IMPACT OF MARKET COMPRTITION ON PROFITABILITY OF BANKING SECTOR OF PAKISTAN: A COMPARISON BETWEEN ISLAMIC AND CONVENTIONAL BANKS OF PAKISTAN

By
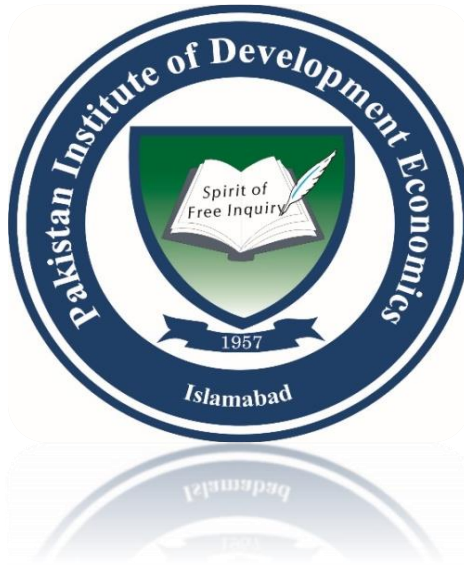
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This is to certify that this thesis entitled: **"Impact of Market Competition on Profitability of Banking Sector of Pakistan: A Comparison between Islamic and Conventional Banks"** submitted by Ms. Saira Bano Naqvi is accepted in its present form by the Department of Business Studies, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Master of Science in Management Sciences**.

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Dedication

Dedicated from core of my heart to my beloved parents Mr. & Mrs. Tahir Naqvi, my respected teacher Dr. Abdul Rashid, my beloved family and especially my brother Raise Naqvi.

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All the praises are for the Allah Almighty; the most beneficent and the most merciful; who granted man with knowledge. All salutations are upon the Prophet (P.B.U.H.) whose teachings enlighten my thought and thrives my ambitions.

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Contents

Abstract

The purpose of current study is to analyze the impact of market competition on profitability of Pakistan's banking sector and to compare the results of Islamic and conventional banks. Data is collected from the official site of state bank of Pakistan, from year 2007-2018. Data of macroeconomic variables is taken from the website of world bank. Two step Generalized Method of Moments is used for estimating results to capture endogeneity, unobserved heterogeneity and problems related to autocorrelation. The results show that the impact of market competition on profitability of overall banking sector and conventional banks of Pakistan is negative and there is insignificant relationship between market competition and profitability of Islamic banks because the Islamic banks are not operating in highly competitive environment like conventional banks. GDP has negative effect on profitability and inflation is positively related to ROE and negatively to ROA. Bank size has inverse effect on profitability because of bureaucratic influence on large size banks. Capitalization is positively related to overall and conventional banks, but it has insignificant relationship with Islamic banking sector because Islamic banking has strict laws for capitalization. Liquidity has negative sign for coefficient which shows that when liquidity decrease, profitability increase. The results are same for one proxy of profitability i.e. NIM for Islamic banking sector. Diversification is negatively related to profitability of overall and conventional banks because there is more competition in fee generating activities and Islamic banks are insignificantly related to diversification because they are not performing as diversified activities as conventional banks.

Keywords: market competition, profitability, Lerner index

Chapter 1

1.1 Introduction

Banking sector plays a vital role in development of financial sector of every country's economy. For a better utilization of resources, contribution of healthy and profitable banking system is necessary, and it also contributes in enhancing financial performance (Ahmad, 2010). Bourke (1989) reported in his study that those banks who have high profitability are well capitalized and have more access to funds in case of any crises. Many reforms are made time to time in banking sector of Pakistan in order to create more competition among different banks. However, many researchers argued that market competition doesn't necessarily increase profitability. It is proved by structure-conduct-performance hypothesis that in a banking sector where concentration is high and competition is low, banks obtain more profits. Operational and managerial activities of commercial and Islamic banks have been an attractive domain for researchers and a subject of debate from years. Conventional and Islamic banks are conceptually very different in a lot of aspects specially including their operational business models, so this difference lead to different survival rates.

Failures, poor management and performance were very prominent in banking sector during global financial crises. Islamic banking is a one sector in global financial system which was most resilient during the recent global financial crises and because of that it attracted attention of whole world. Islamic banking is quickly growing with strong growth rates annually and it has total $1.8 trillion worthy bank assets (Ernst and Young 2015; IMF 2015). Beck et al. (2013) showed in their study that the asset quality in Islamic banks was higher and Islamic banks were better capitalized as compared to conventional banks that's why they suffered less in the recent financial crises. But

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Islamic banks suffer more in high inflation because they mostly rely on their cash reserves and use of commodities as collateral. Some core factors which contributed in growth and boost of Islamic banking and finance were demand for shariah compliant products, oil revenues that act as fuel of Islamic finance markets, safe and stable investments and different operational activities that led to enhanced and diverse products ((levine R, 1998). Islamic banking is based on principles of Shariah and these principles make it different from conventional banking in terms of financial services and products and objectives. In Islamic banking interest, compound derivatives and short selling is prohibited. It also prohibits dealing with investments which involves gambling, alcohol and tobacco. Funding sources of Islamic banks are equity and fee-based services. Usually equity type is used by larger banks.

The amendments which were made in 1990s in banking act 1974, made a huge difference in banking industry by transferring shares of five big banks, which were state owned, to banks of private sector. The second change which was occurred due to these amendments was that new banks were established in the country. Later, the opening of those new banks created problems like maintaining minimum capital adequacy was difficult for small banks which were imposed by the state bank of Pakistan. So, this situation led to mergers and acquisition of banks on large scale. For example, the Pakistani operations of Bank of America and Emirates bank were so sold to Union bank. Later on, Union Bank itself bought by Standard Chartered Bank. In 2014, Hong Kong and Shanghai Banking Corporation were merged in Meezan bank limited. In 2015, Barclays was merged in Habib Bank Limited. In year 2010, Arif Habib and Askari Leasing Limited were merged in Summit Bank and Askari Bank respectively. In 2006, Jahangir Siddique Investment Bank was acquired by JS bank. In 2005, Allied Bank Limited acquired Ibrahim leasing. Pakistan Industrial Credit and Investment Corporation (PICIC) acquired PICIC Commercial Bank Limited as Gulf

Commercial Bank. Later, the bank was named as PICIC commercial bank limited. In 2007, the operations of this bank were merged into NIB. In 2011, RBS was merged into Fasial Bank limited. A vital role is being played by these mergers and acquisitions in the growth of banks because of higher competition, nonexistence of trade barriers and globalization of business. Banks are going through a large level of consolidations and structuring all over the globe faizan et al. 2017.

Islamic and conventional banks operate and behave differently so their contribution in the profitability of banking sector is also different. Profitability of banks is also influenced by environment in which they are functioning and operating so we can't ignore macroeconomic factors which effect bank's profitability. The external determinants are comprised of macroeconomic and industry-specific variables (Athanasoglou et al., 2008 and Staikouras and Wood, 2011). These variables are outside of the prerogative of bank-specific decisions and policies. These macroeconomic factors include interest rate, inflation, GDP per capita and GDP growth rate. The core concern of every bank managers and supervisor is to maximize profit. Another assumption of many researchers is that banks want to maximize the wealth of their shareholders by giving them dividends from profits, so this can be achieved also by maximization of overall profits.

Profitability is one of the major criteria for evaluating the performance of a bank. The profitability of the bank is influenced by its environment. Different factors make an impact on the bank internally and externally. The determinants of bank profitability are usually divided into internal and external factors. The economics of banking literature acknowledges various determinants of bank profitability. These include the size of the bank the extent to which the bank is diversified, the attitude of the bank owners and managers towards risk, the characteristics of the bank ownership and the level of external competition the bank encounters. Liquidity, bank size or capital

adequacy could be named as the examples of internal factors. However, external factors such as competition in the country, inflation or government regulation influence bank profitability almost equally as inside variables. Profitability ratios provide a concise and systematic way to organize the enormous quantity of data contained in financial statements into a framework that creates meaningful information. Financial managers use ratios to benchmark the performance of their firms against that of their competitors and set goals for future performance. Financial advisers use ratios to identify underpriced or overpriced stocks and make recommendations to investors. As a measure of profitability in the banking sector it has become standard practice that the ratios of return on assets (ROA) and return on equity (ROE) are used. Ratios generally involve a mathematical proportion of X/Y that allows control established by analysts in two ways. First of all, this is ratio control over the size of financial information. Because of this characteristic, the current ratios of different firms can be compared even if the current assets and/or current liabilities of these firms are not comparable. The second way is ratio control over industry factors. Industries often have unique characteristics that are seen if the financial ratios of the firm are compared to the industry average.

In recent financial crises, banking system was highly criticized but it still can't deny the role of banking sector in financial stability of business organizations and in providing financial services to consumers. A profitable financial system is essential for every economy because it gives strength to financial system and safeguard economy from unpredictable shocks. After recent financial crises, Islamic banking attracted policy makers and researchers all over the globe because it remained more stable as compared to conventional banking sector, but still conventional banking is more dominating all over the world as compared to Islamic banking system. To operate in such competitive environment, Islamic banks are supposed to strengthen their inter and intra business

strategies and raise its standards of operations. After all those challenges which Islamic banking system in facing, many countries such as UK has adopted interest free banking system which is backed by assets (Belouafi and Chachi 2014). Islamic banks share profit and loss with their customers by making contracts like Modaraba and Musharakah but because of competition they also use Murabahah, Ijarah and Diminishing Musharakah to give fixed return to their customers. Mainly Islamic banks raise their deposits through Modaraba contracts and to obtain current deposits they offer Qard (loan) to their customers.

In Pakistan Islamic banks are supposed to follow rules and regulations given by State Bank of Pakistan (SBP), which are made according to principles of Shariah. Islamic banking services are provided in Pakistan via three institutions of Islamic banking. They are full Islamic banks such as Meezan Bank, Islamic subsidiaries established by conventional banks and standalone branches of Islamic banking services are also established by conventional banks. Islamic banks are allowed to operate parallel by SBP with conventional banks in order to provide Shariah compliant financial services. They are also contributing in developing a sound economic system which is diversified and fulfill the rules and regulations of Islamic financial system. With passage of time, Islamic banking is strengthening its roots in Pakistan however conventional banking is still dominating in Pakistan like many other countries.

Pakistan is an Islamic state and interest is prohibited in Islam so in February 1979, to eliminate interest from economy, Pakistan introduced system of Islamic banking. The operations of House Building Corporation, National Investment Trust and Investment Corporation of Pakistan were started in January 1981. After that separate counters were established in conventional banks, which only receive deposits based on profit and loss sharing. On 1st January 1985, SBP gave an order to all conventional banks in order to restrict the banks to accept interest-based deposits, except banks

could accept current accounts as fully guaranteed. But there were many factors involved which did not allow to successfully emerge the interest free economy. One main reason was that there was not any proper institution like AAOIFI and IFSB to impose Shariah compliant mechanism. Also, there were no official certificates issued to banks by SBP in order to develop a proper mechanism of Shariah principles. In 1991, the mechanism of Islamic banking, which was introduced in 1985, declared against the principles of Shariah by the Federal Shariah Court. Then in year 2001, SBP gave a proper criterion in order to operate a full Islamic banking system parallel to conventional banks and in result first full fledge Islamic bank was established in 2002, named Meezan Bank Ltd. In last decade, a remarkable growth is observed in the sector of Islamic banking in Pakistan. Now (2020) there are 5 full-fledged Islamic banks operating and there are 13 Islamic branches are operating of conventional banks. There was a tremendous growth observed in assets and deposits of Islamic banks of Pakistan.

Between world war 2 and 1970, there was a stable period for banking systems but after that both developed and developing countries faced banking crises for three decades. After that in early years of 21st century there was a stable period for banks, all around the globe. Whenever there is a debate occurs for making policies regarding financial stability, market competition is always center of attention. However, it is not yet conclusively proved by theories and researches that there is an important relationship between market competition and financial stability of banking sector. It is proved by many studies that if there is excessive competition found in the market than the banking system will become more fragile and it is important to have restrictions on competition in order to develop a stable banking system. Many industrialized countries put restrictions on activities of their banking system after the financial crises occurred in the 1930s and they were making policies to restrict competition. But in the 1970s and 1980s because of financial liberalization competition

became unchecked and then many developed and developing countries blamed financial liberalization for fragility of banking system. In subprime mortgage market the boom and bust is result of unfettered competition which is present in financial system of US. The major reports by the bank for international settlements 2001, international monetary fund 2001, and the group of ten 2001, showed increase in number of bank consolidation all around the globe. This consolidation not happened only nationally but also occurred internationally. In past decades, foreign banks entered rapidly in many developing countries and now in many financial systems, which are mostly developed, cross-border mergers are also occurring, specially by Europe. This consolidation is not only occurring in same business lines, they are occurring across different business lines. This results in increase in investment banking and commercial banking, insurance services and in pension funds. However, consolidation is good for efficient working, but this rapid consolidation is rising stability concerns. Most notably their size is increasing on huge level which cause many complexities such as ignoring proper rules and regulations and market and authorities are being unable to supervise such institutions efficiently. Because such conglomerated business plays critical role among different part so of overall financial system and authorities become unable to intervene in such systems because such institutions become "too-big" or "too important to fail". Each market is made of three elements like performance, conduct and structure. Interaction manners between these elements determine market structure that is important to the relationship between producers and consumers and determines pricing nature and competition in the market. Concentration in banking industry means the concentration of funds in a small number of large and major banks. Being developed by the same laws as the concentration of industry, it inevitably leads to monopoly (Staroselskaja 2011). It is a situation when major banks, which play a decisive role, in one or another way, prevail in smaller banks. During competition, many smaller banks go

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bankrupt and simply cease to exist. Other smaller banks formally retain their independence, in fact, obeying the power of the larger ones (Bikker, Haaf 2002). The concentration of bank capital is primarily based on the centralization of production: large industrial companies usually put and keep their available cash capitals in large banks, which strengthens their positions and contributes to the displacement of small banks. The concentration of bank capital leads to the competition in banking industry where large banks have a decisive advantage over smaller ones, the majority of which are included in the sphere of influence of big banks and eventually lose its independence thus becoming the prime offices or branches of the larger ones.

Ideally, the evaluation of competitive conditions and the degree of concentration in banking industry should begin by rigorously defining the market under consideration. The relevant market consists of all suppliers of a particular banking service, including actual or potential competitors, and has product dimension and a geographical dimension. The product definition of a market is based on the equality of products as regards their ability to fulfil specific consumer needs (Bikker, Haaf 2002).

In current sudy, the bank profitability In pakistan is analyzed because it depicts the management of banks and as now banks are being motivated to be listed in stock exchange in order to get external funds and monitoring. The competitiveness of banks can increase because of higher profitability Y.Tan 2016. It also tests whether the industry of Pakistan's banks is in line with SCP hypothesis or not. Current study also controls for broad determinants regarding profitability of banks. It will also help managers, government and regulatory authority to make appropriate policies. It also gives strong results concerning the impact of market competition on profitability of banking sector by using Lerner index as measure of competition. Lerner index is also used to provide separate competitive conditions of Islamic and conventional banks.

1.2 Banking sector of Pakistan

The growth of banking sector of [Pakistan progressed rapidly on recent years because of consolidation structural transformation in industry are taking place and this process will enhance minimum requirement of capital which can result in reduction of market players. State bank of Pakistan made another striking development in banking sector of Pakistan by introducing minimum rate on profit and loss sharing saving deposits from June 1, 2008.

Another reason which attracted the researcher's attention to issues related to market competition, market concentration, economic efficiency of banking industry and financial stability of the banking sector, is recent mergers and acquisitions which are taking place on national and as well as on international level.

In the end of 1990, Pakistan's banking industry had five dominated banks which were National Bank of Pakistan, Allied bank of Pakistan limited, Habib bank limited, Muslim commercial bank and united bank limited. In 1991, state bank of Pakistan made amendments in banking act of Pakistan 1974. First of all, those amendments were made in order to align the banking sector of Pakistan with international standards. Secondly, they were important to improve efficiency of the country's banking sector. Thirdly, those amendments were supposed to enhance competition for the advantage of banking industry. At last those amendments were supposed to attract investments from private sector. Those amendments resulted in making banking sector more liberalized. Because of deregulation of banks owned by state, the large investment from private sector came, in the result, new competitors entered the market, license were issued to them by state bank of Pakistan. When state bank of Pakistan state bank of Pakistan issued shares to those new entrants, it caused increase of private sector's shares in the market. This phenomenon resulted in lowering level of overall concentration in the banking market of Pakistan.

Because of privatization in the banking sector, many domestic and foreign competitors entered in the market. The entry of new competitors led to enhance the importance and room of information technology. The scope of information technology made banks to switch to new and efficient ways in order to enhance and increase their market power. Now, the banks are different from their competitors by the use of information technology and by hiring more skilled employees.

However, newly established banks are not capable of competing with larger banks. According to ESH hypothesis, the banks which are large in terms of profitability, perform better as compared to small banks. They are proved to be more efficient as compared to the small banks. So, this led to mergers and acquisitions and resulted in shrinkage of the banking industry. State bank of Pakistan imposed moratorium on issuance of license of commercial banking to new banks in 1995 because of these large-scale mergers and acquisitions. Firstly, the reason of those merger and acquisitions was that state bank of Pakistan laid minimum capital requirement for banks to operate in the market. Secondly, establishment of Islamic banks in the market introduced new modes which attracted large number of depositors, this made small banks failed to maintain basic requirements laid by the state bank of Pakistan. As per prudential regulations, SBP made banks to raise their minimum capital adequacy requirement from Rs. 5 billion in 2008 to Rs. 23 billion by the year 2013. This requirement was made to secure banks from problems related to liquidity and to prevent them from expected bankruptcies.

Considered as one of the fastest growing financial systems, Islamic banking is expanding rapidly in both Muslim and non-Muslim countries. Islamic bank assets are expected to reach $6.5 trillion by 2020 (Mollah et al., 2016), with an annual growth rate of 19.7% from 2013 to 2018 (Ernst and Young, 2013). Recent studies also show that these banks are becoming systematically important (Song and Oosthuizem, 2014) in a way that can play an important role in promoting financial

inclusion and economic growth in Muslim countries (Imam and Kpodar, 2016). As a result, research has intensified to examine the effect of the development of this industry on bank risk (Čihák and Hesse, 2010; Abedifar et al., 2013), efficiency and profitability (Johnes et al., 2014; Jawadi, 2017), financial soundness (Beck et al., 2013; Bitar et al., 2017a), and corporate governance (Mollah and Zaman, 2015; Mollah et al., 2016), compared to conventional banks. However, this literature does not offer any empirical evidence on the determinants of Islamic banks' capital decisions and whether they share common determinants with their conventional counterparts and the broader corporate finance literature.

In developing countries, economic growth is encouraged by financial developments. Financial institutions play role of engine in growth of economy. In Pakistan, financial developments have been played vital role in growth of economy. Financial assets to GDP ratio in Pakistan remained 74.7% in year 2017, out of which 55.3% is contribution of banking sector, hence we cannot overlook the performance of banking sector of Pakistan. But these contributions are not sudden, they are result of several developments and reforms since independence. During the nationalization period, government took control of all banks and imposed many restrictions on banking activities. Major focus in that time was credit ceiling. Because of political interference these restrictions resulted in non-productive landing. In early 1990s, other banking reforms were made in order to control such problems. Government decided to privatize state-owned banks and liberal entry of new banks through these reforms. This step triggered the competition in banking sector which resulted in banking sector which resulted in improved internal efficiency.

In 2018, 33 banks were operating in Pakistan, together with 20 private, 5 state owned, 4 foreign and 4 specialized banks. The assets, liabilities and owner equity of the Pakistani banking sector increased by 15.91%, 17.16% and 2.89% respectively in 2018 as compared to the previous year.

In nutshell, these several reforms helped in strengthening the banking sector of Pakistan by increasing competitive conditions and initiating risk-taking behavior.

1.3 Type of market competition in banking sector of Pakistan

The banking sector of Pakistan continuously evolved after the initiatives which were launched in 1990s which were related to the deregulation. The amendments which were made in banking sector in 1974, passed on the shares of five state owned banks to private banks. Those amendments put two major impacts on banking sector of Pakistan. Firstly, it passed on the shares of banks owned by state to the private banks. Secondly, new banks were established in the country. This opening of new banks lead to many problems which caused mergers and acquisitions on large scale. As an example, small banks were not capable of competing with large banks and then they became unable to maintain requirements which are imposed by state bank of Pakistan.

A study made by Tahir et al. 2017, showed that the nature of competition of Pakistan's banking industry is monopolistic and overall market is not in long-run equilibrium. This suggests that in country's market major ins and outs are rapidly happening because of merger and acquisitions.

1.4 Gap analysis:

In study of banking sectors, profitability has remained focal point for researchers in all developing and developed economies. This phenomenon has been broadly explored theoretically and as well as empirically. Studies are also made on banking sector of Pakistan in order to explore those factors which affect profitability of banks. These researches give different findings. Ali k. et al. 2011 came to conclusions that profitability of banks is positively associated with proper asset management and GDP. They also found that profitability negatively affects capital adequacy, credit risk and inflation rate. Gul s.s et al. 2011, used ROA, ROE, NIM and return on

capital employed in their study as profitability indicators and found that profitability increases with the increase in bank size, GDP and inflation rate.

Some studies are made to determine main factors of bank's profitability of individual countries banking system and some are conducted on panel of countries. In second group, mostly studies are made on European countries menicucmi E., Paolucci G., 2016, pasioures f., kosmidou k.,2007. Some studies are made on individual banking sectors which include UK (Kosmidou et al.2006), saeed MS, 2014), Australia (William b. 2003), china (sufian F, habibullah ms. 2009), turkey (alp a et al. 2010), Switzerland (dietrich a, wanzenried g. 2011), Philippines (sufian f. chong rr, 2008). These studies are different from one another on the basis of data, difference in time period and their application according to different countries. Beside this these studies can also be classified into two different categories. In first category, these studies fall which considered internal factors and second category contain external factors. External factors are beyond the control of bank's management. Internal factors are basically bank specific variables. These include size of bank, diversification, capitalization, liquidity and on the other hand, external factors include GDP, inflation rate, economic growth etc.

Previous empirical literature shows that profitability of banks is outcome of external and internal factors. Towards profitability, internal factors are seemed to be more affective. Current study fills up the gap in empirical literature by examining the impact of market competition on profitability of Pakistan's banking sector by using both bank specific and macroeconomic variables and factors. Beside this, no study has yet made to analyze that how differently Islamic banking is affected by market competition as compared to conventional banks.

1.5 Problem statement:

Banking sector of Pakistan progressed rapidly because of various rounds of reforms made by state bank of Pakistan. Another reason which attract researchers is recent mergers and acquisitions which are taking place on national and international level. Because of privatization in banking sector, many domestic and foreign competitors are entering into the market. Secondly, establishment of Islamic banks in the market introduced new modes of financing which is increasing competition even between Islamic and conventional banks. This increasing competition is supposed to have an influence on profitability of banks. Current study is made to examine the impact of this increasing competition on profitability of overall banking sector of Pakistan and it also compares the impact of market competition on profitability of Islamic and conventional banks of [Pakistan separately.

1.6 Objective:

The main objective of the study is to examine the impact of Market Competition on the profitability of Islamic and conventional banks in Pakistan. To achieve this objective, we will use alternative measures of market competition namely Lerner index. The aim of study is also to explore whether profitability of Islamic banks differently effected by market competition as compared to conventional banks.

1.7 Significance of the study:

Bank supervisors are truly interested in determinants of profitability of banking sector because it helps them to take appropriate steps to maintain satisfactory competition. It will also help them in stabilizing financial conditions in the banking sector. It will help financial managers to make policies in accordance with market competition to increase profitability. It will enable government

to make policies for Islamic and conventional banks to enhance their profitability by utilizing market competition. This study will also help customers to evaluate that which banking system among Islamic and conventional is more appropriate to invest in. it will also help other stake holders to know that in which banking sector profitability is higher. It is helpful for policy makers because it is important to know if there are only trade-offs between different policy goals in which competition in market is involved. These policy goals may be related to financial stability of banking sector, broadening the business etc.

This study differs from prior studies in a way that the impact of market competition on profitability of Pakistani banking sector is not yet analyzed as per my knowledge. Secondly, in prior studies the data which is used is quarterly but current study is considering annual reports which are published by the state bank of Pakistan to analyzing its variables and baseline model

Chapter 2

2.1 Literature review

2.1.1 Empirical literature on bank profitability

Profitability is the primary measure to examine success of a business and it has a significant impact on efficiency of firm's operations and return to shareholders (Aggarwal 2013). The key task of every business's management is to maximize profits. The profitability of banking sector is determined by both external and internal determinants. Internal factors are micro factors which are related to financial statements of banks. These factors are driven by policies made by management of banks (Staikouras and Wood, 2011). External determinants are macroeconomic and specific to the industry. They are outside the policies and decisions of bank's management

The theoretical aspect of financial products of Islamic banking is that they are backed by assets and this phenomenon is helpful to remain stable in financial distress. But Islamic banks face similar market competition as conventional banks so the need for protection against withdrawal is also similar as conventional banks. To minimize this risk, Islamic banks hold more liquidity and protect depositor's investment by shifting risk to shareholders. The main objective of Islamic banking is not cost minimization and profit maximization like conventional banks instead they work ethically. A shariah board dedicatedly overlook and make sure that the products and practices are according to Islamic law. However, the practices of Islamic banking also vary from country to country because of client's profile, operational matters and availability of financial services and products. Boumediene and Caby (2009) showed in their study that in returns, Islamic banks have low volatility and have strong resilience against crises. Cihak and Hesse (2010) found in their study

that Islamic banks are financially stronger as compared to overall commercial banks, but large financial banks are not much stronger due to challenges in maintaining credit risks.

Studies showed that conventional banks have a significantly higher risk of failure as compared to Islamic banks. The lower risk in Islamic banks is based on micro and macroeconomic factors as well as market structure variables (Vasileios Pappas et al. 2016). In Islamic banking, account holders share the risks with banks. Vasileios et al. (2016), concluded that large conventional banks have significantly more risk of failure as compared to small Islamic banks.

Today, around the globe, the primary objective for policymakers and banking regulatory authorities is to maintain wide-ranging credit flows to private sectors (levine R, 1998). The contestability theory shows that banks has more competitve behavior when they operate in such markets where there are no barriers for entry and exit and in most of the countries, financial sector is most regulated sector. Bahavior of banks is positively directed by the market structures. In highly concentrated markets, inadequate competiton allow some banks to earn more market powers which leads those banks to monopoly through lower deposit rates and higher lending rates (Berger and Hannan 1998; Gilbert 1984). Alternate hypothesis of efficiency structure model the profitability of banks is not influenced by market power, rather it is efficiency of bank itself. In 2010, Tamimi made a study on UAEs islamic and conventioanl banks and he selected the data from year 1996-2008. The measures which he used to evaluate banks performance were Return on Assets (ROA) and Return on Equity (ROE). Independent variables were GDP, size of banks, market concentration, liquidity, number of branches of banks etc. the result of study for conventioanl banks showed that concentration and liquidity significanly effect return on assets and return on equity and oprtaional cost and number of operating branches significantly effect islamic banks.

Another study which was made by Hassan and Bashir in 2003 on islamic banks, found that internal and external factors significantly effect eficiency and profitability of islamic banks. Those internal and external factors included leverage ratios, earning ratios, fund management, ratios, GDP, financial indicators and interest rate. Their study concluded that when capital of banks and loans to asset ratio increase, the profitability of banks also increase. Their study also showed that macroeconomic indicators positively effect banks performance and taxation negatively affect the banks performance.

in 2012, Choong, Trim and Kyzy investigated in their study that credit risk significantly affects performance of banks. The indicators of performance which they used in their study were Return on Assets and Return on Equity. Their study also concluded that liquidity and market concentration have insignificant impact on banks performance. This study is made on Malaysian banks. Zeitun (2012), made a study on Islamic and conventional banks of GCC region. This study found that banks size positively affects performance of Islamic banks. His study also showed that cost to income ratio negatively affect both Islamic and conventional banks and GDP and inflation significantly affect performance of banks.

Curak et.al measured the performance of Macedonian banks, they took data from 2005-2010. In their study they applied GMM model and concluded that bank profitability is significantly affected by operational expenses, GDP, risks related to solvency, market concentration and liquidity risks. In 2009, fixed effect model was used by Sufian to investigate that which are the main determinants of profitability in china's banking sector. His sample was consisted of four state owned and twelve joint stock commercial banks of china. He took data from the period of 2000-2007. He concluded that those banks have higher profitability which have higher levels of credit risk and capitalization whilst the banks with high liquidity and high overhead costs have low profitability. Garcia-Herrero

et al. (2009), made their study to explain the reasons of low profitability in banking sector of China. They took data of Chinese commercial banks from the period 1997-2004. They concluded that the banks which have high levels of capitalization have higher profitability. Their study also showed that the banks with more deposited shares and higher X-efficiency, have higher profitability. Goddard et al. (2004) made a study European banking sector, in which the estimation method was OLS and two-step GMM. Their study concluded that size of bank weakly effect profitability and the effect of off-balance-sheet items on profitability vary from country to country. They also reported that bank's profitability is positively and significantly affected by capital-asset ratio.

Pasiouras and kosmidou (2007), made a study on European banking sector, they also used GMM one step system in order to estimate the impact of market concentration on profitability. They reported that there is significant effect of banking sector concentration on profitability. In 2013, Goddard et al. made a study on European banking industry, they concluded that banks which are more efficient and diversified have higher profitability and those which are highly capitalized have lower profitability. Arthanasoglou et al. (2008), made a study on Greek banking sector and they took data from 1985-2001. The method of estimation was GMM one-step system. They reported that bank's profitability is significantly affected by capitalization, credit risk, productivity and operating expenses.

In 2011, Hoffmann made similar study on US banking sector, taking data of US banks from 1995-2007. The estimation method which he used was GMM two step system. He concluded that the profitability of US banking sector is significantly affected by capital ratio. Another study made on US banking sector by chronopouls et al. (2013), concluded that competition in banking industry helps decreasing abnormal profitability. They took data from 1984-2010 and used GMM with windmeijer-corrected standard errors for estimation. Tan and Floros (2012), made a study on

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Chinese commercial banks using one-step GMM system. In this study they examined the impact of GDP growth on profitability of Chinese commercial banks. They took data from 2003-2009. They concluded that in economic boom the profitability of Chinese commercial banks is lower.

2.1.2 The theory of industrial organization economics

which is also known as structure conduct performance (SCP) hypothesis, assumes that there is one way and casual relationship of market concentration to behavior of price setting of firms. Mainly this hypothesis suggests that concentration in market encourages conspiracy in participants of market by lessen the cost of that conspiracy. This entails that if concentration in market is high than it may delay competition in that sector and in that duration, substantial number of same size banks will cause them to set their prices competitively. The supporters of this theory claim that when a bank who is profit maximizer, operate in sector as a price taker, it will provide credit at a cheapest price and in result that market competition will help in minimizing well-being in the whole economy. Still, this approach also has a number of complications like many other approaches. Critics argue against this theory that in banking sector we cannot directly observe the price setting behavior of any firm and they also argue that without any relative product and geographic markets it is not easy to define concentration. The researchers who are against this approach prevent a competitive hypothesis against this theory which is called Efficient Structure (ES) hypothesis. This hypothesis suggests that a high productive bank increase their own market shares which cause abnormal increase in their profits. Franklin and gale (2004) proved in their study that perfect competition in market and financial stability in sector can co-exist.

In the light of mixed results of SCP and ES hypothesis, another theory of market contestability suggests that the indicators of market structure are not capable of determine competitiveness in the industry, all above. Several other conditions exist which submit behavior of competition in

concentrated markets and collaborative behavior can only survive if there is big number of firm/banks. In banking sector many factors play an important role in establishing competition such as restriction on new entries, competition from non-financial or banking institutions, insurance companies, capital markets etc. market structure is basically explicitly, exogenically and operating with pricing, proper advertising, other financial decisions made by firm managers and output. Baumol 1982 stated in their study that a market is considered contestable if the entry in it is absolutely free and costless.

In general, bank profitability is a function of internal and external determinants. The internal determinants are related to micro or bank-specific factors that originate from balance sheets and/or profit and loss accounts. These factors are influenced by the management decisions and policy objectives (Staikouras and Wood, 2011). The important bank-specific factors include bank size, equity capital, risks, operational efficiency and leverage. Different sized banks may have different abilities to reap economies of scale or scope through diversification, market power, stronger band image or implicit regulatory (to-big-to fail) protection (Curak et al., 2012). Numerous studies have found significant positive relationship between size and profitability (Goddard et al., 2004; Garcia-Herrero et al., 2009; Chortareas et al., 2011).ma

2.1.3 Empirical literature on bank competition and its measurement

The literature related to the measurement of banking competition can be divided into three classes. Firstly, there are concentration ratios, HHI, number of banks which are used to measure market structure. These indicators are used to measure actual shares in market, and it does not interfere in competitive behavior of banks. These measures do not cover the reality that behavior of banks. These measures do not cover the reality that behavior of banks is according to their owners and banks under different owners behave differently from one another. Other phenomenon which it

does not include is that it is not important that all banks are operating and working in same lines of business. The literature also yet not proved that behavior of bank is determined by its market structure (SCP hypothesis) and performance results in market structure (Efficient Structure Hypothesis).

Secondly, we can measure competition by H-statistics. It is used to evaluate that how does output prices react to input prices and what is the behavior of bank toward competition, but it also applies some restrictions on the cost functions of banks. When there is perfect competition in market, total revenue and marginal cost move together when input prices increase. On the other hand, its vice versa. If the market is not in equilibrium than this is not valid. Estimates which are used in H-statistics are widely vary from situation to situation as shown in the studies of Classens and Laeven (2004) and Bikker and Spierdijk (2007). Similar to H-statistics. Lerner index reflects power of bank in market through the ratio of cost and marginal price. In perfect competition this ratio is supposed to be equal. In less competitive markets this ratio will fluctuate.

Thirdly, to check whether the banking system is contestable or not, indicators are taken from regulatory framework of the market. Some of these measures are legal requirements for entry in the market, different formal and some informal barriers which are related to enter in domestic and as well as in foreign banks, restrictions on activities etc. they all prevent new entries in market from many incumbents which could be challenging for the banks.

In measuring market competition another challenge is being faced in order to define the relevant market properly and efficiently. Usually the indicators of competition in market and the structure of market is measured on the level if institutions. This shows that in different lines of product such as depositing money, services of payments, lending etc., competition is assumed same.

There are a lot of estimation methods which are used by researchers worldwide in order to measure competition in banking industry. The Neo-Classical Theory demonstrates the relationship among competition and profitability from very long. It is an assumption of SCP paradigm that behavior of banks is positively directed by the market structure. Berger and Hannan in 1988 and Gilbert in 1984 reported in their study that in highly concentrated markets, some banks are allowed to increase their market power due to inadequate competition and in result, they become able to earn profits in monopoly. On the other hand, hypothesis of Efficiency Structure model says that profitability of banks does not increase because of market power instead it is a result of bank's own efficiency and market shares of that bank also increase because of efficiency of that bank (Berger, 1995). Llyod-williams, Molyneux and Thornton in 1994 suggested in their study that those firms are more likely to expand their market share who are higher performing firms in the industry.

Another method is called mark-up test which was developed by Bresnahan (1982) and Lau (1982). In this method market power is measured in order to estimate bank competition. Many researchers used this method in their studies in order to estimate market competition such as Bikker (2003), Uchida and Tsutsui (2005) and Qin and Shaffer (2014). The behavior of banks is analyzed on an aggregate level in this method and conjectural variation is estimated of banking sector. There are two equations in this model. One is inverse-demand equation and second is supply equation. These equations are derived from profit maximization. In this model the measure of market power is estimated by mark-up of price over marginal cost. Perfect competition is reflected by zero value of output price and if the value is equal to one, then it shows that there is monopoly in the market. Panzar and Rosse (1987), developed another approach to measure the competition in banks. This method is called Revenue-test because it measures that to which extent change in input prices is

being reflected in gross revenue of bank. To estimate bank competition in this method H-Statistic is used. If the value is equal and smaller than zero than it suggests that there is monopoly in the market whilst if the value is between zero and one than it suggests that monopolistic competition is present in the market. If the value of H-Statistic is equal to one than it suggests that the market is perfectly competitive. This approach is used by many researchers such as Bikker and Haaf (2002), Matthews et al. (2007), Goddard and Wilson (2009) and Barbosa et al. (2015). industry but there are two disadvantages of H-Statistics. Firstly, Leuvensteijn et al. in 2011 stated in their study that this model is based on a static model so we can't make any prediction on H-Statistics because the results are uncertain. Secondly, Claessens and Laeven in 2004 reported in their study that H-Statistic require equilibrium of overall market which is not possible because of exits and entries of firms in market, this made interpretation of the results restricted.

Hirschman-Herfindahl Index (HHI), and concentration ratios are other methods to measure bank competition. In this method, market competition among banks is measured through analyzing market power. The base of these two indicators is Structure-Conduct-Performance (SCP) hypothesis. It suggests that market power affects behavior of the banks and performance of banks is affected by the structure of market. The SCP hypothesis suggests that a market where concentration is more and very few banks occupy significant shares, competition is low. On the other hand, the markets with high concentration have higher market power and this leads to higher profits. Recently, Al-Muharrami et al. (2006) and (Fu, 2014) used this indicator in their studies. SCP hypothesis suggests that the conduct and performance of the banks depend on the structural characteristics of the market in which they operate. The defining characteristics of market structure refer to seller concentration, degree of product differentiation and barriers of entry and exit (Bain, 1951). It asserts that banks which operate in a concentrated market are able to extract

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monopolistic rents by using their market power to charge higher interest rates on loans and offer lower rates on deposits (Staikouras and Wood, 2011). This setting of prices is less favorable to consumers" welfare. Since concentration is linked to the degree of competition greater concentrated banking industry is considered to have lower degree of competition and conducive for implicit/explicit collusion among banks to earn higher than normal profits5 (Bain, 1951

The profitability of banks also reflects market power because if the profits are higher it suggests that competition in the market is low. To measure profitability there is another indicator called price-cost margin and it is estimated by taking difference between output price and marginal cost and then dividing it by the output price. This is called Lerner Index and researchers widely used it in their studies to measure market competition. The range of Lerner index is zero to one. If the competition in market is perfect than the Lerner index is equals to zero. The value of Lerner index increases if the degree of competition in market decreases. Cipollini and Fiordelsi (2012) and Fungalova et al. (2014) used Lerner index to measure market competition in their studies. The Lerner Index is proved to be most appropriate and advantageous to measure competition by reviewing literature. Lerner index is made on the assumption that profitability is reflected by market power. If the banks are achieving higher profits, it indicated that the competition in industry is low. Profit can be evaluated by price-cost margins. Many authors and researchers widely used Lerner Index in their studies such as Berger, Klapper and Turk-Ariss(2009), Fungacova, Solanko and Weill(2014) and Tan(2015). Mandos and Solis stated in their study, which was made in 2011, that Lerner Index is very useful because it is made on strong theoretical basis.

Another indicator used by researchers to estimate market competition is Boone indicator. It was developed by Boone in 2008. This indicator suggests that the efficient firms improve their performance in competitive markets and performance of inefficient firms weakens in competitive

markets. If the value of Boone indicator is more negative than it suggests that the level of competition in market is higher whilst more positive value shows that the level of competition in market is lower. Delis (2012) and Tabak et al. (2012), used this indicator to measure competition in their studies made on banking sectors. Tabak, Tazio and Cajueiro in 2012 assumed in their study that in the Boone indicator, banks pass a part of efficiency to their consumers which is a major drawback of Boone indicator. Additionally, this indicator also gives uncertain results.

There is an opposite theory of SCP paradigm which was developed by Hicks in 1935. It is called "Quite Life" hypothesis. This theory indicates that it takes lower effort to maximize profits if the market power of the firm is higher. Maudos and de Guevara in 2007 reported in their study that the correlation between market power and profitability is negative and this implies that the profitability of banks is increased by competition. They said that owners or principles may not be able to detect the incompetence of managers and their behavior of non-profit maximization because of high market power. Berger and Hannan tested the quiet life hypothesis in 1998. They took data of US banks from 1980s. their study founded efficiency of lower cost in those banks which operate in more concentrated markets as compared to other banks. That paper is widely cited but later a doubt of truth in structural approach was founded in that paper, so it was re-investigated, and this time Lerner Index was used as the proxy of market power. The results are varying in examining the relationship between market power and profitability by taking data of developed countries and findings are mostly unclear from the results studies made on developing countries.

2.1.4 Are competitive banking systems more stable?

According to many previous studies and theoretical justifications, the increase of competition in banking industry provoke banks to make more riskier strategies related to their business activities

(smith1984, keelay 1990, repullo 2004). On the other hand, banking systems which are less concentrated are more vulnerable in experiencing financial disasters. In such arguments "frenchise value hypothesis" is being quoted by researchers frequently. This hypothesis suggests that if the bank have comparatively more power in market, it will allow them to defend their franchise value because with more market power they will be capable of creating large capital buffers as compared to their competitors. It will also allow them to switch to less risky strategies (boot and Greenbaum 1993, hellman, Murdoch and Stiglitz 2000, matutes and vives 2000). This point of view is rejected by many other theoretical literatures which suggests that in uncompetitive markets, banks are capable of making risky loan policies which cause subsequent problems in the whole banking system (caminal and matutes 2002). Mishkin 1999 reported in their study that in unconcentrated markets banks make "too-big-to-fail" policies which lead bank managers to make more riskier strategies. De Nicole et al. 2004, reported in their study that those banks experience less crises which operates in concentrated system. On the other hand. Beck, demirguc-kunt and levine (2006-2007) showed in their study that the banks which are operating in concentrated system are more stable as compared to banks which are operating in unconcentrated markets. A study made by martin and simon (2008) reported in their conclusions that the time of crises increases, and likelihood of crises decreases because of competition. Their results are consistent with the findings of studies made by beck, demirguc-kunt and levine (2006-2007).

2.1.5 Impact of competition on banks profitability

Some hypothesis is used by different researchers in their studies to investigate the impact of market competition on profitability of firms. According to SCP hypothesis banks can earn monopoly in concentrated markets by charging high rates of loans and offering low rates of deposits. This hypothesis suggests that if there is there is low competition in market because of high concentration

than firms can achieve monopoly and it results in earning abnormal profits. SCP hypothesis is supported by many researchers such as studies made by Rose and Fraser (1976), Heggestad and Mingo (1977), Berger and Hannan (1989), Llyod-William et al. (1994) and Samad (2008). In a survey, Gilbert (1984) gave a summary of 44 studies. All those studies were related to the relationship between performance of banks and market concentration. 32 out of 44 studies concluded that there is positive and significant impact of market concentration on the performance of banks. There is another hypothesis called Efficient Structure Hypothesis (ESH). This hypothesis suggest that more efficient firms are more likely to increase their shares in market and their size Llyod-William et al. (1984). They further argued that banks can maximize their profits by two ways:

1. By maintaining their policies regarding prices and by maintaining current market size.

2. Expanding size and by adopting strategies related to price reduction.

While Berger (1995) suggested in his study that the bank which is more efficient and having expert management and updated technology can earn more profits and have more market shares as compared to its competitors. This can be explained by X-efficiency and scale efficiency. X-efficiency suggests that the banks with expert management and updated technology have ability to lower their cost of operation and in result their profitability increases. Whilst scale efficiency suggests that the management and technology of all banks is same, but their operational scales are different. Some banks operate more efficiently as compared to their competitors which results in decrease in their per unit cost and increase profitability. Studies of Brozen (1982) and Seelanatha (2010) supported both of these hypotheses. Both hypotheses suggest that concentration is increased by high market power and it results in decreasing competition. Baumol (1982) developed a

Contestable Market Theory (CMT), in which he argues that a concentrated market can behave competitively if there are no barriers for new firms to enter in the market.

2.2 hypothesis development

in empirical literature, there are some hypothesis which are made to investigate the impact of competition on profitability of firms. Structure-Conduct-Performance hypothesis suggest that if firms offer less deposit rates and charge high rates loan, they can be able to take out monopolistic cost if a market is concentrated. It can make firm to earn abnormal profits. There is large number of researches which supports SCP hypothesis. Some of them are rose and fraser 1976, heggesttad and mingo 1977, berger nad hannn 1989, lloyad Williams et al 1994 and samad 2008.

On the other hand, many researchers argued in their study that the significant impact of profitability by market competition is not result of market power instead it is result of higher efficiency of those firms which already have larger market share. Demostz 1973 showed in their study, according to structure-conduct-performance hypothesis, that the firms which are highly efficient, are able to increase their market share and size of firm and its higher efficiency allow firms to concentrate which results in lower competition and it leads to higher profitability. Llyod Williams et al1994 further showed in their study that the banks which are highly efficient, can increase their profits by two techniques. Firstly, by maintaining their policies regarding prices and their market size stream. Secondly, by making strategies regarding expanding size and reducing prices. berger 1995 argued in their study that highly efficient management or production technology can increase profitability of firms. Scale efficiency suggests that all banks have same level of management and technology, but all of their operation scales are different from one another and some of the banks perform more efficient as compared to their competitors. Higher efficient scale results in decrease

in unit cost and increase in unit profit. The studies made by brozen 1982 and seelanatha 2010 supports structure-conduct-performance hypothesis.

Baumol 1982 developed contestable market theory (CMT) which suggests that if there are no barriers for new players to enter the market, a concentrated market can act as competitive market. It argues that if few banks are dominated in a highly concentrated market, the level of competition can still be high. This relationship of competition and concentration can be explained further by the fact that when a market is highly contestable, competition drive out some firms out of the market while this high concentration is basically result of high competition in the market.\

By reviewing empirical literature, it appears that the impact of market competition on banking sector's profitability is not clear. The empirical literature also reports that there are many other factors which affect profitability of banking sector such as size of bank, capitalization, liquidity, inflation rate, GDP and diversification. In the light of all the available literature following hypothesis is made:

H1: There is positive impact of market competition on profitability of banking sector of Pakistan.
Rapid development of Islamic banking in Pakistan make it important to separately check that whether the impact of market competition is same on Islamic banks as on conventional banks. In order to analyze this, following hypotheses are made:

H2: there is positive impact of market competition on profitability of Islamic banks of Pakistan.

H3: there is positive impact of market competition on profitability of conventional banks of Pakistan.

Chapter 3

3.1 Data and methodology

Data: Secondary data from the period 2007-2018 is taken to examine the impact of market competition on profitability of all conventional and Islamic banks (expect very small and public sector banking institutions). The data is taken from the official website of state bank of Pakistan. To analyze macroeconomic variables data is taken from the official website of world Bank.

Methodology: many researchers used different methods to analyze impact of market competition on profitability in their research articles. Table1 explains the summary of methodology used by different researchers around the globe to analyze impact of market competition on profitability.

In current study, Lerner index is used because it can be estimated by each bank at each year. Figure 1 shows the competitive conditions of Pakistan's banking sector from 2007-2018, which is measured by the Lerner Index. It is showing that the overall banks are operating in competitive environment and conventional banks are operating in more competitive environment as compared to Islamic banks. Islamic banks are operating in very uncompetitive environment because there is very small number of full fledge Islamic banks operating in Pakistan's banking industry. The graph is abnormally going down for the year 2018 because the data of all banks was not available for the year 2018.

Table1: summary of methods used by researchers to analyze impact of market competition on profitability:

Name of Author	Banking sector investigated	Data period	Methodology
Al-Muharrami et al. 2014	Gulf Corporation Countries (GCC)	1993-2002	K-Bank concentration ration, Herfindahl-Hirchman Index and Panzar-Rosse H-Statistic
Mathews et al. 2007	British Banking Industry	1980-2004	Panzar-Rosse H-Statistic
Olivero et al. 2011	Asian and Latin American banking industry	1996-2006	Panzar-Rosse H-Statistic
Tabak et al. 2011	Latin American Banks	2003-2008	Boone indicator
Cipollini and Fiordelisi 2012	European banks	1996-2009	Lerner Index and HHI
Fungacova et al. 2014	European banking industry	2002-2010	Lerner index and HHI
(Fu, 2014)	Asian pacific banking industry	2003-2010	Lerner index and three-banking concentration ratio

Figure 1
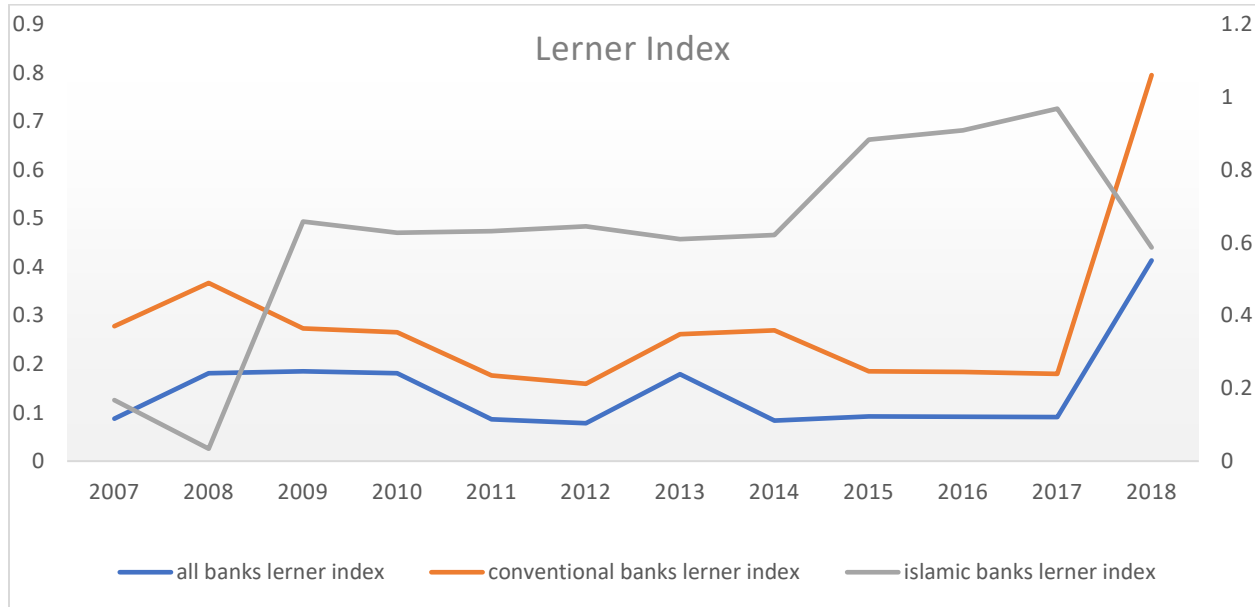
Discussion of Figure 1: Lower value of Lerner index indicates more competitive markets. It shows that commercial banks are operating in more competitive environment as compared to Islamic banks. The low value of Lerner index throughout the studied period shows that overall banking sector of Pakistan is operating in competitive environment.

To estimate the impact of market competition on profitability of Islamic and conventional banks of Pakistan, following regression model is proposed:

$$Prof_{it} = \beta_1 + \beta_2 MC_{it} + X'_{it}\gamma + +y_t\lambda + e_{it}$$

Where profitability is dependent variable and is measured by using ROA, ROE, NIM and PBT as proxies, for specific bank and specific time. β_1 is representing constant term. Market competition is independent variable and it is measured by indicators of market power which are Lerner Index.. X is the vector of bank specific variables which are GDP and Inflation. Y is the vector of macroeconomic variables which include size of bank, capitalization, liquidity, overhead cost and diversification.

Lerner index: it is calculated by taking difference between price of bank and marginal cost and then dividing it by the price. The range of Lerner index is zero to one, where zero is considered minimum and one is considered maximum. Lower value of Lerner index indicates that market competition is higher, and high value indicates low market competition. The value of Lerner Index shows the market power of particular bank to set its price over the marginal cost.

Cost function is specified as:

$$LNCOST_{it} = a_0 + a_1 \, LNASSETS_{it} + \frac{1}{2}\alpha_2(LNASSETS_{it})^2 + \sum_{j=1}^{3} \hat{\beta}_{itj} \, LNINPUT_{itj}$$

$$+ \sum_{j=1}^{3} \gamma_{itj} \, LNASSETS_{it} \, LNINPUT_{itj} + \varepsilon_{it}$$

Where Natural Logarithm is denoted as LN, COST in denoted by total cost, i and t indicates the specific bank at the specific time, ASSETS are representing by total assets. INPUT is representing the three input prices which are used in this study and they are representing by j and k. INPUT1 is the funds price (ratio of interest expenses to total funding), INPUT2 indicates the capital price (ratio of other non-interest expenses to fixed assets), INPUT3 stands for the labor price (ratio of personnel expenses to total assets). α and e stand for the constant and error term. After this, to estimate marginal cost, estimated coefficients of the cost function are used.

$$MC_{it} = \frac{COS_{it}}{ASSETS_{it}}(\hat{a}_1 + \hat{a}_2 \, LNY + \sum_{j=1}^{3} \hat{\gamma}_{itj} \, LNINPUT_{itj})$$

The variables which are used to estimate Lerner index are defined in table 2

Table 2

Variable	Notation	Measurement
Total cost	Cost	Interest expenses plus non-interest expenses
Total asset	Assets	Price of fund-ratio of interest expense over total funding
Input prices	Input	Price of capital-ratio of other non-interest expenses over fixed assets
Marginal cost	MC	

3.2 Methods to investigate the determinants of bank profitability in Pakistan

Researchers used different methods to investigate determinants of profitability in their studies. Sufian (2009) used fixed effect model in his study in order to investigate determinants of banks profitability in china. Generalized Method of Moments (GMM) and system estimation was used by Tan and Floros 2012 to investigate profitability of Chinese banking industry. In current study, the sample data which is used is consist of time series and cross sections. In such case the most appropriate tool is panel data. Panel data can control problems related to unobserved and heterogenous characters of data. To overcome the problems related to heterogeneity, autocorrelation and endogeneity, GMM model is used which is consistently used by researchers in their recent studies (dietrich a, wanzerried 2011), (goddard j. et al 2013), noman ahr. Et al. 2017), (tan y. 2016). System GMM is proposed by arellano bond s. 1991. More accurately two step system gmm is used to obtain more accurate results to analyze impact of market competition on profitability of banks. (Arellano bond o 1995), (arellano r. bond s. 1998). GMM is used because fixed effect model is not appropriate to estimate banks profitability because many problems like

endogeneity, unobserved heterogeneity, autocorrelation and profit persistence cannot be captured by fixed effect. GMM is also used because it gives more precise results (Bond 2002).

3.3 Selection of variables

3.3.1 Dependent variables

The main purpose of conducting this study is to examine the impact of market competition on profitability of Pakistani banking sector. While controlling for bank, industry specific and macroeconomic variables. Indicators which are used as proxies of profitability are Return on Assets (ROA), Return on Equity (ROE) and Net Interest Margin (NIM). ROE, ROA and NIM are used by reviewing different previous literature which is discussed above.

ROA: It is calculated to evaluate the ability of bank's management of utilizing its financial resource in order to maximize profits (Hassan and Bashir 2003). In literature, ROA is key indicator to evaluate profitability of banks (Athanasoglou et al. 2008, Garcia-Herrero et al. 2009, Golin 2001) examined the profitability of state-owned commercial banks, joint-stock commercial banks and city commercial banks by taking ROA as an indicator of banks profitability. ROA is a broad measure that indicates how efficiently a bank uses its resources by specifying profit generated per unit of assets. ROE may be decomposed into ROA multiplied by the leverage (total assets/total equity) of the bank. Therefore, ROA captures profitability before leverage, and as we use core capital, this measure also has a risk adjustment factor.

ROE: It is used to measure that how much return the shareholders are getting on their equity. It also indicates the amount of profits which bank earn from the investments of its shareholders. Return on equity (ROE) is total accounting net income after taxes/average common equity (Daruvala et al. 2012) not only determines profitability but also reflects the extent of the effectiveness of the management use of shareholders' investments. Although ROA provides useful

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information about bank profitability, this is not what the owners of the bank take care of in the majority of cases. They are more concerned about how much the bank earns on their equity investment measured by return on equity – ROE showing how much the bank has earned in comparison with the capital of share-holders.

NIM: it is third profitability indicator which is used in current study. It is also used in studies of Dietrich and Wanzenried 2011, Athanasoglou et al. 2008, Tan and Floros 2012 as indicator of bank performance. NIM shows that according to bank's interest expenses how successful decisions bank make about its investment. The difference in ROA and NIM is that ROA is used to calculate profit earned against per unit of asset and NIM is used to calculate that how much profit is earned on the interest generating activities. Table 3 gives the summary of studies, made on banking sector around the globe, which used ROA, ROE and NIM as proxies of profitability.

Table 3. Glance of literature review on bank profitability – A proxy variable used

Topic	Profitability proxy	Journal name
The effect of interstate banking on large bank holding company profitability and risk, Rivard et al. 1997	Return on assets	Journal of Economics and Business
The profitability of European banks: a cross sectional and dynamic panel analysis. Goddard et al., 2004	Return on Equity	The Manchester School
Determinants of bank profitability in the south eastern European region. Athanasoglou et al., 2006	Return on Assets, Return on Equity	Bank of Greece working paper
The determinants of bank's profits in Greece during the period of EU financial integration. Kosmidou, 2008	Return on Assets	Managerial finance
The determinants of commercial bank interest margin and profitability: evidence from Tunisia. Naceur et al., 2008.	Return on Assets	Frontiers in Finance and Economics
Determinants of bank profitability in a developing economy: empirical evidence from the Philippines.	Return on assets	Asian academy of management journal of accounting and finance

Sufian et al., 2008		
Determinants of bank profitability: evidence from the Greek banking sector. Alexious et al., 2009	Return on equity	Economic annals
The determinants of commercial bank profitability in sub-Saharan Africa. Flamini et al., 2009	Return on assets	International monetary fund working paper
Internal determinants of profitability in Turkish banking sector. Alp et al., 2010	Return on assets	The ISE review
The impact of liquidity on bank profitability. Bordeleau et al., 2010	Return on equity Return on assets	Bank of Canada working paper
Bank specific and macroeconomic indicators of profitability- empirical evidence from the commercial banks of Pakistan. Ali et al., 2011	Return on assets Return on equity	International business of business and social science
Determinants of bank profitability in Ukraine. Davydenko, 2011	Return on assets	Undergraduate economic review
Determinants of the profitability of the US banking industry. Hoffman, 2011	Return on equity	International journal of business and social science
Determinants of commercial banks performance. Evidence from Jordon. Khrawish, 2011	Return on assets Return on equity	International research journal of finance and economics
The effect of bank regulations, competition and financial reforms on banks performance. Naceur et al., 2011	Return on assets Return on equity Net interest margin	Emerging markets review
Bank specific and macroeconomic determinants of profitability, evidence from participation banks in turkey. Macit, 2011	Return on assets Return on equity	Economics bulletin
Determinants of bank profitability: evidence from Jordon. Ramadan et al., 2011	Return on assets Return on equity	International journal of academic research
Determinants of bank profitability in Nigeria: an empirical assessment. Ani et al., 2012	Return on assets	The African business review
The determinants of profitability of Tunisian deposit banks. Ayadi, 2012	Return on average assets	IBIMA business review

The Determinants of Bank's Profitability in Nigeria. Babalola, 2012	Return on assets.	Journal of Money, Investment and Banking.
Determinants of Bank's Profitability: Evidence from Bangladesh. Jahan, 2012	Return on assets. Return on equity.	Indian Journal of Finance.
Determinants of Bank Performance in Nigeria. Oladele et al., 2012	Return on assets.	International Journal of Business and Management Tomorrow.
Commercial Banks Profitability Position: The Case of Tanzania. Qin et al., 2012	Return on assets. Return on equity. Net interest margin.	International Journal of Business and Management.
Analysis of Profitability Determinants: Empirical Evidence of Commercial Banks in the New EU Member States. Roman et al., 2012	Return on Average Equity.	Unpublished.
The Impact of Liquidity Asset on Iranian Bank Profitability. Shahchera, 2012	Return on assets.	International Conference on Management, Behavioral Sciences and Economics Issues.
Factors Affecting Bank Profitability in Indonesia. Syafri, 2012	Return on assets.	The 2012 International Conference on Business and Management.
Determinants of Bank Profitability in a Developing Economy: Empirical Evidence from Nigerian Banking Industry. Ayanda et al., 2013	Return on assets. Return on equity. Net interest margin.	Interdisciplinary Journal of Contemporary Research in Business.
Internal and External Determinants of Profitability of Islamic Banks in Sudan: Evidence from panel data. Eljelly, 2013	Return on assets. Return on equity.	Afro-Asian Journal of Finance and Accounting.
Commercial Banks Profitability Indicators: Empirical Evidence from Latvia. Erina et al., 2013	Return on assets. Return on equity.	IBIMA Business Review.
Internal Factors Affecting Albanian Banking Profitability. Gremi, 2013	Return on assets.	Academic Journal of Interdisciplinary Studies.
The Relationship between Liquidity and Profitability of listed banks in Ghana. Lartey et al., 2013	Return on assets.	International Journal of Business and Social Science.

Optimizing Bank Liquidity in Central and Eastern Europe. Munteanu, 2013	Return on average equity. Return on average assets.	Review of Economic and Business Studies.
The Impact of Liquidity on Jordanian Banks Profitability through Return on Assets. Nimer et al., 2013	Return on assets.	Interdisciplinary Journal of Contemporary Research in Business.
What Determines the Profitability of Banks during and before the International Financial Crisis? Evidence from Tunisia. Rachdi, 2013	Return on assets. Return on equity. Net interest margin.	International Journal of Economics Finance and Management.
Determinants of Profitability of commercial banks in Sri Lanka. Weersainghe et al., 2013	Return on assets.	International Journal of Arts and Commerce.
Profitability of banking system: Evidence from emerging markets. Yilmiz, 2013	Return on assets. Net interest margin.	WEI International Academic Conference Proceedings.
Impact of Internal Factors on Bank Profitability: Comparative Study between Saudi Arabia and Jordan. Almazari, 2014	Return on assets	Journal of Applied Finance and Banking.
An Analysis of Bank Profitability in Macedonia. Iloska, 2014	Return on assets.	Journal of applied economics and business.
Determinants of bank profitability in India. Misra, 2015	Return on assets. Return on equity.	International Journal of Indian Culture and Business Management.
Determinants of Banking sector profitability in Zimbabwe. Abel et al.,2017	Return on assets. Return on equity.	International Journal of Economics and financial issues.

3.3.2 Macroeconomic variables

GDP and inflation rate are used as macroeconomic variables in this study because these are external factors which affect profitability of financial sector. These determinants are selected based on nature and purpose of current study.

Inflation: in current study this variable is measured through inflation rate. Revell 1979 investigated the impact of inflation on profitability of banks and after him Perry 1992 made a study too on similar topic. Both argued in their studies that effect of inflation on banks profitability depends upon that whether inflation is expected or not. If banks realize in their forecast that inflation will occur than they manage their expenses according to the situation in order to grow their revenues faster than their operating cost. This finally leads to increase in banks profitability. On the other hand, if inflation is not predicted than the bank will face loan losses, and this will surely decrease banks profitability.

GDP: many researchers in their studies concluded that there is positive impact of GDP on bank profitability. They argued that the reason behind this is that in the times of cyclic upswings demand for lending automatically increase. Some of those studies include Demirgue-Kunt and Huizinga 1999, Bikker and Hu 2002, Athanasoglou et al. 2008. But another study made by Tan and Floros 2012 concluded that there is negative impact of GDP on banks profitability in Chinese banking sector. According to them business environment is improved by higher growth in economy and it decreases the entry barriers for banks. Banks profitability is reduced by increase in competition. So, we cannot predict the impact of this variable on Pakistani banking industry.

3.3.3 Bank specific variable

Bank size: For the measurement of this variable natural logarithm of total assets is used. Many researchers used this measurement in their studies such as Goddard et al. 2004, Asthanasoglou et al. 2008, Dietrich and Wanzenried 2011. Many studies concluded that large sized banks are easily able to decrease their cost by using economies of scale and scope (akhavein et al. 1997, Bourke 1989, Molyneux and Thornto 1992, Bikker and Hu 2001, Goddard et al. 2004, Lannott et al. 2007, Mercieca et al.2007, Elsas et al. 2010). But alternatively, Barros et al. 2007 concluded in their study that there is negative impact on bank size on its profitability because of problems associated with leading. Humphrey 1994 argued in their study that profitability of banks increases in the beginning of increase in its size but then after some time it decreases because of bureaucratic and many other reasons. In the light of all these arguments, we cannot determine the impact of bank size on profitability of Pakistani banks, priorly. First, investors prefer putting their money into larger, more solid and stable rather than into smaller banks that often fail. Second, large banks, in comparison with smaller ones, serve their customers in a wide branch network attracting contributions from various localities. Third, large banks are far superior in organizational and technical terms (Staroselskaja 2011).

Liquidity: The ratio of total assets over total loans is used to measure this variable. This variable is previously used by (Goddard J. L., 2013) in their study. If the figure of this ratio is large than it shows that level of liquidity is low. If the volume of loans is high than it shows that more interest revenue is generated. There is no prior expectation of this variable because (Molyneux, 1992) found in their study that its impact on profitability is negative whilst (Bourke, 1989) found in their study that those banks which have higher levels of liquidity, have more profitability.

Capitalization: The proxy of this variable is the ratio of shareholders equity over total assets. It is previously used in the studies of (Athanasoglou, 2008), (Garcia-Herrero, 2009) and (Dietrich, 2011). If the capital ratio is high than it indicates that the bank has high creditworthiness. Additionally, the banks which have higher capital levels, usually make prudent lending decisions. This result in increase in profitability. There is risk factor in assets like loans and capital play vital role in absorbing that risk. The banks which are highly capitalized don't need to borrow which automatically reduce their cost and cause increase in profitability. However, (Berger A. 1., 1995) and (Modigliani, 1963) found in their study that there is negative impact of capitalization on profitability because when the level of capitalization in banks is higher the relative risk position of bank is low. So, for this variable too there is no prior expectation. more profitable, and more liquid Islamic banks, operating in countries with better institutional environments and market discipline are better capitalized.

Diversification: ratio of non-interest income over gross revenue is used to estimate this variable. (Tan, 2012a) argued in their study that those banks which are engaged in different businesses, generate more income. But (Demirguc-Kunt A. H., 1999) found in their study that there is negative impact of diversification on profitability because in area of fee-generating business, the competition is stronger, so it decreases the profitability of banks. Because of these previous conclusions, there is no prior expectation of this variable.

the main and most important aim of all business organizations is to maximize its profits. Financial managers are also responsible for maximization of equity holder's investment. In such case, profitability is crucial factor of performance of an organization and investment of shareholders. A study made in 1981 by Weston and brigham stated that "profitability is the net result of a large number of policies and decisions." Hermenson, Edward and salmonson, 1987 argued in their

research paper that profitability can be defined as the association of earnings to some measures of balance sheet which shows that how much an organization is able to earn from its available assets. It also shows that how skillfully the management of an organization is using its resources to give rise to its profits. Profitability of an organization is very important in order to become able to bear harmful shocks and it is also essential to play effective part in making the whole system stable. It can be described as correlation of income and funds used. Basically, the word "profitability" is made up of two words which are "profit" and "ability". In terms of accounting, profit is defined as differentiation among total revenue and direct cost which is incurred while performing daily operations of a business. But if we see through the economic point of view, profit is simply difference among all total direct and indirect revenue and total direct and indirect cost. The second term which is "ability", specify that to which extent the organization can earn or how efficiently it can perform its operations. So, in the light of this, profitability can be defined as the capability of an organization to obtain profit by appropriate use f all its resources, in its financial and operational activities.

According to kaur and Kapoor 2007, the earnings (which are made from all earning assets of the organization) and all expenditures (which are incurred on managing whole portfolio of asset – liabilities) can be defined as profit. All business need profit for their survival as well as for expanding and diversifying business activities. If we see from managerial point of view, profit can be defined as testing efficiency of organization and measuring its controls for employees of an organization profitability is origin of benefits for them. In owner's perspective, profitability is a measure know whether their investment was worthy or not. For certain of an organization profitability is a measure of safety: Government use profitability of organization to measure that how much tax on organization can pay. In customer's point of view, profitability can play a role

as guarantee of superior quality of goods and price cuts. For an enterprise, profitability is a symbol of survival and better growth of an organization. Buyinza et al. 2010, stated in their study profit is necessary for an organization to grow, survive and complete in market, at micro level. Now a days, the environment is competitive, so profits are essential for an organization to lure outside capital. Alcotey et al. 2011, argued in their study that profitability ensure durability of organization and it is important to follow up policy holders and equity holders in order to provide funding to the organization.

Chapter 4

4.1 Results and Discussion

4.1.1 Descriptive stats

In table1, the summary statistics of profitability indicators is shown over the examined period. It also presents the summary of profitability proxies for Islamic and conventional banks of Pakistan separately. The tables show that the ROA of conventional banks is higher than the ROA of Islamic banks. It's same in the case of ROE. But the NIM of Islamic banks is higher than conventional banks. The higher number of ROA and ROE of conventional banks shows that they are involved in generating more income than Islamic banks which suggests that they are involved in more diversified businesses. Another reason is that Islamic banking system is just introduced in 2007 while conventional banks are operating from far long time than that. The higher value of NIM of Islamic banks shows that they are involved in traditional services of loan and deposits.

Table 6 shows the statistics of explanatory variables used in current study. It also contains separate statistics of Islamic and conventional banks. It shows that the size of conventional banks, on the basis of assists, is large as compared to Islamic banks but conventional banks have less liquidity than Islamic banks. It shows that conventional banks take more liquidity risk in order to maintain their profit margins and Islamic banks hold more liquid assets with them. The behavior of Islamic banks towards liquidity is conservative and it can reduce their profits. Conventional banks are showing more capitalization as compared to Islamic banks. Summary statistics of diversification shows that the conventional banks have more diversified business than Islamic banking sector. It shows that Islamic banks focuses more on traditional banking activities.

Table 4. summary statistics of profitability indicators

	All banks					Conventional banks					Islamic banks				
	Obs.	Min.	Max.	Mean	SD	Obs.	Min.	Max.	mean	SD	Obs.	Min.	Max.	mean	SD
ROA	342	0.02	19.7	1.52	1.88	292	0.02	19.74	1.66	1.99	50	0.02	2.85	0.69	0.55
ROE	322	0.08	65.18	13.20	10.14	272	0.08	65.18	14.22	10.68	49	0.13	22.06	8.45	7.05
NIM	342	0.07	19.6	5.03	4.04	291	0.07	19.68	4.64	3.81	50	2.32	22.64	7.27	4.61

Table 5. summary statistics of explanatory variables

	All banks					Conventional banks					Islamic banks				
	Obs.	mean	Min.	Max.	SD	Obs.	mean	Min.	Max.	SD	Obs.	mean	Min.	Max.	SD
Bank size	342	8.17	6.57	9.44	0.65	292	8.21	6.57	9.44	0.68	50	7.95	6.95	8.89	0.45
Liquidity	311	15.31	0.16	77.61	14.57	285	0.07	0.032	0.014	0.03	49	0.12	0.00	0.19	0.04
Capitalization	342	0.29	0.00	7.20	0.98	292	0.32	0.00	7.20	1.06	50	0.11	0.04	0.37	6.54
Diversification	342	2.29	0.02	53.13	4.58	292	3.08	0.02	53.13	4.15	50	2.15	0.23	45.37	6.54
Lerner Index	339	0.92	0.10	1.64	0.23	289	0.93	0.10	1.64	0.23	50	0.84	0.40	1.21	0.19
GDP	365	0.039	0.004	0.058	0.014										
Inflation rate	365	0.08	0.02	0.19	0.04										

4.1.2 Correlation matrix

Correlation matrix is made to examine that what is the correlation between variables and assessing multicollinearity among different variables, a study made by Tabachnick and Fidell 2009, showed that if correlation between variables is equal to more than 0.90 i.e. 90%, than it means that those variables have almost same features. Variables should not be too same.

According to correlation matrix of current study, there is positive and significant relationship between proxies of profitability. The values of variables show that the correlation is not so high, so it appears that these proxies are capturing different dimensions in order to measure profitability. The relationship of ROA with ROE, NIM, GDP and IR ranges between 0.00 to 0.20 which is not so considerable relationship. While ROA has negative relationship between LI, LQD, BS and DVF which shows when one increases other decreases. There range is also between 0.00 to 0.20 which shows that they also have weak impact on one another. Relationship of ROE with LI, NIM, GDP, LQD, DVF and CP is negative and weak. While ROE has positive relationship with IR and BS. But the strength of their relationship is weak.

Lerner index has positive and moderate relationship with BS with coefficient value 0.5 and 0.6 respectively. On the other hand, Lerner Index has negative and extremely weak relationship with NIM, GDP, IR and LQD. Relationship of LI with CP is negative and weak with value -0.3.

NIM is negatively and weakly related to LQD, BS and DVF and the relationship of NIM with GDP, IR and CP is positive and weak. GDP is negatively and weakly related to IR, LQD and CP and positively and weakly related to BS and DVF. IR has positive and weak relationship with LQD, DVF and CP and negative and weak relationship with BS. LQD is weakly and negatively correlated to BS and CP and positively correlated to DVF with value of 0.04. BS has weak and

negative relationship with DVF but on the other hand it has a moderate and negative relationship with CP with coefficient value of -0.5. DVF is positively and weakly related to CP with coefficient value of 0.00.

Table 6. Correlation matrix

	ROA	ROE	NIM	LI	GDP	IR	DVF	CP	BS
ROA	1.000000								
ROE	0.123939	1.000000							
NIM	0.122120	-0.010865	1.000000						
LI	-0.026530	-0.007694	-0.002778	1.000000					
GDP	0.067120	-0.021682	0.004196	-0.006614	1.000000				
IR	0.005181	0.146634	0.007770	-0.141583	-0.177613	1.000000			
DVF	-0.209451	-0.071522	-0.102477	-0.195881	0.017357	0.011830	1.000000		
CP	0.437680	-0.050131	0.147198	-0.377324	-0.009602	-0.000388	0.004673	1.000000	
BS	-0.118742	0.018563	-0.220046	0.593726	0.011054	-0.146342	-0.210316	-0.519528	1.000000

4.1.3 Empirical results

Table 8 demonstrates that, F-statistics is showing variables are jointly significant. First order autocorrelation is present, but it does not show that empirical results are inconsistent. Inconsistency would be present if there was second order autocorrelation was present which is in line with the study of Arellano and bond 1991. So, this case is rejected by AR2 error test. The dynamic character of model is confirmed by the significant value of coefficient of dependent variables which are ROA, ROE and NIM. System GMM model is used in current study.

The results shown in table 7 shows that the Lerner index has positive and significant signs for ROA, ROE and NIM. This shows that the impact of market competition on profitability of banking sector of Pakistan is negative. P.value is 0.03. 0.06 and 0.06 respectively which is significant. These findings are in line with structure conduct performance paradigm. The banks sacrifice their profits in order to attract customers and compete with other competitors in industry, results for commercial banks also shows that the impact of market competition on profitability is negative. The results for Islamic banks are vice versa. The impact of market competition on profitability of Islamic banks is insignificant. It's because the competition in Islamic banks of Pakistan is not so high and there are just 5 full fledge Islamic banks operating in Pakistan currently.

Empirical results show that GDP has significant and negative impact on profitability. It means that when GDP increases the profitability of Pakistani banking sector decreases. It is in line with the findings of Tan and Floros 2012. There results were similar on Chinese banking sector. The reason behind this is when there is high growth in economy the business environment is enhanced and because of that entry barriers for banks decreases. This reduce profitability because of increase in competition in market. These results are similar for commercial banks but for Islamic banks ROE

and NIM has significant and positive values which shows when GDP increases the profitability of Islamic banks also increase.

The impact of inflation rate on profitability is shown to be significant for just one proxy of profitability that is ROE. Results shows that there is positive and significant impact of inflation rate on profitability. This is because when inflation is expected, banks manage their expenses accordingly which leads to increase in profitability for that time period. On the other hand, inflation rate has negative and significant impact on ROA. This is because when banks do not predict inflation fairly, they face losses because they are trying to grow their revenues faster than their operating costs. This lead to decrease in profitability. The results for commercial banks are similar to overall banking sector. In Islamic banks, the two proxies of profitability that is ROE and NIM showed that there is negative and significant impact of inflation rate on profitability.

Current study shows that the impact of bank size on profitability is significant and negative. The reason behind this is that in the beginning, when the size of bank gradually starts increasing, it enjoys more profits but after some time the profitability starts decreasing because of many bureaucratic issues (Humphrey 1994).

The coefficient of capitalization, for overall and conventional banks of Pakistan, shows that there is positive and significant relationship between profitability and capitalization. The reason behind this is when banks are more capitalized, they don't depend largely on external funds. This phenomenon reduces their funding cost which leads to increase in profitability. These results are vice versa for Islamic banks. The empirical results showed no significance of capitalization on Islamic banks. The reason of these insignificant results is Islamic banking capitalization is restricted by shariah laws.

Liquidity shows significant and negative signs of coefficient for overall banks for ROE and NIM and also ROA for conventional banks these results shows that when liquidity is low, the bank's profitability increase. It shows that Pakistani banks have good ability in order to manage and monitor their loans and this cost reduction increase profitability. In case of Islamic banks, the result shows significant and negative value of liquidity only for one profitability indicator i.e. NIM. Empirical results for diversification show that profitability is significantly and negatively affected by diversification for overall and conventional banks of Pakistan. These results are significant for two proxies of profitability which are ROA and ROE. These are in line with the findings of Dermirguc-Kunt A. H, 1999, which reported in their study that there is negative impact of diversification on profitability because the area of fee generating business is more competitive, hence it decreases profitability. The results show that there is insignificant relationship between diversification and profitability of Islamic banks because Islamic banks are not too much engaged in diversified business-like conventional banks.

Table 7. Baseline model: impact of market competition on profitability

Overall banks results						
	ROA		ROE		NIM	
	Coefficient	P.Value	Coefficient	P.Value	Coefficient	P.value
Lerner Index	0.159819	0.0345	19.25358	0.0604	2.560824	0.0614
Macroeconomic var.						
GDP	-0.354234	0.0645	-1.613411	0.1439	-1.008712	0.7320
Inflation Rate	-5.592872	0.0693	204.0140	0.0000	-1.814178	0.8070
Industry specific var.						
Capitalization	0.583170	0.0785	10.54765	0.0000	0.042954	0.8902
Diversification	-0.064884	0.0145	-1.585116	0.0164	-0.116869	0.2629
Bank size	-1.294740	0.0072	-21.48425	0.0013	-2.550509	0.0593
Liquidity	-0.001299	0.1861	-0.118652	0.0000	-0.010786	0.0455
Conventional banks results						
	ROA		ROE		NIM	
	Coefficient	P.Value	Coefficient	P.Value	Coefficient	P.value
Lerner Index	0.135301	0.0641	21.19676	0.0417	4.726992	0.0643
Macroeconomic var.						
GDP	-3.774281	0.0455	-2.091221	0.2115	-1.624065	0.9334
Inflation Rate	-6.333888	0.0954	238.5649	238.5649	-8.188129	0.1694
Industry specific var.						
Capitalization	0.536799	0.0724	12.09708	0.0000	0.914404	0.0000
Diversification	-0.115910	0.0217	-2.679355	0.02833	0.029590	0.5510
Bank size	-1.405386	0.0116	-24.70120	0.0058	-1.704571	0.0047
Liquidity	-0.001238	0.3483	-0.128038	0.0057	-0.012729	0.0027
Islamic banks results						
	ROA		ROE		NIM	
	Coefficient	P.Value	Coefficient	P.Value	Coefficient	P.Value
Lerner Index	-0.199617	0.7591	-2.155298	0.3608	5.420593	0.1988
Macroeconomic var.						
GDP	3.107613	0.9127	9.119812	0.0495	2.243411	0.0095
Inflation Rate	-2.312972	0.2787	-42.82504	0.0210	-27.61626	0.0567
Industry specific var.						
Capitalization	-1.297664	0.5529	-18.40158	0.0273	5.551511	0.3813
Diversification	-0.005037	0.1711	0.008839	0.6477	0.055290	0.2209
Bank size	-0.850255	0.3347	-6.241792	0.0889	-12.66336	0.0018
Liquidity	0.000158	0.8010	0.010229	0.1440	-0.012773	0.0001

Table 8

	ROA	ROE	NIM
F-Test	168.5	100.6	456.9
AR1	0.00367	0.00173	0.00321
AR2	0.432	0.611	0.742

Chapter 5

5.1 Conclusion

This study was basically made to analyze the impact of market competition on the profitability of Pakistan's banking sector and to observe that whether these results are same for both Islamic and commercial banks, for the period of 2007-2018. To measure market competition Lerner index is used and as proxies of profitability return on assets, return on equity and net interest margin are used. In addition to competition, industry specific and macroeconomic variables are also analyzed in this study as control variables. Generalized method of moments is used for econometric estimation in current study. The results show that there is negative relationship between market competition and profitability of overall banking sector of Pakistan and the results are same for commercial banks. But the impact of market competition on profitability of Islamic banks is positive because of less competitive environment in Islamic banks.

5.2 Policy recommendations

The findings of the study are useful for policymakers, regulatory authorities and managers of Pakistan's banking sector. Regulatory authorities should introduce some entry barriers so that the competition in market will decrease because the study showed that more market competition affect the profitability of banking sector negatively.

State bank of Pakistan should encourage banks to engage in different loan activities because when banks holds more liquid assets, it causes decrease in their profitability. These lending activities will also provide more opportunities of investment to entrepreneurs.

The political influence in large size banks should be reduced so they can perform their business activities in free environment.

5.3 Study limitations:

The current study focuses only on financial sector of Pakistan. In future researches non-financial sector can be taken to analyze the same model. Moreover, the study is only conducted on financial sector of Pakistan. Panel data of other countries can also be taken in account to extend current study.

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