

Bank Competition and Monetary Policy in the Indian Banking Industry¹Ravikumar G and ²Dr. Rajiv Kumar¹Research Scholar, Department of Economics, SunRise University, Alwar, Rajasthan (India)²Professor, Department of Economics, SunRise University, Alwar, Rajasthan (India)**Corresponding author Email:** kushalravig@gmail.com

Abstract: The aim of this study is to analyse the impact of monetary policy on Bank Performance in India. Monetary policy plays a crucial role in shaping the financial landscape of a country, and its impact on the banking sector is particularly significant. In India, the Reserve Bank of India (RBI) implements monetary policy measures to achieve its primary objectives of price stability, economic growth, and financial stability. These measures, such as adjustments in reserve requirements, interest rates, and open market operations, have a direct and indirect bearing on the performance of banks. Monetary policy plays a critical role in shaping the performance of the Indian banking sector, influencing deposit mobilization, credit expansion, and profitability. The impact of monetary policy is transmitted through various channels, including the interest rate channel, the balance sheet channel, and the lending channel. The impact of monetary policy can vary across different types of banks, with public sector banks potentially being more sensitive to monetary policy changes. Policymakers need to carefully consider the impact of monetary policy on the banking sector and strike a balance between achieving their primary objectives while ensuring financial stability. The effectiveness of monetary policy depends on a number of factors, including the structure of the economy, the expectations of businesses and consumers, and the credibility of the central bank. In general, monetary policy is more effective in economies with flexible labor markets and low levels of inflation. When businesses and consumers expect the central bank to achieve its inflation target, monetary policy is more likely to be effective. When the central bank is considered to be credible, its actions are more likely to have the desired impact on the economy.

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Introduction:

The impact of bank competition on financial stability has been a focus of academic and policy debate over the last two decades and particularly in the post financial crises (Beck, 2008; Carletti, 2008; Careletti, 2010; Acharya and Richardson, 2009; Beck et al., 2010; OECD, 2011). In literature, it is quite evidence that the degree of competition among credit institutions will increase the risk taking activities to acquire new market and improve profitability. Earlier studies also confirmed that greater concentration fosters financial fragility, whereas lower pricing power also induces bank risk exposure. In Indian context, the banks have achieved new heights by acquiring new customers, new business areas and also adopting better technology to acquire market in almost all business areas. However, in the post crisis period, the asset quality of the Indian banks has been deteriorated, profits declined and credit growth also stagnated at the historical low level. This may be due to higher risk taking than their capacity, to remain intact in their business operations and profitability.

There is vast literature which suggests that greater bank competition produces financial instability by decreasing the degree of market power in the sector, which consequently erodes profits and reduces assets value, supporting the competition-fragility view. Thus, banks are encouraged to take on more risks to increase their returns, deteriorating the quality of their portfolios (Marcus, 1984; Keeley, 1990 and Carletti and Hartmaan, 2002). There are various empirical studies that are supporting this relationship. Some of the studies are: Keeley (1990) finds that increased banking competition and deregulation in the US during the 1990s decreased monopoly rents and contributed to bank failures. Hellmann, Murdock and Stiglitz (2000) concluded that the removal of interest rate ceilings, and thus generating more competitive prices, decreases franchise value and encourages moral hazard behaviour in banks. Jimenez, Lopez and Saurina (2007) studied that the banking sector in Spain and the results indicate that greater banking competition is associated with a higher risk loan portfolio (increased nonperforming

loans). Berger et al. (2008) has studied 23 developed nations and concluded in favour of the competition-fragility view, suggesting that higher market power reduces the risk exposure of banks. However, they also found that greater market power increases loan portfolio risks which could be interpreted as some evidence supporting the competition-stability view. Vives (2010) reviews the theoretical and empirical literature on the competition-stability relationship and argues that although competition is not a determinant of instability, it may exacerbate instability problems. While, some studies have argued in favour of a positive relationship between bank competition and financial stability. Beck, Demirguc-Kunt and Levine (2006) studied a group of 69 countries and the results indicate that the countries who are experiencing less market concentration are less likely to suffer a financial crisis. Boyd and De Nicolo (2005) suggest that greater market power in the loan markets increases bank risks since higher interest rates charged on consumers are harder to repay. This may exacerbate moral hazard problems and, at the same time, higher interest rates attract riskier borrowers due to adverse selection problems. Moreover, in highly concentrated markets, financial institutions may believe they are “too-big-to-fail” and this may lead to riskier investments (Berger et al., 2008). Empirically, there are several studies in the post crisis period who have supported this hypothesis. Boyd, De Nicolo and Jalal (2006) and De Nicolo and Loukoianova (2006) both find an inverse relationship between higher market concentration and financial stability suggesting that the risk of bank failures increase in more concentrated markets. They estimate financial stability by the Z-index (an inverse measure of bank risks) and market concentration by the Herfindahl-Hirschman index. Schaeck, Cihak and Wolfe (2006) study the banking sectors of a group of countries by applying a Logit model and duration analysis. Furthermore, they estimate the Rosse-Panzar H-statistic as a measure of competition. Their main findings argue that more competitive banking sectors have a lower likelihood of bank failure (they are more stable than in monopolistic systems). Other studies have applied the Lerner index of competition and bank stability measures to examine the competition-stability relationship in banking. Berger et al. (2008) study a sample of over 8,000 banks in 23 countries by employing the Generalised Methods of Moments (GMM) dynamic panel data framework. They include measures of market concentration, Herfindahl-Hirschman index, as well as the Lerner index of competition to account for market power.

Moreover, they include the Z-index as a proxy for bank stability and non-performing loans over total loans as a measure of bank portfolio risks in order to test both the competitionstability and competition-fragility relationships respectively. Their main results indicate that banks with a higher degree of market power have less overall risks supportive of the competition-fragility hypothesis; on the other hand, they also find evidence of a positive relationship between competition and stability, implying that market power increases total loan risks. Turk-Ariss (2010) studies how the degree of market power affects both bank efficiency and financial stability in the banking sector for a group of emerging economies and applied three different specifications of the Lerner index of competition and uses a Z-index to proxy for financial stability. The results indicate that the increased market power results in greater bank stability, although with a significant loss in cost efficiency. Liu, Molyneux and Wilson (2013) analysed the competitive conditions in 11 EU countries for the period 2000-2008 in order to examine the competition-stability relationship in banking. They employ the Lerner index of competition and the Z-index in order to proxy for bank competition and bank stability respectively. Their results suggest that a non-linear relationship between competition and stability exists in European banking. More specifically, they find risk-shifting effects in highly concentrated markets, where an increase in banking competition lowers net interest margins (higher deposit rates and lower loan rates) and increases bank stability. However, they find that marginal effects exist in highly competitive markets, where increased competition reduces loan interest payments and the provisions for non-performing loans.

Dynamics of Competition, Liquidity and Risk – An Interactive Network Analysis of Indian Banks

Financial regulation and risk management practices have evolved due to the global financial crisis. The importance of financial stability in formulating macroeconomic policy is widely acknowledged. However, banks operate in an interconnected network system consisting of many banks and their respective links. Banks are interdependent because of payment systems and liquidity supports; at the same time, they also compete. Interconnected complex network systems have far-reaching implications on the economy. Hence, the link between bank competition and stability is essential to financial sector regulators. However, in recent years, there have been a series of bank failures that were operating in an interconnected

network, primarily due to discontinuous changes in asset prices caused by stiff competition and liquidity crises. Though competition has eased the lending rate and improved service quality, indiscriminate lending and cut-throat competition have increased the systemic risk of the banking system. India has aligned its banking system with BASEL standards as an emergent market economy. To ensure a stable financial system, it initiated banking reforms in capital adequacy, asset quality, liquidity, and management systems and introduced risk-based supervision. Despite these reforms, numerous banks experienced significant loan defaults and increased stressed loans. Such defaults caused panic among depositors and raised concerns about the banking system's stability. Moreover, economic growth is critically dependent on a country's monetary system. Hence, the government infused capital to maintain the banking system's stability. The study reviewed the literature on the different proxies to assess the intensity of bank competition, level of bank liquidity and riskiness of the banks, the various factors affecting them, and the conflicting relationship among these variables. The study found that the current literature does not have consensus on the nature of the impact that competition may have on a bank's liquidity and stability. Since banks operate in an interconnected network system, a complex system consisting of many banks and their respective links. Empirical studies found several studies that have been conducted to understand the impact of network structure on systemic risk and stability of the financial system and different methods to construct financial networks. Significant empirical studies have been conducted in developed nations to assess bank competition, liquidity, risk, and its determinants. However, studies in the context of the Indian economy are scarce.

Besides assessing these variables, the study also explored how these variables varied across the two phases of the economic cycles. The study also identified the bank-specific determinants of bank competition, liquidity and risk, which significantly influence these variables through an advanced econometric approach in an emerging market economy like India. Additionally, the study helped to understand the variability of bank-specific parameters like bank size, profitability, level of capitalisation and ownership based on bank competition, liquidity and risk, respectively. The study developed a novel method for constructing bank competition, liquidity and risk networks to understand the interactions among these networks through advanced econometric

approach and machine learning models. The constructed networks also helped to visualise the intensity of interactions among these variables during the two phases of the economic cycles and develop the corresponding network indices. These indices have helped to identify the highly competitive banks, the banks that are most risky and responsible for risk spillover and finally, the banks that are the primary liquidity providers in the banking network system. Additionally, the study contributes to the existing literature by identifying the bank-specific determinants of these network indices. The study proposed a new parameter for understanding the intensity of the interactions among bank competition, liquidity and risk networks, i.e. the average path length of an interactive network. Finally, with the help of advanced machine learning models, the study helped to predict future network indices with a forecast horizon of one year. As a policy measure, the RBI should emphasise mergers and acquisitions by supporting them when competition is intense, prohibiting them in highly concentrated banking markets, and limiting the monopoly power of big-sized banks to promote healthy competition. RBI should emphasise credit quality during the business upcycle so that they do not default during the business downcycle, leading to a rise in the volume of nonperforming assets in Indian banks, especially the public sector banks. The RBI should closely and proactively monitor that the banks have a comprehensive credit appraisal framework so that the borrowers do not default and impose higher risk weight to contain excessive loan creation during economic up-cycle depending upon the type and magnitude of risks and sufficient provision to absorb unexpected losses. The RBI should also ensure that through increasing higher-quality capital and liquidity provision, banks strengthen their resilience against adverse shocks due to fluctuations in the intensity of competition. Finally, the RBI should examine the interaction among bank competition, liquidity and risk while framing policy guidelines. While enhancing competition in the banking system, the RBI should also pay attention towards providing liquidity to the banking system while not disturbing the solvency and stability of the banking system.

Bank competition and monetary policy transmission

Since the Great Depression and recently in the wake of the Global Financial Crisis, monetary easing has been viewed as a key stimulus to boost investment and address difficult economic situations. However, there has been broad consensus that its expected

benefits do not reach all markets evenly. For example, the International Monetary Fund (IMF, 2012) expressed serious concern over monetary easing as it allows large corporations to access bank credit at record-low interest rates while small firms struggle for formal bank loans. Similarly, the Federal Reserve Bank of New York revealed that the purchases of mortgage-backed securities by the central banks did not lower primary mortgage rates partly because of higher interest margins exercised by banks with increased market power. Motivated by these concerns, we examined the idea of whether bank competition influences the transmission of monetary policy in an emerging economy such as India.

A flourishing body of literature has established the theoretical associations between bank competition and monetary policy transmission through the bank lending channel. Bernanke and Blinder (1988, 1992) argue that a competitive banking industry with restricted access to funding sources other than customer deposits is more responsive to an expansionary as well as a contractionary monetary policy. It happens because intensified bank competition, typically characterised by fewer restrictions, fewer barriers to entry and a liberal branch licensing policy may push the weaker and less efficient banks (reliant on deposit finance mostly) out of the market, making the bank lending channel responsive to monetary policy changes.

Banks exercising higher market power (less competition) are endowed with easier, superior and alternative access to uninsured finance, making them less dependent on central bank funding in times of monetary tightening. Increased market power affects monetary policy transmission through two additional channels: the deposit and loan markets. Drechsler et al. (2017) write that with an increase in interest rates, banks have the tendency to widen deposit spreads, which often results in deposits flowing out of the banking market. Since customer deposits constitute a substantial part of bank loans, the outflow of deposits restricts lending. The study argues that bank lending concentration occurs mainly due to perceived market power over deposits.

Similarly, Scharfstein and Sunderam (2016) suggest that banks' market power stifles the effective transmission of monetary policy, as the pass-through of policy changes is not as quick in a concentrated banking system as in a competitive one. However, contrary to the theoretical arguments of Drechsler et al. (2017), Repullo (2020) shows that in imperfect competition, a contractionary monetary policy can

have ambiguous effects on the equilibrium amount of deposits. Repullo's study suggests that the relationship between a tighter monetary policy and the equilibrium amount of deposits is rather U-shaped – first it decreases and then increases.

The Indian case

India is one of the fastest-growing emerging economies in the world. The country's financial sector is largely bank-based, with limited overall access to capital markets. Since commercial banks mostly fulfil the credit needs of households and businesses, the bank lending channel seems to play an important role in monetary policy transmission.

The Indian banking sector has undergone multiple phases and experienced considerable variations in the degree of competition since the financial liberalisation of 1991. During the phase of first-generation economic reforms (1991-1997), several deregulatory measures were implemented, including open entry for private banks, aggressive bank-branch expansion, abolition of administered interest rates, a larger presence of foreign banks and fewer activity restrictions. These measures intensified bank competition to a significant extent.

The second-generation economic reform measures adopted post-1998 involved bank consolidation through mergers and acquisitions. The main purpose of consolidation was to ensure stability. The process was well evident in the declining numbers of total competitors (Jayadev and Sensarma, 2007). The mixed episodes of bank competition and consolidation extend an interesting empirical set-up to examine whether bank competition affects the transmission of monetary policy through the bank lending channel in India.

Different ownership structures

Unlike in advanced economies, commercial banking in India is dominated by public sector banks, which exercise greater autonomy and a higher degree of market power in their lending decisions than private and foreign banks. Public sector banks meet most of the credit demand for firms and households and therefore are subject to greater monitoring and scrutiny. Additionally, banks with other ownership structures have different customer bases and differ from each other with respect to several other factors that influence their lending decisions.

For example, with deposit growth outperforming loan growth at the aggregate level, the loan-to-deposit ratio declined significantly to 64.12 per cent in 2021 from 75.14 per cent in 2012 (Reserve Bank of India, 2021). This decline appears to be a matter of concern and motivates us to examine whether concentration in

the deposit market contracts public sector banks' lending.

In response to the changing macroeconomic environment, the monetary policy's operational framework has undergone surprising changes over the past decades. The framework has also evolved in terms of monetary instruments, its several channels and targeting mechanism. In the Indian context, most studies on monetary policy focus on the interest rate channel, paying little attention to bank lending. Literature is scant when it comes to examining the role of bank competition in the monetary policy transmission mechanism.

Empirical evidence and policy suggestions

Our findings suggest that the Indian commercial banking system has remained competitive over the years. However, there is evidence of concentrated market power during the consolidation phase. As expected theoretically, a higher degree of market power, with lesser competition, weakens monetary policy transmission. Competition and market power indicators are crucial for such an analysis.

We offer some policy suggestions to enhance the effective implementation of monetary policy. Scrutiny of the functioning of the banking system—including the deregulation and consolidation measures that affect competition—is critical. The monetary authority should enact policies that can offset the adverse effects of changes in competition conditions on monetary policy transmission. Pro-competitive policies should be adopted for private and foreign banks. These policy suggestions could be useful for other emerging economies that witnessed a similar experience of bank deregulation and increased competition conditions.

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