Antecedents of Liquidity Creation: Empirical Evidence from Developed, Developing and Emerging Economies

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In the name of Allah, the most merciful and beneficent

DEDICATION

Every challenging work needs self-efforts as well as guidance of those who are

very close to our heart.

My humble efforts is dedicated to my sweet and loving

Mother & Wife,

Their affection, love, encouragement and prayers of days and nights made me able

to get such success and honor,

Along with all hard working and respected

Teachers

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DECLARATION

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FORWARDING SHEET

The thesis entitled "Antecedents of Liquidity Creation: Empirical Evidence from Developed, Developing and Emerging Economies", submitted by Mr. Shoaib Ali has partial fulfillment of PhD degree in Management Sciences with specialization in Finance, has completed under my guidance and supervision. The changes advised by the external and the internal examiners have also been incorporated. I am satisfied with the quality of student's research work and allow him to submit this thesis for further process as per IIU rules & regulations.

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Abstract

The banking sector is the backbone of an economy. Banks as intermediary institutions, raise funds by offering deposits and investing them in assets by transforming the maturities of their positions on the balance sheet. Such a function enables the banks to channel available liquidity into investments whereby they contribute to economic growth. In other words, when banks use their liquid liabilities to finance illiquid assets, they consequently create liquidity and hence promote productive investments that boost the economy.

The purpose of this dissertation is to clarify the mechanism by which competition, corporate governance, capital, liquidity risk, and credit risk influence the banks' liquidity creation. This study also investigates the mediating effect of liquidity risk, credit risk between corporate governance and liquidity creation, and the meditating role of liquidity risk, credit risk, capital between competition and banks' liquidity creation. The sample of the study includes annual data of 9204 commercial banks from 76 countries (Developed, Developing and Emerging). The sample period of the study ranges from 2013 to 2019. The hypotheses were tested using Two-step system Generalized Method of Moment and fixed effects model.

The results demonstrate that competition has a positive impact on the banks' liquidity creation. The results of the study are consistent with the competition stability hypothesis. The relationship is consistent across the banks in developed, developing, and emerging economies. The study's findings highlight that corporate governance has a negative relationship with narrow measure of liquidity creation, whereas the relationship is positive for the broad and inverse measure of liquidity creation. The study also finds that the capital negatively (positively) influences the banks' ability to create liquidity-through the on-balance sheet items (measured through off-balance sheet items) in the market.

The result suggests that liquidity risk and credit risk partially mediate the relationship between competition and liquidity creation on one hand and corporate governance and liquidity creation on the other hand. Furthermore, findings also reveal that capital partially mediates the relationship between bank competition and liquidity creation, and findings are consistent across the banks operating in developed, developing, and emerging economies. The results are consistent for the different proxies of risk and liquidity creation.

It has important theoretical and practical impactions for regulators, policymakers and managers, as this research raises the importance of being more dynamic and proactive in taking into consideration such important functions in setting up the banking regulations. The regulators and policy makers may be incentivized to favour bank competition to increase the welfare of bank consumers, any result suggesting a liquidity-destroying role of bank competition would indicate the existence of a policy trade-off. The results suggest that the banks should focus on their governance mechanism as vital for survival in the market and keep in mind the role of competition and bank stability. In other words, when setting up regulations, regulators and policymakers should take account of various economic conditions, in particular the need to pay particular attention to market competition and the governance mechanism to promote liquidity creation and financial stability.

Keywords: Liquidity Creation, Competition, Corporate Governance, Liquidity Risk, Credit Risk

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LIST OF ABBREVIATIONS

LC	Liquidity Creation
CAT_FAT	Broad Measure of Liquidity Creation
CAT_NFAT	Narrow Measure of Liquidity Creation
Corp_Gov	Corporate Governance
Liq risk-IB	Liquidity Risk (Imbierowicz & Rauch, 2014)
Liq risk-FG	Liquidity Risk (Saunders & Cornett, 2004)
Credit risk	Credit Risk (Imbierowicz & Rauch, 2014)
Cre risk-LLP	Credit Risk (Klomp & Haan, 2012)
LC_INSFR	Liquidity Creation Through Inverse of Net Stable Funding Ratio
ROA	Return On Asset
T_Cost	Total cost

CHAPTER 1: INTRODUCTION

This chapter discusses the research background, statement of the problem, gap analysis, research questions, research objectives, the significance of the research, and theoretical underpinning.

Over the past few decades, the world has witnessed rapid economic growth due to the existence of a strong and well-developed financial system. The well-developed and stable financial system encompasses a potentially powerful framework for long-term financial and economic development (Hussain & Chakraborty, 2012). Theoretically, economic activities and the financial system are interdependent and influence each other's progress, stability, and growth simultaneously (Demirgüç-Kunt & Huizinga, 2000). The growth of economic activities increases the volume of financial services of financial institutions and significantly influences the progress of financial development. In addition, an increase in economic activities eventually increases the demand for funds in the financial system. Therefore, keeping in mind the significance of financial institutions to influence the economic and financial activities of the globe, the existence of banks is needed. Banks exist because they play two vital roles: they generate liquidity and transform risk. Both functions combinedly referred to as the Quantitative asset transformation (QAT) function. Banks generate liquidity in the market by financing the illiquid assets, such a commercial and agricultural long-term loans, by utilizing their liquid liabilities (Demand and time deposits). Simultaneously, this satisfies the firm's long-term and short-run financing needs and the depositors, respectively (Diamond & Dybvig, 1983; Gatev & Strahan, 2006; Gorton & Winton, 2017).

In the same way, banks generate liquidity through off-balance sheet items, including bank guarantees, commitments, and letters of credit, allowing businesses to efficiently develop and attain long-term growth and investment opportunities (Ali, Shah & Chughtai,2019; Kashyap,

Rajan & Stein, 2002). The theory proposes that through creating liquidity banks, improves asset allocation and accelerates economic activities and economic growth (Laeven, Levine, & Michalopoulos, 2015; Levine, 1991). For the economic growth and financial system's stability, bank liquidity creation remains exceptional and turns out to be a considerably more noteworthy financial crises (Laeven et al., 2015).

Secondly, banks' risk-transformation may overlap with the liquidity creation function because risk arises when banks finance their risky illiquid loans by issues riskless liquid deposits. However, risk transformation and liquidity creation do not side-by-side because the amount of liquidity generated may vary considerably at the same level of risk. Therefore, it is crucial to examine and distinguish between both the role played by banks (Bashir, Yu, Hussain, Wang, & Ali, 2017; Berger & Bouwman, 2015; Díaz & Huang, 2013). Extending this notion Bowman (2013) advocates that by creating liquidity, banks expose themselves to various kinds of risk, including liquidity risk, insolvency risk, stability, and credit risk. Banks can take more risk by maximizing their liquidity creation, increasing liquidity risk, credit risk, and insolvency risk. Numerous studies have been done on banks' risk-taking and supervision, prudential regulation, and market discipline to control risk-taking behavior (Bushman & Williams, 2012; Agoraki, Delis & Pasiouras, 2011; black & Hazelwood,2013; Angkinand &Wihlborg, 2010). Banks convert risk by issuing riskless deposits to finance risky loans (Boyd & Prescott, 1986; Ramakrishnan & Thakor, 1984). Studies expounded in past literature extensively advocate how banks transform risk and how it affects banks' performance and spur economic growth. While the development of liquidity is a valuable service offered by banks to the economy, this opens the door to various risks.

Increased globalization has boosted banking and financial services activities and sparked a debate on the potential role and impact of competition in the financial / banking sector. According to the

economic competition theory, competition increases the volatility of market profitability (Fiordelisi & Mare 2014). Two conflicting views could theoretically justify the potential effect of competition on bank liquidity creation. The first is built on the philosophy of bank stability view, while the second perspective is based on bank fragility. Bank stability theory suggests that bank competition results in favorable outcomes by making them think and innovate new financial products for the market.

In comparison, the competition fragility view predicts the negative impact of competition on the banking sector stability, as competition reduces the banks' interest rate spread and profitability. Past studies provide limited evidence about the potential relationship between competition on bank liquidity creation (Horvath, Seidler & Weill, 2016; Jiang & Levine, 2019). Furthermore, the theory of price channels and economic competition holds opposing views on competition's effect on banks' stability and growth. Therefore, the present study aims to fill this gap in the literature by studying the impact of competition on bank liquidity creation.

Competition in the banking industry exposes them to various risks (liquidity risk, credit risk, insolvency risk, interest rate risk) (Jiménez, Lopez & Saurina, 2013; Fiordelisi, Ibanez & Molyneux, 2011). Similarly, the competition is also cohesively linked with bank liquidity creation (Horvath et al., 2016). Increased market competition increases the banks' risk, which ultimately affects the banks' liquidity creation. The increased competition causes a different level of liquidity creation and poses various types of risk and reward. Therefore, it is unknown how banks react towards creating bank liquidity creation in the various spheres of competition in past studies. Therefore, one of the main concerns of this study is to determine the impact of bank competition on bank liquidity creation in the context of developed, developing, and emerging economies.

Competition in the financial market has a far-reaching effect on banks, which affects not only the banks' risk but also the capital of the bank. Anginer, Demirguc-Kunt, and Zhu (2014) argue that increased competition results in several risks that eventually necessitate an increased safety margin in the form of a higher capital ratio. At the same time, the capital ratio is the most critical determinant of banks' liquidity creation (Tran, Lin & Nguyen, 2016; Berger, Bouman & Kick, 2016; Casu, Di Pietro, & Trujillo-Ponce,2019; Horvath et al., 2016). While studying the US market, Berger and Bouwman (2009) find that higher capital increasing the large banks' liquidity creation and reduces the liquidity creation in small banks. So, it is essential to consider capital requirements while studying the impact of competition on liquidity creation.

The unparalleled losses documented by some leading financial institutions of the world have brought the issues into the spotlight concerned with regulatory oversight, corporate governance, disclosure, and risk management. Corporate governance plays a vital role in the performance, stability, and growth of any organization. This role is even more evident for the financial institutions, as corporate governance's role is much more prominent as they define the firms' mix of cash and credit lines in liquidity creation (Safiullah, Hassan, & Kabir, 2020; Diaz & Huang, 2017), ultimately affecting the banks' risk. Dealing with issues related to liquidity creation is a crucial area in the financial system. What is however, far from clear is how banks' ability to create liquidity is affected during episodes of good and weak governance. Is there any effect of internal governance on conventional banks' liquidity creation in the setting of developed and developing and emerging economies? Is there any effect of corporate governance on banks' liquidity creation in the context of developed and developing economies as they differ in different financial and economic aspects? Many researchers ascribe the emergence of the financial crisis as corporate governance failures like negligent board oversight and fragile executive compensation, which

resulted in aggressive risk-taking (Erkens et al., 2012; Kirpatrick, 2009). Answers to these questions are of extreme importance in lighting and guiding the intense discussion among practitioners and academicians in the wake of recent financial data, as inadequate and unreasonable responses to governance mechanisms can hinder the availability of liquidity to the real economy. Consequently, corporate governance issues and risk failures dominate the research studies concerning banks' performance, but studies regarding corporate governance's role in governing liquidity creation are very limited.

There is no such optimal level or standard level of bank liquidity creation (Berger & Bouman, 2015). Therefore, banks can take the excessive risk by creating more liquidity in the market. Therefore, it is worthy of investigating how a bank's liquidity creation results in various risk types and how the bank's governance manages these risks. One of the mechanisms that are considered pivotal to regulate risk in the banking sector is corporate governance. The past studies report divergent results regarding how corporate governance resolves banking issues and improves performance (Sahyouni, & Wang, 2019a; Diaz & Huang, 2015; Aebi, Sabato & Schmid, 2012; Sahyouni & Wang,2019b; Mollah & Zaman, 2015). A handful of studies concentrate on risk-taking behavior and whether the standard of corporate governance was the primary cause of the crisis of sub-prime lending crisis or bank insolvency during the crisis. The limited empirical research has explicitly linked the board of directors' independence, director compensation, and audit committee diligence at banks to their liquidity creation (Safiullah, Hassan, & Kabir, 2020; Diaz et al., 2017). However, not a single study has comprehensively examined the said relationship. The present study attempts to address this literature gap by studying corporate governance's role in determining the banks' liquidity creation. Furthermore, the present study has also examined this relationship in the context of developed, developing, and emerging economies.

The economies worldwide remain divergent to which they have state-owned, foreign-owned, and private-owned banks (Nguyen, Skully & Perera, 2012; Chandio, 2014). Past studies proclaim that banks' efficiency varies significantly with their ownership structure. Moreover, they also affect the operating model of the bank. The contextual divergence also postures a robust gap to fill by looking at how corporate governance divergence affects bank liquidity creation. Based on substantive literature and by considering the contextual divergence of governance and banking system, the proposed study layout the following rationale to study the phenomena of bank liquidity creation. The contextual setting of the study has been provided by developed, developing, and emerging economies.

1.1 Theoretical Background

This section discusses the relationship between competition, corporate governance, capital, risk and banks liquidity creation with the help of various economic and financial theories.

1.1.1 Financial Intermediation Theory

The theory of financial intermediation builds on the idea that intermediaries help mitigate information asymmetry and transaction costs. Increasing growth and demand in information technology, financial market deepening, and deregulation reduces the information asymmetry in the market, thus making the intermediation useless. Banks being a major financial intermediary, plays a vital role in financial intermediation between the borrower and the lender of the funds. If the markets are perfectly competitive, characterized by perfect information, financial intermediation is more like a veil, so its position can not be deemed meaningful. However, Moral hazard and information asymmetry issues have been recognized over time as integral parts of financial markets. This gave rise to theories that highlight the financial sector's role in augmenting

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growth through liquidity creation. Several channels can be conceived to show how the transmission may work (Theil, 2001).

Financial intermediaries create liquidity in the market and ease the process of transferring resources between agents and over time. They finance projects (supply credit) and issue securities that facilitate trade (supply money). According to Modigliani and Miller (1958), in a frictionless market, the cost of liquidity is non-existent, but in reality, they rely on intermediaries to supply money and credit. They earn a spread due to their limited balance-sheet capacity. Financial intermediaries can absorb risk on the scale demanded by the market since their scale enables a fairly diversified investment portfolio required to provide the protection required by savers. In the process of creating liquidity, banks assume certain types of risks like liquidity, stability, and credit. Credit and liquidity risk are directly connected with the liquidity creation of the banks.

Banks' ability to convert deposits into loans (financial intermediation) is a strategic decision taken at the highest level. So, a bank's ability to transform deposits into a loan is highly affected by the governance mechanism as they are responsible for all the major strategic decisions.

1.1.2 Competition Fragility Theory

According to financial fragility theory, competition has a negative effect on the stability of the banks. Their view about the relationship is that too much competition in the market reduces their market power, decline their profit level, and results in a reduced charter value, which encourages excessive risk-taking and ultimately affect banks stability negatively (Charter value hypothesis), which ultimately reduces the liquidity creation of the banks. Competition in the deposit market likely to increase the interest rate on deposits. As banks must pay a higher rate of interest to attract depositors, which reduces the bank's profitability of the banks and reduces the banks charter value.

Which increases the liquidity risk and credit risk ultimately decrease the liquidity creation by the banks.

Financial liberalization increases competition in the financial market and reduces profitability. Thus, liberalization or deregulation in financial sectors allows banks to decide asset allocation and interest rate value, resulting in excessive risk and the problem of moral hazards. Thus, banks need to hold more risk capital in case of investing in risky activities. This is called the "Risk Capital" effect. However, another view regarding the impact of capital requirement concerning banks' attempt to take risks is the so-called "future franchise value effect". Capital requirements act as a tax on the banking system. Therefore, it erodes the bank's profitability and reduces liquidity creation by the banks.

1.1.3 Competition Stability Hypothesis

The impact of banks' competition on stability has been extensively studied in the banking literature and provided two main conclusions. Most of the studies (Keeley, 1990; Suarez, 1994) support the competition-fragility view, especially claims that there is high pressure on profits under higher competition, decreasing banks' franchise value and increasing risk-taking. On the other side, studies favor the competition-stability view that the competition in the banking sector results in a stable banking sector with decreased credit risks, which is due to lower liquidity creation of banks because of lower loan interest rates (Boyd & De Nicoló, 2005), also known as 'risk-shifting' view. Rather than banks choosing the risk of their assets (as described under the 'charter value' view), borrowers select the risk of their investment undertaken with bank loans (Boyd & De Nicoló, 2005). Accordingly, a higher concentration in the loan market results in a higher borrowing cost for the customer; this high cost will make customers more likely to default on their obligations.

The moral hazard theory further reinstates this impact; when customers are confronted with higher interest costs, borrowers increase their own risk of failure. There exists a positive relationship between concentration and bank fragility (Boyd & De Nicoló, 2005). However, Martinez-Miera and Repullo (2008) show that the relationship between competition and risk is U-shaped by allowing for the correlation in loan default. Caminal and Matutes (2002) find that less competition can lead to low credit rationing, larger loans, and a higher default probability if loans are subject to multiplicative uncertainty (Beck, 2008). Due to higher competition, the total liquidity creation in the economy remains stable, but the banks' share may decreases/increases or remains constant.

Furthermore, advocates of the competition-stability hypothesis argue that concentrated banking systems generally have fewer banks and that policymakers are more concerned about bank failures when there are only a few banks. Based on these assumptions, banks in concentrated systems will tend to receive large subsidies through implicit 'too-big-to-fail' or 'to-important-to-fail' policies. These implicit policies increase risk-taking incentives and hence decrease banking system stability (e.g., Mishkin, 2001). More competition could thus resolve the 'too-big-to-fail' problem.

1.1.4 Agency Theory

Agency theory is concerned with addressing issues that might arise in agency relationships due to different goals, unaligned priorities, or different risk levels of aversion. The conflict between the shareholders and managers arises because they have different choices to make as shareholders are inclined towards the company's growth prospects, although it seems risky. At the same time, bondholders are inclined towards making a less risky choice. According to this view, the organization's governance system plays a vital role in a major strategic decision (Growth prospect, financing choices, risk level). Moreover, one of the critical and strategic decision banks has to

make is of liquidity creation. So, this theory directly relates bank governance with the liquidity creation of the banks. Although Bank liquidity creation affects the banks' profitability, it also affects the banks' risk-taking as well; therefore, corporate governance can play a vital role in determining the liquidity creation and banks' risk. While it also links risk level in between the relationship between corporate governance and liquidity creation.

Furthermore, Due to higher competition, banks may create higher liquidity to capture the market share for the sustainability of their profits may increase banks' risk. In this situation, banks may create credit at loose credit standards that may lead to higher risk and lower future profits. In banking, managers' behavior to create creditors refers to a bad management hypothesis due to the poor selection of borrowers for lending in the short-run. One could explain this situation when banks provide loans at a lower interest rate just for boosting the market share, the cost goes up due to monitoring and for the management to excessive loans. Here, banks need good governance to maintain their long term growth and sustainability.

1.1.5 Capital Buffer Theory

The concept of the capital buffer is not old in banking literature. Recently, regulators impose conditions on banks to maintain a counter cycle capital buffer. The main purpose of holding excessive capital as a buffer is to increase the loss- absorption of banks in turmoil period (Jokipii & Milne, 2008). This theory states a negative relationship between the banks' excess capital holdings and liquidity creation, which decreases the banks' risk in the short run. On the other side, holding excessive capital and lower liquidity creation is not beneficial for the economy's growth due to reduced money circulation (Guidara, Soumaré, & Tchana, 2013; Jokipii & Milne, 2011).

1.1.6 Regulatory and Moral Hazard Theory

According to the regulatory hypothesis, theory banks require to maintain a proportionate capital level against risk-weighted assets. It suggests that as banks increase liquidity creation, the risk of the bank also increases, in turn, banks require to increase their capital ratio, which may restrict banks to reduce the liquidity creation up to the optimum level (Aggarwal & Jacques, 2001; Altunbas, Carbo, Gardener, & Molyneux, 2007; Athanasoglou, Brissimis, & Delis, 2008; Berger, 1995; Francis & Osborne, 2010; Jokipii & Milne, 2011; Laeven, Ratnovski, & Tong, 2016; Shrieves & Dahl, 1992). In contrast, the moral hazard hypothesis theory motivates banks to create more liquidity at a lower bank capital level, increasing the risk level. According to moral hazard hypothesis theory, banks earn higher profits to exploit the deposit insurance schemes (Agusman, Monroe, Gasbarro, & Zumwalt, 2008; Jacques & Nigro, 1997; Jahankhani & Lynge, 1979; Lee & Hsieh, 2013; Mongid, Tahir, & Haron, 2012; Zhang, Jun, & Liu, 2008).

1.2 Gap Analysis

The literature on banks' liquidity creation is very limited, and there is a long way to go before this subject matures (Berger,2015). The literature on liquidity creation scratches the surface; evaluating how capital affects liquidity creation and assessing the effect of government policies such as monetary policy (Berger & Bouwman, 2012, 2017), bank capital (Casu et al., 2019; Gorton & Winton, 2017; Horváth et al., 2014), bank bailouts (Berger, Roman, & Sedunov, 2017) and regulatory interventions on liquidity creation regarding normal times and financial crisis, bank competition and liquidity creation (Horvath et al., 2016; Choi, 2018; Bashir et al., 2017; Fu, Lin, & Molyneux, 2016; Jiang, Levine, & Lin, 2016; Jiang, Levine, & Lin, 2019). Past studies also link liquidity creation to bank competition (Ali, Shah & Chughtai, 2019; Berger and Bouwman, 2009;

Horvath et al., 2016), bank size (Duan & Niu, 2020; Umar et al., 2017; Fungáčová & Weill, 2012), future financial crisis (Berger & Bouwman, 2012). Most of the studies have focused on banks' function as risk-transformers compared to their function as liquidity creators. Subsequently, the absence of comprehensive empirical research on the determinants of bank liquidity creation makes it hard to answer abundant research and policy interest questions. While studying a sample of Czech Republic banks, Horvath et al. (2016), stated that the impact of competition on banks' liquidity creation needs to be studied in the different contextual settings as little research is available on this topic. However, banks' competition is related to the banks' risk as investigated by Sebastian et al., (2018), and the role of risk in determining banks' liquidity creation needs to be studied (Berger, 2016). Furthermore, Banks' liquidity is affected by several factors, and bank's corporate governance is one of the crucial factors (Safiullah, Hassan, & Kabir, 2020; Diaz & Huang, 2017), which has not caught the researchers' eye in this regard and needs to be addressed (Berger,2016).

As evident from the previous studies, limited research has been carried out on liquidity creation in developed economies other than the US. Many nations, including developed and developing, have numerous topics left as a fertile ground for future research. The current study not only fills the gap in the literature by assessing the role of competition in determining the liquidity creation highlighted (Berger, 2016; Bawazir, 2018) and corporate governance (Díaz & Huang, 2017) but also follow the future research directions identified by (Horvath et al., 2016).

1.3 Rationale of the Study

The motivation of the study stems from the crucial function played by banks' liquidity creation through liquid liabilities to finance their illiquid business operations, increasing economic growth.

Due to which banks can face a liquidity risk that forces them to liquidate the productive investments earlier, it leads to an interruption in economic activities. Therefore, it can be claimed that banks' liquidity creation or transformation is a double-sword edge and a critical issue that needs careful attention and exploration. One of the key factors which can affect the bank's ability to support economic activities is competition in the market. It is typically considered the positive symbol from a regulator's point of view because competition in the market removes banks' abnormal profit and benefits the customer. However, competition in the financial sector plays a negative role because it drives out the profit and banks incentive to create liquidity in the market and directly link economic activities with the free/open or competitive economy. So, economic development/growth itself increases the market competition, which could further affect the banks' ability to create liquidity. Therefore, one of the key motivations to study this topic because competition negatively affects profitability and liquidity creation.

Moreover, the study's key motivation is to examine the role of corporate governance mechanisms in determining the banks' liquidity creation. Corporate governance is responsible for every decision, and they set the long term and short term goals of the banks. It determines the way of doing the business and approves all the future projects and decisions. So in this way, corporate governance plays a vital role in the banks' stability and growth. Along with all other decisions, corporate governance determines the amount of liquidity created by the banks in the market as it directly affects the risk. During creating liquidity in the market, banks assume some risks, which need to balance very carefully. As it is a double sword edge for the banks creating liquidity in the market increases their risk, and not creating liquidity hampers their profitability. Bank governance can play a vital role in determining the banks' risk-taking, ultimately affecting the banks' profit and liquidity creation. Apart from banks' corporate governance, the country's overall governance

system also significantly affects its liquidity creation. Because developed countries have strong macro and institutional governance mechanisms, in this way, the level of development also affects the way of doing business by banks. So, the second motivation of the study is to explore corporate governance's role in determining the liquidity creation and whether this relationship remains constant across different countries.

The study's third motivation is derived from the fact that competition directly affects the banks' liquidity creation and indirectly through risk level. According to the capital buffer theory, banks operating in the competitive environment to maintain some capital buffer to deal with unavoidable circumstances arise only due to its competitive nature. Therefore, increased competition affects the banks' capital, which further affects the banks' liquidity creation. In this way, competition can indirectly affect the banks' liquidity creation. So, does capital affect the relationship between competition and liquidity creation? The above discussion instigates the further exploration of the relationship between competition, capital, and banks' liquidity creation.

Another objective of this research is to explore whether banks act similarly in various contexts, such as developed, developing, and emerging. Given the importance of understanding the risk to the economy of liquidity creation, corporate governance, competition, capital, and liquidity, it is crucial to explore the determinants of liquidity creation.

1.4 Problem Statement

Literature highlights the lack of research regarding competition, corporate governance and their effect on banks liquidity creation in the context of developing and emerging economies. This field is in its initial stage even in developed economies, while in developing and emerging economies little work has been done. Banks liquidity creation is still a muddle idea, all the debate on their

various aspects has not yet produced objective rule or theories. The basic premise of financial intermediation is rest on the notion that banks perform two essential roles in the economy; risk transformation and liquidity creation. Banks' role as risk transformation- financing risky loans by issuing riskless deposits. Furthermore, Banks create liquidity in the market by funding their illiquid asset through their liquid liabilities, which ultimately plays a vital role in their economic growth. Hence play a major role in financial and economic stability. Liquidity creation, however, is a double-edged sword as liquidity destroying by banks hampers the economic growth by reducing credit supply to firm. Furthermore, Liquidity destroyed by banks has a variety of detrimental effects not only on the growth of the economy but also on the wealth maximization of the banks and vice versa. On the other hand excessive liquidity creation can negatively affect financial stability and economic growth by initiating or exacerbate an asset bubble, thereby raising the banking sector's vulnerability and triggering a financial crisis (V. Acharya & Naqvi, 2012). Recently, the global crisis has proven that the lack of bank liquidity was the main trigger of all the adverse events. Due to the great significance of liquidity creation for the stability of financial system and economy, its important to examine different factor that affect the banks liquidity creation.

The first and foremost factor that remains central to bank liquidity creation is bank risk-taking behaviour, which is further reinstated by bank competition. The pace of globalization has increased the integration of financial institutions and stimulate a debate about the role of competition in the banking sector. The financial fragility theory holds that increased competition level results in suboptimal economic outcomes, while the banks' stability theory posits that competition results in financial stability. Past literature remains inconsistent with revealing how bank competition is linked with bank liquidity. Additionally, there is limited evidence regarding the role of bank

governance in regulating competition and liquidity creation. The studies have confirmed the linkage between bank governance and bank risk-taking behaviour; however, there is limited evidence regarding bank governance's prudential role in controlling bank liquidity creation.

Additionally, past studies proclaim that different types of banks remain different in terms of their efficiency and operating model. The contextual divergence also postures a robust gap to fill by looking at how bank types, operating models, and governance divergence affect bank liquidity creation (Horvath et al., 2016; Diaz et al., 2017). Therefore, this study warrants the need for additional empirical evidence to examine how bank competition and governance regulate the level of bank liquidity creation by considering the intervening role of bank risk-taking. The contextual setting of the study is provided by developed, developing, and emerging economies.

1.5 Research Questions

Based on the problem statement and literature gap, the following are the research questions:

1. What is the impact of competition on banks' liquidity creation in developed, developing, and emerging countries?
2. Does risk mediate the relationship between competition and liquidity creation?
3. Does capital ratio mediate the relationship between competition and liquidity creation?
4. Does corporate governance affect the bank liquidity creation in developed, developing, and emerging countries?
5. Does risk mediate the relationship between corporate governance and liquidity creation in developed, developing, and emerging countries?

1.6 Objectives of the Study

The present study explores and examines the impact of competition, corporate governance, liquidity risk, and credit risk on the banks' liquidity creation in developed, developing and emerging countries in the world. Furthermore, the research critically investigates the potential factors like risk, corporate governance, and competition that affect liquidity creation. The present study explores the mediating role of capital while studying the impact of competition and liquidity creation. Furthermore, the study has also explored the mediating role of risk in the relationship between competition and Liquidity creation.

This research, therefore, aims to seek the following objectives:

1. To investigate the impact of competition on banks' liquidity creation in Developed, developing, and emerging economies.

2. To explore the mediating role of capital ratio in the relationship between bank competition and banks' liquidity creation.

3. To examine the mediating role of risk in the relationship between bank competition and banks' liquidity creation.

4. To analyze the link between corporate governance and liquidity creation in developed, developing, and emerging economies.

5. To explore the relationship between liquidity risk and credit risk and liquidity creation.

6. To examine the relationship between liquidity risk and credit risk and banks' liquidity creation in developed, developing, and emerging economies.

7. To investigate the mediating role of liquidity risk and credit risk in the relationship between banks' corporate governance and banks' liquidity creation.

1.7 Significance of the Study

1.7.1 Theoretical Significance

The modern financial intermediation theory stresses the importance of banks as creators of liquidity. Based on the concept of positive maturity transformation, financial intermediation theory states that banks create liquidity in the market by financing relatively illiquid assets with relatively liquid liabilities. What is however far from clear is what are the factors which affects banks' ability to create liquidity in the market. While studying the impact of competition on liquidity creation using a sample of US banks (Berger & Bouwman, 2009) find competition erodes the liquidity of the banks. Horvath et al. (2016) and Toh, Gan, and Li (2020) find a similar relationship while studying the Czech Republic and Malaysian Banks. This study theoretically contributes to the body of knowledge by settling the competition stability theory and competition fragility theory debate. This study contributes to the existing body of literature by studying a more comprehensive data set of banks and from all developed, developing, and emerging countries, which helps in generalizing the results.

The literature on corporate governance's role in determining the liquidity created by banks is scratching the surface (Berger, 2015). The only notable contribution to this field of research is made by (Diaz and Huang, 2017). While studying the US banks' sample, they found that corporate governance plays a vital role in determining banks' liquidity. Firstly, this study contributes to the existing literature by studying a significantly larger sample, which helps researchers make a generalized conclusion. This study fills the gap suggested by Berger (2015) by studying its impact in different settings (Developed, Developing, and Emerging countries). This study is significant for all managers as it helps them decide either corporate governance is directly related to the banks' liquidity creation. Lastly, this study is significant for policymakers as it helps them decide how

strong governance affects the banks' way of doing business and how it got affected by the level of development in an economy.

As suggested by the Financial Fragility theory, increased competition in the market increases the risk level of the bank; hence they create less liquidity. This study fills the gap suggested by Berger (2016) and Bawazir et al. (2018) by comprehensively studying the role of risk in the relationship between competition and liquidity creation. This study extends the body of literature by studying the mediating role of risk is the relationship between competition and liquidity creation. This study contributes contextually by studying similar relationships in different settings, i-e, developed, developing, and emerging countries. The present study helps policymakers as it suggests that competition is not directly related to liquidity creation, but it also contributes indirectly through liquidity and credit risk. So, this indirect channel must be carefully considered while making any policy.

Numerous studies have found that corporate governance is directly linked to risk (Calomiris & Carlson, 2016; Srivastav & Hagendorff, 2016) as its one of the fundamental decisions they have to make. So governance mechanism directly affects the banks' risk-taking, which ultimately affects the banks' liquidity creation. Furthermore, competition in the market also affects the banks' risk, further affecting the banks' liquidity creation. Therefore, the present study extends the body of literature by studying the mediating role of risk in the relationship between corporate governance, competition, and liquidity creation.

A handful of studies (Fungacove,2017; Fu, Lin & Molyneux, 2016) have examined the impact of competition on banks' capital. They found a significant relationship between them, and the relationship is in line with the capital buffer theory. The current study examined the relationship

between competition and banks' capital and in addition to it present study explored the mediating role of the banks' capital in the relationship between competition and banks' liquidity creation.

1.7.2 Contextual Significance

This study contributes to the existing body of literature by studying a more comprehensive data set of banks and from all developed, developing, and emerging countries, which helps in the generalization of the results. The results of studies performed in developed countries have little or no relevance with the studies conducted in developing countries like Pakistan because of the differences in societal (Halme & Laurila, 2009), culture (Hofstead, 1984), risk-taking (Charnes & Gneezy, 2012) and economic factors (Alvaro, 2008). Furthermore, this study contributes by studying the relationship in a different setting like developed, developing, and emerging economies; therefore, this study contributes contextually.

1.7.3 Practical Significance

Apart from the theoretical and contextual contribution present study also has practical significance for the policymakers, regulators, and bank managers. The present study results suggest banks create liquidity in the market through off-balance sheet items as well. The amount of liquidity created through off-balance sheet items is higher than the on-balance sheet item, ultimately increasing their risk. While regulators may be incentivized to favor bank competition to increase the welfare of bank consumers, any result suggesting a liquidity-destroying role of bank competition would indicate the existence of a policy trade-off. Thus, in this study, we seek to improve our understanding of the determinant of liquidity creation and the consequences of bank competition. Hence, this study suggests that the banks should focus on their governance mechanism as vital for survival in the market and keep in mind the role of competition and bank

stability. This study helps policymakers understand what other factors they must consider before making corporate governance and liquidity creation policy.

Furthermore, the study's findings have serious implications for the regulators and policymakers. This research raises the importance of being more dynamic and proactive in considering such important functions in setting up banking regulations. In other words, when setting up regulations, regulators and policymakers should take account of various economic conditions, in particular the need to pay particular attention to market competition and the governance mechanism to promote the role of creating liquidity and at the same time, promoting banks ' financial stability.

CHAPTER 2: LITERATURE REVIEW

This chapter demonstrates the definition and background of each of the variables used in the research model. We have also discussed the relationships explained by previous research studies for proposing the hypotheses. In the end, we have given the conceptualized research model.

Despite the fact that banks' liquidity creation function is crucial for the financial sector and economic growth, literature remains scarcely on such a dynamic topic. Diamond and Dybvig's (1983) study is considered one of the pioneering studies that elaborate on banks' role as providers of liquidity, who focused on a model equilibrium between the solvency and banks' ability to provide liquidity simultaneously. Banks create liquidity through financing assets that are illiquid (investments/loans) with liquid liabilities (deposits) (Diamond & Dybvig, 1983). Banks play a dynamic role through such a function that promotes real economic activities. However, bank run may occur due to a large extent of abrupt withdrawals. Diamond and Dybvig (1983) argue in their model that banks offer demand deposits that promote the market effectiveness by forming an environment which is risk-sharing among all the bank's customers, where new depositors are used in order to offset the withdrawal of other deposits by other customers.

However, the bank run is caused by offering demand deposits because of the depositors' panic that they have an incentive of immediate and unexpected withdrawals. Social welfare is negatively affected by banks runs dramatically due to the disruption in the economy of liquidating productive investments early or may result in diminishing the net worth of such projects. To avoid and prevent the bank runs, the authors' suggested effective government methods are deposit insurance and suspending the conversion of illiquid assets or withdrawals. Additionally, the framework of

optimal contracts with stochastic withdrawals is proposed by them which is practically a vital strategy to prevent banks runs and play a crucial intermediary role.

Furthermore, according to Bhattacharya et al. (1998) and Postlewaite and Vives (1987), the popular critique of the model suggested by Diamond and Dybvig's (1983) is lack of trigger mechanism as banks runs are assumed to be the sunspot phenomena that may occur without the other economic variables' effects. Gorton (1988) describes that "banking panics were the systematic responses by depositors during the US National Banking Era to changing perceptions of risk that were based on the new information arrival rather than random events. This indicates that banks' returns' adverse information is considered a key trigger on bank runs (Bhattacharya et al., 1998). Goston (1988), Bhattacharya et al. (1998), and Bryant (1980) argue that when there is a lower future return than the rights of their current withdrawal, bank run may be caused by fund providers if they take decision of their deposits withdrawals, this implies that asymmetric information plays a significant role in bank runs. Furthermore, panic can be caused further by an information-based run in the banking sector if the liquidity shocks were interconnected across banks (Bhattacharya et al., 1998). Additionally, regarding the proposal of suspension of deposits convertibility suggested by Diamond and Dybvig's (1983), despite to provide a shield against the panic of depositor can cause a dramatic increase in the costs of bank. Moreover, banks are protected by deposit insurance Fungáčová, Weill, and Zhou (2017), against the runs suggested by Diamond and Dybvig (1983); it may negatively affect social welfare because of the high government taxes placed on other sectors to recover the liquidity needs (Bhattacharya et al., 1998).

In this regard, the basic theory of money creation/supply is important, which argues that the supply of money is determined by the four key players: banks, central banks, borrowers, and depositors. According to this theory, banking systems create money, including the four mentioned players,

and not at a time by one single bank (Mishkin, 2001). The money creation process is affected by the key factors such as the commercial banks' decision to hold access reserves, central banks' reserves requirements, the depositors, the decision to hold their funds, and borrowers' decision to borrow money (Mishkin, 2001).

Fisher (1936) suggested to 100 percent reserve regarding the central bank's reserve requirements, initially proposed for eliminating the commercial banks' function in creating and or destroying money and leaving such as tasks for central banks (Allen,1993). The behavior regarding the money creation of commercial banks, which is the core focus of this research, the critical component of the money creation process is their decision toward holding excess reserves, as argued by (Mishkin, 2001).

Accordingly, this research's main focus is commercial banks' behavior regarding money creation, and the impact of reserve requirements set by the central bank or the borrowers' and depositors' decision impact on money creation are not examined. Furthermore, it is also worth mentioning that the operational side of money/liquidity creation is the main focus of this research as the amount of liquid liabilities is examined in it that commercial banks transfer to long-term illiquid assets at a time, rather than discussing the theoretical base of money creation as proposed by Fisher (1936). Mishkin (2001) argues the function of money multiplying of the whole banking system that includes the four key players as well discussed earlier.

Liquidity creation measured in empirical research, a pioneering role in developing measurements for liquidity creation, was taken by two key studies. Deep and Schaefer (2004) conducted the first research, and Berger and Bouwman's (2009) the second. Later, a few studies were conducted that followed Deep and Schaefer's (2004) and Berger and Bouwman's (2009) approach to examine the

banks' liquidity creation from different perspectives. In such attempts, control variables and some determinants such as capital and risk measurements were considered in the respective examined models. These studies were conducted on the economies that were developed, emerging, and transforming, which gave different results. In line with such modeling, the determinants and implications of liquidity creation were explored by a critical review of some prior research on creating real economic activities and on the countries' economic growth where they operate is elaborated in this section.

For example, liquidity transformation was measured by Deep and Schaefer (2004) based on the amount of long-term assets that have been financed by short-term liabilities, in which they were used as an indicator of the banks' contribution to economic production. Deep and Schaefer (2004) considered that liquid assets and liabilities are those that mature within one year or can be converted into cash. In their review, the 'moneyness' of assets and liabilities is liquidity implying an ability to convert them into cash and equivalents within a certain period when they are demanded. Therefore, 'nature' and 'maturity' are the factors that define the 'liquidity' of an asset or liability. Therefore, Deep and Schaefer (2004) argue that off-balance sheet items and increased provision of loan commitments cannot be interpreted as liquidity transformation due to their contingent nature. Using the liquidity transformation (creation), they suggested, the amount of net liquidity is gauged by authors that banks transform from liquid liabilities to illiquid assets. Therefore, a higher ratio represents a greater liquidity amount that banks transfer to long-term assets from short-term liabilities and, thus, liquidity is created of a higher amount.

By taking data from about 200 largest US banks over the period 1997-2001, it was concluded by Deep and Schaefer (2004) that much liquidity is not created by US banks where the average liquidity transformation of the total assets is only 20 percent, which is relatively considered as low.

To substantiate their results, they run some tests to examine the liquidity transformation determinants of banks taken in the sample by examining the relationship between deposit insurance and liquidity transformation. Empirical results of their study show that the magnitude of the impact of the deposit insurance is limited on enhancing the liquidity transformation/creation of the banks, which indicates that uninsured liabilities are not replaced by insured deposits rather than expand the loans or deposit base (Deep and Schaefer,2004). Additionally, the association between the credit risk and liquidity transformation was assessed by them, and a significant negative impact was found on liquidity transformation caused by credit risk. Furthermore, they state that there is 85 percent stronger negative impact of credit risk on liquidity transformation than the positive impact of deposit insurance on liquidity transformation. Thus, it was concluded by Deep and Schaefer (2004) that the impact of deposit insurance on liquidity transformation essentially appears on the liability side, while the effect of the credit risk on liquidity transformation appears on the asset side.

In exploring the measurement of the liquidity creation function of the US banks further, Berger and Bouwman's (2009) model is considered one of the most recognized comprehensive models. They developed four liquidity creation measures using a three-step approach, which is the core contribution of their study. In the first step, according to the time consumption, cost, and ease of the banks to meet depositors' obligations, all bank assets were classified by them as illiquid, semiliquid, or liquid. In a manner similar to this, bank equities and liabilities were classified by them as illiquid, semi-liquid, or liquid. Additionally, off-balance sheet activities are treated, but authors in the same way as on-balance sheet activities. In the second step, weights were assigned by them to the activities they classified in the first step. Liquid liabilities and illiquid assets were assigned positive weights, which are constructed through the theory of liquidity creation that

suggests that liquidity is created by banks by liquid liabilities when they finance their illiquid assets (Berger and Bouwman,2009).In the third step, all the off and on-balance sheet items were combined by them, which they classified in the first step and assigned them weights in the second in different methods for the development of liquidity creation. Accordingly, the four measures they classified were multiplied by 0, 1/2, or -1/2 each of them with classified activities as illiquid, semi-liquid, and liquid. As stated by (Berger & Bouwman, 2009), the measurement of liquidity transformation developed by Deep and Schaefer (2004) is an instinctive step forward. However, they argue that it is not considered to be an adequately comprehensive measurement.

A few key differences were highlighted by (Berger & Bouwman, 2009) between their approach and Deep and Schaefer's approach (2004). Firstly, all commercial banks were included in the model of (Berger & Bouwman, 2009) and compared for small and large banks rather than including only the largest banks. Secondly, 'cat fat' which is their preferred measure, loans was classified by category rather than maturity. Thirdly, off-balance sheet activities were included in their preferred measures. It was found by (Berger & Bouwman, 2009) that overtime, liquidity creation of US banks considerably increases as 39 percent of the industry's total assets are represented by liquidity creation in 2003.

Moreover, a positive relationship was found by hem between the market-to-book ratio and price-earnings ratio and liquidity creation. Furthermore, a positive association was indicated by their results between liquidity creation and bank capital for large banks, negative for small banks, and not significant for medium banks. Additionally, based on other measures excluding off-balance sheet items, no significant association was found between bank capital in the case of large-and-medium sized banks and liquidity creation and a significant negative association was found in case of small banks.

It is worthy of being noted that Berger and Bouwman (2009) conducted another research on the sample banks in the US market to examine the relationship between aggregate liquidity creation and monetary policy. An assessment of the amount of liquidity was attempted in this study that the US banks had created during the financial crisis in the US over 25 years. Two banking crisis were specifically focused: the credit crunch in the beginning of 1990s and the recent subprime lending crisis that began in the second half of 2007. Other three financial crisis was covered by them, which affected the financial market directly, namely: The stock market crash 1987, the Russian debt crisis plus the long term capital management meltdown in 1998, and the bursting of the dot.com bubble plus the September 11 terrorist attach (Berger & Bouwman, 2009). They measured liquidity creation based on the measurements that were developed by Berger and Bouwman (2009). Furthermore, the impact of bank capital ratio pre-crisis on each individual bank's financial performance during each financial crisis and competition was examined by Berger and Bouwman (2009). Throughout the financial crisis, the capital aptitude of risk-absorption become paramount, and the levels of risks got critically elevated were taken into consideration. A debate was raised by them that whether highly capitalized banks create more liquidity because of the low cost of capital and whether banks' financial performance is positively affected by such high liquidity creation levels.

Empirical results of Berger and Bouwman (2009) show that there is a different impact of the nature of the financial crisis (market-related crisis and bank-related crisis) on banks' behavior toward liquidity creation. They elaborate that banking sector related crisis has a positive effect on liquidity creation of the US banks. In contrast, the financial crisis that is market-related has a negative impact on the US banking sector's liquidity creation. Their results state that the financial crisis (the subprime mortgage crisis of 2007-2009) affected liquidity creation positively, which could be

because of low restrictions on lending standards that increased banks' incentives to boost their off-balance-sheet and lending activities. They state that even though the bank's ability to increase liquidity creation may be enhanced by the fragile structure of the banks' capital. They raise a critical debate of the likelihood of a reverse impact of liquidity creation in terms of high levels of liquidity creation may in return, cause financial fragility in the banking sector.

Furthermore, Berger and Bouwman (2009) research results proved that large-sized banks promote liquidity during both the banking crisis. However, during the market related to the financial crisis, this was not the case. Unlike those of large banks, less-capitalized banks promoted liquidity creation during all financial crises without any differences between the banking financial crisis and financial market-related crisis. In terms of bank capital impact on liquidity creation prior to the financial crisis, a positive association was detected by Berger and Bouwman (2009) between banks' financial performance and size before and after the financial crisis.However,in normal times, a vital role was not played by banks' capital in promoting the profitability of banks. They pointed out that large banks' financial performance during the banking financial crisis is enhanced through high levels of capital. However, small banks' capability to enhance their financial performance during the banking crisis market related financial crisis and in normal times is promoted by a high ratio of capital.

A few studies followed Deep and Schaefer (2004) and others followed Berger and Bouwman (2009) in further research conducted on liquidity creation. For example, Fungacova et al. (2010) checked the effect of introducing a deposit insurance scheme on the association between liquidity creation and bank capital. This work is considered the extension of the debate raised by Berger and Bouwman (2009) by investigating how a deposit insurance scheme influences such a relationship. As the deposit insurance scheme has been operated by Russia since 2004, they took

this as a natural experiment as a case study for their research. They attempted to find whether the deposit insurance scheme has a negative impact on the negative association between liquidity creations and bank capital or not. By determining such an argument, they expected their research could enable all the decision-makers to come up with some adequate regulations for capital requirements to promote banks' liquidity creation and enhance financial stability. In their research, unlike Berger and Bouwman (2009), Fungacova et al. (2010) attempted to explore bank ownership impact on the association between liquidity creation and bank capital. They compared three types of banks based on the ownership: foreign-owned banks, state-controlled banks, and domestic private banks. The sample of their research was taken from Russian Banks for the period before and after implementing the deposit insurance scheme from 1999 to 2007. By adopting the approach of Berger and Bouwman (2009), Fungacova et al. (2010) stated based on their empirical results that the association between the liquidity creation and bank capital of Russian banks is negative and significant statistically, as they found a limited impact of the introduction of the deposit insurance scheme on such a relationship. During the evaluation of their empirical findings, they observed slight changes by implementing a deposit insurance scheme on the relationship between liquidity creation and bank capital.

Furthermore, it was observed that fluctuation comes in relation to ownership and size, as their findings signified a negative relationship between liquidity creation and bank capital private domestic banks, small and medium banks. However, according to their results, the relationship is insignificant for large banks, state-owned banks as well as foreign banks. Fungacova et al. (2010) concluded their research by supporting the 'financial fragility/crowding-out' theory, which states that well-capitalized banks have a less fragile capital structure that leads to less incentive for liquidity creation. They further stated that despite the positive effect of capital requirements, the

implementation of high restrictions on banks' capital requirements could negatively influence the ability of banks for liquidity creation.

In respect to capital interjections and regulatory intervention, Berger et al. (2011) investigated the influence of regulatory intervention" such as restrictions of dividend payouts, lending, and dismissal of managers" (Berger et al., 2011) and capital support on the behavior of risk-taking and liquidity creation in the banking sector. To investigate such a relationship, Berger et al. (2011) regressed the variances in the risk-taking behavior of banks and liquidity creation levels on regulatory intervention capital support measured through dummy variables. Berger et al. (2009) empirically proved based on their short-run analysis that capital support and regulatory intervention economically and statistically correlated with banks' liquidity creation and risk-taking attitude significantly. However, their long-run analysis showed that banks' risk-taking and liquidity behavior were not affected by before such actions, i.e., capital support and regulatory intervention. More precisely, significant changes in risk-taking and liquidity creation are indicated by their results after capital support and regulatory intervention have taken place by banks. Despite the importance of capital support and regulatory intervention role that helps in reducing the risk-taking behavior, Berger et al. (2011) detected a negative effect of such actions on the liquidity creation aptitude of banks. In order to check whether the dataset used is robust, an instrumental variable method was used by Berger et al. (2011) to control for potential problems of endogeneity. They conclude their research study by altering the significance of such a banking-sector relationship, particularly the economic system that needs to be closely observed.

Using annual data of US commercial banks (Ana et al., 2010) find that mergers in the banking sector increase the short-term liquidity amount created by banks throughout the active period of the merger movement. The empirical results of the study conducted by Pana et al. (2010) showed

that there is a dramatic and strong positive impact of the capital structure on both sides of the balance sheet and diversification of risk in relation to bank mergers on the amount of liquidity that banks created. In the reflection of their findings, Pana et al. (2010) stated that "before the merger, small acquirers create a significantly higher level of liquidity, at a fraction of total gross assets, than their targets. The group of large acquirers created a comparable level of liquidity with those of their targets". They elaborated further that deposit insurance of a greater level of the acquiring bank before the merger enhanced banks' capacity to create higher levels of liquidity.

Regardless of the acquirer's size, a vital role was played by the volume of equity funds of the acquiring banks in boosting liquidity creation after mergers took place. However, the authors stated that because of low level of competition in the market, the decreases in the amount of liquidity creation of banks with no recent merger and acquisition may affect the short-term growth of liquidity creation of the merger participants negatively. Furthermore, they stated that because of the merger reformation procedure, liquidity creation during economic booms might deteriorate due to the difficulties in evaluating the liability, asset, equity, and off-balance-sheet items. Consequently, Pana et al. (2010) raised a need for further research in the long-term to be conducted to examine the relationship between deposit insurance and liquidity creation in relation to bank mergers.

While studying the determinants of banks' liquidity creation for saving banks of Germany (Rauch et al., 2011) used measures of liquidity creation developed by Berger and Bowman (2009). They also adopted Deep and Schaefer's (2004) approach to assess the liquidity transition gap to indicate the amount of maturity transformation they conducted to create liquidity. In order to explore the empirical analysis, a multivariate regressions analysis was conducted by them to recognize the factor determining the banks' liquidity creation. While doing so, they used various types of banks'

specific variables like performance, risk, and size. Additionally, macroeconomic variables (monetary policy) were also used to determine the possible effect of these policies on the banks' liquidity creation. From the regression analysis they conducted, a significant relationship was found by Rauch et al. (2011) between banks' liquidity creation and economic growth. However, they document an insignificant relationship between bank size and liquidity creation. Moreover, strict monitoring policies are conducted by savings banks, which enable them to anticipate any credit risk in return. Hence, such a position allows savings banks to increase their loan activities that positively and directly affect liquidity creation. However, they found an insignificant relationship between bank competition and liquidity creation.

Using Berger and Bouwman (2009) measure of liquidity creation, Horvath et al. (2012) studied the relationship between banking competition and liquidity created by them by using the Czech Republic banking industry data. They claimed based on their explorations, proving empirical evidence that banks' capital adversely affects banks' liquidity creation. Based on such findings, they suggested that banks' incentives would be hindered by well-structured-capital to create a higher amount of liquidity in the market. This evidence shows a trade-off between the banks' liquidity creation function and financial solvency. Horvath et al. (2012) and Tran (2020) also claim that small banks create less liquidity in the market because they have a tighter restriction on their capital. They further state that conducting higher levels of generating liquidity contributes to a deterioration in banks' financial solvency. Furthermore, Horvath et al. (2012) argued that banks' liquidity creation is a vital topic in banking, and special attention must be paid to it.

Horvath et al. (2016) research was based on the dataset taken from the Czech banking sector for a period of 2002 to 2010 when they evaluated the effect of bank competition on liquidity creation. The main objective of their study was to examine the effect that bank competition may have on

the liquidity creation function of Czech banks, they run econometric models for this and to test the effect of other variables as well on liquidity creation, such as non-performing loans, earning volatility, capital, credit-risk, unemployment rate, and inflation. It is noteworthy that in measuring liquidity creation, the econometric model of Horvath et al. (2016) was based on Berger and Bouwman's (2009) approach. According to the descriptive analysis they conducted on their data, a steady increase of liquidity creation was found during the period in question. Their core empirical findings showed that bank competition affected the liquidity creation of Czech banks negatively. Horvath et al. (2013) considered this due to the increase in fragility of banks capital structure, as fragility is increased by a reduction in the profitability of banks during high levels of competition. Hence, lending activities are attempted by banks to decrease on the asset side and deposits on the liabilities side. In return, it is found that such behavior directly influences banks' attitude towards the liquidity creation negatively.

In addition, they state that a reduction in the banks' market power reduces the incentive to create liquidity in the market as it directly affects their lending activities. Furthermore, Horvath et al. (2016) report that credit risk adversely affects the banks' liquidity creation. While concluding their study, they stated that one of the critical determinants of liquidity creation is bank competition, in which they considered the existence of trade-off between the negative effect of bank competition on liquidity creation and the positive effect of bank competition on customer welfare. Finally, Horvath et al. (2016) claimed that while regulating and administering bank competition policies, there is a vital need to understand the liquidity development feature.

Regarding the region of GCC, Al-Khouri (2012) took data from 43 GCC banks over the period between 1998 and 2008 to check the effect of government ownership, bank capital, and other micro-and macroeconomic variables liquidity creation by following the Deep and Schaefer (2004). Al-Khouri (2012) found a positive relationship between bank capital and liquidity creation and argued that such a positive effect is because of the risk absorption that a high level of capital may provide to the banks. Additionally, the results signified that bank profitability (ROA) and liquidity creation are positively and significantly associated with each other, suggesting a high level of expenses resulting from increased loan losses. In addition to this, Al-Koura (2012) proved a statistically significant and positive impact of bank size and lag of liquidity creation on liquidity creation. Authors attributed these findings to the economic nature of the GCC region's financial markets, which is classified as "a bank-based economy where banks control most of the financial flows and possess most of the financial assets. The capital markets, however, are still undeveloped" (Al-Khouri, 2012). Similarly, they found that liquidity creation is negatively and insignificantly affected by government ownership.

To summarize, the existing literature on liquidity creation indicates that different researchers have explored liquidity creation who mainly followed Berger and Bouwman (2009) and Deep and Schaefer (2004). "However, it can be said confidently that literature on liquidity creation is still scarce as in comparison to the significance to such a function for banks as facilitators of raising necessary funding of financial activity through channeling liquid short-term funds on the liabilities side(deposits) into long-term illiquid assets (loans/investments) that helps in transforming saving funds into productive investments". Furthermore, it is worthy to note that literature on liquidity creation in both developed and under-developing countries remain unexplored, which gives a

rationale for conducting research as presented in this study. Furthermore, supervisory standards and banking regulation is neglected by the existing literature.

2.1 Liquidity Creation and Competition

The deregulation in banking activities has attracted significant attention from regulators and researchers on the role of competition in the banking industry. Previous studies regarding bank competition focus on bank failure, financial stability, and risk-taking access to credit—however, not enough debate was available about the impact of bank competition on liquidity creation.

Theoretically, there are two opposing hypotheses regarding the relationship between bank competition on liquidity creation. The first is that intensive competition raises the bank's fragility by lowering bank profits that contribute to capital, typically serving as a 'buffer' against adverse shocks. Consequently, banks are given incentives to reduce liquidity creation by limiting both the volume of deposits accepted to reduce the threat of bank runs and the volume of loans granted. Thus, according to the mentioned "fragility channel "view, banks' competition reduces liquidity creation. Numerous studies (Berger & Bouwmen, 2009; Hovarth et al., 2016; Ali et al., 2019; Toh, Gang & Li, 2020) reinforced the fragility channel view, who argue that credit supply is reduced by increased competition, as banks are less likely to grant credit to clients that are not locked in. The idea is that banks' incentives are decreased due to low market power to establish long-term relationships with new borrowers, relationships that could create future surpluses to be shared.

The second hypothesis about bank competition's effect on liquidity creation is that increased competition directly affects banking price strategies, leading to lower loan rates and higher deposit rates. Therefore, the demand for deposits and loans rises. Several studies provide empirical support for a link between low lending rates and competition (Love & Martinez Peria, 2012; Carbo

Valverde et al., 2009). Demand for loans is stimulated by enhanced competition by alleviating financing obstacles. Empirical support was provided by Fungacova et al., 2017 and Moyo and Sibindi (2020) for this argument in their results that financing obstacles in general are increased by increased bank competition. While shown by Hainz et al. (2013) that increased competition is associated with higher collateral requirements, contrary to the view given by (Chen, Chen, Lou & Song, 2020). Thus, a positive link is suggested by the "price channel" between liquidity creation and competition. An empirically similar relationship was found by Joh and Kin 2015 while studying OECD countries".

Early work done by Berger and Bouwman (2009) asserts that increased competition in the market reduces the banks' liquidity creation. The latest study conducted by Hovarth et al. (2016) and Jiang, Levine, and lin (2019), Al-Khouri and Arouri (2019), found a similar relationship between liquidity creation and competition. The findings of both of the studies mentioned earlier confirm the banking fragility view. So, the following hypothesis is formulated based on the studies' literature and findings, as mentioned above.

H1: Bank competition has a positively influence banks' liquidity creation.

The restrictions on freedom of entity usually reduce the quantity and quality of financial services available to the economy, and thus economic growth is hindered and distorted. On the other hand, competition in banking acts a spur to the mobilization of idle financial resources and to their efficient utilization in commerce and industry (Berger & Bouwman, 2009).

The competitive conditions in the banking sectors of both developed and developing countries have been changed by the financial liberalization and restructuring efforts of the last two decades (Wang & Giouvris, 2020; Wang & Lou, 2019). Large financial institutions were motivated by the new competitive conditions in developed countries operating at relatively low margins to extend

cross-border operations into the potentially more profitable markets of developing countries. According to Kasman and Kasman (2015), the increasing level of competition was considered the key driving force behind the acceleration in the consolidation process in both groups of countries, raising concerns about increased concentration in the banking sector.

Over the period of postwar, a few businesses have grown as rapidly as banking. A higher degree of financial regulation made the banks in developed countries exhibit different behavior than operating in developing or emerging countries (Kroszner,2014). It was found by Alavro (2008) that market competitiveness is different in each category of developed, developing, and under-developing countries. Thus, each category in itself has a unique nature of competition. It was found by Boot and Marinc (2006) that before entering the market, the bank considers the competitiveness of the country. As stated by Molyneux (2014) that the on-going reform since the 2008-2010 crisis in the European banking sector leads to a more conservative and less competitive system. While the US banks that have more illiquid asset portfolios cut back on lending during crisis periods but keeping themselves competitive in the market.

It was found by Acharya and Mora (2015) that US banks have significantly reduced lending to customers during the period of crisis. However, deposits rates have been raised by banks to substitute wholesale funding constraints. While studying the Capital structure choices of firms in 10 developing countries, Booth et al. (2001) find that the determinant is the same as those of the developed countries. However, it has different impacts in different countries (Boot & Marinc, 2006).

While both theories (competition stability and competition fragility) suggest conflicting views regarding the associations between competition and bank liquidity creation, Researchers found that both hypotheses can be unified, and a synthesis offers a better explanation (Beck, De Jonghe,

& Schepens, 2013). Additionally, the evidence shows that competition stability relation is influenced by the framework in which a bank operates. These factors are the development of regulatory supervision, financial markets, and institutions. They showed that higher competition between banks, for example, in countries with higher developed financial markets, has less adverse effect than in countries with less developed financial markets. This condition helps banks operating in higher developed economies, institutions, and regulatory supervisors to gain additional competitive advantages while retaining financial stability.

Based on the above arguments, the following hypothesis is formulated.

H2: The impact of competition on banks liquidity creation varies across developed, developing, and emerging countries.

2.2 Liquidity Creation and Corporate Governance

The liquidity creation process exposes banks to various types of risks. While this is pivotal to the economy, it also increases banks' vulnerability to sustain (Berger, 2016; Diaz & Huang, 2017). Regardless of this vulnerability, banks play an important role in developing an economy by creating liquidity in the market. However, the material benefits of liquidity creation remain limited. Simultaneously, excessive bank liquidity creation results in increased banking sector vulnerability and may trigger an economic meltdown. Aggregate bank liquidity creation may directly proportional to future financial crises or at least vital to predicting such crises (Berger, 2014). Past studies posit that high aggregate bank liquidity creation leads to a price bubble that inevitably explodes and derails bank stability. Consistent with these arguments, aggregate liquidity creation above the trend increased the probability of systematic risk, causing the entire financial system to collapse. Therefore, drawing on financial intermediation theory, both risk transformation and bank

liquidity creation remain interlinked. The failure of one can trigger ripple effects, causing the breakdown of the whole financial system.

Collectively, the risk transformation function overlaps with liquidity creation (e.g., when banks issue riskless liquid deposits to fund risky illiquid loans), and both do not move in the perfect tandem. For a given amount of risk transformed, the level of liquidity created may differ significantly among banks. Though these two prolific functions do not move concurrently, but they may coincide. Thus, it is imperative to examine both functions to understand banks' role in the financial system. Therefore, it is essential to consider how liquidity creation coincides with various risk factors, such as liquidity risk, credit risk, and default risk or financial distress (Berger, 2016). Whereas scandals gave primarily rise to new developments in regulations, the global financial crisis has led to reinstate the need for sound risk management techniques within financial organizations.

Categorically, risk management contains measurement and management of specific bank risks such as liquidity risk, credit risk, and default risk. On the structural level, the various types of risk are being integrated to manage the entire risk instead of dealing with specific risks alone (Ghenimi, Chaibi, & Omri, 2017). The integrated approach to assess the risk remains missing until the recent banking literature examines the risk congruence (Ghenim et al., 2017). Moreover, banks' risk management remains speculative because they tend to be supported by the financial safety net, implicitly guaranteed through regulation. Explicitly, banks can hedge their exposure to risk from explicit state guarantees in the form of liquidity and capital support, which mitigate their financial distress. All of these safety cushions push to moral hazard incentives, causing banks to take excessive risks.

Moreover, excessive risk-taking also influences bank liquidity creation. The specific types of risk, such as liquidity risk, credit risk, and default risk, are contingent on bank liquidity creation. On a structural level, risk transformation and bank liquidity creation do not move simultaneously, but they may coincide. Consequently, risk failures and bank liquidity creation issues remain predominated and might be influential in determining the financial system's soundness. Thus, to curb and supervise such excessive risk-taking behavior of banks, prudential regulations and governance mechanisms remain essential (Aniginer et al., 2018).

Additionally, Public policymakers always remain the main proponent of strong corporate governance mechanisms applied in financial institutions. Risk management practices are regarded in sequence with a strong corporate governance mechanism. The public policymakers assert to put risk high on the agenda by establishing respective structures. There are limited shreds of evidence on corporate governance issues in the banking sector, and some of the studies focus on risk-taking and whether poor corporate governance remains the proximate cause of financial fragility. Accordingly, improved bank governance has a proven positive effect on bank performance and specific risk-taking behavior. Consequently, corporate governance issues and risk management issues remain predominant in recent bank regulation (Berger, 2016). Likewise, banks' financial intermediation role in the economy, the public, and the market have a high degree of sensitivity to any corporate governance shortcoming in banks. Therefore, corporate governance practices are of great relevance to determine how it influences the bank's risk transformation role in coinciding with bank liquidity creation.

Corporate governance remains pragmatic to control and guide management to manage the affair of the banks effectively. During the last decade, the banking system faced repeated crises in addition of major regulatory and governance changes. Consequently, these regulatory and

governance changes may also impact bank roles as risk transformer and liquidity creator. Past studies have found a relationship between bank governance and risk-taking behavior; however, evidence regarding the relationship between governance and liquidity creation remains limited. We have found only two papers in developed economies that remain devoted to analyzing the linkage between governance and bank liquidity creation. The study of Diaz & Huang (2017) links bank governance and liquidity creation in the US context. The findings of the study confirm the significant effect of internal bank governance on bank liquidity creation. Particularly, the governance dimension such as compensation structure, CEO education remain significant to influence the bank liquidity creation positively. Likewise, the study of Yeddou and Pourroy (2020), examined the relationship between bank ownership structure and banks' liquidity creation in the context of 17 western European countries. The findings posit that ownership structure as proximate the only measure of governance remains significantly influential in predicting bank liquidity creation. These studies remain relevant; however, they have only focused on the liquidity creating role of banks and overlook the vital function of risk transformation. Moreover, the study has been conducted in developed economies where banks have strong government support to create liquidity without minimum exposure to systematic risk. In contrast, developing economies have divergent macro and micro governance structure with less rigid regulations to supervise their financial system. Extending this notion, we believe that findings may vary in other contextual settings while investigating the relationship between bank governance and bank liquidity creation.

H3: Corporate Governance has a positive relationship with the Banks liquidity creation.

H4: The effect of governance on bank liquidity creation is different for banks in developed, developing, and emerging countries.

2.3 Liquidity Creation and Risk

One of the key factors that banks operate is that they generate liquidity and assume various risks (Diamond, 1984; Andreou, Philip & Robejsek, 2016). A similar argument is provided by Diamond and Rajan (2001) about banks' liquidity and risk-taking. In the current decade, Berger and Bouwman (2009) provide evidence supporting the relationship between liquidity creation and bank risk-taking. Diamond and Dybvig (1983) opine that banks generate liability through on the balance sheet items, such as extending loans to individuals and businesses with deposits. The study concludes that banks use deposits to create liquidity, the debate in line with (Berger & Bouwman, 2009).

Banks additionally create liquidity through the off-balance sheet items as well, for example, by expanding backup letters of credit and advance duties to their clients (Kashyap et al., 2002; Thakor,2005; Berger and Bouwman, 2009; Roberts, Sarkar, & Shachar, 2019). Then again, regulatory bodies' capital requirements decrease betting incentives by putting bank equity at risk; however, they may likewise support hazard taking by diminishing the current estimation of future income (Besanko & Kanatas, 1996; Hellmann, Murdock & Stiglitz, 2001; Zheng & Cronje, 2019). Capital prerequisites above a specific level may likewise be expensive in that they lessen deposit-taking (Gorton & Winton, 1995), decrease liquidity creation (Diamond & Rajan, 2001), and may even increment fundamental risk (Acharya, 2003).

The literature on Banking provides two distinct views regarding the linkages between bank competition and stability (risk-taking conduct). As suggested by the competition fragility hypothesis, higher competition in the banking industry causes financial organizations to lose their market power, prompting an abatement in income. Financial institutions are more likely to invest in riskier portfolios to recover from financial losses. Thus, this excessive risk-taking by financial

institutions lower their stability (Keeley, 1990). The argument is consonance with the findings of (Allen & Gale, 2000; Hellmann et al., 2000).

On the other hand, the Competition-stability hypothesis proposes that competition has a positive impact on financial institutions' stability. Boyd and De Nicolo (2005) document that banks with a significant share in the loan market dominate the other counterparts and charge higher interest rates while extending the customer's loans. Which may increase the risk taking behavior of the borrowing firms. Extending his arguments, Boyd and De Nicolo (2005) state that this excessive risk taking by the firms ultimately transfer to the banks, which will ultimately increase the loan's riskiness.

While developing a theory on banks' liquidity creation, Calomiris et al. (2015) conclude that banks must be regulated on the assets side rather than of the capital. According to them, holding a higher amount of liquid assets helps them in facing various risks, including liquidity and credit risk, and better monitor and manage risk. Nevertheless, the connection between liquidity and credit risks influences the stability of lending institutions.

Existing investigations have considered the role of diverse ownership behavior on bank hazard-taking and conclude that banks within sight of institutional ownership tend to cater higher risk-taking (Beltratti & Stulz, 2012). In a similar context, Erkens, Hung, and Matos, (2012) argue that the block holders' behavior is aggressive to take risks and argument is aligned with (Laeven and Levine, 2009; Hoskisson, Chirico, Zyung, & Gambeta, 2017; Helling, Maury, & Liljeblom, 2020). Gropp and Kohler (2010) and Ma and Ren (2020), conclude that banks with institutional ownership take a higher risk. The behavior of higher risk-taking due to institutional ownership tends to create higher liquidity that subsequently increases the liquidity and credit risk of lending institutions.

Recently, Acharya and Mora (2015) build an econometric model in banking and conclude that banks' role remains significant to create liquidity during the financial crisis. The study proves that in last 2008-financial crisis, failed banks remain unable to cope with their liquidity shortage in crisis. The study reports that banks remain unable to boost up deposits in the last financial crisis at higher returns.

The outcomes explore that liquidity and credit risk both remain significant in the last 2008-financial crisis in a roundabout way. Ghenimi et al., (2017) argue that in liquidity shortage and credit default create problems for bank failure in the last financial crisis.

Hypothesis 5: Liquidity risk has a negative relationship with the bank's liquidity creation.

Hypothesis 6: Credit risk has a negative relationship with the bank's liquidity creation.

As per the economic rationale, liquidity risk and credit risk are interrelated. At present, most of the banking model, Diamond and Dybvig (1983) argue that financial institutions and intermediation are at similar pages in lending and borrowing. In line with the argument of Diamond and Dybvig (1983) the study of Bryant (1980) concludes that banks' liability structure is linked with deposit withdrawals and defaults of borrowers. The study point-out in most of the time banks create credit by using deposits of customers that influence the structure of liability and assets side of the balance sheet. Holmstrom and Tirole (1998) point out that banks have two options to create credit in the economy. One is from the balance sheet but and other is from off-balance sheet activities. When banks use off-balance activities, then they use the opening of a credit lines, providing guarantees and commitments. The creation of liquidity either from on-balance sheet or the off-balance sheet, is affected by the risk of the lending bank. The study of Kashyap et al., (2002) support the argument of Holmstrom and Tirole, (1998) that liquidity creation increases the

risk of lending firms. Recently, Godlewski and Weill (2011) conduct a study and conclude that due to lower information asymmetries theory, banks' risk remains uncertain because the banks representative remains restricted to get information about the borrowers.

Recently, many studies have investigated the interaction relationship between different proxies of liquidity risk and credit risk in banking (Acharya & Mora, 2015; Acharya & Viswanathan, 2011). The following scholars also investigate the relationship between credit risk and liquidity among others (Acharya, Shin, & Yorulmazer, 2010; Cai & Thakor, 2008; Goldstein & Pauzner, 2005; Gorton & Metrick, 2011). The empirical findings of Asongu et al. (2016) provide evidence about the risk-taking for developing economies firms and conclude that due to poor information asymmetry, the risk of developing economies firms is higher than in developed nations. The study provides different results by using various simulations to explore the connection between risk and excessive lending in developing states.

The empirical findings of Beck et al. (2004) document that liberalization in financial activities discover no effect on the correlation between bank addictions and funding restrictions, while higher financial, organizational financing requirements, and bank concentration creates financing difficulties. Besides, Love and Peria (2015) probe the impact of competition on bank lending. The study concludes competition decreases the access to lend. The advancement in financial instruments decreases the adverse impact of low competition among banks and promotes liquidity creation. In addition, Fungáˇcová et al., (2017) also favors the development of financial instruments to mitigate the unfavorable impact of low competition to create credit. Medura and zarruk (1995) confirm that role of lending interest rate risk is significant to impact the liquidity creation of developing countries. The study also confirms that the findings are heterogeneous for the US and other nations for liquidity creations. However, the findings of Asongu et al. (2016)

confirm that the behavior of developing nations to take risks is higher than in developed economies. The study confirms that deviation in risk-taking is lower in developing economies than in developed states.

Hypothesis 7: Liquidity risk has a significantly different relationship with the bank's liquidity creation in developed, developing, and emerging countries.

Hypothesis 8: Credit risk has a significantly different relationship with the bank's liquidity creation in developed, developing, and emerging countries.

2.4 Liquidity Creation, Risk, and Competition

The relationship between competition and risk-taking in banking is not straightforward. The competition can increase the risk-taking on one side and decrease the risk-taking on the other end. In banking, two hypotheses are well studied to explore the connection between risk-taking and bank competition. First, hypothesis is "fragility hypothesis" and second is "stability hypothesis". The one side of literature confirms that competition increases the risk of lending firms (Maji & Hazarika, 2018; Jiang, Levine, & Lin, 2017). In short, it suggested that excessive competition to collect deposit on higher rate and decrease the lending rates increases the cost of banks subsequently the character value of banks decreases (Keeley, 1990). In earlier similar hypotheses was tested by Matutes and Vives (1996). The findings suggest that higher competition motivate owner to take higher risk that eventually move on the investor of the economy and government (Hellmann, et al., 2000). In this context and Boyd and Prescott (1986) and Moudud-Ul-Huq (2020), suggest that big banks performance better in higher competition environment and consequently contributes significant role in the stability of financial system. In line with the above mentioned

studies, Williamson (1986) and Allen (1990) corroborate that during higher competition banks require to focus on business sector for lending instead of other loaning.

In particular context, fragility competition theory supports the view of Keeley (1990) that indicate higher competition increases the risk-taking of commercial banks. The fragility competition assumption indicates that in case of perfect market the banks are not in a position to earn higher profits. In addition, in such conditions the investors remain fully informed and take vise decisions. In contrast, when banks have higher market share and positive character value the managers remain easy to protect the wealth of shareholders.

In earlier studies, Keeley (1990) develops a model that supports the hypothesis of franchise value. Later, Allen and Gale (2004) apply a similar model with little modification and conclude that financial crises normally influenced the poorly managed financial system. The basic ideology for this point of view is that unneeded higher competition in the economy decreases the franchise value of financial origination. Matutes and Vives (2000) explore that higher market power decreases banks' credit risk, particularly in an imperfect market. In the similar line, Hellmann et al. (2000) conclude that competition is a significant factor in influencing firms' risk-taking. Kasman (2015), Maji and Hazarika (2018) and Jiang, Levine, and Lin (2017) support the arguments of the above-mentioned studies.

Surprisingly, the literature also confirms that higher competition is favorable for banks and financial system stability. In this regard, Boyd and De Nicolo (2005) develop a model known as stability hypothesis. According to Boyd and De Nicolo (2005) competition and financial stability are positively related. They argue that lower competition increases the funding costs of lending due to the probability of borrower's risk is increases. Consequently, banks decrease their lending in turn the non-performing loans decreases and the stability of banks increases.

Martinez-Miera and Repullo (2010) conduct a study to explore the impact of competition in the banking sector. The empirical findings provide proof that there is an inverse relationship between risk-taking and higher competition. In addition, they argue that higher competition decreases the default rate of borrowers. They also conclude higher competition decreases the credit risk and decreases loan losses. The study document a non-linear relationship between risk-taking and competition in banking. In their opinion, the probability of credit risk decreases in start of the competition and increases later. The above-mentioned argument is supported by the findings of (Maji, & Hazarika, 2018; Kasman & Kasman, 2015). Another strand of bank competition and risk-taking is the role of market share in loans and deposit. In short, when competition increases the banks want to increase their market share of deposit to consequently loans. Due to this reason, banks offer depositors to get higher returns and eventually offer loans to borrowers at lower rate of profits than normal loan rates. In this situation, banks remain demotivated to decrease their risk-taking in the short run (Boyd & De Nicoló, 2005).

Although the empirical literature provides proof for bank competition and risk-taking but the evidence are contradictory. For example, Boyd et al. (2006) reveal empirical evidence favoring the direct relationship between risk-taking and competition. The study uses HHI index to probe the connection between risk-taking and bank competition by using Z-score. The study uses twenty five hundred small banks of the US and twenty seven hundred banks from one hundred thirty four developing economies. The findings of the analysis confirm that competition and bank stability are inversely connected. De Nicolo and Loukoianova (2007) conduct a study by collecting data from one hundred thirty three developing countries over the period 1993 to 2004. The examination indicates that results confirm that the role of ownership is more significant to influence risk-taking and competition. By extending the above-mentioned studies, Turk-Ariss (2010) explores how the

market power of a bank's affects the performance and stability of banks in developing nations. Uhde and Heimeshoff (2009), extended the work by investigating twenty-five EU countries, reveal a negative correlation between bank concentration and financial stability. Utilizing data from 69 nations, Beck et al. (2006) find results by using sixty-nine economies data and conclude that lower market concentration are lower inclined to the financial crisis. Yeyati and Micco (2007), collect a data for eight Latin America states and concludes a positive relationship between bank stability and risk-taking in line with the stability hypothesis. In similar context, Berger et al. (2009) probes a relationship between risk-taking and bank competition by collecting data for twenty-three economies. The outcomes indicate are not in favor of both the "competition-fragility hypothesis" and the "competition-stability hypothesis". Kasman and Kasman (2015) opine that market power increases the behavior of risk, however, the market power provide protection in competition.

Zhao et al. (2010) conduct a study by using the data of Indian banks and explore the impact of deregulatory factors to influence competition and risk-taking. The empirical findings favor the similar direction between risk-taking and competition in India. Ak-Kocabay (2009) examines the legitimacy of the competition-stability theory for the Turkish financial framework over the period 1990–2008. The study provides contradictory results between competition and bank risk-taking by using different propositions of the econometric model. Using Turkish banking industry data from 2001 to 2009 Yaldız and Bazzana (2010) conclude that market power impacts credit risk that is in line with the stability hypothesis. Pak and Nurmakhanova (2013) inspect the influence of market power by taking credit risk and stability in Kazakhstan. Their findings indicate that enhanced market influence is, on the other side, connected to credit risk-taking by Kazakhstani banks. Moreover, this increased consumer influence has a crucial beneficial impact on the competitiveness of banks. Pino and Araya (2013) examine the impact of market power

heterogeneity on the correlation between competitiveness and stability in the Chilean banking sector and demonstrate that this kind of heterogeneity may play an important role in the relationship between risk-taking and competitiveness. Jimenez et al. (2013) investigated whether the Spanish financial system has a non-direct interaction between competitiveness and stability.

By way of the analysis process, Kasman and Kasman (2015) recommended experimental findings that more notable bank competition cause bank credit hazard as the proportions of bank competition (Boone marker and Lerner's proficiency modified record) are, in essence, at odds with the non-performing advance proportion (NPL). Results also demonstrate that the more influential fixation positively impacts the NPL ratio and a negative effect on the Z-value. Generally, our discoveries endorse the view of competition-fragility.

Hypothesis 9: Bank competition has a significantly negative relationship with liquidity risk.

Hypothesis 10: Bank competition has a significantly negative relationship with credit risk.

Economic and financial development is also attributed to lower data information in literature (Godlewski & Weill, 2011), which may be attributed to the better level of risk investigations performed before credit endorsement by bank members. It is fair to conclude, though, that the efficiency of the danger investigation improves with the knowledge and expertise of bank members favorably defined by financial and economic occurrences. Furthermore, the information hypothesis suggests that hazy borrowers are the ones who profit most from the range of interest information from banks. Low competition could thus be more profitable for the cost of understanding events in a country for the higher economic and financial turn of events; thus, the nation is expected to face lower asymmetries of information (Fungá'cová, 2017).

Beck et al. (2004) discovered no impact of financial development on the relation between bank concentration and snags of financing, whereas more notable monetary and structural progress

relaxes funding conditions and extends deterrents of financing through bank fixation. Essentially, (Fungá-cová et al., 2017; Love & Peria, 2015) report that low bank competition reduces access to finance, however more notable financial development mitigates the detrimental impact of low bank competition and promotes credit facilitation.

As, the relationship between competition and liquidity creation and risk and liquidity creation is already established. So, from the above discussion hypothesis is derived.

Hypothesis 11: Risk (liquidity and credit) mediates the relationship between liquidity creation and banks' competition.

2.5 Liquidity Creation, Risk, and Corporate Governance

Good corporate governance practices in the financial sector may have facilitated, rather than limited, excessive risk-taking (Iqbal et al., 2015). Upon the first glimpse, it might seem rather counterintuitive that banks with good corporate governance practice have higher systemic risk levels. Even then, aligned with traditional shareholder wealth maximization, well-governed financial institutions may have sought to increase their profitability by rising risk-taking levels to appease shareholders. Beltratti and Stulz (2012) provide empirical evidence for this view, documenting that banks with more shareholder-friendly boards took more risk at the onset of the global financial crisis and performed worse during the crisis. Mehran, Morrison, and Shapiro (2011) argued that due to the increased complexity and opaqueness of banking activities, investors might have ignored or become less responsive to bank risk-taking.

Moreover, Mehran et al. (2011) noted, the board of directors has a "dark side of expertise;" as well because qualified and competent board members can be appointed to justify and increase risk-taking for wealth maximization rather than helping in monitoring the executives. In line with this view, Minton, Taillard, and Williamson (2014) report that an independent board of directors

increases the banks' risk-taking before a financial crisis, and board expertise has a detrimental effect on the banks' performance during a crisis.

Corporate governance frameworks include motive and constraint mechanisms. Motivate mechanisms apply to business executives and their salaries. Numerous studies (Amihud & Lev, 1981; Demsetz & Lehn, 1985) have examined how managers' incentives and rewards influence banks' risk-taking behavior. Laeven and Levine (2009) illustrate that bank managers are likely to be more risk-averse than shareholders due to career considerations and undiversified career risk. On the other hand, Knopf and Teall (1996) empirically determine that, management- controlled banks tend to take riskier and less profitable investments relative to shareholder-controlled banks. Regarding executive compensation, Houston and James (1995) and Shah et al., (2017), report that the bank CEO compensation policies did not encourage excessive risk-taking. Palia and Porter (2004) and Chen et al. (2006) assert that CEO compensation is negatively related to bank risk. By comparison, Balachandran et al. (2011) and Guo et al. (2015) claim the executive compensation-risk relationship is positive and substantial. Therefore, the literature has not reached a consensus.

The constraint mechanisms in corporate governance emphasize the degree to which the management is controlled by shareholders and are thus related to the roles played by shareholders or boards. Numerous studies (Lee & Hoov, 2020; Siddika & Haron, 2019; Haque, 2019; Stulz, 2005) studied the relationship between bank ownership and banks' risk-taking in different regions. Most bank shareholders prefer to manage and influence bank managers to cover their personal benefit (Morck et al., 2005) because their own assets can hardly diversify (Shleifer & Vishny, 1986, 1997). Therefore, concentrated ownership may help control bank management. According to Gropp and Köhler (2010), Controlling the management is most important for the large block holder rather than limiting the risk that arises due to holding undiversified assets. However, banks'

opacity renders it impossible for majority shareholders to participate because their knowledge costs are high (Kahn & Winton, 1998), thus further worsening banks' agency problems.

Laeven and Levine (2009) explain that the dispersed ownership can reduce the risk, whereas concentrated ownership is linked with higher risk-taking by banks. However, banks with a high concentration of ownership have low risks of assets and insolvency (Iannotta et al., 2007). According to Bechmann and Raaballe (2010), Disperse ownership and ineffective monitoring by the shareholders make the banks CEO more powerful. Improving shareholder rights in relation to this can allow dispersed shareholders to monitor bank managers and adjust their degree of risk-taking (Haque, 2009; La Porta et al., 1999). The impact of ownership concentration on bank risk-taking is, therefore unclear.

Pathan (2009) observes that for large U.S. bank holding companies, their powerful boards representing shareholder preferences have a favorable effect on bank risk-taking due to increased management monitoring (Jensen & Meckling, 1976; Merton, 1977). By comparison, Smith, and Stulz (1985) and Altunbaş, Thornton, and Uymaz (2020) find that the CEO directly controlling board decisions adversely affect bank risk-taking due to risk aversion. Furthermore, having a higher number of outside directors proves to be useful in tracking managers 'selfish activities (Ongsakul & Jiraporn, 2019; Fama & Jensen, 1983; Fama, 1980) and increasing the probability of financial institutions' survival during a turmoil period (Byrd et al., 2001; Tran & Hassan, 2019). Erkens et al. (2012), however, found that companies with more independent boards reported worse stock returns during the crisis period as they accumulated more equity than debt.

Specifically, their empirical results show that financial institutions with stronger, more shareholder-focused corporate governance practices and boards of directors are linked to higher systemic risk levels (Iqbal et al.,2015).

Hypothesis 12: Corporate governance has a negative relationship with liquidity and credit risk

Strong bank governance limits excessive risk-taking behaviour; thus, they can produce the same amount of liquidity in the market with a low insolvency risk level. While studying the impact of banks' board effectiveness and risk-taking, Faleye and Krishnan (2014) find that strong banks and board governance restrict excessive lending, reducing the banks' risks. They also find that this effect is stronger for banks with credit risk committees. They also claim that if the board allows banks to create liquidity in the market by assuming limited risk while staying solvent, their value can be increased.

Hypothesis 13: Bank risk (Liquidity & Credit) mediates the relationship between banks' corporate governance and banks' liquidity creation.

2.6 Liquidity Creation, Capital and Competition

The relationship between capital and liquidity creation is a well-researched topic in banking. However, the literature poses two different and conflicting views regarding the relationship between capital and banks' liquidity creation. According to one school of thought known as the "financial fragility-crowding out hypothesis," higher capital limits banks' liquidity creation. We can say there is a negative relationship between capital ratio and liquidity creation. Another school of thought referred to as the "risk absorption hypothesis" suggests a positive relationship between banks' capital and liquidity creation.

While modelling banks that generate funds from investors to provide an entrepreneur with funds (Diamond & Rajan, 2001), found that entrepreneurs can withhold effort, reducing the amount of bank funding they can achieve. More importantly, the bank may also withhold effort, limiting the bank's ability to raise financing. A deposit contract mitigates the bank's holdup problem – because

depositors can run on the bank if the bank threatens to withhold effort and, therefore, maximizes liquidity creation. Capital providers do not run on the bank, limiting their ability to supply funds, thereby decreasing liquidity creation. Therefore, the higher the capital ratio of a bank, the less liquidity it can generate.

Diamond and Rajan (2000), based on Calomiris and Kahn's (1991) work, found that the propensity of uninsured depositors to run on the bank in the circumstance of bank managers anticipated expropriation of wealth is a critical disciplinary mechanism. Flannery (1994) offers a justification for the mismatching of maturity that does not concentrate on generating liquidity and focuses on the disciplining effect of depositors' ability to withdraw funds on demand, thus restrict banks from expropriating depositor wealth through excessively risky investments. Gorton and Winton (2000), and Le (2019), Toh (2019), argue that higher capital ratios limit the banks' liquidity creation by crowding banks out of deposits and imply that deposits are more effective and efficient liquidity hedges for investors than bank equity capital investments. Thus, higher capital ratios convert investor deposits from relatively liquid bank deposits to relatively illiquid bank capital, thus reducing overall investor liquidity.

An opposing view is that higher capital enhances the ability of banks to produce liquidity in the market. Diamond and Dybvig (1983) and Allen and Gale (2004) assert that banks' liquidity creation exposes them to various risks. The more liquidity generated, the higher the probability and intensity of loss linked with illiquid assets' disposal to meet customers' liquidity demands. Whereas, Repullo (2004) argues that bank capital absorbs risk, thus increases the banks' risk-bearing capacity. The above discussion claims that banks' capital is positively related to the banks' liquidity creation.

Typically, banks create liquidity in the market by converting relatively illiquid assets into relatively liquid liabilities. However, Gorton and Winton (2000) and Diamond and Rajan (2001) argue that banks, by simply adjusting their financing mix on the liability side, banks can create liquidity. Capital can also influence the banks' asset portfolio composition (Thakor, 1996), thereby affecting liquidity creation through a change in the asset mix. Our liquidity creation measures inculcate these observations, which pertinently acknowledge that banks create liquidity through the adjustments in the blend on both sides of the balance sheet and off-balance sheet operations. These studies do not concentrate on bank capital role, nor do they analyze bank capital's impact on liquidity creation. However, they include the capital ratios in econometric equations of some liquidity categories, giving rise to unclear predictions about the impact of capital on the banks' liquidity creation. Gatev and Strahan (2009) conclude that higher bank capital ratios appear to be accompanied by increased loans and deposits (that can increase the liquidity creation) and higher net assets and non-deposit liabilities (that can decrease the liquidity creation).

Based on the above argument, the study has developed the following hypothesis.

Hypothesis 14: Capital ratio has a negative relationship with banks' liquidity creation.

A primary objective of capital adequacy regulation is to decrease the risk of a bank's default. As this probability of default is related to the bank's risk-taking incentives, the design of any framework, such as the regulation of capital adequacy, must consider the level of such incentives. In particular, the industrial organization of the banking sector, particularly the degree of competition among banks, affects their incentives to take risks. (Acharya, 2003). therefore, the optimal structure of capital ratio is responsive to this industrial organization. To be very specific,

in a very competitive market banks that, ceteris paribus make lower profits and more inclined toward risk-taking. Therefore, in a competitive setting, banks are required to keep more capital. Schaeck et al. (2009) empirically proved that there exists a trade-off between competition and the banks' risk-taking behavior banks by using the data from 45 countries. Their findings show that banks maintain higher capital reserves when operating in a more competitive environment, and competitive banking markets are less likely to experience systemic crises. Boyd et al. (2009) show that concentration positively and significantly affects bank default risk. Whereas, Agoraki et al. (2011) explore the relationship between risk-taking, competition, and regulation in Central and Eastern Europe's banking markets and find that banks' risk-taking attitude is negatively linked to market power. Kasman and Kasman (2015) also find similar findings in analyzing five Southeast Asia countries using several bank-specific risk indicators. Their findings show that competition has a significantly negative relationship with the majority of risk measures, which indicates that competition does not compromise bank stability. Analyzing the sample of 14 Asian Pacific countries (Fu et al., 2014) found that higher concentration enhances financial fragility and lower pricing power also induces exposure to bank risk. Abbas, Iqbal and Aziz (2019), Abbas and Ali (2020) also find that higher capital ratio lower the banks fragility and decrease the banks risk-taking behavior.

Based on the above discussion and argument study has developed the following hypothesis.

Hypothesis 15: Capital ratio mediates the relationship between competition and liquidity creation.

2.7 Theoretical Model

Based on the theories discussed in section 1.1 and literature review in section 2 following model is developed to answer the research questions.
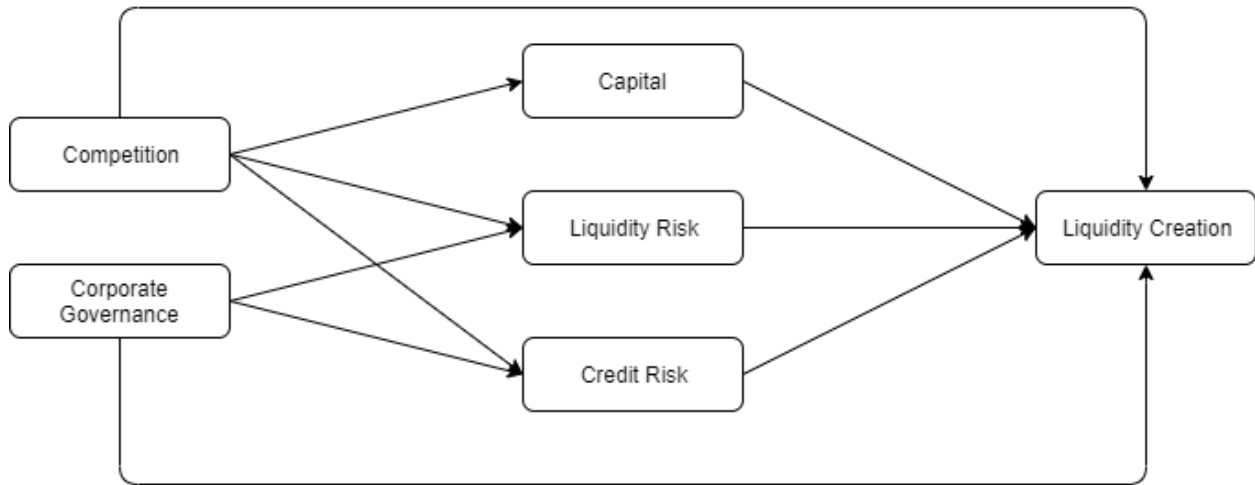
Figure 1: Theoretical Model

CHAPTER 3: DATA AND METHODOLOGY

This chapter explains and provides the research philosophy, research methodological framework, variables, and econometric model used in the present study. It explains the research philosophy, nature of the study, the process of selecting and defining the methodological framework, and techniques used to accomplish the objectives. This chapter starts with a description of the research philosophy, data collection method, and analysis. This chapter then provides different aspects of the econometric model, specification of the model, estimation technique, and data validation. This chapter also explains the panel data regression models utilized to achieve the research objectives. Later, after that definition and construction of all dependent and independent variables are provided along with the research method.

3.1. Research Philosophy Data Collection and Analysis

According to Saunders, Lewis, and Thornhill (2012), research philosophy can be defined as the views and beliefs of the knowledge under examination in the study in which the philosophical assumptions rationalize the way with which research questions are answered. The four basic types of research paradigms are realism, pragmatism, positivism, and interpretivism (Saunders et al., 2012). Positivism paradigm is applied in the study as hypotheses regarding the effect of competition, corporate governance, and risk on banks' liquidity creation, and relevant theories could be statistically examined using tools and methods used in this study (Saunders etl., 2012). The research paradigm selection helps identify the best fit of the two research approaches: inductive and deductive. According to Kothari (2004), Saunders et al. (2012) and Silverman (2013), in general, the deductive approach goes from general phenomenon to specific, and

hypotheses are developed based on the preexisting theories. On the other hand, the inductive approach goes from specific to general; it starts with researcher observation and then searches for patterns in data (Bryman and Bell, 2011). The current study employed a deductive research approach. It deals with investigating the causal relationship between the dependent and independent variables to test different developed hypotheses and, thus, generalize the results rather than develop a new theory (Saunders et al., 2012).

Two main types of research methods are qualitative and quantitative. In the Qualitative method, we collected data through a non-numeric or descriptive approach, like interviews to examine some social behavior or phenomenon, rather than finding the causal relationship among the variables (Berg, 2004; Feilzer, 2010). On the other hand, the quantitative method deals with numeric data either collected from many respondents or the companies and measured through different quantitative techniques, like a questionnaire or getting information from published material (Goddard & Melville, 2004; Bryman, 2012). The researcher can use qualitative or quantitative methods or maybe both, known as a mixed method.

There are three categories in which quantitative data is categorized: times series data, cross-sectional data, and panel data or also known as longitudinal data. In time-series data, a single variable for an entity is collected over a period of time, and in cross-sectional data, data from several respondents/entities are collected at the same timeframe. While in panel data, data of a variable is collected from different entities over a period of time (Greene, 2003; Gujarati, 2003; Goddard & Melville, 2004; Huang, Hsiao, & Lai, 2007; Saunders et al., 2012).

According to Kelly (2011) qualitative method of research "allow the researchers to discover how the social world is constructed by the people studied." Ghauri and Gronhaug, 2010 said that researchers mostly used the immeasurable data collection technique, such as case studies and

interviews, while doing qualitative research as they aim to understand the association between a research subject and investigator. On the other hand, the quantitative research method can be labeled as an analytical and logical approach that primarily focuses on examining the relationship among variables under consideration (Ghauri & Gronhaug, 2010). According to Kelly (2011), a quantitative method provides a cross-sectional overview of the real world at a specific time frame, due to which it heavily relies on the large data sample from different databases in the form of secondary data and from the survey in the form of primary data. In the quantitative method, researchers usually measure the conceptual abstract to empirically verify the testable hypotheses and refine theory through finding the relationship among variables, which require complex statistical analysis for generalizing the outcomes (Kelly,2011). Hence, it requires a higher level of transparency in data and statistical analysis used, which makes it easier to replicate in the future(Kelly,2011). It is important to explain that the difference between qualitative and quantitative methods "is not the question of quantification, but also a reflection of different perspectives on knowledge and research objectives" (Ghauri and Gronhaug, 2010). In many cases, the researcher quantifies the qualitative data to answer their research question, which suggests that quantitative and qualitative research methods cannot be clearly segregated (Ghauri & Gronhaug, 2010).

In the present study, the developed hypotheses are empirically tested by analyzing the data collected from Orbis bank focus (discussed in detail in the next section) to study the antecedents of banks' liquidity creation in the developed, developing, and emerging economies of the world. Therefore, this research uses the quantitative method of research to answer the research questions mentioned in chapter one.

3.2 Sample Selection Process

An adequate sample has to be selected to empirically answer the research question developed in this study. In order to so, sample selection starts with countries to be selected in the final sample. The present study uses the data of countries mentioned as developed, developing, and emerging by Morgan Stanley Capital International (MSCI). MSCI country classification is considered valid in empirical research. Table (3.2) provides the list of countries in each of the categories along with the number of banks from each country.

Next, all commercial banks from the developed, developing, and emerging economies are selected whose data is available on Orbis bankfocus, because commercial banks are considered as the major source of liquidity creation in an economy. So the total sample consisted of 9,204 banks from 2013-2019. A major reason for selecting the time period is data available on the Bankscope provided by Bureau Van Dijk; they only maintain the latest seven years' data. It should be noted that the number of banks sampled is exclusively dependent on the availability of data from the Orbis bankfocus database. The bank number of each country is listed in Table 3.1.

The key explanation for sample selection is the quantitative aspect of the empirical data examined, as panel data regression analysis is used to investigate the relation between explained and explanatory variables. According to Baltagi, (2005), quantitative research methodology requires extensive data from a large number of observations because a smaller sample leads to biased and inconsistent results.

Table 3.1: List of countries based on Development level

Developed		Developing		Emerging	
Country Name	No of Banks	Country Name	No of Banks	Country Name	No of Banks
CANADA	80	ARGENTINA	54	CROATIA	25
USA	5854	BRAZIL	134	ESTONIA	7
Austria	66	CHILE	19	LITHUANIA	8
BELGIUM	32	COLOMBIA	21	KAZAKHSTAN	31
DENMARK	29	MEXICO	61	ROMANIA	20
FINLAND	32	PERU	23	SERBIA	25
FRANCE	109	CZECH REPUBLIC	19	SLOVENIA	9
GERMANY	66	EGYPT	24	BAHRAIN	10
IRELAND	13	GREECE	7	JORDAN	14
ISRAEL	12	HUNGARY	21	KUWAIT	6
ITALY	76	POLAND	83	LEBANON	37
NETHERLANDS	29	QATAR	7	OMAN	7
NORWAY	24	RUSSIAN FEDERATION	509	BANGLADESH	43
PORTUGAL	25	SAUDI ARABIA	10	SRI LANKA	28
SPAIN	48	SOUTH AFRICA	17	VIETNAM	135
SWEDEN	29	TURKEY	54	COTE D'IVOIRE	17
SWITZERLAND	112	UNITED ARAB EMIRATES	21	KENYA	35
UNITED KINGDOM	124	CHINA	226	MAURITIUS	17
AUSTRALIA	23	INDIA	51	MOROCCO	13
HONG KONG	41	INDONESIA	101	NIGERIA	21
JAPAN	136	PAKISTAN	25	TUNISIA	16
NEW ZEALAND	16	REPUBLIC OF KOREA	14	BURKINA FASO	10
SINGAPORE	11	MALAYSIA	29	SENEGAL	21
		THAILAND	25		
		TAIWAN	40		
		PHILIPPINES	68		

Source: MSCI country classification

3.2.1 The Sources and Characteristics of the Sampled Data

To constitute the authenticity and reliability of the data, it is crucial to explain the source and approach used in the process of data collection, following the work of Naceur and Omran (2011), and Agoraki et al. (2011), data related to banks' specific variable are taken from Orbis bankfocus. Following Naceur and Omran (2011) work, this study uses the unconsolidated statements and

consolidated financial statement in the absence of an unconsolidated financial statement after confirming that no banks exist twice in the dataset.

There are three major benefits of using the data from Orbis bankfocus: (i) Its globally recognized as used in research by researcher and credit rating agencies like Fitch (Naceur and Omran, 2011) (ii) it contains about 90% of banks assets in an economy. (iii) It provides information in global reporting and accounting standards. Moreover, following Dinger and Hagen (2009), data related to macro-economic variables are obtained from the world economic outlook and international monetary fund (IMF) database.

3.3 Empirical Modelling

After identifying the research philosophy and data collection process and analyses, the current section provides a holistic view of understanding the statistical process carried out in assessing the determinants of banks' liquidity creation in the developed, developing, and emerging economies of the world. This section provides a specification of the econometric model, process of data sample selection, characteristics and nature of data, variables definition and measurement, and the statistical process used for data analysis.

3.3.1 Model Specification

The econometric model used in the analysis to empirically test the hypotheses formed in chapter 2 is explained in this section.

The primary purpose of the current research study is to highlight the impact of competition, corporate governance and risk on banks liquidity creation. The econometrics relationship is shown below in the following equations:

$$Liq\_Cre_{i,t} \ = \ \beta_0 + \ \beta_1 X_{i,t} + \beta_2 Z_{i,t} + \eta_i + \nu_t + \ \varepsilon_{i,t} \tag{1}$$

65

Here $Liq\_Cre_{i,t}$ represents the banks liquidity creation, which is the dependent variables, β_0 is a constant, i, is cross-section which is a bank, t, is a time which is year 'X' represents independent variables (competition, corporate governance, risk and capital), 'Z' is here to represent control variables that size, profitability, economic growth and interest rate. The sign η_i shows bank fixed effects; ν_t is period fixed effects, and $\varepsilon_{i,t}$ represents the zero-mean disturbance term. The above equation (1) represents the static for of regression model.

Numerous mathematical issues may arise from the estimation of equation (1) by using simple ordinary least square: Firstly, competition and risk in $X_{i,t}$ are assumed endogenous. Due to this fact, causality may run in both sides from competition and risk to bank liquidity creation , and vice versa and these variables may be correlated with the error term of the equation (1). We have used Durbin chi square and Wu-Hausman to test the endogeneity between the variable. The p-value of 0.000 for the Durbin scores and Wu-Hausman test confirms the endogeneity, hence OLS is not applicable on this data. Secondly, time-invariant bank characteristics refer to fixed effects in cross-sections. The fixed effects remain contained in the error term, which comprises of the unobserved bank-specific effects, $v_{i,}$ and the observation-specific errors, $e_{i,t}$.

$$u_{i,t} = v_i + e_{i,t} \tag{2}$$

Thirdly, the existence of the lagged value $Liq\_Cre_{i,t-1}$promotes the problem of autocorrelations. Fourth, the data has a shorter time dimension and a higher number of cross-sections (N). To resolve the issue of fixed effects, we tried fixed effects instrumental estimations in the setting of two-stage least square (2SLS). We tried several instruments, but we found that the instruments are week and a not right choice to use. Due to this fact, the study uses Manuel Arellano and Stephen Bond (1991) GMM approach to proceed further. The use of difference GMM resolves the problem of fixed effects from equation (1).

$$\Delta Y_{i,t} = \beta_1 \Delta Y_{i,t-1} + \beta_2 \Delta X_{i,t} + \beta_3 \Delta Z_{i,t} + \Delta\varepsilon \tag{3}$$

The above equation is transformed as follows :

$$(\Delta Liq\_Cre_{i,t} = \alpha\Delta Liq\_Cre_{i,t-1} + \beta_2 \Delta x'_{i,t} + \Delta\varepsilon \tag{4}$$

The transformation of the equation eliminates the fixed banks-specific aspect because it does not vary with time. With the use of equation (2) we can express:

$$u_{i,t} = v_i + e_{i,t}$$

Or

$$u_{i,t} - u_{i,t-1} = (v_i - v_{i-1)} + \left(e_{i,t} - e_{i,t-1}\right) = e_{i,t} - e_{i,t-1} \tag{5}$$

In this case, the firs-differenced lagged dependent variable is also used as an instrument with its past information. We follow the recommendation of Manuel Arellano and Stephen Bond (1991) to favor the argument in the sense that the use of a one-step method is severely biased. Frank Windmeijer (2005) recommended two-step robust standard errors instead of a simple two or one-step approach. From his point of view, the system's two-step estimator is more efficient and consistent. In banking literature, various studies apply GMM (Berger & Bouwmen,2008; Horvath et al., 2015; Faisal Abbas, Noshaba Batool and Fiaz Ahmad Sulehri, 2020, Chien-Chiang Lee and Meng-Fen Hsieh, 2013, Yong Tan, 2016, Vuong Thao Tran et al., 2016).

Dynamic panel estimation techniques are used to analyze the relationship between liquidity creation, liquidity risk, credit risk, capital corporate governance, and competition. Furthermore, to study this relationship, a time-variant and cross-sectional invariant technique is used along with GMM. The dependent variable is liquidity creation. Equation 6 shows the general model used to answer the research objective along with the control variable.

$$Liq\_Cre_{i,t} = \beta_0 + \beta_1 Liq\_Cre_{i,t-1} + \beta_2\ Corp\_Gov_{i,t} + \beta_3 Comp_{i,t} + \beta_4 Comp_{i,t-1} +$$

$$\beta_5 Capital_{i,t} + \beta_6\ liq\_Risk_{i,t} + \beta_7\ Cre\_Risk_{i,t} + \beta_8\ ROA_{i,t} + \beta_9 Size_{i,t} +$$

$$\beta_{10}\ Country\_Dummy_t + \varepsilon_{i,t} \tag{6}$$

Table 3. 2: Variables Descriptions

$Liq\_Cre_{i,t}$	The amount of Liquidity created by bank i in time t
$Corp\_Gov_{i,t}$	Corporate governance index value for bank i in time t
$Comp_{i,t}$	Market power (Lerner index) of bank i in time t
$Capital_{i,t}$	Ratio of banks Equity to total asset for by bank i in time t
$liq\_Risk_{i,t}$	Liquidity risk of bank i in time t
$Cre\_Risk_{i,t}$	Credit risk of bank i in time t
$ROA_{i,t}$	Return on assets of bank i in time t
$Size_{i,t}$	Size of bank i in time t
$Country\_Dummy_t$	Dummy variable created for developed, developing and emerging economies, used separately.
β_0	Intercept value
β_1 to β_{10}	Regression coefficients for above-mentioned variables.

3.4 Definitions and Construction of Key Variables

The current section provides the definition and operationalization of the variables. Based on the econometric model, all variables were classified as dependent or independent variables.

3.4.1 Dependent Variables Definitions

This section presents the definitions and descriptions of dependent variables.

3.4.1.1 Measuring liquidity creation

Considering the typical difficulties when measuring liquidity creation, four different indicators are considered here. First, the Berger and Bowman (2009) measure (BB-measure, hereinafter).

Second, the Inverse Net Stable Funding Ratio (Inverse NSFR, hereinafter) includes explicitly a proxy to the new long-term liquidity requirement introduced in Basel III, which permits an analysis of the conflict may exist between regulatory capital requirements and liquidity requirements imposed by the new regulatory framework.

Berger and Bowman (BB) measure

Berger and Bowman (2009), while studying the impact of capital on banks' liquidity creation, provide four different measures of liquidity creation, which are now the widely used measure of liquidity creation. Out of those four measures, two-measures (Broad and Narrow), which includes off-balance sheet items and classifies the items by category (in terms of their ease, cost, and time to be liquidated) rather than by maturity. The study's preferred measure of liquidity creation is Narrow measure (include all on balance sheet account) and broad measure (Include all on and off-balance sheet lending accounts.

A three-step procedure is used for measuring liquidity creation. Step 1 involves the classification of the bank's asset into the liquid, semiliquid, and illiquid based on cost, time, and ease for the bank to provide liquidity for the customer when requested. Similarly, all the liabilities are also categorized as liquid, semi-liquid, and semiliquid based on cost, time, and ease for the bank to provide liquidity for the customer when requested. Indeed, some assets are considered easier to sell than others (such as the loans are securitisable and the securities that are saleable on financial markets).

In the second step, weights are assigned to all the items classified in step 1 according to the liquidity creation theory, which states that banks create liquidity because they hold illiquid items and give the public liquid items. Therefore (½) weight is allocated to illiquid guarantee, liquid liabilities, and illiquid assets, whereas (-½) weight is assigned to all liquid derivatives, guarantees,

Table 3.3: Measurement of Liquidity creation

Illiquid Assets (Weight = ½)	Semi liquid Assets (weight = 0)	Liquid Assets (Weight = - ½)
Commercial real estate loans (CRE)	Residential real estate loans (RRE)	Cash and due from other institutions
Commercial and industrial loans (C&I)	Loans to state and local Governments	Fed funds sold
Loans to finance agricultural production	Consumer loans	Trading assets
Customers' liability on bankers' acceptances	Loans to foreign Governments	All securities (regardless of maturity)
Other real estate owned (OREO)	Loans depository institutions	
Investment in unconsolidated subsidiaries		
Other loans and lease financing receivables		
Premises		
Intangible Assets		
Other assets		
Liquid Liabilities	**Semi liquid liabilities**	**Illiquid liabilities plus Equity**
Transactions deposits	Time deposits	Bank's liability on bankers'
Savings deposits		acceptances
Overnight federal funds	Other borrowed money	Subordinated debt
purchased		Other liabilities
Trading liabilities		Equity

Off-balance sheet guarantees

Illiquid guarantees	Semiliquid guarantees	Liquid guarantees
Unused commitments	Net credit derivatives	Net participations acquired
Net standby letters of credit	Net securities lent	
Commercial and similar		
letters of credit		
All other off-balance sheet liabilities	Off-balance sheet derivatives	
		Liquid derivatives
		Interest rate derivatives
		Foreign exchange
		derivatives
		Equity and commodity
		derivatives

illiquid liabilities, liquid assets, and equity. All semi-liquid accounts are assigned a weight of 0.

Berger and Bowman (2009) give the following example: when liquid liabilities (such as transaction

deposits) are used to finance illiquid assets (such as business loans), liquidity is created. The choice

of ½ and –½ weights rather than some other weights are not relevant since what matters is that a perfect symmetry exists between items that create liquidity and those that "destroy" liquidity. Table 3.3 provide the categorizes the accounts bases on the liquidity and illiquidity position.

In step 3, weight from step 2 are combined with account classified in step 1. We multiply the account currency value with the weight assigned in step 2 and then adding the weighted account to get the final value of liquidity created by the bank. The underlying formula for the calculation of CAT_FAT and CAT_NFAT are given below.

$$CAT\_FAT_i = \left(\frac{1}{2} * illiquid\ assets_i\right)x + \left(-\frac{1}{2} * liquid\ assets_i\right) + \left(\frac{1}{2} * liquid\ liabilities_i\right) + (0 * semi\ liquid\ liabilities_i) +$$

$$\left(-\frac{1}{2} * illiquid\ liabilities_i\right) + \left(\frac{1}{2} * illiquid\ gurantees_i\right) + (0 * semi\ liquid\ gurantees_i) + \left(-\frac{1}{2} * liquid\ gurantees_i\right) +$$

$$\left(-\frac{1}{2} * liquid\ Derivatives_i\right) \qquad (7)$$

$$CAT\_NFAT_i = \left(\frac{1}{2} * illiquid\ assets_i\right) + (0 * semi\ liquid\ assets_i) + \left(-\frac{1}{2} * liquid\ assets_i\right) + \left(\frac{1}{2} * liquid\ liabilities_i\right) +$$

$$(0 * semi\ liquid\ liabilities_i) + \left(-\frac{1}{2} * illiquid\ liabilities_i\right) + \left(-\frac{1}{2} * equity\right) \qquad (8)$$

To control for the impact of bank size and make the measure comparable across the banks above calculated, liquidity creation is normalized by the bank's total assets.

Inverse of Net Stable Funding Ratio (NSFR) measure

While studying the relationship between banks' liquidity and regulatory capital Distinguin et al. (2013) presents a new measure of liquidity creation based on the long-term regulatory standards proposed by the Basel Committee on Banking Regulation and Supervision. This measure is used to check the robustness of the data because the preferred measure of liquidity creation for this is CAT_FAT and CAT_NFAT. The inverse of the net stable funding ratio is calculated as a proxy for liquidity creation.

Table 3.4: Measurement of Net stable funding ratio

Available stable funding

Regulatory capital	Regulatory Capital under Basel III (run-off factor 100%)
Customer deposits: other	All the other Customer deposits (if maturity > 1 year; run-off factor of 100%)
Other stable funding	Other Stable funding (run-off factor 0% unless maturity > 1 year; run-off factor of 100%)
Wholesale funding > 1 Year	All the Customer deposits + Bank deposits + Other wholesale deposits + Short-Term funding + Long-Term Borrowings and Debt Securities at Historical cost more than 1 Year (run- off factor 100%)
Wholesale funding <1 Year	All the Customer deposits + Bank deposits + Other wholesale deposits + Short-Term funding + Long-Term Borrowings and Debt Securities at Historical cost less than 1 Year (run-off factor 50%)
Derivatives	Derivatives - Available stable funding
Customer deposits: stable	All the Stable Customer deposits < 1 year (run-off factor 85%)
Customer deposits: less stable	All the Less Stable Customer deposits < 1 year (run-off factor 70%)
Repos	This line represents any securities lent out or used as collateral for funding purposes where there is an agreement to repurchase the securities or regain the collateral at a specified time in the future.

Required Stable Funding

Cash	All Cash items (run-off factor 0%)
Debt securities < 1 year	All the Debt Securities < 1 Year (run- off factor 0%)
Debt securities > 1-year govts AAA- AA	All the Debt Securities of the Governments with a rating of AAA-AA > 1 Year (run-off factor 50%)
Debt securities > 1-year other repo eligible	All the Debt Securities eligible for repo operations with the maturity > 1 Year
Other debt securities	All the other Debt Securities items
Mortgage loans > 1 year	All the Loans secured by residential property (mortgage / house / home loans / residential loans) > 1 year
Consumer loans < 1 year	All the Loans and leases to individuals, either unsecured or secured by assets other than residential property (Credit Cards, Personal Loans) < 1 Year (run-off factor 85%)
Other loans < 1 year	All the Loans and leases which do not fall into any other category (Loan Securities, Bills of Exchange, Leased Assets, Intercompany/Related Party Loans) < 1 Year (run-off factor 50%)
Other loans >1 year	All the Loans and leases which do not fall into any other category (Loan Securities, Bills of Exchange, Leased Assets, Intercompany/Related Party Loans) > 1 Year
Lending and other commitments	All the Lending and other commitments items (e.g. undrawn amount of committed credit and liquidity facilities (run-off factor 10%))

.

$$Inverse\_NSFR_i = \frac{Required\ amount\ of\ stable\ funding\ (RASF)_i}{Available\ amount\ of\ stable\ funding\ (AASF)_i}$$

A high value for the ratio of NSFR means high bank liquidity, and hence its inverse is a proxy for liquidity creation as banks that hold liquidity in their balance-sheet do not provide liquidity to the economy. Although more details of the mapping between the NSFR and the items considered in each category are exhibited in Table 3.4, and the main methodological discrepancies and respective reasoning are outlined below.

3.4.2 Definition and Measurement of The Independent Variables

This section discusses all the independent variables used in the study.

3.4.2.1. *Measuring competition*

Lerner Index

The literature includes various bank competitiveness measures; however, it can be divided into traditional Industrial Organizational Approach and new Industrial Organizational Approach. Bank competition 's traditional measure is based on the Structural Performance (SCP) model. Usually, they rely on the HHI index for measuring the competition. However basic flaw in HHI-index is that it only measures banks' concentration but not the competition at the individual level. Moreover, it is just a partial measure of competition. Therefore it does not provide a clear picture of the competition among banks. According to the SCP hypothesis, increased competition in the markets causes less competitive behavior by the banks to lead to increased profitability and vice versa. Concentration indices or the Herfindahl-Hirschman index can then be used to measure competition. The index used to assess the largest banks' market share and gain the estimation of banking sector competition.

The new empirical industrial organization (NEIO) approach provides non-structural tests to combat the issues associated with the competition. Following the (NEIO) approach, this study uses the Lerner index to measure the competition at the bank level. The major benefit of using the Lerner index is that it allows us to calculate the competition among banks at the individual level and which can vary over time. Abba Lerner gave Lerner Index in 1934, and it is defined as the ability of the bank to set the price higher than it marginal cost. A high value indicates a low level of competition in the market. The Lerner index is also defined as "the difference between price and marginal cost, divided by total price." Where price is the revenue of the firm scaled by total assets of the bank and marginal cost is calculated by using the translog cost function with one output (total assets) and three input prices (the price of physical capital, price of borrowed fund and price of labor). Equation 9 provide the cost function as:

$$\text{T\_Cost} = \partial_0 + \partial_1 lnX + \frac{1}{2}\partial_2(lnX)^2 + \sum_{j=1}^{3}\beta_j lna_j + \sum_{j=1}^{3}\sum_{k=1}^{3}\beta_{jk} lna_j \, lna_j + \sum_{j=1}^{3}\gamma_j lnXlna + \varepsilon_{i,t} \qquad (9)$$

Where the T_Cost represents the total cost of the bank, X represents the bank's total assets, a_1 is labor price calculated as the ratio of staff expenses to the number of employees. a_2 is the price of physical capital calculated as the ratio of general and administrative expenses, depreciation and other operating expenses to fixed assets. Whereas a_3 is the price of borrowed funds calculated by dividing the cost of borrowed funds by borrowed funds). Total cost is calculated as the sum of staff expense, depreciation, general and admin expense, operating expense, interest expense. The estimated coefficients of the cost function are used to calculate the marginal cost:

$$\text{MC} = \frac{\text{T\_Cost}}{X}\left(\partial_1 + \partial_2^{lnX} + \sum_{j=1}^{3}\gamma_j{}^{\wedge}lna_j\right) \qquad (10)$$

Once the above equation is estimated, each bank's Lerner index is determined using the following equation, which is a direct measure of bank competition.

$$Lerner_{it} = \frac{Price_{i,t} - MC_{i,t}}{Price_{i,t}} \tag{11}$$

The present study uses the bank-level Herfindahl index as an alternative proxy for bank competition for the robustness check. To measure the bank-level HHI, we calculate the Herfindahl index of the market's deposits in each of these markets.

The investigation of the competitive structure has become of great interest in numerous studies on banking systems. The majority of the studies are conducted in the context of the developed countries, specifically the US and European countries like (Cipollini & Fiordelisi, 2012; Casu & Girardone, 2006; Weill, 2004; Coccorese, 2004; Bikker & Haaf, 2002, Hempell, 2002; Bikker & Groeneveld, 2000; De Bandt & Davis, 2000). In comparison, the studies in the context of emerging economies use H-statistics in the Gulf Combined Countries (Al-Muharrami, Matthews, & Khabari, 2006, Sub-Saharan Africa (Chen, 2009), China (Masood & Sergi, 2011), Latin America and Europe (Gelos & Roldós, 2004) South Africa (Mlambo & Ncube, 2011), emerging Asia and Latin America (Jeon et al., 2011),), South-eastern Europe (Mamatzakis, Staikouras, & Koutsomanoli-Fillipaki, 2005) and Southeast Asia (Liu et al., 2012). Most of these studies find that the banking sector in these emerging countries were monopolistically competitive. While studying the emerging economies, Turk Ariss (2010) finds that these countries' markets are monopolistically competitive. The author indicates that banks operate under conditions of monopolistically competitive markets in these emerging regions where there are conditions of relatively underdeveloped financial markets and where the essential role of banks is to provide credit. The study's finding suggests that banking industries in the Middle East and South Asia, and the pacific region are less competitive.

In the context of the Latin American banking system, Williams (2012), using the Lerner index for measuring the competition, finds that the banking system was monopolistically competitive. While studying the six south-eastern European countries, Fang et al. (2011) found similar results using a sample period from 1998-2008. Agoraki et al. (2011) and Pruteanu-podpiera et al. (2008), while studying competition (using Lerner index) in the banking sector of Czech Republic and Central and Eastern European countries respectively, finds the monopolistic competition best describes the banking industry of these countries). Whereas while studying the competition using H-statistics in developed and developing economies, Klaus Schaeck et al. (2009) and Claessens and Laeven (2004) finds these countries are characterized by monopolistic competition. This study contributes to the body of literature on competition using the Lerner index as the proxy of competition for developed, developing, and emerging economies in the world.

3.4.2.2. Measure of Corporate Governance

There are numerous corporate governance measures like CEO duality, compensation committee, board independence, intuitional ownership, Shareholder Rights, Corporate Behavior and Corporate Social Responsibility Issues, Financial Disclosure, and Internal Controls, Executive Compensation, Market for Control and Ownership Base, board meetings and many more. Keeping in view the study's objective and following Tarchouna et al. (2017), we calculate the index for corporate index(corp_gov) for the bank by using the most frequent and relevant used proxies of corporate governance. Variables used to calculate the corporate governance index include CEO duality, the board size, audit committee, risk committee, and majority shareholders.

In this study, CEO duality is a dummy variable equal to 1 if the Chief Executive Officer and chairman of the board are the same person; otherwise, 0. Following Minton et al. (2014), board independence is calculated by dividing the number of independent directors to the total number of

directors. The audit committee and compensation committee is a dummy variable that takes 1 bank's value with an audit committee and compensation committee and 0 otherwise (collier and zaman, 2005). The majority ownership is calculated for each bank following two steps: As a first step, we look for shareholders designed as "Principal Shareholders". These block holders are the beneficial owners of five percent or more in the bank's outstanding shares. As a second step, we calculate the sum of these percentages.

Corporate governance index is calculated by running a principle component analysis PCA, which in itself has many benefits. First, it helps to control multicollinearity, which could be raised because of the high correlation among different corporate governance measures (Agrawal and Knoeber 1996). The control for the possible interrelation between corporate governance variables is important, knowing that the different corporate governance mechanisms may operate as substitutes in order to alleviate the agency problems (Weir et al., 2002; Peasnell et al., 2003; Florackis 2005; Lasfer, 2006). Second, it helps in aggregating the individual bank level governance information into a comprehensive index. An additional benefit of the PCA is the automatic allocation of the weights to each component.

This makes the corporate governance index explain as much of the variance in the set of the different corporate governance variables. Hence, it is unnecessary to predetermine their weights (Ammann et al., 2011). Past studies (Gompers et al., 2003; Cremers & Nair 2005; Bebchuk and Cohen 2005) make several assumptions regarding the variable's equal weights and contribution in the index. Given its great advantage, many studies like (Veprauskaitė & Adams, 2013; Dey, 2008; Larcker et al., 2007). Follow this method to confine the data of individual characteristics into an index.

By comparing the correlation matrix with the matrix of identity, the Bartlett test has a null hypothesis indicating that the correlation matrix is not factorable (Pett et al., 2003). Accordingly, Bartlett's sphericity test p-value should be less than 5 percent to ensure that the data used is suitable for factor analysis. The Kaiser – Meyer – Olkin "KMO" value varies from 0 to 1, with 0.50 being the widely used critical threshold (Florackis & Ozkan 2009). So, to proceed with our analysis satisfactorily, this number should be over 0.5. These rules must be followed to check whether data factorization is sufficiently coherent and acceptable to search for meaningful common dimensions (Tarchouna, 2017).

Corporate Governance Index Calculation

The basic purpose of PCA is to reduce the dimensionality in a set of correlated attributes into a smaller set of uncorrelated attributes that explain the majority of the variation in the original attributes.

The sample data matrix of *n* number of samples that are resulted to *k* number of characterization methods can be represented by matrix X, where

$$X = \begin{pmatrix} x_{11} & \cdots & x_{1k} \\ \vdots & \ddots & \vdots \\ x_{n1} & \cdots & x_{nk} \end{pmatrix} \dots$$

A deviate matrix D, is constructed by mean-centering the data of the matrix X. This is done by subtracting the mean of the data from each data point. Mean centering removes the arbitrary bias from measurements.

$$D = \begin{pmatrix} x11 - X1^{\bar{\bar{}}} & \cdots & xn1 - Xk \\ \vdots & \ddots & \vdots \\ x1n - Xk & \cdots & xnn - Xk \end{pmatrix} \dots$$

The resulting covariance matrix can be calculated by:

$$S = \frac{D.D^T}{n}$$

$$S = \begin{pmatrix} c11 & \cdots & c1k \\ \vdots & \ddots & \vdots \\ ck1 & \cdots & ckk \end{pmatrix} \cdots$$

Where,

$$C_{ij} = 1/n \{(x_i - \bar{X_i})(x_j - \bar{X_j})\} \ (i, j = 1,2, \dots, k) \dots$$

As the variance and covariance matrix are in absolute numbers, so we cannot compare them until they are measured in same units or same scale. Variable with larger values in data set will have a larger variance and vice-versa. To overcome this scale dependency, it's important to use standardize/normalized variable which is calculated by dividing each matrix by its standard deviation.

Normalized matrix element Cij,

$$C_{i,j} = \frac{C_{i,j}}{\sqrt{Var(i).Var(j)}} \ (i, j = 1,2, \dots, k)$$

Variance of ith element is given as $Va(i)$. The maximum variation the ith and j^{th} variable can have is $Va(i)$ and $Var(j)$ respectively. Therefore, the correlation between i^{th} and j^{th} variable, $C_{i,}$, can never exceed $\sqrt{Var(i).Var(j)}$ resulting the maximum value a covariance matrix element to one. For two variables that are uncorrelated, the covariance is zero ($C_{i,j} = C_{j,i} = 0$). Correlation matrix is symmetric due to the fact, $C_{i,j} = C_{j,i}$ and it is always real and positive definite.

Table 3.6 reports the descriptive statistics the correlation among the variables used for the calculation of the corporate governance index (Corp_Gov).

Table 3.5: Summary Statistics

	Mean	Std.	Board Size	CEO Duality	Risk-Com	Comp-Com	Audit-Com
Board Size	1.338	3.173	1				
CEO Duality	0.444	0.496	0.221	1			
Risk-Com	0.234	0.423	0.112	0.329	1		
Comp-Com	0.103	0.304	0.222	0.221	0.456	1	
Audit-Com	0.134	0.340	0.237	0.273	0.472	0.497	1

Basic purpose of the PCA is to reduce the dimensions while keeping intact the variation of the original data. Thus, the covariance matrix defines both the orientation (covariance) and spread (variance) of the data. If we keep all the components, then 100% variation can be explained. Selecting the number of components that represents the original data set is one of the key features in PCA. The significance of the component in principle component is determined by its eigenvalue. One of the simple and rule of thumb is to keep those components which have eigen value greater than one. Which mean it explain sufficient variation in the data that it can be used a separate variable. Table 3.6 reports the result of the principle component analysis..

Table 3.6: Principal component analysis
Panel A

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.437	1.474	0.487	0.487
Comp2	0.962	0.118	0.192	0.680
Comp3	0.844	0.290	0.168	0.848
Comp4	0.553	0.352	0.110	0.959
Comp5	0.201	.	0.0403	1

Panel B

Variable	Comp1	Comp2	Comp3	Comp4	Comp5
Board Size	0.264	0.753	-0.533	0.280	0.006
CEO Duality	0.335	0.512	0.665	-0.426	0.048
Risk-Com	0.454	-0.167	0.398	0.779	0.005
Comp-Com	0.547	-0.290	-0.263	-0.251	0.697
Audit-Com	0.559	-0.243	-0.213	-0.265	-0.716

Only one component has eigen value greater than one. Which mean that only one component explains almost 50% of the variation, and factor loading of all variables is mentioned in panel B of table 3.6.

3.4.2.3. Measuring liquidity risk

Liquidity is defined as the ability of the bank to satisfy its obligation whenever they are due. However, in literature, there is no single definition and measure of liquidity risk so this study uses two different measures of liquidity risk one as the preferred measure given by (Imbierowicz, Christian Rauch, 2014) and the other one given by (Saunders and Cornett, 2004) is for the robustness test. Table 3.6 provide the description and measure of risk.

Liquidity risk (Imbierowicz & Rauch, 2014)

Liquidity risk is measured as the difference between liquid liabilities and liquid assets scaled by the total assets of the bank. Liquid assets are those assets of the bank which they can quickly convert into cash at a very low cost, and liquid liabilities are those which could be drawn from the bank at very short notice. While calculating the liquidity risk, we also account for the off-balance sheet risk through, e.g., standby letter of credit and unused commitments, along with off-balance sheet items risk; this measure also considers the bank exposure to derivative and interbank lending. Equation 7 is used to calculate the liquidity risk of the bank.

$$\text{Liq\_risk}_{i,t} = (Demand\ Deposits_{i,t} + Transaction\ Deposits_{i,t} + Brokered\ Deposits_{i,t} + NOW\ Accounts_{i,t} +$$
$$Unused\ Loan\ Commitments_{i,t} + Fed\ Funds\ Purchased_{i,t}) - (Cash_{i,t} +$$
$$Trading\ Assets_{i,t} + Commercial\ Paper_{i,t} \pm Net\ Derivative\ Position_{i,t} +$$
$$Securities\ available\ for\ Sale_{i,t} \pm Net\ InterBank\ Acceptances_{i,t} \pm Net\ Inter\ Bank\ Lending\ Position_{i,t}) / Total\ Assets_{i,t} \quad (12)$$

The final value of the construct could be positive or negative. A positive value indicates a high risk as the bank has to consider other options or sources in order to meet the unexpected cash

withdrawals. A high ratio indicates high liquidity risk for the bank. By contrast, A negative value is a good sign for the bank as it means banks have sufficient cover of liquid assets to cover the unexpected and sudden deposit withdrawals. A low ratio indicates a low level of liquidity risk for the bank. Thus, this study uses liquidity risk to account for "bank run" risk (risk of not meeting all the short-term obligations/payments). By analyzing liquidity risk, we integrate the immediate financing risks a bank can face in case of sudden liquidity withdrawals or deterioration of assets.

Liquidity risk (Saunders and Cornett, 2004

*Previous studies on liquidity risk (*Distinguin et al., 2013; Matz, 2008) uses balance sheet ratios to measure liquidity risk, like the loan to deposit ratio (Klomp & Haan, 2012; Iannotta et al., 2007; Demirguc-Kunt et al., 2004), loan to the total asset (Athanagolou et al., 2006; Dermiguc-Kunt and Huizinga, 1999), loans to the customer and short term funding ratios (Naceur & Kandil, 2009; Pasiouras & Kosmidou, 2007). The ratio of loan commitment to total assets and ratio of the borrowed fund to total assets is also used as the proxy for liquidity risk. A higher ratio of borrowed funds to total assets and loans to deposits means that banks heavily rely on short-term deposits rather than its core deposits to satisfy loan demand. Similarly, A higher ratio of loan commitments to assets means that a greater need for liquidity to satisfy the unexpected demand for loans. Hence, the higher levels of such ratios, the greater degrees of liquidity risk exposure that a bank may face (Saunders & Cornett, 2006). However, it is argued that depending on such ratios in measuring liquidity risk could be insufficient (Distinguin et al., 2013; Matz, 2008). This study used the measure based on the financing gap suggested by (Saunders & Cornett,2006).

Banks are exposed to liquidity risk because banks finance their long-term assets by using short-term deposits. Banks can face liquidity risk on both the assets side (banks are exposed to liquidity risk due to excessive practices of off-balance-sheet activities) and liability side (unexpected

withdrawals by the depositors). According to Saunders and Cornett (2006), deposits are kept on average for long periods. Accordingly, the bank managers do concern themselves about the average positions of banks deposits, which form the core basis of funds that finance the average amount of banks' lending activities. Following Saunders and Cornett (2006), liquidity risk is calculated based on the 'finance gap' method, which is defined as the difference between average banks.

loans and average bank core deposits. Where bank core deposits include, money market deposit, demand deposit, NOW accounts, certificate of deposits (CDs) and other saving accounts. To remove the impact of the bank size financing gap is scaled by the total assets of the bank. A higher ratio indicates a higher degree of liquidity risk to the bank. Accordingly, liquidity risk is calculated by using the following formula:

$$Liq\_riskFG_{i,t} = \frac{Avg\ loans_{i,t} - Core\ deoposit_{i,t}}{Total\ Assets_{i,t}} \tag{13}$$

3.3.2.4. Credit Risk (Imbierowicz & Rauch, 2014)

Unlike liquidity risk, credit risk is defined as the borrowers' inability to pay its debt obligations to the bank whenever they are due. The measure describes a bank's economic ability to cover short term potential loan losses. Credit risk is measured by the following (Imbierowicz, Rauch, 2014). it is defined as the ratio of net loan losses to the previous year loan loss allowances. Whereas net loan loss is calculated as the difference between the loan charges off and loan recovered.

$$Credit\ Risk_{i,t} = \frac{Loan\ charege\ off_{i,t} - loan\ Recoverd_{i,t}}{Loan\ loss\ allowance_{i,t-1}} \tag{14}$$

Note that this study uses annual data rather than quarterly data for calculation as banks in most cases adjust the incorporated variables during the year leading up to the annual balance sheet

recording date, a pattern also observable in our data. The numerator of the measure is similar to what is used in previous studies (Dick, 2006; Angbazo, 1997). This measure represents unexpected loan losses and the banks' credit risk, and a ratio greater than 1 means that the bank can have unexpected losses. A higher ratio indicates a higher credit risk of the bank. Because of its ability to capture loan risk management, this variable is used as a preferred measure of credit risk in this study. However, for robustness, the present study uses another proxy of Credit risk suggested by (Klomp & Haan, 2012; Dietrich & Wanzenried, 2011; Bouvatier & Lepetit, 2008), which is measured by the ratio of loan loss provision to gross.

$$Credit\ Risk\ LLP_{i,t} = \frac{Loan\ loss\ provision_{i,t}}{Gross\ Loans_{i,t}} \qquad (15)$$

Table 3.7 provides the list of the various measures of the risk used in the study along with their description.

Table 3.7: Measurement of Risk

Category	Symbol	Values	Description
Liquidity Risk	Liq_Risk	Values above zero imply that the bank is not able to endure a sudden bank run	LR shows to what degree a bank is capable of dealing with sudden and unexpected liquidity demand. The indicator calculates to what degree a bank can cover this demand with liquid assets. A high value indicates high liquidity risk.
Liquidity Risk	Liq_RiskFG	A higher ratio indicates a higher degree of liquidity risk	Liq_RiskFG is calculated as the difference between the average bank loans and average bank core deposits scaled by the total assets of the bank.
Credit Risk	Cre_Risk	Values above 1 indicate unexpected losses	Cre_Risk is calculated by dividing the net loan charge-offs by the loan loss allowance in the previous year (including the excess allowance on loans and leases) indicates to what degree a bank was expecting the current period's losses in the period before that
Credit Risk	Cre_RiskLLP	A higher ratio indicates a higher degree of credit risk	Cre_RiskLLP is measured by the ratio of loan loss provision to gross

3.4.3 Definition and Measurement of Control Variables

Table 3.8 provide the list of control variables used in this study along with their measurement.

Table 3.8: Measurement of Control Variables

Variable name	Symbol	Measurement	Reference
Return on Asset	ROA	the ratio of Net income to total assets	Klomp and Haan, 2012; Iannotta et al., 2007
Size	Size	Log of Total Asset of the bank	Beger and Bouwman,2016; Imbierowicz, C. Rauch, 2017
Gross Domestic Product	GDP	percentage change in the GDP at constant prices	Ghenimi et al., 2017; Distinguin et al. 2013;
Interest Rate	Int_rate	Real Interest rate	Berger and sedunov,2017

CHAPTER 4: RESULTS AND DISCUSSION

In this chapter, the statistical tools and techniques used in the study are discussed. First, the data was cleaned, and diagnostics were performed through screening tests (normality, multicollinearity and endogeneity) followed by Generalized Method of Moment (GMM) measurement model and Ordinary least square and fixed effect through STATA 15. Additionally, the robustness tests are also performed in the last section.

4.1 Descriptive Statistics

This section presents the descriptive statistics of the sample. The sample of the study consists of 76 countries that are further divided into developed, developing, and developing economies and 9204 banks. Six thousand nine hundred eighty-seven banks are from developed countries, 1662 banks from developing countries, and 555 banks from emerging countries. Table 3.2 explains the country-wise detail of the sample.

Table 4. 1: Full sample descriptive statistics

Variables	Obs	Mean	Std.Dev.	Min	Max	p1	p99	Skew.	Kurt.
Broad Measure	8523	0.10	0.24	-0.41	1.27	-0.41	1.27	1.68	9.03
Narrow Measure	51155	-0.04	0.13	-0.41	0.31	-0.41	0.31	-0.14	3.43
LC_INSFR	1305	0.01	0.00	0.00	0.02	0.00	0.02	1.81	8.45
Lerner	49345	0.34	0.17	0.00	0.67	0.00	0.67	-0.46	2.53
Market Share	63420	0.01	0.03	0.00	0.87	0.00	0.18	5.23	31.32
Corp_Gov	64414	-0.01	1.54	-1.07	4.68	-1.07	4.68	1.77	5.16
Capital	55676	0.12	0.09	0.03	0.73	0.03	0.73	4.46	26.07
Liq Risk-IB	55654	0.00	0.22	-0.68	0.61	-0.68	0.61	-0.26	3.74
Liq Risk-FG	54132	0.03	0.11	-0.12	0.69	-0.12	0.69	4.63	24.91
Credit Risk	40480	1.25	6.45	-13.65	49.97	-13.65	49.97	5.50	40.35
Cre Risk-LLP	53187	0.01	0.01	-0.01	0.09	-0.01	0.09	3.69	19.02
Size	63420	12.93	2.06	9.13	19.35	9.13	19.35	0.93	3.65
ROA	55640	0.01	0.01	-0.05	0.26	-0.05	0.26	-0.26	11.42

Table 4.1 reports the descriptive statistics for the whole sample. The value of the broad measure (Cat fat) and Narrow measure (Cat nonfat) of liquidity creation lies between -0.41 to 1.41 and -0.41 of 0.31 with a standard deviation of 24% and 13%, respectively. This means the banks during the sample period create the liquidity and sometimes destroy the liquidity. Banks destroy liquidity when banks don't have any incentive to create liquidity in the market. Secondly, from the values of liquidity creations its clear that banks create more liquidity through off-balance sheet than on balance sheet. Horvath et al., (2014), Berger and Bouwmen (2009) Deep and Schaefer (2004) found the similar average of broad and narrow measure of liquidity creation, according to them liquidity creation by banks equal to 20 percent of the assets. In line with above studies Table 4.1 show that banks create more liquidity through off-balance sheet item then on balance sheet items. The average value of competition measured through the Lerner index is 0.34 with standard deviation of 17 %, with a minimum value of 0 and a maximum value of 0.67. Horvath et al., (2014), Amidu and Wolfe (2013), Bewazir et al. (2018) find similar results while studying USA, Developing and European banks, respectively. A high value of Lerner index means high market power or a low level of competition. Other measure of competition used in this study for robustness purpose is measured through the market share of the bank in that country. The average market share of the banks in the sample is 0.01 with standard deviation of 0.03 and its values lies between 0 to 0.87. which means bank have as high as 87% market share in a country.

The value of the corporate Governance index lies between -1.07 to 4.67 with mean value of -0.01 and a standard deviation of 1.54. Capital has an average value of 0.12 with a standard deviation of 0.09 with a minimum value of 0.03 and a maximum value of 0.73. This means banks in sample have an investment as low as 3% of the assets and as high as 73% of the bank's total assets. The average return on asset for the bank is 1% with a standard deviation of 0.01. Values of ROA lie

between -0.05 to 0.26 which means banks incur a loss equal to 5% of their assets and earn as much as 26% of the assets. Finding are in line with Gambacorta and Hofmann (2019) they also reports a similar trend in ROA.

The average value of liquidity risk IB is 0 with standard deviation of 0.22 and has a minimum value of -0.68 and maximum value of 0.61. whereas, Liquidity risk FG has a mean of 0.03 and standard deviation of 0.11 and has a minimum value of -0.12 and maximum value of 0.69. the value of credit risk for the full sample lies between -13.65 to 49.97 with average risk of 1.25 and standard deviation of 6.45, whereas when credit risk measure through loan loss proxy its value lies in the range of -0.01 to 0.09 with an average credit risk of 0.01 and standard deviation of 0.01. it means that bank loan loss provision equals 1% of the total bank loans and advancements on average.

Table 4. 2: Descriptive statistics for developed countries

Variables	Obs	Mean	Std.Dev.	Min	Max	p1	p99	Skew.	Kurt.
Broad Measure	5051	0.14	0.24	-0.41	1.27	-0.39	1.27	1.69	9.50
Narrow Measure	43774	-0.03	0.12	-0.41	0.31	-0.37	0.30	-0.17	3.56
LC_INSFR	587	0.01	0.00	0.00	0.02	0.00	0.02	2.03	11.86
Lerner	43022	0.35	0.16	0.00	0.67	0.00	0.67	-0.60	2.85
Market Share	48650	0.00	0.02	0.00	0.86	0.00	0.86	9.05	87.78
Corp_Gov	48902	-0.18	1.41	-1.07	4.68	-1.07	4.44	2.02	6.37
Capital	45689	0.11	0.08	0.03	0.73	0.03	0.66	5.63	40.54
Liq Risk-IB	45031	0.02	0.21	-0.68	0.61	-0.61	0.60	-0.26	3.82
Liq Risk-FG	44246	0.01	0.09	-0.12	0.69	-0.04	0.63	6.62	48.73
Credit Risk	37134	1.30	6.42	-13.65	49.97	-12.00	49.32	5.52	40.41
Cre Risk-LLP	43588	0.00	0.01	-0.01	0.09	-0.01	0.05	4.57	31.73
Size	48650	12.68	1.83	9.13	19.35	9.52	19.35	1.30	5.16
ROA	45803	0.01	0.01	-0.05	0.26	-0.04	0.26	-0.19	14.07

Table 4.2 reports the descriptive statistics for the developed countries. The value of the broad

measure (Cat fat) and Narrow measure (Cat nonfat) of liquidity creation lies between -0.41 to 1.27 and -0.41 to 0.31 with a standard deviation of 24% and 12%, respectively. This means that the banks in developed countries apart from creating liquidity, sometimes also play the role of liquidity destroyer. Secondly, from the values of liquidity creations, it is clear that banks create more liquidity off the balance sheet than through the balance sheet. Horvath et al., (2014), Berger and Bouwman (2009), Deep and Schaefer (2004) found the similar average of broad and narrow measures of liquidity creation, according to them liquidity creation by banks equals to 20 percent of the assets. In line with above studies Table 4.2 show that banks create more liquidity through off-balance sheet item then on balance sheet items.

The average value of competition measured through Lerner index is 0.35 with standard deviation of 16 %, with minimum value of 0 and maximum value of 0.67. Horvath et al. (2014), Bewazir et al. (2018) find similar results while studying USA, and European banks, respectively. Whereas, the average market share of the banks in the sample is 0.00 with standard deviation of 0.02 and its values lie between 0 to 0.86. which means bank has a market share as high as 86%.

The value of the Corporate Governance index lies between -1.07 to 4.67 with mean value of -0.01 and standard deviation of 1.54. Capital has an average value of 0.11 with standard deviation of 0.08 with minimum value of 0.03 and maximum value of 0.73. This means banks in sample have investment as low as 3% of the assets and as high as 73% of the bank's total assets. The average return on assets for the bank is 1% with a standard deviation of 0.01. Values of ROA lies between -0.05 to 0.26 which means banks incurs a loss equals to 5% of their assets and earn as much as 26% of the assets. Finding are in line with Gambacorta and Hofmann (2019), who find a similar trend in ROA.

The average value of liquidity risk IB is 0.02 with a standard deviation of 0.21 and has a minimum

value of -0.68 and maximum value of 0.61. Whereas, Liquidity risk FG has a mean of 0.01 and

standard deviation of 0.11 and has a minimum value of -0.12 and maximum value of 0.69. the

value of credit risk lies between -13.65 to 49.97 with average risk of 1.25 and a standard deviation

of 6.45, whereas when credit risk measure through loan loss proxy its value lies in the range of -

0.01 to 0.09 with average credit risk of 0.01 and a standard deviation of 0.01. it means that on

average bank loan loss provision equals to 1% of the total bank loans and advancements.

Table 4. 3: Descriptive statistics for developing countries

Variables	Obs	Mean	Std.Dev.	Min	Max	p1	p99	Skew.	Kurt.
Broad Measure	2503	0.03	0.23	-0.41	1.27	-0.41	1.02	1.88	9.75
Narrow Measure	5258	-0.10	0.16	-0.41	0.31	-0.41	0.31	0.38	3.28
LC_INSFR	421	0.01	0.00	0.00	0.02	0.00	0.02	1.86	13.50
Lerner	4605	0.24	0.18	0.00	0.67	0.00	0.67	0.41	2.44
Market Share	11025	0.01	0.04	0.00	0.18	0.00	0.18	3.29	13.38
Corp_Gov	11634	0.47	1.77	-1.07	4.68	-1.07	4.68	1.32	3.37
Capital	7472	0.16	0.14	0.03	0.73	0.03	0.73	2.30	8.28
Liq Risk-IB	7928	-0.06	0.25	-0.68	0.61	-0.68	0.61	-0.06	3.42
Liq Risk-FG	7508	0.07	0.16	-0.12	0.69	+-0.12	0.69	2.36	7.89
Credit Risk	2454	0.72	6.69	-13.65	49.97	-13.65	49.97	5.52	41.22
Cre Risk-LLP	7148	0.02	0.02	-0.01	0.09	-0.01	0.09	1.70	5.24
Size	11025	13.86	2.67	9.13	19.35	9.13	19.35	0.06	1.96
ROA	7332	0.01	0.02	-0.05	0.06	-0.05	0.06	-0.37	6.15

Table 4.3 reports the descriptive statistic for the developing countries. The average liquidity

created (CAT_FAT) by the bank is 0.03 with a 0.23 standard deviation. This value is low compared

to the developed countries, which means banks in developed countries generate more liquidity

than banks in developing countries. Whereas the value of the narrow measure(CAT_NFAT) of

liquidity creation is -0.10 with a standard deviation of 0.16, which means banks destroy the

liquidity in developing countries. The average value of Lerner index is 0.24 in emerging economies

compared to an average of 0.35 in developed countries, which means banks in developed countries

have more market power than banks operating in developing countries. Amidu and wolfe (2013) also find a similar value of the Lerner index while studying the sample of developing countries. Banks in developing countries have high capital to asset ratio when compared with developed countries. They have an average of 0.16 with a standard deviation of 0.04. whereas a low value of credit risk suggests that banks have low risk compared to the developed countries' banks.

Table 4. 4: Descriptive statistics for emerging countries

Variables	Obs	Mean	Std.Dev.	Min	Max	p1	p99	Skew.	Kurt.
Broad Measure	969	0.06	0.25	-0.41	1.27	-0.39	1.27	2.00	9.73
Narrow Measure	2123	-0.06	0.16	-0.41	0.31	-0.41	0.31	0.32	2.86
LC_INSFR	297	0.01	0.00	0.00	0.02	0.00	0.02	1.09	3.74
Lerner	1718	0.20	0.16	0.00	0.67	0.00	0.67	0.74	3.14
Market Share	3745	0.04	0.05	0.00	0.18	0.00	0.18	1.69	4.89
Corp_Gov	3878	0.80	1.85	-1.07	4.68	-1.07	4.68	0.95	2.50
Capital	2515	0.14	0.12	0.03	0.73	0.03	0.73	3.09	14.07
Liq Risk-IB	2695	-0.06	0.23	-0.68	0.61	-0.68	0.60	0.00	3.73
Liq Risk-FG	2378	0.12	0.20	-0.12	0.69	-0.02	0.69	1.79	4.85
Credit Risk	892	0.77	7.12	-13.65	49.97	-13.65	49.97	5.19	36.92
Cre Risk-LLP	2451	0.01	0.02	-0.01	0.09	-0.01	0.09	2.26	8.20
Size	3745	13.50	1.98	9.13	18.32	9.13	17.39	-0.30	2.55
ROA	2505	0.01	0.02	-0.05	0.06	-0.05	0.06	-0.76	6.24

Descriptive statistics for the emerging markets are mentioned in Table 4.4. The average value of the broad measure of the liquidity is 0.06 between developing and developed countries, which means banks in the emerging market create more off-balance liquidity than the banks in developing countries and less than the banks in developed countries. The narrow measure of liquidity creation has a negative value of 0.06 which mean bank destroy the liquidity, but its magnitude is less than that of developing countries banks. Another useful insight provided by banks is that they rely on off-balance sheet liquidity rather than on balance sheet items.

As suggested by the low value of Lerner index bank in emerging counties faces a high level of competition than that of developing economies. The average value of the Lerner Index is 0.20 with a standard deviation of 0.16. Banks in emerging markets maintain a have higher equity to total assets ratio the suggested by Basel III suggesting their risk-averse behavior. On average equity to total assets ratio in the emerging markets is 0.14 with a standard deviation of 0.12. whereas the variable like risk, size and profitability are similar to that of developing countries.

4.3 Correlation

Before proceeding to the main estimation, we must check for multicollinearity in the data. Multicollinearity is the problem that arises due to the strong relationship between the independent variable in the model. Multicollinearity refers to the degree of possibility that a variable can be explained by other variables in the analysis, which as a problem appears in statistical analysis when two or more variables are strongly interrelated (Hair et al., 2010). In case of multicollinearity, the results are misleading and biased, which could mislead our explanation of the relationship the dependent and independent variables.

This study uses the Pearson correlation matrix to check the problem of multicollinearity. There is no consensus in the literature regarding at what level the issue is reported as multicollinearity (Wooldridge,2013). According to Haniffa and Cooke (2005) and Brooks (2008), there will be no issue of multicollinearity if the correlation among the independent variable is below 0.80. The full sample result of the correlation among all variables are reported in table 4.5. From the tables it's clearly evident that the correlation between the independent variables is within the acceptable range. So, from Table 4.5, we can confirm that there is no issue of multicollinearity in the data.

Table 4.5 reports that the competition is significantly negatively correlated with all proxies of liquidity creation. Lerner index has a negative correlation of -0.02, -0.05 and -0.06 with Broad,

Narrow and inverse measure of liquidity creation. This supports the financial fragility theory, which suggests increased competition in negatively related to liquidity creation. Whereas the market share (another Proxy of competition) has a significant negative correlation with liquidity creation. Banks' capital is negatively correlated with all measures of liquidity creation. Its has a correlation coefficient of -0.10, -0.35 and -0.13 with broad, narrow and inverse measure of liquidity creation. Results suggest that banks having higher capital buffer generate less liquidity in the market.

Banks' corporate governance negatively correlates with the broad measure and inverse measure of liquidity creation and positively correlated with the narrow measure of liquidity creation. This suggests that strong corporate governance discourages liquidity generation through off-Balance sheet items, whereas, it encourages the banks to generate liquidity through the on-balance sheet items.

Liquidity risk has a positive correlation with liquidity creation, which means that if banks generate more liquidity in the market, their liquidity risk will also go up. Credit risk has a significant positive correlation with liquidity creation with the coefficient of 0.02,0.03 and 0.01 for broad, narrow, and inverse liquidity creation measures. However, the sign of the relationship changes with credit risk is measured through the loan loss provision proxy. Whereas the Size and ROA of the banks have different signs with a different measure of liquidity creation.

Table 4. 5: Full sample pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Broad Measure	1												
(2) Narrow Measure	0.66*	1											
(3) LC_INSFR	-0.13*	0.01	1										
(4) Lerner	-0.02*	-0.05*	-0.06	1									
(5) Market Share	-0.13*	-0.04*	-0.19*	-0.23*	1								
(6) Corp_Gov	-0.11*	0.08*	-0.04	-0.24*	0.32*	1							
(7) Capital	-0.10*	-0.35*	-0.13*	0.02*	-0.07*	-0.03*	1						
(8) Liq Risk-IB	0.28*	0.33*	0.11*	0.03*	-0.01	-0.03*	-0.12*	1					
(9) Liq Risk-FG	0.10*	0.07*	0.02	-0.11*	0.05*	0.06*	0.08*	-0.15*	1				
(10) Credit Risk	0.02*	0.03*	0.01	-0.06*	0.00	0.01	-0.03*	-0.02*	-0.03*	1			
(11) Cre Risk-LLP	-0.08*	-0.10*	-0.01	-0.16*	0.05*	0.05*	0.17*	-0.07*	0.08*	0.14*	1		
(12) Size	-0.06*	0.19*	0.05	-0.32*	0.50*	0.46*	-0.24*	-0.10*	0.07*	0.03*	0.02*	1	
(13) ROA	0.02	-0.08*	-0.01	0.33*	0.03*	-0.00	0.27*	0.02*	-0.00	-0.10*	-0.25*	0.02*	1

- Show the significance at 1%

Table 4. 6: Pairwise correlations for developed Countries

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Broad Measure	1												
(2) Narrow Measure	0.67*	1											
(3) LC_INSFR	-0.04	-0.04	1										
(4) Lerner	-0.02*	-0.10*	-0.03	1									
(5) Market Share	-0.19*	-0.01	0.25*	-0.17*	1								
(6) Corp_Gov	-0.11*	0.18*	0.12*	-0.19*	0.28*	1							
(7) Capital	-0.04*	-0.35*	-0.24*	0.03*	-0.07*	-0.04*	1						
(8) Liq Risk-IB	0.24*	0.34*	0.18*	-0.01	-0.00	-0.00	-0.17*	1					
(9) Liq Risk-FG	0.06*	0.06*	-0.13	-0.09*	-0.03*	0.01*	0.07*	-0.12*	1				
(10) Credit Risk	0.01	0.03*	0.07	-0.06*	0.01	0.02*	-0.02*	-0.02*	-0.02*	1			
(11) Cre Risk-LLP	-0.01	-0.03*	-0.01	-0.13*	-0.00	0.01	0.03*	-0.02*	0.02*	0.19*	1		
(12) Size	-0.07*	0.34*	0.31*	-0.30*	0.46*	0.47*	-0.22*	-0.07*	0.05*	0.05*	-0.00	1	
(13) ROA	0.10*	-0.06*	-0.09	0.38*	-0.04*	-0.04*	0.31*	0.02*	-0.03*	-0.11*	-0.34*	-0.02*	1

- Show the significance at 1%

Table 4. 7: Pairwise correlations for developing countries.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Broad Measure	1												
(2) Narrow Measure	0.58*	1											
(3) LC_INSFR	-0.32*	-0.03	1										
(4) Lerner	-0.06	-0.05*	0.01	1									
(5) Market Share	0.12*	0.09*	0.00	-0.16*	1								
(6) Corp_Gov	-0.02	-0.01	0.10	-0.12*	0.31*	1							
(7) Capital	-0.20*	-0.37*	0.03	0.20*	-0.22*	-0.14*	1						
(8) Liq Risk-IB	0.36*	0.22*	-0.05	0.05*	0.10*	0.03*	0.01	1					
(9) Liq Risk-FG	0.20*	0.28*	0.03	0.02	-0.08*	-0.08*	-0.01	-0.14*	1				
(10) Credit Risk	-0.02	-0.00	0.00	-0.03	0.07*	0.00	-0.04	0.03	-0.03	1			
(11) Cre Risk-LLP	-0.06*	-0.13*	-0.08	0.04	-0.15*	-0.14*	0.16*	-0.04*	-0.03	0.01	1		
(12) Size	0.13*	0.09*	0.18*	-0.15*	0.53*	0.37*	-0.54*	-0.04*	-0.08*	0.07*	-0.26*	1	
(13) ROA	0.02	-0.09*	0.07	0.28*	0.05*	0.03	0.20*	0.02	0.05*	0.01	-0.22*	0.04*	1

- Show the significance at 1%

Table 4. 8: Pairwise correlations for emerging countries

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Broad Measure	1												
(2) Narrow Measure	0.70*	1											
(3) LC_INSFR	0.13	-0.03	1										
(4) Lerner	0.00	0.03	-0.26*	1									
(5) Market Share	-0.11*	0.01	0.17*	-0.08*	1								
(6) Corp_Gov	-0.17*	-0.10*	-0.26*	-0.04	0.28*	1							
(7) Capital	0.15*	-0.24*	-0.21*	0.24*	-0.22*	-0.14*	1						
(8) Liq Risk-IB	0.22*	0.15*	0.18*	0.05	0.17*	0.01	0.01	1					
(9) Liq Risk-FG	0.31*	0.42*	-0.07	-0.07*	-0.08*	-0.01	0.09*	-0.19*	1				
(10) Credit Risk	0.04	-0.02	0.02	-0.04	0.00	0.00	-0.00	-0.03	-0.06	1			
(11) Cre Risk-LLP	0.07	0.01	0.00	-0.04	-0.06*	-0.09*	0.11*	-0.04	0.04	0.03	1		
(12) Size	-0.18*	0.00	-0.19*	-0.03	0.66*	0.37*	-0.41*	0.02	-0.22*	0.00	-0.14*	1	
(13) ROA	-0.03	0.00	0.01	0.35*	0.11*	0.05	0.15*	0.15*	-0.12*	-0.02	-0.37*	0.12*	1

- Show the significance at 1%

Table 4.6 reports the correlation among the variable for the developed sample only. In developed countries, competition in the market negatively affects the banks' ability to generate liquidity. Whereas corporate governance is negatively correlated with the broad measure of liquidity creation and positively correlated with the narrow and inverse measure of liquidity creation. This suggests that strong corporate governance discourages liquidity generation through off-Balance sheet items, whereas it encourages the banks to generate liquidity through the on-balance sheet items.

Liquidity risk has a positive correlation with liquidity creation. Credit risk has a significant positive correlation with liquidity creation with the coefficient of 0.01, 0.03 and 0.07 for broad, narrow, and inverse measurement of liquidity creation. However, the sign of the relationship changes with credit risk is measured through the loan loss provision proxy. Whereas the Size and ROA of the banks have different signs with a different measure of liquidity creation.

Table 4.7 reports the correlation among the variable for the developing countries. In developing countries, competition in the market negatively correlated with the banks' ability to generate liquidity in the market. Whereas corporate governance is negatively correlated with the broad measure and narrow measure of liquidity creation and positively correlated with the inverse measure of liquidity creation.

Liquidity risk has a positive correlation with the liquidity creation, coefficient or correlation with broad, narrow and inverse measures are 0.36, 0.32 and -0.05, respectively. Credit risk has a significant positive correlation with liquidity creation with the coefficient of 0.01, 0.03 and 0.07 for broad, narrow, and inverse measurement of liquidity creation. However, the sign of the relationship changes with credit risk is measured through the loan loss provision proxy. Whereas the Size and ROA of the banks have different signs with other measures of liquidity creation.

Correlation for the variable in emerging markets is reported in Table 4.8. In emerging countries, the Lerner index positively correlated with the banks' ability to generate liquidity (both broad and narrow) in the market. Whereas corporate governance is negatively correlated with the broad measure and narrow and inverse measure of liquidity creation.

Liquidity risk has a positive correlation with the liquidity creation, coefficient or correlation with broad, narrow and inverse measure are 0.22,0.15 and 0.18, respectively. Credit risk has a significant positive correlation with liquidity creation with a coefficient of 0.04, -0.02 and 0.02 for broad, narrow and inverse measure of liquidity creation. However, the sign of the relationship remains the same coefficient value changes when credit risk is measured through the loan loss provision proxy. Whereas the Size and ROA of the banks have different signs with a different measure of liquidity creation.

4.4 Baseline Results

The results of a static econometric model of linear regression do not incorporate various issues of autocorrelation, heteroscedasticity of model parameters, and also data simultaneity and hence, leads to a biased result. In order to avoid the issues of endogeneity (mainly taken as a correlation of several explanatory variables with their error terms in the respective model) and also a dependency of lagged information of such endogenous variables, this study uses a dynamic panel dataset methodology for the estimation of unbiased, precise, and consistent estimators (Arellano & Bond, 1991; Roodman, 2009; Vithessonthi & Tongurai, 2016). The dynamic methodology enables the available smooth variance along with covariance methodology under the required situations. For this purpose, different simulations are used to analyze dynamic panel dataset models under the situation of one-step and two-step model estimators that include the difference between

Table 4. 9: Main Result with Narrow measure of CAT_NFAT

	Full Sample	Developed	Developing	Emerging
	(1)	(2)	(4)	(3)
Variables	Narrow Measure	Narrow Measure	Narrow Measure	Narrow Measure
Narrow Measure $_{t-1}$	0.869***	0.932***	0.826***	0.784***
	(0.015)	(0.017)	(0.016)	(0.028)
Lerner	-0.157***	-0.171***	-0.297***	-0.235***
	(0.055)	(0.041)	(0.033)	(0.061)
Lerner $_{t-1}$	0.127**	0.063*	0.245***	-0.070
	(0.050)	(0.035)	(0.037)	(0.061)
Capital	-0.005***	-0.002*	-0.003**	0.001*
	(0.001)	(0.001)	(0.001)	(0.001)
Capital $_{t-1}$	0.004***	0.002**	-0.001	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
Liq Risk-IB	-0.037**	-0.039***	0.033***	-0.074**
	(0.016)	(0.010)	(0.008)	(0.033)
Credit Risk	-0.002**	-0.005***	-0.004***	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Corp_Gov	-0.005***	0.004**	0.006***	-0.011
	(0.002)	(0.002)	(0.002)	(0.008)
Size	-0.001	-0.006***	0.000	-0.004
	(0.002)	(0.001)	(0.001)	(0.005)
ROA	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Interest rate	-0.007**	-0.006***	-0.012***	0.002***
	(0.001)	(0.000)	(0.003)	(0.000)
Inflation	-0.008**	-0.007**	-0.003***	-0.001*
	(0.004)	(0.003)	(0.000)	(0.000)
AR(1)	0.000	0.008	0.000	0.100
AR(2)	0.345	0.456	0.681	0.352
Hansen	0.120	0.345	0.387	0.706
Groups	5274	4763	397	132
Instruments	82	66	82	33
Observations	10,591	9,206	995	391

Following Windmeijer (2005) two step system GMM is employed to test the relationship with robust standard errors are reported in bracket. *, ** and *** indicates the significance at 1%,5% and 10% respectively. The Arellano – Bond (AB) serial correlation test concerns first differentiated residuals. Arellano-Bond specification is used to test the second-order serial correlation in residual, with Null hypothesis that first differenced errors do not shows serial correlation of second order. The Hansen test of the overidentifying restrictions for the GMM estimators is the null hypothesis that instruments used are not correlated with the residuals, and hence the overidentifying restrictions are valid.

panel estimators and also the methodology of panel estimators. Further, the widely used technique of the two-step linear model of GMM estimator is used in the analysis as it is considered to be more suitable and reliable as compared to the panel estimators described in one -step linear model of GMM (Windmeijer (2005). The efficient model of two-step dynamic panel data was effectively demonstrated by (Abbas & Masood, 2020; Ding & Sickles, 2019; Lee & Hsieh, 2013) to examine the influence of bank capital buffer, its profitability, and risk-ratio.

Table 4.9 reports the result of two step system Generalized Method of Movement (TSYS-GMM) approach of the determinants of narrow measure of liquidity creation. Using a sample of all developed, developing and developing economics of the world consisting of 76 countries and 9204 banks. We separately apply system GMM on full sample, Developed, Developing and Emerging economies of the world. Result of each category are separately mentioned in each column. The consistency and validity of the model parameters are ensured through the post-estimation test of autocorrelation and over-identification. Here Hansen test is for the exogeneity of all instruments as a group.

The Results for developed countries are reported in 4.9, which suggests that the previous year liquidity creation is the significant and positive determinant of the banks' current liquidity creation in developed countries. The coefficient of the previous year liquidity creation is positive with a value of 0.932. The sign and magnitude of the lag liquidity creation is in line with the findings of Horvath et al. (2013), they also find similar results while studying the impact of capital of banks liquidity creation.

The coefficient of the current Lerner index is -0.171 and statistically significant at 1%. The finding of the study is in line with the result of Bewazir et al. (2018) which finds the negative impact of Lerner index of the liability side and off-balance sheet liquidity of the bank. The study's finding is

also in line with the competition stability theory, which suggests increasing competition in the market forces banks to search for alternatives and earn good profit in the market. Whereas the lag of the Lerner index is also positive but significant at 10% which means that the banks generate more liquidity when they have low competition or high market power. The study results are in line with the competition fragility theory, which suggests that increasing competition reduces the banks' profit and significantly affects their ability to absorb the negative shocks. Beck et al. (2013) and Berger et al. (2009) also find a similar result while studying the impact of competition on banks liquidity creation.

Results also reveals that for banks in developed countries capital has a significant negative relationship with liquidity creation. The beta for capital is -0.002 which suggest an increase in capital reduces the banks' ability to create liquidity. The findings of the study are supported by the capital buffer theory which suggest increase in capital reduces the risk of the bank, but it also decreases it ability to create liquidity in the market. Results of this study is further supported by Bawazira et al. (2018), Horvath et al. (2013), Fungacova et al. (2010) and Berger and Bouwmen (2009), they also find a negative relationship between capital and liquidity creation. Whereas the lag capital has a significant positive relationship with the narrow measure of liquidity creation. Results of the study support the finding of Horvath et al. (2013).

In line with the theory both the credit and liquidity risk have a significant relationship with the bank's liquidity creation. Higher the liquidity and credit risk lower will be the liquidity creation by the banks. Present study contradicts the finding of the Diaz and Huang (2017) and Horvath et al. (2013) which finds a positive association between credit risk and liquidity creation. Present study also found that the corporate governance has a significant positive relationship with the liquidity creation. Finding of the study contradicts the results presented bynDiaz and Huang

(2017), they find that a negative relationship between corporate governance and banks liquidity creation.

Results for developing countries are reported in column 3 of table 4.9, finding reveals that the current liquidity creation has a significant positive relationship with lag liquidity creation of the banks in developing countries. Which means that the current liquidity creation can be determined by the last years liquidity creation. Coefficient of previous year liquidity creation is positive with a value of 0.826. The sign and magnitude of the result is in line with the findings of the Horvath et al. (2013), they also find similar results while studying the impact of the capital of banks liquidity creation.

The coefficient of the current Lerner index is -0.297 and statistically significant at 1%. Finding of the study is in line with result of Bewazir et al, (2018) which finds the negative impact of competition on banks liquidity creation of the bank. The findings of the study are also consistent with the competition stability theory, which suggests that increased competition in the market forces banks to seek alternatives and to make good profits on the market. Whereas the lag Lerner index is significantly positive, which means that banks will generate more liquidity when they have low competition or high market power. The results of the study are in line with the competition fragility theory, which suggests that increasing competition reduces bank profits and significantly affects their ability to absorb negative shocks. Beck et al. (2013) and Berger et al. (2009) also find similar results while studying competition's impact on banks' liquidity creation.

Results also reveal that capital for banks in developing countries has a significant negative relationship with liquidity creation. The capital beta is -0.003 which suggests that an increase in capital reduces the ability of banks to generate liquidity. The findings of the study are supported by the capital buffer theory, which suggests that increased capital not only reduces the bank 's risk,

but also limits its ability to create market liquidity. For instance, Casu et al. (2016) find that higher capital requirements may result in reduced liquidity creation in the Eurozone. Similarly, Horváth et al. (2014) find Czech banks have a negative and significant relationship between liquidity creation and capital.

Furthermore, Fu et al. (2016) and Distinguin et al. (2013) find similar results when analyzing commercial banks in 14 Asia-Pacific economies and a sample containing European and US banks, respectively. The results of this study is further supported by Horvath et al. (2013), Fungacova et al. (2010) and Berger and Bouwmen (2009), they also find a negative relationship between capital and liquidity creation. Whereas, in line with Horvath et al. (2013) study find that the lag capital has a significant positive relationship with the narrow measure of liquidity creation.

In line with the theory, both the credit and liquidity risk have a significant relationship with the bank's liquidity creation. Higher the liquidity and credit risk lower will be the liquidity creation by the banks. The outcome of the present study contradicts the finding of the Diaz and Huang (2017) and Horvath et al. (2013), which finds a positive association between credit risk and liquidity creation. The result of current study also found that corporate governance has a significant positive relationship with liquidity creation. This means banks with strong governance will create more liquidity in the market. The study supports Diaz and Huang (2017), they also find a similar relationship between corporate governance and banks' liquidity creation.

The results for Emerging economies are reported in 4.9 (see column 4), which suggests that the previous year liquidity creation is the significant and positive determinant of the banks' current liquidity creation in developed countries. The coefficient of the previous year liquidity creation is positive with a value of 0.784. The sign and magnitude of the lag liquidity creation is in line with

the findings of Horvath et al. (2013), they also find similar results while studying the impact of the capital of banks liquidity creation.

The coefficient of the current Lerner index is -0.235 and statistically significant at 1%. Results contradict the finding of Horvath et al. (2013) they find a positive impact of Lerner index on the banks liquidity creation. The study's finding is in line with the result of Bewazir et al, (2018), which finds the negative impact of Lerner index on the liability side of the bank. The study results are also consistent with the competition stability hypothesis, which indicates that increased competition in the market encourages banks to try alternatives and make good returns on the investment. Whereas the lag of the Lerner index is positive but insignificant, which means banks in developing countries are affected by only their current competition but not from the previous year competition.

Results also reveal that capital has a significant positive relationship with liquidity creation for banks in emerging countries. The beta for capital is 0.001 which suggests an increase in capital increase the banks' liquidity creation. The findings of the study are supported by the view that the higher the capital in the bank's assets, the higher the liquidity creation. Whereas the lag capital has a significant positive relationship with the narrow measure of liquidity creation. Results of this support the finding of Horvath et al. (2013).

As expected by theory, both the credit and liquidity risk have a significant negative relationship with the bank's liquidity creation. Higher the liquidity and credit risk lower will be the liquidity creation by the banks. The betas for liquidity and credit risk are -0.074 and -0.003, respectively. The present study contradicts the finding of the Diaz and Huang (2017) and Horvath et al. (2013) which finds a positive association between credit risk and liquidity creation. The present study also found that corporate governance has a significant negative relationship with liquidity creation in

the case of emerging countries. The findings of the study are supported by Diaz and Huang (2017), they find a negative relationship between corporate governance and banks' liquidity creation. Strong governance reduces the risk-taking of the bank and ultimately, the risk-taking of the banks. The results of beta testing highlights that the relationship between competition, corporate governance and banks liquidity creation varies with the level of development and their coefficients are significantly different from each other.

Full sample results reported in Table 4.10 suggests that the lagged liquidity creation is the significant and positive determinant of the current liquidity creation of the banks. Coefficient of previous year liquidity creation is positive with a value of 0.939. The sign and magnitude of the lag liquidity creation is in line with the findings of the Horvath et al. (2013), they also find similar results while studying the impact of capital of banks liquidity creation. Possible reason for such a high and positive beta is the growth intentions of the banks as banks earns most of their profits by generating the liquidity in the market. So, with every passing year they tend to increase their lending in comparison to the previous year.

Results for the competition shows a mixed result which means that current competition in the market negatively affects the banks liquidity creation. The coefficient of current Lerner index is -0.140 and statistically significant for the full sample. The finding of the study is in line with result of Bewazir et al, (2018) which finds the negative impact of Lerner index of the liability side and off-balance sheet liquidity of the bank. Finding of the study are also in line with the competition stability theory which suggests increase competition in the market forces banks to search for the alternatives and earn good profit in the market. Whereas the lag of the Lerner index is significant and positive which mean that the banks will generate more liquidity when they have low competition or high market power.

Table 4. 10: Main Result with Broad measure of CAT_FAT

VARIABLES	Full Sample (1) Broad Measure	Developed (2) Broad Measure	Developing (4) Broad Measure	Emerging (3) Broad Measure
Broad Measure $_{t-1}$	0.939***	0.969***	0.630***	0.734***
	(0.018)	(0.033)	(0.012)	(0.030)
Lerner	-0.140**	0.307***	-0.081***	-0.373***
	(0.060)	(0.110)	(0.024)	(0.081)
Lerner $_{t-1}$	0.194***	-0.307***	0.033*	-0.213***
	(0.050)	(0.106)	(0.018)	(0.061)
Capital	0.004***	0.006**	-0.006***	0.001
	(0.001)	(0.003)	(0.001)	(0.001)
Capital $_{t-1}$	-0.003***	-0.006*	0.004***	-0.000
	(0.001)	(0.003)	(0.001)	(0.001)
Liq Risk-IB	0.033**	0.027	0.142***	0.193***
	(0.015)	(0.028)	(0.007)	(0.037)
Cre_risk	-0.000***	-0.000	-0.003***	-0.000
	(0.000)	(0.000)	(0.001)	(0.000)
Corp_Gov	0.014***	0.016***	-0.003***	0.020***
	(0.003)	(0.003)	(0.001)	(0.005)
Size	-0.010**	-0.006**	-0.004**	-0.064***
	(0.004)	(0.003)	(0.001)	(0.013)
ROA	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Interest rate	-0.005**	-0.003***	-0.012***	0.002***
	(0.001)	(0.000)	(0.003)	(0.000)
Inflation	-0.008**	-0.007**	-0.002***	-0.001*
	(0.004)	(0.003)	(0.000)	(0.000)
AR(1)	0.000	0.010	0.000	0.153
AR(2)	0.449	0.317	0.397	0.727
Hansen	0.274	0.102	0.179	0.328
Groups	876	570	234	72
Intruments	82	37	96	66
Observations	2,387	1,485	692	210

Following Windmeijer (2005) two step system GMM is employed to test the relationship with robust standard errors are reported in bracket. *, ** and *** indicates the significance at 1%,5% and 10% respectively. The Arellano – Bond (AB) serial correlation test concerns first differentiated residuals. Arellano-Bond specification is used to test the second-order serial correlation in residual, with Null hypothesis that first differenced errors do not shows serial correlation of second order. The Hansen test of the overidentifying restrictions for the GMM estimators is the null hypothesis that instruments used are not correlated with the residuals, and hence the overidentifying restrictions are valid.

The results of the study are in line with the competition fragility theory which suggests that, increase competition reduces the banks profit and significantly affect their ability to absorb the negative shocks. Horvath et al. (2013), Beck et al. (2013) and Berger et al. (2009) also find the similar result while studying the impact of competition on banks liquidity creation. Therefore, we provide evidence that increased Bank competition or low market power can have adverse economic effects by reducing bank liquidity creation.

Results also reveals that the capital has a significant positive relationship with the broad measure of liquidity creation. The beta for capital is 0.004 which suggest increase in capital increases the banks' ability to create liquidity through off-balance sheet items. Findings of the study are supported by the capital buffer theory which suggest increase in capital reduces the risk of the bank, but it also decreases it ability to create liquidity in the market. Results are also supported by risk absorption hypothesis, which states that higher capital increase the banks liquidity creation. Results of this study contradicts the findings ofy Horvath et al. (2013), Fungacova et al. (2010) and Berger and Bouwmen (2009), they also find a negative relationship between capital and liquidity creation. Whereas, in line with the finding of Horvath et al. (2013), lag capital has a significantly negative relationship with the broad measure of liquidity creation. Lag capital is significant at 1% with coefficient-0.003 and one possible reason for the sign reversal of the capital and lag capital could be the banks adjustment to the market condition. Same excessive capital which reduces their ability to generate more liquidity in the market can serve and base to decide about the future orientation of the bank. In this way previous year capital negatively contributes to the liquidity creation. Results are consistent with the financial fragility crowding out hypothesis which predict a negative relationship between capital and liquidity creation.

In line with the theory both the credit and liquidity risk have a significant relationship with the bank's liquidity creation. Credit risk has a significantly negative relationship with the liquidity risk, which means that bank will create more liquidity when they have low credit risk. Result of the study are supported by the regulatory hypothesis which states that, bank maintain additional capital to counter the effect of risk which ultimately reduces the bank ability to reduce the liquidity. Finding of the study contradicts the results of Diaz and Huang (2017) and Horvath et al. (2013) which finds a positive association between credit risk and liquidity creation. Whereas, the liquidity risk is the positive and significant determinant of the liquidity creation. Increase in liquidity risk causes increases the liquidity creation by the banks. The Results of the Present study are in line with the finding of the Diaz and Huang (2017) and Horvath et al. (2013) which finds a positive association between z-score and liquidity creation. Findings are further supported by the moral hazard theory, which states that managers take a higher risk on the cost of deposit insurance (Demirgüç-Kunt & Kane, 2002).

The present study found that corporate governance has a significant positive determinant of liquidity creation. As, Strong governance plays a vital role in the performance and risk-taking behaviour of the bank. A robust and experienced governance system allow them to take more risk without bringing that in the notice of shareholders, thus create more liquidity through the off balance sheet item. If the bank has strong and experienced management than its sensitivity to the market risk is low leading to improved liquidity creation and financial stability. The finding of the study are further supported by Diaz and Huang (2017), they also find that corporate governance has a positive relationship with the banks' liquidity creation. They also find that few components of corporate governance (compensation and Board size) have a negative relationship with liquidity creation whereas, components like (audit quality and ownership characteristics) have a positive

relationship with liquidity creation. Strong corporate governance encourages the banks' risk-taking, which ultimately increases the liquidity creation by the bank through the off-balance sheet items. The size of the bank has a negative relationship with the broad measure of liquidity creation. The finding of the present study supported the empirical evidence provided by Bewazir et al., 2018. One of the possible reasons of this relationship is that, large banks avoid to create liquidity through off-balance sheet items which in return can increase the risk of the bank.

Results for developed countries are reported in the second column of the table 4.10, which suggests that the previous year liquidity creation is the significant and positive determinant of the current liquidity creation of the banks in developed countries. Coefficient of previous year liquidity creation is positive with a value of 0.969. The sign and magnitude of the formation of lag liquidity is in line with the Horvath et al. (2013) findings, they also find similar results while studying the impact of capital on creating liquidity for banks.

The coefficient of current Lerner index is 0.307 and statistically significant at 1%. Results of the present study are in line with the results of Choi (2017) and contradicts the result of Bewazir et al. (2018) which finds the negative impact of Lerner index of the liability side and off-balance sheet liquidity of the bank. Finding of the study is also consistent with the competition stability theory that indicates increasing market competition, pushing banks to look for alternatives, and developing innovative product and solutions generates good profit on the market by creating more market liquidity. Whereas the lag of the Lerner index is also negative and significant at 1% which mean that the banks will generate less liquidity when they have low competition or high market power. The results of the study are in line with the competition fragility theory which suggests that, increase competition reduces the banks profit and significantly affect their ability to absorb the negative shocks and ultimately reduces their liquidity. Beck et al. (2013) and Berger et al.

(2009) also find the similar result while studying the impact of competition on banks liquidity creation.

Results also reveal that for banks in developed countries capital has a significant positive relationship with liquidity creation. The beta for capital is 0.006 which suggest increase in capital increases the banks' ability to create liquidity. Results of this study is further supported by Diaz and Huang (2017) and Horvath et al. (2013) they also find a negative relationship between capital and liquidity creation. Whereas the lag capital has a significant negative relationship with the narrow measure of liquidity creation. Findings of the study are supported by the capital buffer theory, which suggests an increase in capital reduces the risk of the bank, but it also decreases it ability to create liquidity in the market Results of this supports the finding of Horvath et al. (2013).

In line with the theory both the credit and liquidity risk have a significant relationship with the bank's liquidity creation. Credit risk has a significantly negative relationship with liquidity risk, which means that bank will create more liquidity when they have low credit risk. Result of the study are supported by the regulatory hypothesis which states that, bank maintain additional capital to counter the effect of risk which ultimately reduces the bank ability to reduce the liquidity. The finding of the study contradicts the results of Diaz and Huang (2017) and Horvath et al. (2013) which finds a positive association between credit risk and liquidity creation. Whereas, the liquidity risk is the positive and significant determinant of the liquidity creation. Increase in liquidity risk causes increases the liquidity creation by the banks. The Results of the Present study are in line with the finding of the Diaz and Huang (2017) and Horvath et al. (2013) which finds a positive association between z-score and liquidity creation. Findings are further supported by the moral hazard theory, which states that managers take a higher risk on the cost of deposit insurance (Demirgüç-Kunt & Kane, 2002).

This study found that corporate governance has a significant positive determinant of the liquidity creation. As, Strong governance plays a vital role in the performance and risk taking behavior of the bank. Finding of the study are further supported by Diaz and Huang (2017), they also find that corporate governance has a positive relationship with the banks liquidity creation. They also find that few components of corporate governance (compensation and Board size) have a negative relationship with the liquidity creation whereas, components like (Audit quality and ownership characteristics) have a positive relationship with liquidity creation. Strong corporate governance encourages the banks risk taking which ultimately increases the liquidity creation by the bank through the off-balance sheet items. Size of the bank has a negative relationship with the broad measure of the liquidity creation. Finding of the present study supported the empirical evidence provide by Bewazir et al., 2018. One of the possible reasons of this relationship is that, large banks avoid to create the liquidity through off-balance sheet items which in return can increase the risk of the bank.

Results for developing countries are reported in column 3 of table 4.10, finding reveals that the current liquidity creation has a significant positive relationship with lag liquidity creation of the banks in emerging countries. Which means that the last years liquidity creation can determine the current liquidity creation. The coefficient of previous year liquidity creation is positive with a value of 0.630. The sign and magnitude of the result is in line with the findings of Horvath et al. (2013), they also find similar results while studying the impact of the capital on banks liquidity creation.

The results for the competition shows a mixed result which means that current competition in the market negatively affect the banks liquidity creation. The coefficient of the current Lerner index is -0.081 and statistically significant for the full sample. The finding of the study is in line with

result of Bewazir et al, (2018) which finds the negative impact of the Lerner index of the liability side and off-balance sheet liquidity of the bank. The study results are also in line with the competition stability theory, which suggests increasing competition in the market forces banks to search for alternatives and earn good profit in the market. Whereas the lag of the Lerner index is significant and positive which mean that the banks will generate more liquidity when they have low competition or high market power. The study results are in line with the competition fragility theory, which suggests that increasing competition reduces the banks' profit and significantly affects their ability to absorb the negative shocks. Horvath et al. (2013), Beck et al. (2013) and Berger et al. (2009) also find a similar result while studying the impact of competition on banks liquidity creation. Therefore, we provide evidence that increased Bank competition or low market power can have adverse economic effects by reducing bank liquidity creation.

Results also reveal that capital for banks in developing countries has a significant negative relationship with liquidity creation. The capital beta is -0.006 which suggests that an increase in capital reduces the ability of banks to generate liquidity. The findings of the study are supported by the capital buffer theory, which suggests that increased capital not only reduces the bank 's risk, but also limits its ability to create market liquidity. For example, while studying the sample of Eurozone Casu et al. (2016) found higher capital requirements can lead to reduced liquidity creation of liquidity. Similarly, Horváth et al. (2014) find that Czech banks have a negative and significant relationship between liquidity creation and capital. Furthermore, Distinguin et al. (2013) and Fu et al. (2016) find similar findings in the study of commercial banks in 14 Asian-Pacific economies and a study of European and US banks, respectively. Results of this study is further supported by Horvath et al. (2013), Fungacova et al. (2010) and Berger and Bouwmen (2009), they also find a negative relationship between capital and liquidity creation. In line with

Horvath et al. (2013), the study finds that the lag capital has a significant positive relationship with the narrow measure of liquidity creation.

In line with the theory both the credit and liquidity risk have a significant relationship with the bank's liquidity creation. Credit risk has a significantly negative relationship with liquidity risk, which means that bank will create more liquidity when they have low credit risk. The result of the study is supported by the regulatory hypothesis, which states that banks maintain additional capital to counter the effect of risk, which ultimately reduces the bank's ability to reduce liquidity. Finding of the study contradicts the results of Diaz and Huang (2017) and Horvath et al. (2013) which finds a positive association between credit risk and liquidity creation. Whereas, the liquidity risk is the positive and significant determinant of liquidity creation. An increase in liquidity risk causes increases the liquidity creation by the banks. The present study results are in line with the finding of Diaz and Huang (2017) and Horvath et al. (2013), which finds a positive association between z-score and liquidity creation. Findings are further supported by the moral hazard theory, which states that managers take a higher risk on the cost of deposit insurance (Demirgüç-Kunt & Kane, 2002).

The present study found that corporate governance has a significant positive determinant of liquidity creation. Strong governance plays a vital role in the performance and risk-taking behavior of the bank. The study's findings are further supported by Diaz and Huang (2017), they also find that corporate governance has a positive relationship with the banks' liquidity creation. They also find that few components of corporate governance (compensation and Board size) have a negative relationship with liquidity creation whereas, components like (Audit quality and ownership characteristics) have a positive relationship with liquidity creation. Strong corporate governance encourages risk-taking, which ultimately increases the bank's liquidity creation through the off-

balance sheet items. Bank size has a negative relationship with the broad measure of liquidity creation. The finding of the present study supported the empirical evidence provided by Bewazir et al., 2018. One possible reason for this relationship is that large banks avoid creating liquidity through off-balance sheet items, which can increase the bank's risk.

Table 4.9 (See column 4) also reports the results of the determinants of liquidity creation for emerging economies. The results suggest that the previous year's liquidity creation is the significant and positive determinant of the banks' current liquidity creation in developed countries. The coefficient of the previous year's liquidity creation is positive with a value of 0.734. The sign and magnitude of the lag liquidity creation are in line with the findings of Horvath et al. (2013), they also find similar results while studying the impact of capital on banks liquidity creation.

The coefficient of the current Lerner index is -0.373 and statistically significant at 1%. Results contradict the finding of Horvath et al. (2013) they find a positive impact of Lerner index on the banks' liquidity creation. The finding of the study is in line with the result of Bewazir et al, (2018) which finds the negative impact of Lerner index on the liability side of the bank. They also find low competition restricts the banks from creating liquidity through off-balance sheet items. The study results are also consistent with the competition stability hypothesis, which indicates that increased competition in the market encourages banks to try alternatives and make good returns on investment. Whereas the Lerner index's lag is positive but insignificant, which means banks in developing countries are affected by only their current competition but not from the previous year competition.

Results also reveal that capital has a significant positive relationship with liquidity creation for banks in emerging countries. The beta for capital is 0.001, which suggests an increase in capital increase the banks' liquidity creation. The study's findings are supported by the view that the

higher the capital in the bank's assets, the higher the liquidity creation. The study's findings are in line with the financial fragility crowding out theory, which states that higher capital reduces liquidity creation. Whereas, the lag capital has a significant negative relationship with the broad measure of liquidity creation. The findings of this study support Bewazir et al.(2018) 's results and contradict the conclusion of Horvath et al. (2013).

Column 4 of Table 4.10 also reports that liquidity risk is the positive and significant determinant of liquidity creation in emerging economies. An increase in liquidity risk causes increases the liquidity creation by the banks. The Results of the Present study are in line with the finding of the Diaz and Huang (2017) and Horvath et al. (2013) which finds a positive association between z-score and liquidity creation. Findings are further supported by the moral hazard theory, which states that managers take a higher risk on the cost of deposit insurance (Demirgüç-Kunt & Kane, 2002). Credit risk has a significantly negative relationship with liquidity risk, which means that bank will create more liquidity when they have low credit risk. The result of the study is supported by the regulatory hypothesis, which states that banks maintain additional capital to counter the effect of risk, which ultimately reduces the banks' ability to reduce liquidity. The finding of the study contradicts the results of Diaz and Huang (2017) and Horvath et al. (2013), which finds a positive association between credit risk and liquidity creation.

The present study found that corporate governance has a significant and positive predictor of the creation of liquidity. Governance plays a crucial role in the success and risk-taking behaviour of the bank. Results are in line with the Finding of Diaz and Huang (2017), they also find that corporate governance has a positive relationship with the banks' liquidity creation. They also find that few components of corporate governance (compensation and Board size) have a negative relationship with liquidity creation whereas, components like (Audit quality and ownership

characteristics) have a positive relationship with liquidity creation. Strong corporate governance encourages the banks' risk-taking, which ultimately increases the bank's liquidity creation through the off-balance sheet items. In line with Bewazir et al. (2018), we find that the bank size has a negative relationship with the broad measure of liquidity creation. One possible reason for this relationship is that large banks avoid creating liquidity through off-balance sheet items, increasing the bank's risk.

The results of beta testing highlights that the relationship between competition, corporate governance and banks liquidity creation varies with the level of development and their coefficients are significantly different from each other.

To test the robustness of the results, we use another measure of the liquidity creation mentioned in chapter 3. Full sample results reported in 4.11 suggest that the lagged liquidity creation is the significant and positive determinant of the bank's current liquidity creation Coefficient of the previous year's liquidity creation is positive with a value of 0.940. Findings are consistent across all proxies of liquidity creation. A possible reason for such a high and positive beta is the banks' growth intentions as banks earn most of their profits by generating liquidity in the market. So, with every passing year they tend to increase their lending in comparison to the previous year. Results for the competition show a mixed opinion, current competition in the market negatively affects the banks' liquidity creation. The coefficient of the current Lerner index is -0.002 and statistically significant for the full sample. Finding the study is in line with Bewazir et al, (2018), which finds the negative impact of Lerner index of the liability side and off-balance sheet liquidity of the bank. The study's findings are also in line with the competition stability theory, which suggests increasing competition in the market forces banks to reduce the banks' liquidity creation. Results are identical to the narrow measure of liquidity creation.

Table 4. 11: Main Result with LC_INSFR

VARIABLES	Full Sample	Developed	Developing	Emerging
	(1)	(2)	(3)	(4)
	LC_INSFR	LC_INSFR	LC_INSFR	LC_INSFR
LC_INSFR $_{t-1}$	0.940***	0.824***	0.968***	0.641**
	(0.004)	(0.054)	(0.017)	(0.511)
Lerner	-0.002***	-0.002***	-0.001***	-0.013*
	(0.000)	(0.000)	(0.000)	(0.007)
Lerner $_{t-1}$	0.001***	-0.000	0.000	0.016
	(0.000)	(0.000)	(0.000)	(0.011)
Capital	-0.003***	-0.008*	-0.007***	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)
Capital $_{t-1}$	0.001***	0.003***	0.002***	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)
Liq Risk-IB	-0.042***	-0.032***	-0.029***	-0.060
	(0.000)	(0.000)	(0.000)	(0.005)
Cre_risk	-0.001***	-0.000	-0.003**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Corp_Gov	0.002***	0.004*	0.003***	0.001
	(0.000)	(0.000)	(0.000)	(0.001)
Size	-0.000**	-0.000*	0.000***	-0.005
	(0.000)	(0.000)	(0.000)	(0.004)
ROA	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Interest rate	-0.005**	-0.003***	-0.012***	0.002***
	(0.001)	(0.000)	(0.003)	(0.000)
Inflation	-0.008**	-0.007**	-0.002***	-0.001*
	(0.004)	(0.003)	(0.000)	(0.000)
AR(1)	0.191	0.049	0.704	0.151
AR(2)	0.109	0.328	0.267	0.183
Hansen	0.262	0.178	0.285	0.382
Groups	107	55	32	20
Instruments	79	37	31	20
Observations	304	159	94	51

Following Windmeijer (2005) two step system GMM is employed to test the relationship with robust standard errors are reported in bracket. *, ** and *** indicates the significance at 1%,5% and 10% respectively. The Arellano – Bond (AB) serial correlation test concerns first differentiated residuals. Arellano-Bond specification is used to test the second-order serial correlation in residual, with Null hypothesis that first differenced errors do not shows serial correlation of second order. The Hansen test of the overidentifying restrictions for the GMM estimators is the null hypothesis that instruments used are not correlated with the residuals, and hence the overidentifying restrictions are valid.

Whereas the Lerner index's lag is significant and positive, which means in a less competitive environment, banks create more liquidity. The study findings are consistent with the competition fragility theory, which indicates that increased competition decreases banks' profit and dramatically affects their capacity to withstand adverse shocks. Horvath et al. (2013), Beck et al. (2013) and Berger et al. (2009) also report similar conclusions when examining the effects of competition on banks' liquidity creation. We thus provide evidence that increased competition from the Bank or low market power can have detrimental economic effects by reducing the bank liquidity creation.

Results also reveal that capital has a significant negative relationship with liquidity creation. The beta for capital is -0.002, which suggests an increase in capital reduces the banks' ability to create liquidity. The findings of the study are supported by the capital buffer theory, which suggests an increase in capital reduces the risk of the bank, but it also decreases it ability to create liquidity in the market. Results of this study is further supported by Horvath et al. (2013), Fungacova et al. (2010), Bawazira et al. (2018) and Berger and Bouwmen (2009), they also find a negative relationship between capital and liquidity creation. Whereas the lag capital has a significant positive relationship with the narrow measure of liquidity creation. The findings of the present study support the finding of Horvath et al. (2013). One possible reason for the sign reversal of the capital and lag capital could be the banks' adjustment to the market condition. The same excessive capital reduces their ability to generate more liquidity in the market and can serve and base to decide about the bank's future orientation. In this way, previous year capital positively contributes to liquidity creation.

In line with the theory, both the credit and liquidity risk have a significant relationship with the bank's liquidity creation. Credit risk has a significantly negative relationship with liquidity risk,

which means that banks will create more liquidity when they have low credit risk. The result of the study is supported by the regulatory hypothesis, which states that banks maintain additional capital to counter the effect of risk, which ultimately reduces the bank's ability to reduce liquidity. The finding of the study contradicts the results of Diaz and Huang (2017) and Horvath et al. (2013) which find a positive association between credit risk and liquidity creation. Liquidity risk, on the other hand, is a positive and substantial factor of liquidity creation. An increase in the risk of liquidity leads to an increase in the amount of liquidity created by banks. The present study results are in line with the finding of the Diaz and Huang (2017) and Horvath et al. (2013), which finds a positive association between z-score and liquidity creation. The results are also supported by the moral hazard theory, which indicates that managers assume a greater risk on the cost of deposit insurance (Demirgüç-Kunt & Kane, 2002).

The present study found that corporate governance has a significant positive determinant of liquidity creation. As, Strong governance plays a vital role in the performance and risk-taking behavior of the bank. The study's findings are further supported by Diaz and Huang (2017), they also find that corporate governance has a positive relationship with the banks' liquidity creation. They also find that few components of corporate governance (compensation and Board size) have a negative relationship with liquidity creation whereas, components like (Audit quality and ownership characteristics) have a positive relationship with liquidity creation. Strong corporate governance encourages the banks' risk-taking which ultimately increases the liquidity creation by the bank through the off-balance sheet items. The size of the bank is inversely related to the broad measure of liquidity creation. The current study's findings corroborated the results provided by Bewazir et al., (2018), one probable explanation for this association is that major banks avoid generating liquidity through off-balance sheet items, which increases the bank's risk.

Results for developed countries are reported in the second column of Table 4.11, which suggests that the previous year liquidity creation is the significant and positive determinant of the banks' current liquidity creation in developed countries. The coefficient of the previous year liquidity creation is positive with a value of 0.824. The sign and coefficient of lag liquidity creation is in line with Horvath et al. (2013) findings, they also find similar results while studying the impact of capital on creating liquidity for banks.

The coefficient of the current Lerner index is -0.002 and statistically significant at 1%. The findings of this study are consistent with those of Bewazir et al. (2018) and contradict those of Choi (2017), who found a positive relationship between the liability side Lerner index and the bank's off-balance sheet liquidity. The findings also show that capital has a substantial positive link with liquidity creation for banks in developed countries. The beta for capital is 0.008 suggesting an increase in capital increases the banks' ability to create liquidity. The findings of this study are corroborated by Diaz and Huang (2017) and Horvath et al. (2013), who likewise discover a negative link between capital and liquidity generation. The lag capital has a significant negative relationship with the narrow measure of liquidity creation. Findings of the study are supported by the capital buffer theory, which suggests an increase in capital reduces the risk of the bank, but it also decreases it ability to create liquidity in the market Results of this supports the finding of Horvath et al. (2013).

In line with the financial theories, both the credit and liquidity risk have a significant relationship with the bank's liquidity creation. Credit risk has a significantly negative relationship with liquidity risk, which means that banks will create more liquidity when they have low credit risk. The result of the study is supported by the regulatory hypothesis, which states that banks maintain additional capital to counter the effect of risk, which ultimately reduces the bank's ability to reduce

liquidity. The study's findings contradict those of Diaz and Huang (2017) and Horvath et al. (2013), who found a positive relationship between credit risk and liquidity creation. On the other hand, the liquidity risk is a positive and significant determinant of liquidity creation. An increase in liquidity risk causes increases the liquidity creation by the banks. The current findings are consistent with those of Diaz and Huang (2017) and Horvath et al. (2013), who discovered a favourable relationship between z-score and liquidity creation. Findings are further reinforced by the moral hazard theory, which states that managers take a higher risk on the cost of deposit insurance (Demirgüç-Kunt & Kane, 2002).

The present study found that corporate governance has a significant positive determinant of liquidity creation. As strong governance plays a crucial part in the bank's overall performance and risk-taking behaviour. The study's findings are reinforced further by Diaz and Huang (2017), who discover that corporate governance has a positive impact with banks' liquidity creation. They also find that few components of corporate governance (compensation and Board size) have a negative relationship with liquidity creation whereas, components like (Audit quality and ownership characteristics) have a positive relationship with liquidity creation. Strong corporate governance encourages the banks risk taking, which ultimately increases the bank's liquidity creation through the off-balance sheet items. The bank's size is negatively correlated with the broad measure of liquidity creation. The findings of the current investigation corroborated the empirical evidence provided by Bewazir et al., (2018).

Results for developing countries are reported in column 3 of Table 4.11, finding reveals that the current liquidity creation has a significant positive relationship with lag liquidity creation of the banks in emerging countries. This means that the last years' liquidity creation can determine the current liquidity creation. The coefficient of the previous year liquidity creation is positive with a

value of 0.968. The magnitude and sign of the result are consistent with those found by Horvath et al. (2013), who also find similar results when investigating the effects of bank capital on liquidity formation.

The results of the competition indicate a mixed picture, indicating that the current level of competition in the market has a positive impact on the banks' ability to provide liquidity. The current Lerner index has a coefficient of -0.081, which is statistically significant for the full sample result. The findings of this study are consistent with the findings of Bewazir et al. (2018), who observed a negative impact of the Lerner index on the liabilities side and off-balance sheet liquidity of the bank. Furthermore, the findings of the study are in accordance with the Competition Stability Theory, which suggests that more competition in the market encourages banks to seek out alternatives in order to generate a high profit in the marketplace. The lag of the Lerner index, on the other hand, is significant and positive, indicating that banks will generate more liquidity when there is little competition or when they have a lot of market power. The findings of the study are consistent with the competition fragility theory, which implies that increased competition reduces the profit of banks and has a major impact on their ability to absorb negative shocks in the long run. While analyzing the influence of competition on bank liquidity creation, Horvath et al. (2013), Beck et al. (2013), and Berger et al. (2009) all come to the same conclusion. As a result, we show that increased bank competition or a lack of market dominance might have negative economic consequences by limiting bank liquidity creation.

Furthermore, results show that banks in developing nations with lower levels of capital are less likely to create liquidity. The capital beta is -0.007, indicating that increasing capital limits banks' ability to produce liquidity. The study is supported by the capital buffer theory that increased buffer not only minimizes the bank's risk but also limits its ability to produce market liquidity. For

example, while studying the sample of Eurozone Casu et al., (2016) found higher capital requirements can lead to reduced liquidity creation of liquidity. Horvath et al. (2014) discovered that the relationship between liquidity creation and capital is negative and significant in Czech banks. Furthermore, Distinguin et al. (2013) and Fu et al. (2016) found comparable findings in studies of commercial banks in 14 Asian-Pacific economies and European and US banks, respectively. The result of this study is further supported by Horvath et al. (2013), Fungacova et al. (2010) and Berger and Bouwmen (2009), they also find a negative relationship between capital and liquidity creation. According to Horvath et al. (2013), lag capital shows a significant positive association with the narrow measure of liquidity creation.

In line with the theory, both the credit and liquidity risk have a significant relationship with the bank's liquidity creation. Credit risk has a significantly negative relationship with liquidity risk, which means that bank will create more liquidity when they have low credit risk. The study's result is supported by the regulatory hypothesis, which states that the bank maintains additional capital to counter the effect of risk, which ultimately reduces the bank's ability to reduce liquidity. Finding of the study contradicts the results of Diaz and Huang (2017) and Horvath et al. (2013) which finds a positive association between credit risk and liquidity creation. Whereas, the liquidity risk is the positive and significant determinant of liquidity creation. An increase in liquidity risk causes increases the liquidity creation by the banks. The Results of the Present study are in line with the finding of the Diaz and Huang (2017) and Horvath et al. (2013) which finds a positive association between z-score and liquidity creation. Findings are further supported by the moral hazard theory, which states that managers take a higher risk on the cost of deposit insurance (Demirgüç-Kunt & Kane, 2002).

Corporate governance was found to be a major positive predictor of liquidity creation because strong governance is critical to a bank's profitability and risk-taking behaviour. The finding of the study are further supported by Diaz and Huang (2017), they also find that corporate governance has a positive relationship with the banks' liquidity creation. They also find that few components of corporate governance (compensation and Board size) have a negative relationship with liquidity creation. Whereas, components like (Audit quality and ownership characteristics) have a positive relationship with liquidity creation. Strong corporate governance encourages the banks' risk-taking, which ultimately increases the bank's liquidity creation through the off-balance sheet items. The size of the bank has a negative relationship with the broad measure of liquidity creation. The current study's findings corroborated the empirical evidence provided by Bewazir et al., 2018. One probable explanation for this association is that large banks avoid generating liquidity through off-balance sheet transactions, which increases the bank's risk.

Table 4.11 (See column 4) also reports the results of the determinants of liquidity creation for emerging economies. Results reveal that the previous year liquidity creation is the significant and positive determinant of the bank's current liquidity creation. The coefficient of the previous year liquidity creation is positive with a value of 0.641. The sign and magnitude of the lag in liquidity creation are consistent with Horvath et al. (2013)'s findings; they also discover comparable results when examining the impact of banks' capital on liquidity generation.

The coefficient of the current Lerner index is -0.013 and statistically significant at 10%. Contrary to Horvath et al. (2013), the results indicate that the Lerner index has a favorable effect on banks' liquidity creation. The finding of the study is in line with the result of Bewazir et al. (2018) which finds the negative impact of the Lerner index of the liability side of the bank. They also find low competition restricts the banks from creating liquidity through off-balance sheet items. The study's

findings also support the competition stability hypothesis, which states that increased market competitiveness drives banks to explore alternate investments and earn a profit. On the other hand, the Lerner index has a positive but insignificant impact on liquidity creation, implying that banks in developing nations are affected solely by their present competition and not by competition from the previous year.

Results also reveal that capital has a significant positive relationship with liquidity creation for banks in emerging countries. The beta for capital is 0.001, suggesting an increase in capital increase the banks' liquidity creation. The study's findings supported by the view that the higher the capital in the bank's assets higher will be the liquidity creation. The study's findings are in line with the financial fragility crowding out theory, which states that higher capital reduces liquidity creation. Whereas the lag capital has a significant negative relationship with the broad measure of liquidity creation. The findings of this study confirm the findings of Bewazir et al. (2018), however they are in contradiction to the findings of Horvath et al (2013).

In line with the theory, both credit and liquidity risk significantly negatively affect the bank's liquidity creation. Higher the liquidity and credit risk lower will be the liquidity creation by the banks. The betas for liquidity and credit risk are -0.060 and -0.000, respectively. The present study contradicts the finding of the Diaz and Huang (2017) and Horvath et al. (2013) which finds a positive association between credit risk and liquidity creation. In the case of emerging countries, the current research discovered that corporate governance has a strong negative relation with liquidity creation. The findings of the study are supported by Diaz and Huang (2017), they find a negative relationship between corporate governance and banks' liquidity creation.

The present study found that corporate governance has a significant and positive predictor of the creation of liquidity. Governance plays a crucial role in the success and risk-taking behaviour of

the bank. The findings are consistent with Diaz and Huang (2017), who discovered that corporate governance has a favorable relationship with the banks' liquidity creation. They also find that few corporate governance components (compensation and Board size) have a negative relationship with liquidity creation whereas, components like (Audit quality and ownership characteristics) have a positive relationship with liquidity creation. Strong corporate governance encourages banks to take risks, which enhances liquidity creation through off-balance sheet transactions. In line with Bewazir et al. (2018) findings, we find that the bank's size has a negative relationship with the broad measure of liquidity creation. One of the possible reasons for this relationship is that large banks avoid creating liquidity through off-balance sheet items, which in return can increase the bank's risk.

Overall, the study's findings suggest that apart from the lag of liquidity creation, competition significantly affects the banks' liquidity creation. The findings of the study are robust to the different measures of liquidity creation. Banks with high market power create less liquidity and drives its profit from the high-interest rate margins. Banks capital remains a significant determinant of the liquidity creation, although sign varies specifically with broad measure of liquidity creations. High capital provides leverage to create liquidity through the off-balance sheet items, and findings are robust to different liquidity creation proxies. Credit risk and liquidity risk has a negative relationship with both narrow and inverse measure of liquidity creation; however, have a positive relationship with the broad measure of liquidity creation. The findings are substantiated by the opinion that risk has a negative impact on liquidity creation through on-balance-sheet items since it is visible to all stakeholders and they can adjust their decision making accordingly.

The results of beta testing highlights that the relationship between competition, corporate governance and banks liquidity creation varies with the level of development and their coefficients are significantly different from each other.

4.5 Mediation Results

The section provides the result of the mediation analysis. Mediation regression analysis was used to explore the mediation effects of liquidity risk, credit risk on competition and banks liquidity creation on one side and corporate governance and liquidity creation on the other side. Barren and Kenny's (1986) method was used for mediation analysis, which can be run if three conditions are fulfilled. The results related to the direct effects of corporate governance and competition on banks' liquidity creation measure through on and off-balance sheet items are reported in Table 4.12 and 4.13, respectively. The direct impact of corporate governance ($\beta_1 = -0.016, p < 0.01$) and was significantly negatively linked with banks liquidity creation for full sample results. The direct impact of competition ($\beta_2 = -0.008, \ p < 0.01$) and has a significantly negative relationship with banks liquidity creation for full sample results. The direct impact of corporate governance ($\beta_1 = -0.022, p < 0.01$) and was significantly negatively associated with banks liquidity creation for developed economies. The direct impact of competition ($\beta_2 = -0.009, \ p < 0.01$) and has a significantly negative relationship with banks liquidity creation for developed economies.

Column 3 of Table 4.12 reports the result of the direct impact of competition and competition on banks' liquidity creation for developing economies. The direct impact of corporate governance (β_1=-0.003,p<0.05) and was significantly negatively associated with banks liquidity creation in developing economies. The direct impact of competition (β_2=0.007,p<0.05) and has a significantly negative relationship with banks' liquidity creation for developed economies.

Table 4. 12: Impact of competition and corporate governance on CAT_FAT

VARIABLES	Full Sample (1) Broad Measure	Developed (2) Broad Measure	Developing (3) Broad Measure	Emerging (4) Broad Measure
Corp_Gov	-0.016***	-0.022***	-0.003**	-0.016**
	(0.003)	(0.005)	(0.002)	(0.008)
Lerner	-0.008***	-0.009***	0.007**	-0.013**
	(0.002)	(0.003)	(0.003)	(0.006)
Size	0.008**	0.017***	0.011**	-0.009
	(0.003)	(0.005)	(0.005)	(0.017)
ROA	0.220	0.721	-0.414	0.361
	(0.273)	(0.448)	(0.419)	(0.544)
Constant	-0.019	-0.109	-0.145*	0.208
	(0.051)	(0.068)	(0.082)	(0.266)
Number of index	1,360	793	409	158
Adj R-square	0.011	0.007	0.031	0.031
P- value	0.000	0.000	0.197	0.261
Observations	7109	4625	1720	764

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The direct impact of corporate governance ($\beta_1 = -0.016, p < 0.05$) and was significantly negatively associated with banks liquidity creation for emerging economies (see Column 4 and Table 4.12). The direct impact of competition ($\beta_2 = -0.013, p < 0.05$) and has a significantly negative relationship with banks liquidity creation for emerging economies (see Column 4 and Table 4.12). For the sake of brevity, the results of control variables are not discussed here.

The results of the direct impact of corporate governance and competition on banks' liquidity creation (narrow measure) are reported in Table 4.13. Column 1 of Table 4.13 report the result of the full sample period and the direct impact of corporate governance ($\beta_1 = -0.008, p < 0.01$) and was significantly negatively associated with banks liquidity creation. The direct impact of competition ($\beta_2 = 0.077, p < 0.01$) and has a significantly positive relationship with banks' liquidity creation. The direct impact of corporate governance ($\beta_1 = -0.006 \ p < 0.01$) and was significantly negatively associated with banks' liquidity creation for developed economies. The

direct impact of competition ($\beta_2 = 0.061$, $p < 0.01$) and has a significantly positive relationship with banks liquidity creation for developed economies.

Table 4. 13: Impact of competition and corporate governance on CAT_NFAT

	Impact of competition and corporate governance on Narrow Measure			
	Full Sample	Developed	Developing	Emerging
	(1)	(2)	(3)	(4)
VARIABLES	Narrow Measure	Narrow Measure	Narrow Measure	Narrow Measure
Corp_Gov	-0.008***	-0.006***	0.002*	-0.007*
	(0.001)	(0.002)	(0.001)	(0.004)
Lerner	0.077***	0.061***	0.121***	0.055***
	(0.005)	(0.005)	(0.027)	(0.004)
size	0.024***	0.036***	0.006***	0.014**
	(0.001)	(0.001)	(0.002)	(0.006)
ROA	-0.369***	-0.326***	-0.641***	0.073
	(0.058)	(0.058)	(0.178)	(0.303)
Constant	-0.381***	-0.499***	-0.235***	-0.274***
	(0.016)	(0.018)	(0.035)	(0.092)
Number of index	7,575	6,304	925	346
Adj R-square	0.060	0.084	0.042	0.010
P- value	0.000	0.000	0.000	0.000
Observations	46841	42029	3332	1480

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Column 3 of Table 4.13 summarises the direct effects of competition and competition on bank liquidity creation in developing economies. The direct impact of corporate governance ($\beta_1 = 0.002, p < 0.1$) and was significantly positively associated with banks liquidity creation in developing economies. The direct impact of competition ($\beta_2 = 0.121$, $p < 0.01$) and has a significantly negative relationship with banks' liquidity creation for developed economies.

The direct impact of corporate governance ($\beta_1 = -0.007, p < 0.1$) and was significantly negatively associated with banks liquidity creation for emerging economies (see Column 4 and Table 4.13). The direct impact of competition ($\beta_2 = -0.013$, $p < 0.01$) and has a significantly negative relationship with banks' liquidity creation for emerging economies (see Column 4 and Table 4.13).

Table 4. 14: Impact of competition and corporate governance on liquidity risk

	Full Sample	Developed	Developing	Emerging
	(1)	(2)	(3)	(4)
VARIABLES	Liq Risk-IB	Liq Risk-IB	Liq Risk-IB	Liq Risk-IB
Corp_Gov	-0.007***	-0.008***	-0.004**	-0.002**
	(0.002)	(0.002)	(0.004)	(0.006)
Lerner	0.132***	0.149***	0.007**	0.016**
	(0.009)	(0.009)	(0.030)	(0.071)
Capital	-0.307***	-0.258***	-0.230***	-0.519***
	(0.033)	(0.042)	(0.058)	(0.161)
Size	0.011***	0.023***	-0.009***	0.002
	(0.002)	(0.002)	(0.003)	(0.008)
ROA	0.756***	0.763***	0.321	1.913***
	(0.103)	(0.113)	(0.235)	(0.406)
Constant	-0.139***	-0.293***	0.105**	-0.028
	(0.022)	(0.027)	(0.047)	(0.116)
Number of index	8,048	6,431	1,241	376
Adj R-square	0.038	0.053	0.018	0.073
P- value	0.000	0.000	0.003	0.000
Observations	48,660	42,518	4,478	1,664

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

To test the second step of the mediation analysis, we test the impact of dependent variables (competition and corporate governance) on the mediator (liquidity risk). Column 1 of Table 4.14 reports full sample results of the direct impact of the competition and corporate governance on liquidity risk. The study's findings confirm that corporate governance ($\beta_1 = -0.007, p < 0.01$) negatively relates to the bank's liquidity risk. Whereas the Lerner index ($\beta_1 = 0.132, \ p < 0.01$) has a significant positive relationship with the liquidity risk, bank with greater market power generates more liquidity and has greater liquidity risk.

Column 2 of Table 4.14 shows the results for developed countries. The corporate governance (Lerner Index) shows a statistically significant negative (positive) relation with liquidity risk. In Column 3 of Table 4.14, the direct effects of competition and competition on liquidity risk for developing economies are provided. The direct impact of corporate governance ($\beta_1 = -0.004, p < 0.05$) and was significantly negatively associated with banks liquidity creation in

developing economies. The direct impact of competition ($\beta_2 = 0.007$, $p < 0.05$) and has a significantly positive relationship with banks' liquidity creation for developed economies.

The direct impact of corporate governance ($\beta_1 = -0.002, p < 0.05$) and was significantly negatively associated with banks liquidity creation for emerging economies (see Column 4 and Table 4.14). The direct impact of competition ($\beta_2 = 0.016$, $p < 0.05$) and has a significantly positive relationship with banks liquidity creation for emerging economies (see Column 4 and Table 4.14).

Table 4. 15: Impact of competition and corporate governance on credit risk

	Full Sample	Developed	Developing	Emerging
	(1)	(2)	(3)	(4)
VARIABLES	Credit Risk	Credit Risk	Credit Risk	Credit Risk
Corp_Gov	-0.013**	-0.023***	-0.012**	-0.009**
	(0.006)	(0.007)	(0.015)	(0.019)
Lerner	0.419***	0.469***	0.161**	0.167**
	(0.051)	(0.059)	(0.127)	(0.182)
Size	0.024***	0.020***	0.041***	-0.020
	(0.005)	(0.006)	(0.012)	(0.027)
ROA	4.843***	6.163***	0.979**	4.035***
	(0.723)	(0.921)	(0.429)	(1.003)
Constant	-0.348***	-0.328***	-0.537***	0.534
	(0.074)	(0.091)	(0.172)	(0.381)
Number of index	8,187	6,517	1,278	392
Adj R-square	0.0165	0.0268	0.0123	0.0182
P- value	0	0	0	0
Observations	49209	42907	4589	1713

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Column 1 of Table 4.15 reports full sample results of the direct impact of the competition and corporate governance on credit risk. The study's findings confirms that corporate governance ($\beta_1 = -0.013, p < 0.05$) negatively relates to the bank's liquidity risk. Whereas the Lerner index ($\beta_2 = 0.419$, $p < 0.01$) has a significant positive relationship with the liquidity risk, bank with greater market power generates more liquidity and has greater liquidity risk.

The results for the developed countries are reported in Column 2 of Table 4.15. Corporate governance (Lerner Index) has a statistically negative(positive) relationship with the liquidity risk in the context of developed economies. Relationship between the Lerner index and credit risk is positive which suggest the credit risk is high when bank has more market power, mean market power has a positive relationship with the credit risk. One of the possible justifications for such result are that bank lend more money when they have greater market power, and they are earning the abnormal profit on their lending's.

Column 3 of Table 4.15 report the result of the direct impact of competition and competition on liquidity risk for developing economies. The direct impact of corporate governance ($\beta_1 = -0.012, p < 0.05$) and was significantly negative associated with banks liquidity creation in developing economies. The direct impact of competition ($\beta_2 = 0.161, p < 0.05$) and has a significantly positive relationship with liquidity risk for developing economies.

The direct impact of corporate governance ($\beta_1 = -0.009, p < 0.05$) and was significantly negatively associated with liquidity risk for emerging economies (see Column 4 and Table 4.15). The direct impact of competition ($\beta_2 = 0.167, p < 0.05$) and has a significantly positive relationship with liquidity risk for emerging economies (see Column 4 and Table 4.15). Whereas the size and ROA are taken as a control variable in these models.

Table 4. 16: Impact of competition on Capital

	Full Sample	Developed	Developing	Emerging
	(1)	(2)	(3)	(4)
VARIABLES	Capital	Capital	Capital	Capital
Lerner	0.008***	0.009***	0.007***	0.068***
	(0.002)	(0.002)	(0.011)	(0.017)
ROA	0.635***	0.622***	0.951***	0.625***
	(0.040)	(0.039)	(0.239)	(0.178)
Size	-0.006***	-0.007***	-0.015***	-0.017***
	(0.001)	(0.001)	(0.003)	(0.004)
Constant	0.180***	0.182***	0.350***	0.342***
	(0.008)	(0.009)	(0.055)	(0.063)
Number of index	6,600	5,935	478	187
Adj R-square	0.105	0.113	0.117	0.148
P- value	0	0	0	0
Observations	38682	36427	1599	656

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 4.16 reports the result of the impact of competition on banks' capital. Column 1 of Table 4.16 reveals that the direct impact of the Lerner index ($\beta_1 = 0.008, p < 0.01$) and was significantly positively associated with banks capital ratio during full sample results. The study's findings are in line with the capital buffer theory according to which banks have additional capital buffer when operating in the competitive market or reducing the risk in case of excessive lending.

The direct impact of competition ($\beta_1 = 0.009, p < 0.01$) and significantly positively associated with banks capital for developed economies. The outcome of the study are consistent across the developing and emerging economies of the world. For the sake of brevity, the results of control variables are not discussed here.

The three conditions of mediation related to investment performance were also fulfilled. The direct path, the impact of the mediator path and the path from independent variable to mediator were all significant (Table 4.12-4.16).

Table 4. 17: Mediation results for CAT_FAT

VARIABLES	Full Sample (1) Broad Measure	Developed (2) Broad Measure	Developing (3) Broad Measure	Emerging (4) Broad Measure
Corp_Gov	-0.014***	-0.018***	-0.004**	-0.011***
	(0.004)	(0.004)	(0.002)	(0.005)
Lerner	-0.029**	-0.034***	-0.047***	-0.028**
	(0.012)	(0.014)	(0.001)	(0.107)
Capital	-0.228**	-0.139**	-0.169*	-1.026***
	(0.104)	(0.070)	(0.091)	(0.302)
Liquidity Risk-IB	0.290***	0.295***	0.329***	0.134**
	(0.032)	(0.018)	(0.034)	(0.068)
Credit Risk	-0.002*	-0.000*	0.001**	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.001	0.011***	-0.011*	-0.046***
	(0.004)	(0.004)	(0.006)	(0.017)
ROA	0.546	0.757***	-0.106	1.030
	(0.345)	(0.259)	(0.514)	(0.780)
Constant	0.169***	0.016	0.262**	0.863***
	(0.054)	(0.055)	(0.110)	(0.268)
Number of index	998	652	254	92
Adj R-square	0.0999	0.0678	0.143	0.0335
P- value	0	0	0	0.00196
Observations	5203	3886	995	322

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The results indicate that the direct impact of the independent variable (corporate governance and competition) on the dependent variable (banks liquidity creation) without a mediator was significant, as reported in Table 4.12-4.13, and the direct impact of the independent variable (corporate governance and competition) on the dependent variable (banks liquidity creation) with the mediator was also significant (Table 4.17 and 4.18). Therefore, these results suggest that liquidity risk partially mediates the relationship between corporate governance and banks liquidity creation on one side and competition and banks liquidity creation on the other side. And overall impact of the corporate governance and Lerner index reduces in the presence of liquidity risk. The findings of the study remain consistent across developed, developing and emerging economies of the globe and narrow measure of liquidity creation.

Table 4. 18: Mediation results for CAT_NFAT

VARIABLES	Full Sample (1) Narrow Measure	Developed (2) Narrow Measure	Developing (3) Narrow Measure	Emerging (4) Narrow Measure
Corp_Gov	0.001***	0.002**	0.011***	-0.006***
	(0.000)	(0.001)	(0.003)	(0.002)
Lerner	0.035***	0.026***	0.077**	-0.005**
	(0.005)	(0.004)	(0.038)	(0.003)
Capital	-0.385***	-0.362***	-0.250***	-0.950***
	(0.027)	(0.022)	(0.095)	(0.113)
ROA	-0.328***	-0.314***	-0.892***	0.855***
	(0.048)	(0.044)	(0.294)	(0.284)
Liq Risk-IB	0.227***	0.230***	0.171***	0.050**
	(0.006)	(0.006)	(0.030)	(0.024)
Credit Risk	-0.000***	-0.000**	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.013***	0.022***	-0.003	-0.008
	(0.001)	(0.001)	(0.004)	(0.007)
Constant	-0.184***	-0.280***	-0.055	0.151
	(0.014)	(0.016)	(0.063)	(0.102)
Number of index	6,455	5,859	425	171
Adj R-square	0.273	0.298	0.156	0.158
P- value	0.000	0.000	0.000	0.000
Observations	38186	36129	1470	587

Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

The outcome also reveals that impact of the corporate governance and competition on the bank's liquidity creation (narrow and broad measure) without credit risk was significant, as reported in Table 4.12-4.13, and the direct impact of the corporate governance and competition on the banks liquidity creation with the mediator was also significant (Table 4.17 and 4.18). Therefore, these results suggest that credit risk partially mediates the relationship between corporate governance and banks liquidity creation on one side and competition and banks liquidity creation on the other side. Additionally, the effect of corporate governance and the Lerner reduces in the presence of credit risk. Results confirm that corporate governance reduces the bank's risk taking, which ultimately reduces the bank liquidity creation. Whereas the Lerner index negatively affects liquidity creation. Which mean the in the competitive market banks create less liquidity and the

finding are in line the competition fragility theory. The findings of the study are consistent across other proxy of liquidity creation and developed to developing and emerging.

The finding of the study documents that the relationship between competition on the bank's liquidity creation (narrow and broad measure) without capital was significant, as reported in Table 4.12-4.13, and the direct impact of the competition on the banks liquidity creation with the capital was also significant (Table 4.17 and 4.18). Therefore, these results suggest that capital partially mediates the relationship between competition and banks liquidity creation. Additionally, the effect of the Lerner enhances the presence of capital. The competition fragility theory supports findings of the study, according to which bank operating in the highly competitive market have high capital buffer ratios which ultimately reduce the banks liquidity creation. The finding of the study are also in line with the capital buffer theory, according to which under risky condition banks hold additional capital to reduce their risk which ultimately affect the bank performance and ability to create liquidity in the market. Table 4.19 presents the study's overall findings with respect to all the stated hypotheses and acceptance or rejection.

Table 4. 19: Summary of the Results

Hypothesis	Result
H1 Bank competition has a positively influence banks' liquidity creation.	*Accepted*
H2: The impact of competition on banks liquidity creation varies across developed, developing, and emerging countries.	*Accepted*
H3: Corporate Governance has a positive relationship with the Banks liquidity creation.	*Accepted*
H4: The effect of governance on bank liquidity creation is stronger for banks in developed, developing and emerging countries.	*Accepted*
Hypothesis 5: Liquidity risk has a negative relationship with the bank's liquidity creation.	*Accepted*
Hypothesis 6: Credit risk has a negative relationship with the bank's liquidity creation.	*Accepted*
Hypothesis 7: Liquidity risk has a significantly different relationship with the bank's liquidity creation in developed, developing and emerging countries.	*Accepted*
Hypothesis 8: Credit risk has a significantly different relationship with the bank's liquidity creation in developed, developing and emerging countries.	*Accepted*
Hypothesis 9: Bank competition has a significantly negative relationship with liquidity risk.	*Accepted*
Hypothesis 10: Bank competition has a significantly negative relationship with credit risk.	*Accepted*
Hypothesis 11: Risk mediates the relationship between liquidity creation and banks competition.	*Accepted*
Hypothesis 12: Corporate governance has a negative relationship with banks risk (Liquidity & Credit).	*Accepted*
Hypothesis 13: Bank risk (Liquidity & Credit) mediates the relationship between banks corporate governance and banks liquidity creation.	*Accepted*
Hypothesis 14: Capital ratio has negative relationship with banks liquidity creation.	*Accepted*
Hypothesis 15: Capital ratio mediates the relationship between competition and liquidity creation.	*Accepted*

4.6 Robustness of the Results

In order to check the robustness of the results of the panel data results with the Generalized method of moment (GMM), we also conduct additional robustness tests to increase the generalizability and validity of the results. For that purpose, we estimate all the models by using alternative proxies. For measuring the competition in the banking sector, we use the bank's market share in that country.

Table 4.20 reports that the previous year liquidity creation is the significant and positive determinant of the banks' current liquidity creation. The sign and magnitude of the lag liquidity creation is in line with the findings of Horvath et al. (2013), they also find similar results while studying the impact of the capital on banks' liquidity creation. A possible reason for such a high and positive beta is the banks' growth intentions as banks earn most of their profits by generating liquidity in the market. The competition results are mixed, which means that current competition in the market negatively affects the banks' liquidity creation. The coefficient of market share is negative for the full sample and for developed countries, developing and emerging economies. The finding of the study is in line with the result of Bewazir et al., (2018), which finds the negative impact of competition of the liability side and off-balance sheet liquidity of the bank. The study's finding is also in line with the competition stability theory, which suggests increasing competition in the market forces banks to search for alternatives and earn good profit in the market. The result of this model is similar to the main findings of this study, which confirm that results are robust to the alternative proxy of competition. Therefore, we provide evidence that increased Bank competition or low market power can have Positive effects by increasing bank liquidity creation.

Table 4. 20: Impact of market share and corporate governance on CAT_NFAT

VARIABLES	Full Sample (1) Narrow Measure	Developed (2) Narrow Measure	Developing (3) Narrow Measure	Emerging (4) Narrow Measure
Narrow Measure $_{t-1}$	1.017***	0.878***	0.860***	0.720***
	(0.014)	(0.027)	(0.020)	(0.008)
Market Share	-1.761***	-2.361*	-1.010*	-0.451***
	(0.609)	(1.382)	(0.555)	(0.133)
Market Share $_{t-1}$	1.072***	1.370*	1.183**	0.265**
	(0.606)	(1.376)	(0.560)	(0.135)
Capital	-0.000	-0.004***	-0.001	0.000**
	(0.000)	(0.001)	(0.001)	(0.000)
Capital $_{t-1}$	0.002***	0.002*	-0.001	0.002***
	(0.000)	(0.001)	(0.001)	(0.000)
Liq Risk-IB	-0.012	-0.067***	0.029**	-0.024**
	(0.009)	(0.016)	(0.013)	(0.010)
Credit Risk	-0.001**	0.003**	0.001	-0.001***
	(0.000)	(0.001)	(0.001)	(0.000)
Corp_Gov	0.001**	0.002	0.002	0.006***
	(0.000)	(0.002)	(0.002)	(0.002)
Size	-0.001*	-0.002	-0.001	-0.015***
	(0.000)	(0.001)	(0.002)	(0.002)
Macro control	Yes	Yes	Yes	Yes
AR(1)	0.000	0.005	0	0.031
AR(2)	0.091	0.469	0.581	0.322
Hansen	0.297	0.088	0.168	0.335
Groups	5385	4792	440	153
Intruments	73	56	56	56
Observations	11,581	9,421	1,626	534

Following Windmeijer (2005) two step system GMM is employed to test the relationship with robust standard errors are reported in bracket. *, ** and *** indicates the significance at 1%,5% and 10% respectively. The Arellano – Bond (AB) serial correlation test concerns first differentiated residuals. Arellano-Bond specification is used to test the second-order serial correlation in residual, with Null hypothesis that first differenced errors do not shows serial correlation of second order. The Hansen test of the overidentifying restrictions for the GMM estimators is the null hypothesis that instruments used are not correlated with the residuals, and hence the overidentifying restrictions are valid.

Table 4. 21: Impact of market share and corporate governance on CAT_FAT

VARIABLES	Full Sample (1) Broad Measure	Developed (2) Broad Measure	Developing (3) Broad Measure	Emerging (4) Broad Measure
Broad Measure$_{t-1}$	0.930***	1.022***	0.556***	1.159***
	(0.015)	(0.014)	(0.017)	(0.042)
Market Share	-3.123***	-1.828***	-2.158***	-1.522***
	(0.840)	(0.484)	(0.413)	(0.429)
Market Share$_{t-1}$	2.481***	1.588***	1.191***	-1.233***
	(0.805)	(0.467)	(0.322)	(0.373)
Capital	0.005***	0.000	-0.002***	0.006**
	(0.001)	(0.001)	(0.001)	(0.002)
Capitalt-1	-0.005***	0.002***	-0.001*	0.003**
	(0.001)	(0.001)	(0.001)	(0.002)
Liq Risk-IB	0.028	0.025***	0.143***	-0.116***
	(0.019)	(0.006)	(0.010)	(0.024)
Cre_risk	-0.000***	0.000***	0.001*	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Corp_Gov	0.012***	-0.009***	-0.003	0.032***
	(0.003)	(0.001)	(0.002)	(0.006)
Size	0.000	0.010***	-0.004*	0.010
	(0.002)	(0.001)	(0.002)	(0.009)
Macro control	Yes	Yes	Yes	Yes
AR(1)	0.032	0.002	0.129	0.015
AR(2)	0.429	0.312	0.438	0.232
Hansen	0.353	0.066	0.589	0.213
Groups	937	582	270	85
Instruments	83	83	96	33
Observations	3,075	1,652	1,128	295

Following Windmeijer (2005) two step system GMM is employed to test the relationship with robust standard errors are reported in bracket. *, ** and *** indicates the significance at 1%,5% and 10% respectively. The Arellano – Bond (AB) serial correlation test concerns first differentiated residuals. Arellano-Bond specification is used to test the second-order serial correlation in residual, with Null hypothesis that first differenced errors do not shows serial correlation of second order. The Hansen test of the overidentifying restrictions for the GMM estimators is the null hypothesis that instruments used are not correlated with the residuals, and hence the overidentifying restrictions are valid.

The result of the alternative proxy of competition (market share) and broad measure of liquidity creation is reported in table 4.21. Results for the competition shows a market share have a negative relationship with the bank liquidity creation, suggesting bank rely on rent-seeking if they have high market power. The finding of the study is in line with the result of Bewazir et al., (2018), which finds the negative impact of competition of the liability side and off-balance sheet liquidity

of the bank. The study's finding is also in line with the competition stability theory, which suggests increasing competition in the market forces banks to search for alternatives and earn good profit in the market. Table 4.22 reports the result for the alternative proxy of the liquidity creation measured through the inverse measure of the liquidity creation.

Table 4. 22: Impact of market share and corporate governance on LC_INSFR

VARIABLES	Full Sample (1) LC_INSFR	Developed (2) LC_INSFR	Developing (4) LC_INSFR	Emerging (3) LC_INSFR
L.LC_INSFR	0.949***	0.996***	1.040***	0.591***
	(0.002)	(0.105)	(0.022)	(0.203)
Market Share	-0.005***	-0.024***	-0.005*	-0.044**
	(0.000)	(0.009)	(0.003)	(0.020)
Market Share $_{t-1}$	0.004***	0.025**	0.004*	-0.039**
	(0.000)	(0.010)	(0.002)	(0.018)
Capital	-0.001***	0.002**	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
Capital $_{t-1}$	0.003***	-0.002***	0.001*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)
Liq Risk-IB	0.000***	-0.001**	0.000	0.011*
	(0.000)	(0.000)	(0.000)	(0.006)
Cre_risk	0.000***	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Corp_Gov	-0.000***	0.000	-0.000**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.000***	0.000	0.000**	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)
Macro control	Yes	Yes	Yes	Yes
AR(1)	0.026	0.014	0.022	0.226
AR(2)	0.113	0.311	0.521	0.345
Hansen	0.209	0.538	0.379	0.734
Groups	111	56	34	21
Instruments	79	32	26	21
Observations	354	177	112	65

Following Windmeijer (2005) two step system GMM is employed to test the relationship with robust standard errors are reported in bracket. *, ** and *** indicates the significance at 1%,5% and 10% respectively. The Arellano – Bond (AB) serial correlation test concerns first differentiated residuals. Arellano-Bond specification is used to test the second-order serial correlation in residual, with Null hypothesis that first differenced errors do not shows serial correlation of second order. The Hansen test of the overidentifying restrictions for the GMM estimators is the null hypothesis that instruments used are not correlated with the residuals, and hence the overidentifying restrictions are valid.

Column 1 of Table 4.23 reports full sample results of the direct impact of the competition and corporate governance on liquidity risk. The study's findings confirms that corporate governance $(\beta_1 = -0.007\ p < 0.01)$ negatively relates to the bank's liquidity risk. Whereas the Lerner index $(\beta_1 = -0.288,\ p < 0.001)$ has a significant negative relationship with the liquidity risk, bank with greater market power generates more liquidity and has greater liquidity risk.

The results for the developed countries are reported in Column 2 of Table 4.23. Corporate governance (Lerner Index) has a statistically negative(positive) relationship with the liquidity risk in the context of developed economies.

Table 4. 23: Impact of market share and corporate governance on liquidity risk

	Full Sample	Developed	Developing	Emerging
	(1)	(2)	(3)	(4)
VARIABLES	Liq Risk-IB	Liq Risk-IB	Liq Risk-IB	Liq Risk-IB
Corp_Gov	-0.008***	-0.010***	0.001	-0.003
	(0.002)	(0.002)	(0.003)	(0.002)
Market Share	-0.288***	-0.790***	0.565***	0.515**
	(0.106)	(0.171)	(0.179)	(0.209)
Capital	-0.325***	-0.317***	-0.254***	-0.261**
	(0.031)	(0.040)	(0.053)	(0.108)
Size	0.009***	0.022***	-0.011***	-0.008
	(0.002)	(0.002)	(0.003)	(0.009)
ROA	1.142***	1.417***	0.458**	1.670***
	(0.096)	(0.110)	(0.196)	(0.333)
Constant	-0.074***	-0.232***	0.139***	0.071
	(0.023)	(0.029)	(0.045)	(0.125)
Number of index	8,459	6,589	1,430	440
Adj R-square	0.0257	0.0390	0.0111	0.0295
P- value	0.000	0.000	0.000	0.000
Observations	53209	43944	6962	2303

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Column 3 of Table 4.23 reports the result of the direct impact of competition and competition on liquidity risk for developing economies. The direct impact of corporate governance $(\beta_1 = 0.001, p > 0.01)$ and was insignificantly negative associated with banks liquidity creation in

developing economies. The direct impact of competition ($\beta_2 = 0.565$, $p < 0.01$) and has a significantly positive relationship with banks liquidity creation for developed economies.

The direct impact of corporate governance ($\beta_1 = -0.00, p < 0.05$) and was significantly negatively associated with banks' liquidity creation for emerging economies (see Column 4 and Table 4.23). The direct effect of competition ($\beta_2 = 0.515$, $p < 0.05$) and has a significantly positive relationship with banks' liquidity creation for emerging economies (see Column 4 and Table 4.23). Whereas the size and ROA are taken as control variable in these models.

Table 4. 24: Impact of market share and corporate governance on credit risk

	Full Sample	Developed	Developing	Emerging
	(1)	(2)	(3)	(4)
VARIABLES	Credit Risk	Credit Risk	Credit Risk	Credit Risk
Corp_Gov	-0.013**	-0.020***	0.007**	0.004***
	(0.005)	(0.007)	(0.003)	(0.001)
Market Share	0.538*	-0.023	0.341**	0.694**
	(0.311)	(0.541)	(0.170)	(0.326)
Capital	-0.240***	-0.305***	0.032	-0.423*
	(0.046)	(0.104)	(0.136)	(0.245)
Size	0.003	-0.001	0.026***	-0.026
	(0.005)	(0.006)	(0.008)	(0.020)
ROA	5.865***	7.788***	1.830*	3.103**
	(0.183)	(0.738)	(0.937)	(1.522)
Constant	0.071	0.105	-0.262**	0.500*
	(0.064)	(0.076)	(0.127)	(0.288)
Number of index	8,917	6,878	1,526	513
Adj R-square	0.0115	0.0172	0.0138	0.00325
P- value	0.000	0.000	0.000	0.000
Observations	55377	45562	7319	2496

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Column 1 of Table 4.15 reports full sample results of the direct impact of the competition and corporate governance on credit risk. The study's findings confirm that corporate governance ($\beta_1 = -0.013, p < 0.05$) negatively relates to the bank's liquidity risk. Whereas the Lerner index ($\beta_2 = 0.538$, $p < 0.1$) has a significant positive relationship with the liquidity risk, bank with greater

market power generates more liquidity and has greater liquidity risk.

Column 2 of Table 4.15 summarizes the findings for developed countries. In developed economies, corporate governance and the Lerner Index have a statistically negative relation with liquidity risk. The Lerner index negatively relates to credit risk, implying that banks with greater market power take less credit risk. One possible explanation for such an outcome is that banks lend more money when they have higher market power and generate an abnormal profit on their loans.

Column 3 of Table 4.15 reports the findings of the direct impact of competition and competition on liquidity risk for developing economies. The direct impact of corporate governance ($\beta_1 = 0.007, p < 0.05$) and was significantly positively associated with banks liquidity creation in developing economies. The direct impact of competition ($\beta_2 = 0.341,\ p < 0.05$) and has a significantly positive relationship with liquidity risk for developing economies.

Table 4. 25: Impact of market share on capital

	Full Sample	Developed	Developing	Emerging
	(1)	(2)	(3)	(4)
VARIABLES	Capital	Capital	Capital	Capital
Market Share	0.311***	0.678***	0.214***	0.114**
	(0.047)	(0.093)	(0.073)	(0.046)
ROA	0.710***	0.686***	0.978***	0.964***
	(0.038)	(0.039)	(0.186)	(0.094)
Liq Risk-IB	-0.000	0.002	-0.006	-0.030***
	(0.002)	(0.002)	(0.009)	(0.009)
Credit Risk	-0.000	-0.000	-0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.009***	-0.009***	-0.022***	-0.027***
	(0.001)	(0.001)	(0.003)	(0.003)
Constant	0.213***	0.218***	0.455***	0.500***
	(0.009)	(0.009)	(0.054)	(0.041)
Number of index	6,770	5,992	565	213
Adj R-square	0.106	0.118	0.110	0.153
P- value	0.000	0.000	0.000	0.000
Observations	40093	36851	2369	873

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The direct impact of corporate governance ($\beta_1 = 0.004, p < 0.05$) and was significantly posively associated with liquidity risk for emerging economies (see Column 4 and Table 4.15). The direct impact of competition ($\beta_2 = 0.694, p < 0.05$) and has a significantly positive relationship with liquidity risk for emerging economies (see Column 4 and Table 4.15). Whereas the size and ROA are taken as control variables in these models.

Table 4.25 reports the result of the impact of competition on banks' capital. Column 1 of Table 4.25 reveals that the direct impact of the Lerner index ($\beta_1 = 0.311\ p < 0.001$) and was significantly positively associated with banks' capital ratio during full sample results. The study's findings are consistent with the capital buffer theory, which states that banks keep a buffer when operating in a competitive market or decreasing risk in the event of excessive lending.

The direct impact of competition ($\beta_1 = 0.678, p < 0.001$) and significantly positively associated with bank capital for developed economies. The outcome of the study are consistent across the developing and emerging economies of the world. For the sake of brevity, the results of control variables are not discussed here.

These results suggest that liquidity risk partially mediates the relationship between corporate governance and banks liquidity creation on one side and competition and banks liquidity creation on the other side. And the overall impact of the corporate governance and Lerner index reduces in the presence of liquidity risk. The findings of the study remain consistent across developed, developing and emerging economies of the globe and narrow measure of liquidity creation.

The outcome also reveals that impact of the corporate governance and competition on the bank's liquidity creation (narrow and broad measure) without credit risk was significant, and the direct impact of the corporate governance and competition on the banks liquidity creation with the

mediator was also significant (Table 4.26 and 4.27). Therefore, these results suggest that credit risk partially mediates the relationship between corporate governance and banks liquidity creation on one side and competition and banks liquidity creation on the other side. Additionally, the effect of corporate governance and the Lerner reduces in the presence of credit risk. Results confirm that corporate governance reduces the bank's risk-taking, which ultimately reduces the bank liquidity creation. Whereas the Lerner index negatively affects liquidity creation. Which mean the in the competitive market banks create less liquidity and the finding are in line the competition fragility theory. The findings of the study are consistent across other proxy of liquidity creation and developed to developing and emerging.

Table 4. 26: Impact of market share and corporate governance on CAT_FAT

	Full Sample	Developed	Developing	Emerging
	(1)	(2)	(3)	(4)
VARIABLES	Broad Measure	Broad Measure	Broad Measure	Broad Measure
Corp_Gov	-0.010***	-0.013***	-0.002	-0.017
	(0.003)	(0.004)	(0.005)	(0.012)
Market Share	-0.784***	-1.455***	0.220	0.153
	(0.124)	(0.199)	(0.201)	(0.339)
Capital	-0.165***	0.039	-0.257***	-1.114***
	(0.053)	(0.068)	(0.087)	(0.253)
ROA	0.513**	0.497**	0.401	0.953
	(0.212)	(0.250)	(0.488)	(0.646)
Liq Risk-IB	0.326***	0.328***	0.356***	0.134**
	(0.015)	(0.017)	(0.029)	(0.057)
Credit Risk	-0.000	-0.000	0.001	0.000
	(0.000)	(0.000)	(0.000)	(0.001)
Size	0.007**	0.023***	-0.014*	-0.047***
	(0.003)	(0.004)	(0.007)	(0.018)
Constant	0.051	-0.179***	0.290**	0.885***
	(0.050)	(0.060)	(0.119)	(0.271)
Number of index	1,066	676	291	99
Adj R-square	0.136	0.135	0.153	0.0752
P- value	0.000	0.000	0.000	0.000
Observations	5914	4085	1419	410

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The study's findings show that the relationship between competition and bank liquidity creation (narrow and broad measures) remains substantial in the presence of capital, demonstrating partial mediating role of capital. Therefore, these outcomes imply that capital partially mediates the relationship between competition and banks' liquidity creation. Additionally, the effect of Lerner enhances in the presence of capital. The study's findings are supported by the competition fragility theory, which states that banks operating in a highly competitive market have large capital buffer ratios, which reduces the banks' liquidity creation.

Table 4. 27: Impact of market share and corporate governance on CAT_NFAT

	Full Sample	Developed	Developing	Emerging
VARIABLES	Narrow Measure	Narrow Measure	Narrow Measure	Narrow Measure
Corp_Gov	0.002	0.004***	0.004	-0.005
	(0.001)	(0.001)	(0.003)	(0.005)
Market Share	-0.645***	-1.046***	0.451***	-0.110
	(0.080)	(0.145)	(0.112)	(0.154)
Capital	-0.371***	-0.332***	-0.345***	-0.775***
	(0.028)	(0.025)	(0.042)	(0.080)
ROA	-0.199***	-0.232***	-0.516**	0.627***
	(0.046)	(0.043)	(0.202)	(0.238)
Liq Risk-IB	0.228***	0.232***	0.158***	0.075***
	(0.006)	(0.006)	(0.012)	(0.021)
Credit Risk	-0.000***	-0.000**	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.015***	0.025***	-0.014***	-0.005
	(0.001)	(0.001)	(0.003)	(0.007)
Constant	-0.196***	-0.307***	0.139***	0.093
	(0.015)	(0.017)	(0.052)	(0.103)
Number of index	6,597	5,908	497	192
Adj R-square	0.260	0.294	0.142	0.147
P- value	0.000	0.000	0.000	0.000
Observations	39354	36456	2125	773

Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

The study's findings are consistent with the capital buffer theory, which states that banks keep a buffer when operating in a competitive market or lowering risk in the event of excessive lending.

4.7 Graphical representation of the Main results

Figure 3 displays the results of our theoretical model. Competition and Corporate governance are the independent variable where as capital, liquidity risk and credit are the meditator and liquidity creation is the dependent variable of this study.
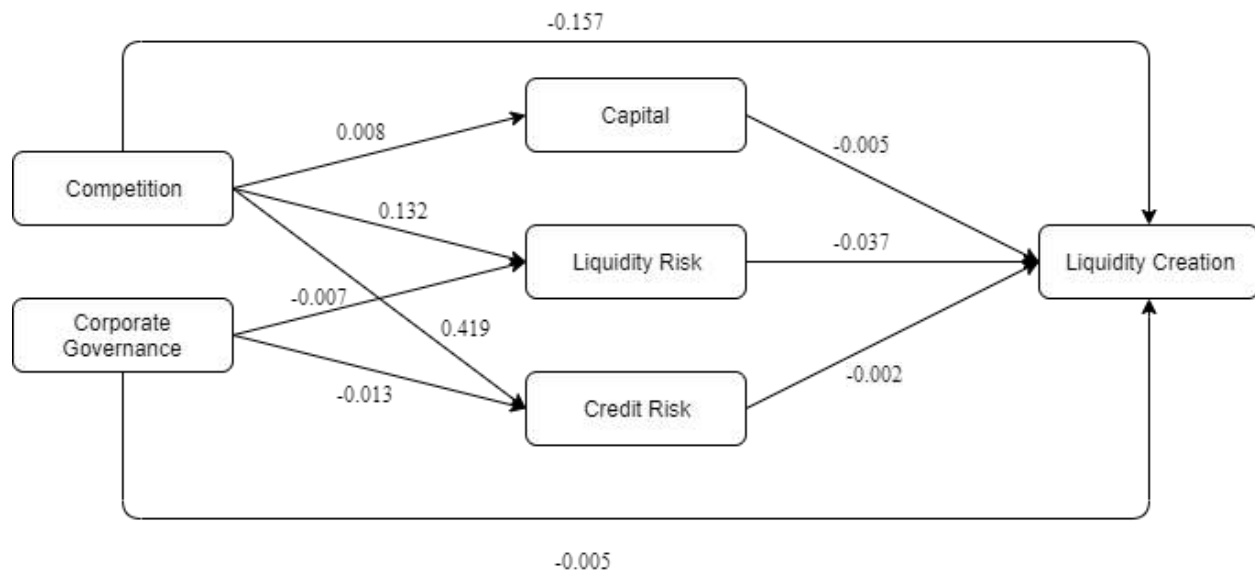

Figure 2: Graphical representation of full sample results for the narrow measure of liquidity creation

CHAPTER 5: CONCLUSION

This chapter demonstrates the comparison of findings between current research findings with the existing research, enlists the theoretical contributions, identifies the study's limitations, and provides directions for future research with policy implications and conclusions.

The global financial crisis demonstrated that banks' oversized balance sheets (due to relaxed lending) in terms of excessive liquidity creation and poor governance severely damage the financial system and trigger financial instability. In addition, the 2008-financial crisis also highlighted the significance of off-balance-sheet activities to credit liquidity that occurred predominantly through securitization in the shadow banking system. These activities radiate banks from traditional banking and stress the importance of banks' off-balance-sheet assets to create higher liquidity and earn higher profits at unknown higher risk.

This study focuses on the banks' liquidity creation as it is the core activity by commercial banks, which has increased enormously in the past few years. As per the liquidity creation theory, banks create liquidity through on-balance sheet items and off-balance sheet items. Thereby, the banks' on and off-balance sheet activities are indispensable components. Therefore, this study aims to find the relationship between bank competition, corporate governance, and liquidity creation by using a sample of 9204 banks from 76 countries covering the period from 2013-2019. In addition, this study investigates the mediating role of banks' capital, liquidity risk, and credit risk between competition and liquidity creation.

Furthermore, this study also examines the mediating role of liquidity risk and credit risk between corporate governance and banks' liquidity creation. We use the two-step system GMM to study

the role of competition and corporate governance in determining the banks' liquidity creation and fixed effect to study the mediating roles of capital, liquidity risk, and credit risk. The empirical findings demonstrate the empirical evidence for the stated hypotheses. The current chapter provides the summary and overall concluding remarks for the four previous chapters, followed by the critical reflections of the findings, and discusses the theoretical and policy implications that may help identify and formulate concrete recommendations. In particular, this conclusion sheds light on the individual contributions to the existing literature and underlines the research limitations and motivations for a broader scope of future research. Finally, this chapter brings the research journey to its conclusion.

5.1 Summary of the Research

To conclude, Banks as intermediary institutions raise funds from customer's deposits and allocate them into various kinds of assets. Such a process of funds allocation enables banks to channelize the available liquid assets into various categories of investments to promote economic activities. In other words, when banks use their liquid liabilities to finance illiquid assets, they consequently create liquidity and hence promote productive investments that boost the progress of lending institutes and enhance the growth and development of the economy. As such, in their function in combining cash with human endeavours and moving them into a state of creation, banks add to real economic growth. It is worth noting that a diverse array of banks create liquidity in the market and henceforth play a pivotal role in economic growth. Given the great significance of banks' liquidity creation in the economy, it must be dealt with carefully.

The present study aims to find the impact of competition and corporate governance on the banks' liquidity creation using the two-step system GMM method over the period from 2013-2019 of all commercial banks from all developed, developing, and emerging economies of the world.

Furthermore, the present study also explores the mediating role of liquidity risk and credit risk to influence the relationship between competition, corporate governance, and bank liquidity creation. In addition to it, we also explore the mediating role of bank capital to influence the relationship between competition and the bank's liquidity creation by using the ordinary least square method.

The empirical findings show a mixed result regarding the nexus between the banks' competition and liquidity creation. The study results favour the financial stability view regarding the relationship between competition and banks' liquidity creation. Findings reveal that high market power promotes the rent-seeking behaviour of lending financial institutions. Due to this reason, bank managers charge higher interest rates to secure higher profits instead of creating higher liquidity. In a similar context, due to higher competition, banks require to introduce alternative and distinctive products to enlarge their banking activities for higher profits instead of entirely depending on liquidity creation. The development of distinctive products will diversify the earnings sources of banks; hence the stability of banks increases. Here, the empirical outcomes provide proof that banks with higher market power tend to generate lower liquidity and enhance their other activities to maintain their franchise value.

However, the relationship with broad measure of liquidity creation is slightly different in the case of developed countries. The result of the study is aligned with the competition fragility theory, which suggests that increasing competition reduces the banks' profit and significantly affects their ability to absorb adverse shocks. Horvath et al. (2013), Beck et al. (2013), and Berger et al. (2009) also find a similar result while studying the impact of competition on banks' liquidity creation.

The study also confirms that banks behave differently while creating liquidity through on and off-balance sheet items. In developed countries, banks with higher market power create a higher level of liquidity (through off-balance sheet items) in the market, this may be due to the high credit

demand in financially developed countries, or maybe they are cashing their market share by making an extended commitment to their customer. This means that competition in the financial sector affects differently to banks in the developed economy; banks in a monopolistic(competitive) environment generate more (less) liquidity through the off-balance sheet item. The findings of the study support the results of Bewazir et al. (2018), who also find that increased competition contributes to the banks' stability and confirms it affects not only the balance sheet items but also the off-balance-sheet items as well. The present study's finding sheds light on the discussion over banks' competition and its economic impact as there is a trade-off between competition and economic growth. Increased competition can increase the consumers' welfare (lowering the banks' interest rate/ profit margin) in the market, ultimately contributing to economic growth. On the one side, higher competition increases the banks' risk, which can affect the stability of the financial system performance and stability. These contradictory predictions have significant implications for economists, policymakers, investors, and bankers that how to deal with competition in the market for the optimal uses of resources. However, on the other hand, it can also affect the banks' stability as highlighted by (Berger er al., 2009, Beck et al., 2013), so it is a double sword edge for the banks' manager and policymakers to decide whether to increase or discourage the competition in the market.

The Study finds that apart from the significance of banks' competition in determining the banks' liquidity creation, the magnitude of the impact is different across developed, developing, and emerging economies. This means what so ever the level of development is, competition increases the stability (by generating a low level of liquidity) of the banking sector, but its magnitude is different, and findings are robust to different proxies of the liquidity creation. Results also show that competition affects the banks' stability risk, ultimately reducing the banks' liquidity creation.

Apart from the positive benefits of the competition on the consumers' welfare, it also affects the banks' stability. As the finding suggests, the risk meditates the relationship between competition and liquidity creation. It means banks' competition directly and indirectly (through risk) affects the banks' liquidity creation. Whereas the strength of the relationship with the level of development in an economy.

Results also reveal that capital has a significant negative relationship with the narrow and inverse measure of liquidity creation. Empirical evidence shows that the holding of higher capital is associated with lower liquidity creation in the economy. The findings of the study for the narrow and inverse measure are in line with the capital buffer theory. The regulators suggest that banks have to create a capital buffer that will enhance banks' loss absorption capacity. On the other hand, the excessive holding of capital decreases banks' liquidity creation in the economy. Findings are further supported by the "financial fragility-crowding out" hypothesis, according to which higher capital reduces the banks' ability to generate liquidity in the market by inducing a less fragile capital structure and by crowding out hypothesis (Winton & Gorton, 2017; Umer et al., 2018). This negative relationship between bank capital and creating liquidity has significant policy significance. It indicates that bank capital ratios implemented for safety purposes can seriously destroy liquidity, thus harming economic performance. There is a trade-off between the advantages of financial stability and the lower cost of generating more bank capital. This study's findings complement those of Horvath et al. (2013), Fungacova et al. (2010), and Berger and Bouwmen (2009), who all observed an inverse relation between capital and liquidity generation.

The outcomes for the broad measure of liquidity generation differ in that capital has a positive connection with CAT_FAT for the full sample, developed and emerging economies. The findings are backed by the notion that having a sufficient capital buffer enhances bank risk-taking, resulting

in more liquidity creation through off-balance-sheet activities. The findings corroborate the risk absorption hypothesis, which states that increasing the capital ratio improves banks' ability to create liquidity by absorbing the risks. The finding of the study supports the result of Danishman (2018), they also find a similar relationship while studying the relationship between capital and banks' liquidity creation. Moreover, the lag capital has a significant positive relationship with the narrow and inverse measure of liquidity creation. The results support the finding of Horvath et al. (2013). One possible reason for the sign reversal of the lag capital could be the banks' adjustment to the market condition. The same excessive capital that reduces their ability to generate more liquidity in the market can serve as a benchmark to decide about the bank's future orientation. Empirical results also reveal the mediating role of capital in the relationship between bank competition and liquidity creation. Findings suggest, increased competition affects the banks' capital ratio, which ultimately impacts the banks' liquidity creation in the short run.

The study finds the mixed results for the relationship between corporate governance and banks' liquidity creation. The present study found that corporate governance has a significant positive determinant of the liquidity creation created through off-balance sheet items, which plays an essential role in the recent global crisis. Strong governance plays a vital role in the bank's liquidity creation, performance, and risk-taking behaviour. The finding of the study is further supported by Diaz and Huang (2017), they also find that corporate governance has a positive relationship with the banks' liquidity creation. They also find that few components of corporate governance (compensation and Board size) have a negative relationship with liquidity creation whereas, components like (Audit quality and ownership characteristics) have a positive relationship with liquidity creation. Strong corporate governance encourages the banks' risk-taking, ultimately increasing their liquidity creation through the off-balance sheet items. But in the case of the on-

balance sheet items, the relationship is negative, which means banks discourage risk-taking through the on-balance sheet items. Conversely, the relationship is negative with the narrow measure of liquidity creation.

The size of the bank has a negative relationship with the broad measure of liquidity creation. The finding of the present study supported the empirical evidence provided by Bewazir et al., 2018. One of the possible reasons for this relationship is that large banks avoid creating liquidity through off-balance sheet items, which could increase the bank's risk.

In line with the theory, both credit and liquidity risk significantly affect the bank's liquidity creation. Higher the liquidity and credit risk lower will be the liquidity creation by the banks. In line with the finance theories, we find liquidity and credit risk have a negative and significant relationship with the narrow and inverse measure of the liquidity creation, and sign are consistent over all the study sub-samples. The current analysis supports the findings of Diaz and Huang (2017) and Horvath et al. (2013), who found a strong positive relationship between credit risk and liquidity creation.

The study's finding reveals that the lag of liquidity creation is the significant and positive determinant of the current liquidity creation. The findings of the study are in line with Horvath et al. (2013); they also find similar results while studying the impact of capital on banks' liquidity creation. The significant positive coefficient of the lag liquidity creation indicates that last year, liquidity creation contributes to current liquidity creation. The bank's growth intentions are a potential explanation for such a strong and positive beta, as banks gain most of their income by creating liquidity in the market. In comparison to the previous year, they appear to increase their lending with each passing year. The finding is similar for all the categories (developed, developing,

and emerging) of the sample. Whereas, in the case of competition, we find mixed results regarding its relationship with the banks' liquidity creation.

5.2 Policy Implications and Recommendations

This research provides some significant contributions to the Banks' liquidity literature. To this end, several different econometric approaches and a set of different samples (developed, developing, and emerging economies) are used in this thesis. Based on the empirical findings, this research offers policy recommendations and implications that could be significant to banks, academics, practitioners, and regulatory bodies.

5.2.1 Policy Implications and Recommendations for Banks

The empirical findings show that corporate governance and banking competition is the significant determinant of liquidity creation either measured through the narrow measure, broad measure, or inverse measure of liquidity creation. Competition positively influences the banks' liquidity creation in developed, developing, and emerging economies, and governance also plays a significant role in determining liquidity creation. Findings confirm that in a highly competitive market, banks with extra liquidity, they will keep it to secure the benefits of their superior hedging strategies. Whereas banks with liquidity needs would do everything to avoid signalling their fragilities.

Accordingly, this research alerts banks in general to the significance of this role in enhancing economic growth. The present study results suggest that banks create liquidity in the market through off-balance sheet items as well. The amount of liquidity created through off-balance sheet items is higher than the on-balance sheet item, ultimately increasing their risk. While regulators may be incentivized to favour bank competition to increase the welfare of bank consumers, any

result suggesting a liquidity-destroying role of bank competition would indicate the existence of a policy trade-off. Thus, in this study, we seek to improve our understanding of the determinant of liquidity creation and the consequences of bank competition.

The present study finds that corporate governance remains the key determinant of the banks' liquidity creation for both on and off-balance sheet items. Hence, this study suggests that the banks should focus on their governance mechanism as it plays a vital role in the banks' survival in the market. It also affects the banks' ability to create liquidity by adjusting risk-taking behaviour. Moreover, competition affects the bank's liquidity creation by affecting the banks' risk-taking and capital adjustment. So due consideration must be given to the capital requirements and risk along with competition and corporate governance. The finding of the study has serious implications for the bank's manager regarding governance.

5.2.2 Policy Implications and Recommendations for Regulators and Policy Makers

Empirical results demonstrate that competition, corporate governance, capital, liquidity risk, and credit risk play a vital role in determining the liquidity created by commercial banks. Therefore, the regulators should be vigilant in outlining the required strategies for helping in a compliant manner, liquidity creation in conventional banks. Although the high standards of such regulations boost the banks' financial stability, it limits banks' capacity to create more economic activities and promote the economy's growth.

The findings show that liquidity creation is involved in establishing the preconditions for a liquidity crisis in certain circumstances. Bank market power, however, is perceived to have significant advantages in terms of accessing different financial markets. The degree to which the former impact will substantially reduce the latter in terms of welfare remains an open question. Therefore, in light of the conflicting objectives between sustainable economic growth through

liquidity creation and the Basel III policy's effectiveness and efficiency, bank regulations under the Basel III policy need to be re-evaluated. Regarding tightening levels of liquidity criteria and their ability to control liquidity shocks, the Basel Committee was concerned with reducing this ambiguity by standardizing securitized products and enhancing the rating system to reduce information asymmetry. Similarly, unnecessarily strict liquidity provisions will minimize the return on economic transactions and could be circumvented.

More explicitly, this implication applies to the capital requirements of Basel III, as higher capital requirements will play an important role in the reduction of lending/financing activities, which will have a negative effect on the amount of liquidity that banks will generate. Therefore, it can be claimed that the implementation of higher constraints on the adequacy of banks' capital will have a negative role in fostering economic growth by contributing to real economic activities by channelling funds into productive investments. Therefore, while enforcing the Basel III liquidity ratios, the importance of banks' liquidity creation function should be taken into account to enhance banks' position in stimulating economic growth by financing their illiquid assets through liquid liabilities that boost real economic activity.

Furthermore, considering the positive effects of imposing high standards to the banking sector in creating liquidity by facilitating the competitive environment and the governance process, regulators and policymakers should recognize the pitfalls of uncompetitive markets leading to monopoly and corruption, which have a negative impact on the economic growth and social welfare in the long term and on a large scale. Hence, these critical implications must also be considered in setting these requirements.

Hence, for regulators and policymakers, this research raises the importance of being more dynamic and proactive in taking into consideration such important functions in setting up the banking regulations. When setting up regulations, regulators and policymakers should take account of various economic conditions, particularly the need to pay particular attention to market competition and the governance mechanism to promote the role of creating liquidity and, at the same time, promoting banks ' financial stability.

5.2.3 Policy Implications and Recommendations for Researchers and Academics

The finding of the study have several policy implications for the researcher and academicians with regards to the critique banks in developed countries behaves differently from developing and emerging economies, this empirical study finds that regardless of the developmental level competition and governance are an equally important determinant of the banks' liquidity creation and ultimately contribute in the economic growth of the economy. The study provides a generalized result for the researchers by studying a comprehensive data set of commercial banks. Although criticism is always needed for further development, it needs to be constructive and weight should be given for further research and investigating how competition and corporate governance channelize its impact on liquidity creation through establishing comprehensive cooperation between researchers on individual and institutional levels, as well as bridging between academia and the financial industry.

5.3 Limitation of the Study

Despite the importance of consistent findings concerning corporate governance, market competition, and risk in determining the banks' liquidity creation, this research remains with some limitations. The most critical constraints for the researcher remain access to the requisite, periodic,

and comprehensive data. For example, having access to comprehensive and regular on-and-off-balance sheet item data may provide more insights and allow the research findings to be generalized. This study used the data of only the last seven years, which can reduce the results' generalizability. As Data is taken from the Orbis bank focus, the availability and depth of the required data remain the most critical limitation of the study.

5.4 Avenues for Future Research

Any systematic and comprehensive study raises additional questions. Therefore, this segment provides useful avenues for future study.

First, future study is worth exploring the complexity of the relationship between bank liquidity creation and competition. Although this thesis addresses many empirical questions, there is a great margin for future studies. This study does not attempt to clarify and comprehend the transmission mechanism by which the banks' liquidity creation is influenced by market competition. The findings presented here may be attributed to improved efficiency and economies of scale. Therefore, future research may examine the relationship between bank performance, market power, and creating liquidity.

Second, future studies can be conducted using alternative proxies of corporate governance and which component of corporate governance affects the banks' liquidity creation. Does these components remain the same across the different subsamples like developed, developing, emerging, high income, low income, highly liquid, and low liquid banks? Third, the goal of this study is to explore the mediating position of capital and the risk that future studies will investigate the interaction of various regulatory and monetary policy requirements as well as their effect on the risk-shifting of banks. Fourth, instead of quantity, considering the quality of assets (financing

activities) is an extremely crucial aspect that deserves to be analyzed during the analysis of banks' liquidity formation, mainly when conducting a comparative study between different economies.

Fifth, it can also be a useful exercise to investigate the effect of quality information on liquidity behaviour to test the hypothesis that banks with greater transparency in providing information will draw more funds that would positively impact liquidity production and negatively impact their liquidity risk. Also, undertaking studies on evaluating the effect of the liquidity risk and liquidity creation on banks' reputational risk should be seen as an essential contribution to the literature.

Finally, this thesis compares the determinants of liquidity creation for the developed, developing, and emerging economies; future studies can be conducted by further classifying the countries on economic freedom, monetary freedom, competitiveness level, income level, and region-wise. Future studies can be conducted by considering other alternative measures of capital and risk.

5.5 Epilogue

This study set off with two main aims: first to analyze the determinants of the banks' liquidity creation and mediating role of risk and capital for the commercial banks of developed, developing, and emerging economies by using the data from 2013-2019. This study aims to fulfill the important gap in literature; the determinant of banks' liquidity creation for developed, developing, and emerging economies are nonexistent. How does competition and corporate governance affect the banks' liquidity creation?

To respond to the study's aim and objective, mainly, chapter 4 captures the determinants of the liquidity creation and mediating role of capital and risk for commercial banks. Chapter 2 provides the theoretical framework, while chapter 3 explains the sample, variable construction, research

process, and econometric modelling and specification. As the theoretical and empirical chapters illustrate, these findings confirm that the research aims and objectives have been achieved systematically and structured, bringing this analysis to an end at this point.

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