristics and dimensions of liquidity. These measures have evaluated liquidity at various levels in various markets. On MOP, many measures with different angles have been applied to give an overview of MOP's impact and the Central Bank's role.

Secondly, different MOP implementations affect the stock market in general and SML in specific. Based on applying various methods, most scholars demonstrate that the relationship between MOP and SML variables is asymmetric, and MOP can have asymmetric effects for several reasons. Besides, empirical results showed that the nature of the relationship is subject to liquidity measures used and tends to depend on the data sample of analysis.

Thirdly, in an attempt to analyze the relationship of MOP and the stock market with a lack of timeline separation between the Crisis period and Non-crisis period, although MOP effect varies among different countries, many researchers have the similar result on impact level.

From an overall perspective, the noticeable findings given by researchers provide a panorama of a relation between MOP and SML in EMEs. Thus, a systematic literature review identifies directions and broadens future research.

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