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# COMPETITION AND BANK STABILITY: A GLOBAL PERSPECTIVE

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## ABSTRACT
*Several rounds of banking reforms were introduced globally as a result of GFC 2007-2008. The effects of these reforms have affected the banking industry. One of these reforms was bank consolidations, leading banking sector towards high concentration. As a result, the level of competition changed. This study presents a global perspective on "the influence of competition on banks stability" by reviewing the recent literature describing "competition-stability nexus". The relevant researches were extracted by using Prisma Protocol. Data extraction was done by using "master taxonomy". Two main theories "competition-fragility" and "competition-stability" have been examined by several authors using "GMM estimator" as a statistical tool. The problem identified from literature is that there is lack of consensus on the "competition-stability nexus", hence studies produced mixed results. This study aims to identify and discuss the causes of heterogeneity in results. The study shows that researchers have tested these theories under different settings i.e., by sampling the data of specific region for different period of time, hence the results are mixed. In addition, the level of competition and bank concentration vary from one region's banking sector to another. Moreover, the measurement of competition also varies among researchers, being another possible cause of mixed results. The study suggests that taking sample of single country instead of multiple countries may produce more specific results; and Boone indicator should also be used to measure competition to obtain robust results.*
**Keywords:** Competition; Bank Stability; Bank Concentration; Boone Index.

## INTRODUCTION
Banking sector being a significant chunk of economic structure plays a vital role in the growth of a country's economic system. Numerous rounds of transformations in banking sector have created high influence on the performance and stability of banks (Tan,2016). Among these several reforms, the major one is deregulation and consolidation which has drastically changed whole banking industry worldwide. These reforms aimed to strengthen the financial system of the economy. For the practice of consolidation, central bank of Indonesia offered several incentives to the small banks who decided to merge (Yuanita,2019). As a result, banks started to compete with each other in order to remain stable in the industry. This gave a lead to researchers to study the association between "competition and bank stability".

Economic crisis of 2007-2008 further enhanced the importance of this relationship for both policy makers and academicians (Fu et al., 2014). It is assumed that competition helps in bringing innovation and improves product quality and efficiency; hence many sectors take competition as a tool for their product or services improvement (Kasman, 2015). He also argues that impact of competition on banks performance is not always positive. (Fu et al., 2014) also agrees that competition does not always lead to improvement and profitability.

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Two opposing views on the influence of competition have been identified from the past literature. These are: one is "traditional competition-fragility" another is "modern competition-stability view".

"Traditional competition- fragility" states that increasing degree of competition in banking industry tend to cause economic distress to banks leading to instability and fragility. In a "highly competitive market", banks may face their declining market power leading to low profit margins. As a result, banks invest in high riskier portfolios in order to maintain their profitability, which leads them to insolvencies if there comes a financial distress (Cuestas et al, 2019; Keeley, 1990). On the contrary, low competitive market may benefit banks in terms of their stability because the need to take unnecessary high risk diminishes, resultantly, banks invest in less risky portfolios leading them to enhance not only their own stability but also overall the stability of overall banking industry. Bergantino and Capozza (2013) as cited by (Cuestas et al., 2019) admiring the idea of "high banking concentration" state that it enables new business ventures to get loan from bigger banks at a lower interest rate, thus helping banks in earning high profits in the future. Also, fewer numbers of banks enable the authorities to monitor the banking sector more diligently. Lastly, banks with higher market power may get more advantage from international markets instead of domestic markets; hence, they may lend at lower rate to their domestic borrowers. Consequently, it will benefit the firms and households in decreasing their cost of capital (Beck, Kunt, & Levine, 2006)

The modern "competition-stability view" states that "competition contributes to banks stability". In high level of competition, banks may reduce their interest rates which helps borrowers to payback on time. This results in lower bad loans ratio thus increasing banks' profit. On the contrary, less competitive environment allows the banks to enjoy monopoly and thus high market power, driving banks to elevate their interest rate for borrowers. Resultantly, borrowers are unable to payback which increases bad loans leading to higher credit risks, thus decreasing banks stability (Boyd & De Nicolo ,2005) cited by (Albaitya, Malleka,, & Noman, 2019).

Many reasons make the issue of competition important for banking industry. One of main functions of banks is to provide loans, which helps the businesses to grow and expand. If market structure of banks affects banks efficiency, then this influence is ultimately transmitted to the country's financial stability in both direct or indirect ways (Khan, 2017). Financial stability is important for three reasons, the first is it helps in facilitating the provision of resources required for country's infrastructure; second is it decreases the chance of taking unnecessary high-risk operations, thus financial risk is well evaluated; third is it helps the country's economy in absorbing any financial shock/crisis. When any country faces financial instability, it faces elevation of bad loans, banks resisting to invest in profitable projects and high deviation of assets prices from their intrinsic value (Schinasi, 2004). Moreover, the issue of the association between concentration, competition and banks stability is still controversial.

The deregulation and high concentration efforts in past two decades have totally transformed the competitive environment of banking industry in "both developed and developing countries". These novel "competitive conditions" have encouraged big "financial institutions" of advanced states with less profit to step into developing countries by investing in profitable projects. Rise in competition has been identified as one of the core leading cause of consolidation among developed and developing countries. High competition is encouraging small banks to merge with large banks for stability thus causing high bank concentration (Kasman, 2015).

Many studies have highlighted deregulation and competition as the reason of financial crisis held in 2007-2008 which adversely affected world's financial system. On the contrary, many studies have found that competition create positive effect on banks stability. This study aims to synthesize the results of different authors who had empirically checked the association among "concentration, competition and banks stability" by captivating diverse regions for diverse time period.

## METHODOLOGY

To find the related articles, we used Harzing Publish or perish; Google Scholar and Scinapse.

To find the articles, we used search terms such as Concentration; competition; bank stability; bank efficiency. Related papers were searched by using key terms and from references of downloaded articles.

Articles were selected on following grounds:

1. Published in High impact factors

2. Published in last 10 years
3. Covered banking industry
4. Must have examined the association among “competition, concentration and bank stability”
5. Quantitative methodology

Articles were excluded on following grounds:

1. Used any other language than English
2. Used qualitative methodology
3. Published before last 10 years
4. Included other than banking sector

MS excel was used to chart the data from the relevant articles. It was also used for categorization and coding of variables. The data was summarized with the help of pivot tables.

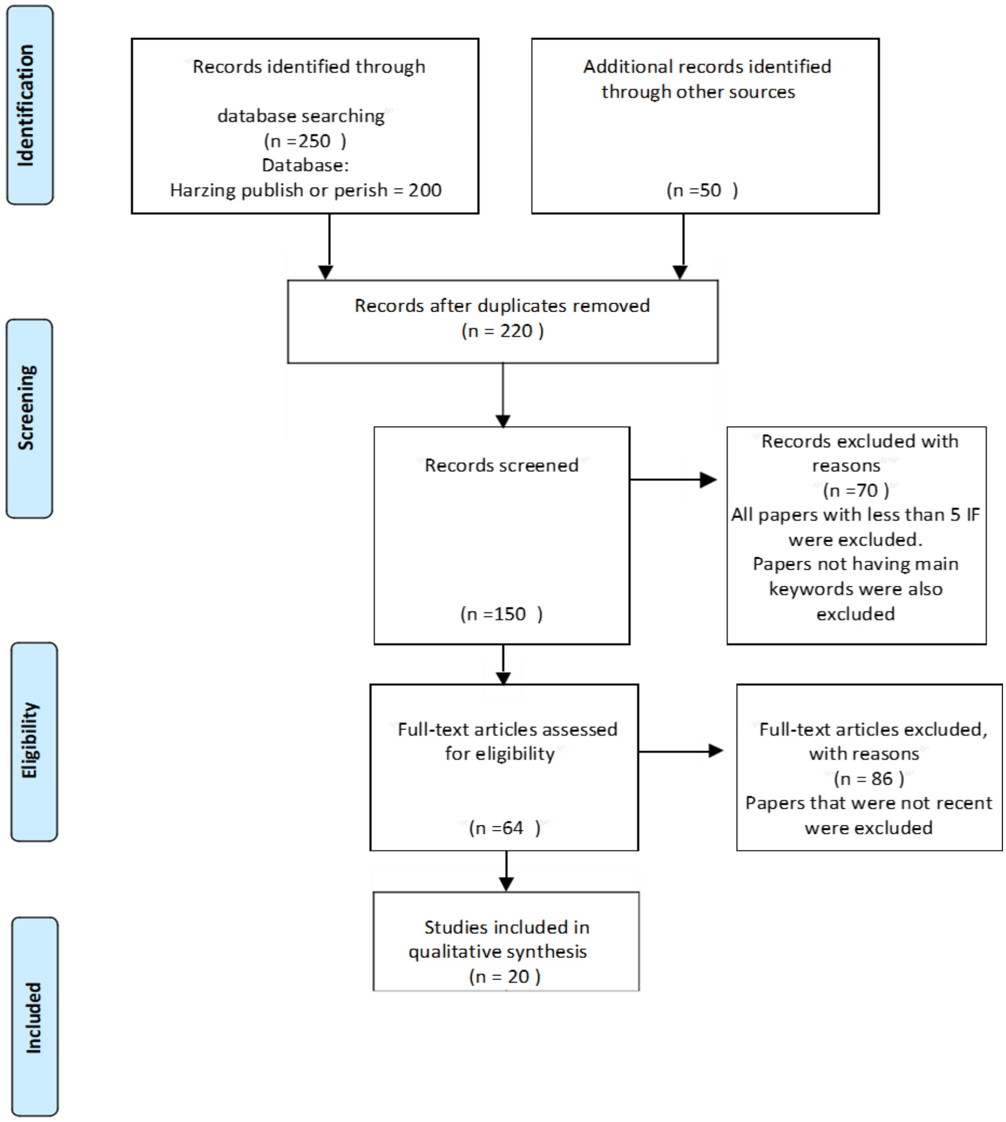


Figure 1: Prisma Protocol

## RESULTS AND DISCUSSION

### *Competition and Bank Stability in China*

To decrease the volume of bad loans, “Chinese government established four Asset management companies (AMCs) in 1999”. They aimed to buy and manage the bad loans of “state owned commercial banks” (SOCBs). Up to now, these AMCS have purchased loans from these banks three times. First time in 1999, AMCs purchased "non-performing loans" (NPLs) from four SOCBs worth RMB 1.4 trillion, second time in 2004, worth RMB 278.7 billion and the third time in 2005 worth RMB 262 billion. These purchases successfully reduced NPLs but has raised the level of competition for the entire world (Tan, 2016). Similarly, many reforms kept coming year by year raising the concerns for the "bank competition and stability".

"Chinese banking sector (CBS)" is found to have competitive environment. Tan (2016) conducted a study on the CBS for the period of 2003-2011. He used two different tools for measuring competition, i.e.., "Lerner index" (LI) and "Herfindahl-Hirschman index" (HHI). To measure bank risk, he used three tools, i.e., "stability inefficiency, Z-score and ratio of loan loss provision over total loans." For the measurement of banks profitability, several bank specific, industry related and macroeconomics characteristic were used. One step GMM system was used as statistical tool.

Due to strong support of Chinese government to SOCBs through its four established AMCs, the study found no significant influence of "competition and risk" on Chinese banks profitability. Although "47.3% of total assets" of CBS are hold by five biggest banks of china, the study withstands "structure conduct performance (SCP) hypothesis". This states that in low competitive market with high banking concentration, banks may compete with each other to gain supernormal profit margins. The study came up to the conclusion that "efficiency structure" (ES) hypothesis may be implied in Chinese banking sector, thus identified it as a gap which can be covered in future studies by using efficiency as one of the antecedents.

The study has found taxation and diversification as some of the factors posing threat to Chinese banks stability. On the contrary, the study has also found few factors which may increase Chinese banks profitability such as high labor productivity. Surprisingly, high inflation and high overhead cost are also identified as high profitability indicators in Chinese banking sector.

***Competition and Bank Stability in MENA Region***

The choice of Mena region has been made because it includes both "developed and developing countries of Asia, Africa and Europe". This region is area of interest for many investors and bankers worldwide; its location makes this region vulnerable to political instability, leading to financial instability. Besides, massive increase in credit growth rate has become a concerning area for policymakers and regulatory authorities (Bitar, Saad, & Benlemlih, 2016). Generally, rise in credit growth is seemed as a potential indicator of financial instability (Pawlowska, 2016). Similar to other regions, deregulation of banking industry started in the "period of 1980s and 1990s", which was aimed to bring competition. In addition to it, the "Gulf Cooperation Council (GCC) countries" is facilitating local banks to establish their branches in other GCC countries, hence promoting these banks to raise their market power and monopoly.

It is clearly identified that Mena region has competitive structure. After Financial crisis of 2008, Islamic banking industry has grown twice more than conventional banks in Mena region. Albaity et al. (2019), carried out a study by taking observations of "276 banks from 18 countries of MENA region for the period of 2006-2015". The study measured competition by two indicators, i.e., "Boone indicator" and "Lerner Index". Bank stability was measured by Z- score and NPL ratio along with ROA and ROE. It also included the nature of bank (Islamic/conventional) as moderator and similar to (tan, 2016), this study also used "two step GMM system estimator".

The study has concluded that high competition has negative impact on banks profitability and stability, and thus leads to high insolvency risk. High competition worsens the "risk-taking behavior" of banks leading them to insolvencies. Unsurprisingly, the study has found more competition in conventional banking sector than Islamic banks. More stable banks in MENA region are identified from "low competitive markets". The results also agreed and supported the "competition -fragility view" and thus recommended that banks exposed to less competition don't take unnecessarily high risk and thus enjoy high profit margins.

***Competition and Bank Stability in Asia Pacific***

"Global Financial Crisis (GFC) 2007-2008" has created a devastating effect on the entire world's financial system. Asia Pacific region was also one of its victims. Several studies have found liberalization and extreme competition as one of the causes that led to financial instability in UK and USA. ( Fu, Lin, & Molyneux, 2014) carried out a research by taking data of "14 Asia Pacific economies for the period of 2003-2010". The study has measured competition by "Lerner Index"; whereas "economic stability is measured by Z-score" and "Probability of bankruptcy" including bank specific, industry related and macroeconomic indicators. Two step GMM system estimator was used as statistical tool similar to (Albaity et al., 2019).

With rise in competition and concentration, there has been seen a significant shift in “risk-taking behavior of banks” during the observed period. The study found out that both “competition-stability” and “competition-fragility” theories simultaneously work on “Asia Pacific banking sector”. This implies that high competition brings financial instability, but provision of pricing control power leads to high risk exposure, which banks manage through the diversification, thus leading to financial stability. However, the study confirmed that GFC led to banks fragility.

It was also found that bank stability can be achieved by maintaining strict barriers to entry; whereas insurance of deposit may lead to financial fragility. The study has also identified bank concentration as insignificant variable for measuring banks’ competition.

***Competition and Bank Stability in Baltic Countries***

Baltic countries (“Estonia, Latvia and Lithuania”) are also important region for the study of association between “competition and bank stability” because of high banking concentration, i.e., this region has small numbers of banks and most of them are foreign banks. Highly concentrated market structure in this region is the outcome of privatization and mergers which happened after financial crisis 1990s. The regulator body supported these mergers, foreign takeovers and deregulation activities to save their financial system from insolvencies.

Cuestas et al, (2019) carried out a study on this region by taking data of 40 banks for the period of 2000-2014. Similar to (Tan, 2016), this study measured bank stability with Z-score and NPLs, whereas competition is measured through “market share” and “Lerner Index”.

By using regression model, the study concluded that low competition causes a decrease in banks’ risk exposure and thus results in banks stability up to certain level. The limit identified for “Lerner index is 0.606 on average and for market share is 49%”. After this level, competition negatively affects banks stability.

The study suggests that there is a need to prevent “mergers and acquisition” in highly concentrated markets. These can be promoted in highly competitive markets but for small banks only, because large banks may tend to take high risk which may affect country’s economy.

***Competition and Bank Stability in CIS Markets***

“Commonwealth of Independent States” (CIS) are particularly important to study in this context for many reasons. First, since last two decades, banking sector of CIS has experienced major changes due to the chain of liberalization and “mergers and acquisition” (M&As) that intensified after GFC 2007-2009. Second, for the growth of financial sector, many cross-border M&As held in mid 2000s, creating a huge influence on structure of banking system.

Clark et al. (2017) attempted to study the relationship by taking data of “333 banks of CIS countries for the period of 2005-2013”. Similar to (Cuestas et al, 2019), “bank stability is measured by Z-score” and “NPLs”, whereas “competition is measured by Lerner index”, bank specific and other industry related instruments. GMM estimator technique was used as statistical tool.

The study supported “competition-stability view” stating that competition drives the CIS banks towards stability. It indicates that less market power and low ratio of NPLs may lead the banks towards stability. It also suggests that bank stability may be obtained by adhering to legal rights of borrowers and lenders, along with strong administration by regulatory authorities.

***Competition and Bank Stability in South East Asian Nations (Seans)***

To cope up with the economic shocks of “Asian financial crisis” (AFC) 1997-98 and GFC 2008-09, government of SEANs had announced substantial structural reforms including “consolidation of financial markets, denationalization and deregulation, mergers and acquisitions and other financial reforms”. As a result of these reforms, number of banks increases in the region (Lestano and Kuper, 2016). This may result in higher banking concentration, raising market power of large banks over the time.

Khan et al, (2017) conducted a study to explain the link by using data of SEANs countries (“Malaysia, Indonesia, Singapore, Philippines and Thailand”) for the time duration of 1995-2014. The study has used regression model for statistical analysis. The results confirm that concentration is inversely proportional to competition, i.e., increase in concentration leads to decrease in the level of competition and vice versa. Another finding shows that if the association between “competition and concentration” is well managed, then it may lead the banking sector towards stability and efficiency.

***Competition and Bank Stability in Turkey***

Similar to banking sector of all other regions of the world, Turkish banking industry also experienced after effects of several financial crisis that came after mid-2000s. It also witnessed several rounds of structural reforms including deregulation, liberalization, mergers and acquisitions which made the sector highly concentrated. Kasman and Kasman (2015) carried out a study to examine the relationship in this country by taking the data of “28 commercial banks for the period of 2002 to 2012”. “Competition is measured by Lerner Index” and “Boone indicator”, whereas “bank stability is measured by Z-score” and “NPL” similar to (Clark et al., 2017).

Using GMM regression, the results indicate that bank stability improves by raising banks pricing power. Supporting “competition-fragility view”, the study found that banks profits are vulnerable in highly “competitive and high concentrated market structure”. Moreover, banks risk exposure also increases in more concentrated markets. In summary, stability of Turkish banking sector is vulnerable to high competition. The results suggest that there is a need to increase market entry restrictions to decrease competition. It is also needed to facilitate mergers and acquisitions for “small and medium sized banks” in order to decrease the market power of large banks.

***Competition and Bank Stability in USA***

Removal of interstate entry barriers not only caused geographical expansion of incumbents’ banks, but also increased the number of out of state entrants. This has affected the level of competition in US banking sector. To explain this affect, Goetz (2017) carried out a study by taking the data of all commercial banks of USA for the period of 1976-2006. He used regression model to reach to the results. Similar to (Kasman & Kasman, 2015), “bank stability is measured by Z-score” and “NPL” along with bank specific and industry related instruments.

The results indicate that increase in competition makes the bank safer because it improves asset quality of banks, leading to reduction in the proportion of NPLs. Rise in potential entrants leads the banking sector towards stability and decreases the possibility of banks failure. Moreover, increasing bank competition leads the bank to release more information in market. Supporting “competition-stability view”, Goetz (2017) proposes that high competition helps to take right selection decision of borrowers since any wrong decision may lead them to insolvencies. The study indicates that there is a need to study the impact created by bank risks or failures on country’s economy.

***Competition and Bank Stability in Korea***

Due to currency crisis in 1990s, Korean government put in huge amount of “public funds” into banks leading to insolvencies and this resulted into a number of structural changes in Korean banking industry. With the advent of 2000s, several mergers held leading the industry towards growth. These series of mergers declined the sum of “commercial banks” from ‘26’ in 1997 to ‘17’ in 2000 and in 2012, only 13 banks exist. This rapid rise in concentration was leading to decrease in the level of competition. However, during the time when (Jeon & Lim., 2013) carried out a study on this market, competition pressure was prevailing in the market.

Jeon & Lim (2013) investigated this nexus by taking the quarterly based data of “commercial and mutual saving banks” for the period of 1999-2011. “Competition was measured by Boone indicator and HHI”. “Bank stability was measured by Z-score” like (Goetz, 2017). By using pooled regression, the results indicate that characteristics of banks play a significant part in the “competition-stability nexus”. The results show two sides:1) competition leads the commercial banks towards fragility. However, it leads the MSBs towards stability but with weak corporate governance. Hence, the study suggests that there should be two different policies to serve “commercial banks” and “MSBs”.

***Competition and Bank Stability in Emerging Economies***

Amidu and Wolfe (2013) tested this nexus by taking data of 978 banks from 55 countries for the period of 2000-2007. They measured competition by “HHI and Lerner Index”. Bank stability was measured by “Z-score” and “NPLs”. They also used “diversification, bank specific and macroeconomic variables. Using regression analysis, the study supports “competition-stability hypothesis”. It indicates that banks operating in diversified and competitive market takes on less risky portfolios hence remain safe from any bank failures. The results show that bank stability is directly proportional to increase in diversification activities.

Ali et al. (2016) examined this nexus using the data of banks of 156 "developed and developing countries for the period of 1980-2011". "Concentration was used as a measure of competition"; "bank stability was measured by ROA and NIM". Along with GMM, "Logit and Probit model" were used to estimate results. The study found that banking system is highly concentrated in developing countries preventing them from taking high risk. They charge high interest rates, allowing them to decrease their credit and default risk. The results suggest that concentration should be increased in normal period because then it will help to absorb financial shocks at the time of crisis. The study had limitations since it used only one measure for competition, also it tested only one direction of nexus.

***Competition and Bank Stability in Indonesia***

"Indonesian Banking industry" is imperative to study because it has main contribution in Asian banking sector. Although it is less competitive compared to its counterparts in Asia, but it gives a highest proportion of profitability to Asian market. Yusgiantoro et al, (2019) examined the nexus in this market by taking 122 banks for the period of 2010-2015. "Competition was measured by Lerner Index" whereas "bank stability was measured by z-score".

Testing "charter value hypothesis" and "competition-stability hypothesis", the study found that high market power may result in increase of capital ratios of government banks. However, high competition is still found to be unfavorable for banks stability. This is because banks with more market power may incline to invest in high risk portfolios, leading them to insolvencies. Even high capital ratios cannot prevent them from bank failure. The study supporting "charter value hypothesis" suggest that private banks should also be facilitated to increase their market power, thus reduce the insolvency risk.

The study identified that future research can be estimating the effects of consolidation on public banks without having high market power. It is also worthy to identify the sources of market power of public banks.

***Competition and Bank Stability in GCC***

According to "World Bank Data", the banks concentration in GCC is very higher as compared to other economies. "The average assets of the five larger GCC commercial banks (CR5) account for 92.75% (95.87% for Bahrain, 100% for each Kuwait and Oman, 99.09% for Qatar, and 79.55% and 82.01% for Saudi Arabia and UAE respectively) of total assets, an increase of 2.48% during the post-financial crisis 2010–2016 compared to the crisis period 2007–2009. In comparison, the said ratio in other Asian countries was 82.39% in China, 39.76% in India, 58.03% in Japan, 78.28% in Malaysia, 68.5% in Thailand and 57.83% in Indonesia. The ratio was 47.42%, 78.28%, and 67.13% in the USA, UK, and Turkey respectively".

Testing "competition-fragility theory", Saif-Alyousfi et al, (n.d) carried out a study by sampling data of banks for the period of 1998-2016. They measured competition using bth approaches (structural and non-structural). Bank stability was measured by "Z-score". Using "GMM estimator", study found that increase in competition and concentration cause banks distress and leads to banks fragility. Its effect is more intense on small banks rather than on large banks. Lower competition in GCC banking sector was the cause of reduction in "moral hazard" created by GFC 2007-2008. The study suggests that increase in monitoring and supervision may increase banks' stability. However, increase in government restrictions and depositor protection may increase banks fragility.

***Measures of Competition***

Several studies have been conducted to investigate competition-stability nexus under different settings, but there still exists a debate on its relationship. Studies could not reach to one result. The results are different 1) because of the difference in level of competition exist in different markets 2) due to measurement error of competition.

Competition has been used as an independent variable in past studies. Competition is measured by two approaches.1) structural approach uses "market structure" instruments such as "market shares, concentration ratios for the largest sets of firms, and a Hirschman–Herfindahl Index". 2) Non-structural approach focuses to pricing behavior of bank. It includes the "Lerner index and the Panzar Rosse H-statistic index" ( Fu, Lin, & Molyneux, 2014)

It is very imperative to comprehend the level of competition of the region being selected for the study. This will then help in making correct choice of instrument for measuring competition. The "Boone indicator" provides more comprehensive view about the level of bank competition because it focuses on banks behavior instead of capturing only market structure. Depending on concentration ratios may produce misleading results because it measures the level of concentration which assume that concentration has negative influence on competition, i.e., higher concentration leads to low competition. Claessens & Laeven (2004) as cited by Kasman and Kasman (2015) identified from its study results that concentration is poor instrument for measuring competition. H-statistics need assumption for banking market prevailing in "long run equilibrium". Similarly, Lerner Index limitation is its inability to capture level of "product substitutability". The Boone indicator can work without needing the assumption of "long run equilibrium" and can also capture level of "product substitutability".

## CONCLUSION

After "Global Financial crisis (GFC)", several banking reforms were introduced one after another including "deregulation, mergers & acquisition, liberalization". These reforms have affected the banking industry worldwide in terms of structure and profitability. Due to rapid rise in consolidation efforts worldwide, the level of competition is affected. This effect is directly/indirectly transferred to banks' stability, raising concerns for policy makers and researchers.

Several attempts are made to test the "competition-stability nexus" , but have produced mixed results. Some authors reported that competition is directly proportional to banks' stability and vice versa. This study attempts to find the reason of heterogeneity in results by presenting and discussing the results of studies who has tested this nexus carried out globally. In addition, the study has also discussed some measures of competition, which may be one of the causes of heterogeneity in results.

The study found that results are different because the level of competition is diverse in different markets. More specifically, many studies have used the sample of multiple countries, hence their results may not reflect true picture. Another reason is error in measurement of competition. Structural approach including concentration is used widely in articles which has certain limitation. Hence, nonstructural approach including Boone indicator has been identified as efficient measure of competition.

### *Future Research*

The "competition-stability nexus" is tested only unidirectional; hence it should be tested bidirectional (competition-fragility view"). Several authors have used stability as dependent variable; bank efficiency should also be measured. In methodology, GMM estimation is widely used. Hence, adoption of any other tool would be addition to literature. There is no or very limited use of moderator or mediating effect. It can be used as a new contribution to literature. The effects of diversification activities on banks performance can also be assessed along with this nexus.

### *Limitations*

The study is limited to banking sector only. It has only included commercial and mutual savings banks. It only cited articles published in high impact factor journals. It discussed only main factors of competition.

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